Abstract Book

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Abstract 91

CELLULAR ANALYSIS OF RETINAL PIGMENT EPITHELIUM AND PHOTORECEPTORS BY TRANSSCLERAL OPTICAL PHASE IMAGING IN IMPG2-RELATED INHERITED RETINAL DYSTROPHY

Lombardo M.*[1], Cusumano A.[1], Sebastiani J.[2], Nucci C.[1], Cesareo M.[1], Falsini B.[3]

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The aim of this study was to assess whether images obtained with Adaptive Optics Transscleral Flood Illumination (AO-TFI) in a case of IMPG2-related Inherited Retinal Dystrophy (IRD) could offer valuable qualitative and quantitative information beyond what is obtained through current diagnostic methods.

A patient with IMPG2 mutation-related IRD was analyzed. A comprehensive ophthalmological evaluation was conducted, including an assessment of best corrected visual acuity (BCVA), retinal sensitivity through computerized perimetry, electroretinography (ERG), blue autofluorescence, optical coherence tomography (OCT), and OCT angiography (OCTA). AO-TFI macular images were acquired from both eyes. Quantitative analysis was conducted using Voronoi density analysis and proprietary software to measure the photoreceptor (PR) and retinal pigment epithelium (RPE) cells, as well as the hyper-reflective and hypo-reflective regions. The analysis focused on areas with complete RPE and PR atrophy (RORA), PR atrophy with RPE sparing (ORA), and unaffected retinal areas.

The results of the BCVA, perimetry, and ERG tests showed a direct correlation with the remaining macular cones. Areas with hypo-autofluorescence matched the areas where RPE and PR cells were absent, while areas of hyper-autofluorescence corresponded to reduced PR with partially intact RPE. Additionally, the hypo-autofluorescence areas aligned with choriocapillaris atrophy observed on OCTA. New cellular imaging features, such as clusters of dark spots concentrated in the border areas between preserved and atrophic RPE, also appeared. The analysis of hypo- and hyper-reflective regions allowed for a quantitative evaluation of the images when the Voronoi method was not feasible to use.

AO-TFI displayed regional differences in the involvement of the RPE and PR cells, consistent with other structural and functional examinations. This study's findings suggest that this method can offer specific parameters in particular areas of interest. AO-TFI can reveal new morphological changes that could assist in the characterization of IRDs.

Abstract 15 – Main Program

QUANTITATIVE MULTIMODAL IMAGING CHARACTERIZATION OF INTRARETINAL CYSTS VS DEGENERATIVE PSEUDOCYSTS IN NEOVASCULAR AGE-RELATED MACULAR DEGENERATION.

Arrigo A.*, Aragona E., Antropoli A., Bianco L., Battaglia Parodi M., Bandello F.

IRCCS San Raffaele Scientific Institute ~ Milan ~ Italy

Intraretinal cysts are a common manifestation in neovascular AMD. These may be interpreted as exudative/transudative intraretinal fluid (IRF) or degenerative pseudocysts. The differentiation of these types of cysts is challenging. The aim of this study is to provide quantitative multimodal imaging findings discriminating IRF from degenerative pseudocysts in neovascular AMD.

Imaging protocol included structural OCT, OCTA and DART-OCTA scans. We included only cysts with a diameter > 50µm to avoid possible images resolution biases. IRF was defined as the appearance of intraretinal cysts in the study visit, with no signs of the same cysts in the last follow-up. Degenerative pseudocysts were defined as persistent intraretinal cysts for at least three months. We evaluated cysts' perfusion characteristics, and the presence of hyperreflective foci (HF) in their context. The statistical model was built to assess the inter-imaging techniques agreement, the correlation with the clinical status of the patients, and fibrotic/atrophic changes.

We analyzed 387 intraretinal cysts. We found IRF cysts in 35/35 eyes (100%), whereas we found degenerative pseudocysts in 21/35 eyes (60%). IRF cysts were characterized by peri-cyst perfusion signal, significantly higher circularity values and the presence of HF in 89% of cases. Degenerative pseudocysts showed no sign of perfusion signal, significantly lower circularity values and the poor or null HF. DART-OCTA provided much more details than enface OCTA. The correlation analysis revealed an inverse relationship between the number of IRF cysts and fibrosis/atrophy. LogMAR BCVA showed an inverse significant correlation with the number of IRF cysts.

This study proposed a quantitative approach to categorize IRF cysts and degenerative pseudocysts, resulting clinically relevant in neovascular AMD setting. Future studies should be focused on the implementation of this quantitative strategy in AI-based tools.

Abstract 13 – Main Program

QUANTITATIVE OPTICAL COHERENCE TOMOGRAPHY DETECTION OF NEW NEOVASCULAR BRANCHES AND ASSOCIATION WITH EXUDATION RECURRENCE IN NEOVASCULAR AGE-RELATED MACULAR DEGENERATION.

Arrigo A.*, Aragona E., Battaglia Parodi M., Bandello F.

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Macular neovascularization (MNV) is a common complication of age-related macular degeneration (AMD) patients. We tested a new OCTA multi-signal analysis based on the combined use of high-resolution (HR) and high-speed (HS) OCTA acquisitions. The main hypothesis is that HR-HS gap evaluation is useful to distinguish exudative from non-exudative MNV lesions.

The study was designed as an observational, cross-sectional study. We included type 1, type 2 or mixed type 1/2 MNV lesions. The quantitative OCTA pipeline was developed to isolate the MNV network and to highlight the presence of new secondary branches by calculating the HR-HS MNV gap. Moreover, we evaluated the agreement between the HR-HS MNV gap area and the fluid area, detected on enface OCT. We tested the relationship between HR-HS gap values and three subgroups of MNV: (I) clinically relevant fluid recurrence; (II) not clinically relevant fluid recurrence; (III) inactive lesion. P-values <0.05 were considered statistically significant.

Our study involved 32 MNV eyes (32 AMD patients; 15 males; mean age 74±5 years). MNV were classified as type 1 (17; 53%), type 2 (11; 34%) or mixed type (4;13%). Subretinal fibrosis was found in 17/32 eyes (53%), whereas outer retinal atrophy interested 22 out of 32 eyes (69%). HR-HS MNV gap was significantly different among the three subgroups: 18% for Exudative subgroup, 12% for Minimally exudative subgroup and 4% for Dry subgroup (p<0.05). HR-HS MNV gap area highly overlapped with fluid area. HR-HS MNV gap significantly correlated with LogMAR BCVA, disease duration, fibrosis, and outer retinal atrophy.

Our study proposed a novel quantitative approach to evaluate the novel branches in neovascular AMD. Their detection is significantly associated with exudation recurrence. HR-HS MNV gap is potentially clinically useful, being associated with MNV activity, disease duration, fibro-atrophic evolution, and visual outcome.

Abstract 103

QUANTITATIVE COMPARISON OF CHORIOCAPILLARIS IMAGING WITH DIFFERENT OCT DEVICES

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Visual comparison of OCTA images from different devices shows considerable variability. This suggests that the technical specifications and algorithms of each machine play a significant role in the visualization results and, consequently, the quantitative evaluation.
Aim: To compare quantitative parameters of choriocapillaris blood flow using OCTA systems from different manufacturers.

Central OCTA with seven different machines (HRA+OCT Spectralis; DRI OCT Triton (Software verions 2022 and 2024); Mocean 4000; Revo NX130; Avanti; Solix) was performed for 13 volunteers (10 females, 26[24;27] years). Image binarization was performed using the Phansalkar method in ImageJ software. Instead of resizing the images, which differed in size and resolution across machines as done in previous studies, we adjusted the binarization window. After the image processing standard choriocapillaris flow parameters were calculated: FD number, FD density, and mean FD size. Correlation analysis was performed to compare these quantitative parameters from images obtained by the different OCT machines.

The binarization window was calculated for each device, based on the assumption that it should cover the intercapillary space (24 μm converted in pixels considering the scanned area size and transverse resolution) plus 1 pixel.
Correlation was found only for two pairs of comparisons. The evaluation results from DRI OCT Triton and Spectralis machines correlated in terms of FD density (r=0.813, p=0.048). A very strong correlation was discovered for the FD number (r=0,955, p=0,017) and FD density (r=0,912, p=0,033) parameters between Avanti and DRI OCT Triton. Notably, no correlation was found between two different software versions of DRI OCT Triton.

The lack of correlation between images of the same eye from different devices highlights considerable variation in OCTA visualisation across manufacturers. Despite all technical progress, the results may not accurately represent the actual anatomy. Therefore, quantitative evaluations using contemporary commercial OCT devices should be approached with caution.

Abstract 233

DISTINCT PATHWAYS OF MACULAR ATROPHY IN TYPE 3 MACULAR NEOVASCULARIZATION ASSOCIATED WITH AMD

Borrelli E.[1], Barresi C.[2], Ricardi F.*[1], Berni A.[2], Grosso D.[2], Viggiano P.[3], Marolo P.[1], Introini U.[2], Bandello F.[2], Reibaldi M.[1]

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To explore the occurrence of macular atrophy (MA) in eyes with age-related macular degeneration (AMD)-associated Type 3 macular neovascularization (MNV) treated with anti-vascular endothelial growth factor (anti-VEGF) therapy. Importantly, we aimed to describe the existence of separate pathways leading to MA

We analyzed 41 participants (41 eyes) with treatment-naïve Type 3 MNV who were followed up for 12 months after beginning the anti-VEGF therapy. At the one-year follow-up visit, optical coherence tomography (OCT) scans were reviewed for the presence of MA. MA regions of interest (ROIs) were selected and traced back to their original dominant baseline lesion (i.e., precursor) through previous serially captured OCT scans. Baseline lesions included precursors associated with the development and exudation of MNV and causes external to the neovascularization itself

At the one-year follow-up visit, MA was graded to be present in 38 (92.7%) out of 41 eyes. These 78 MA ROIs were divided into two subgroups according to the precursor lesion, yielding a group of 53 MA lesions with precursors associated with the development and exudation of MNV (i.e., MA caused by physical harm from Type 3 neovessels, collapse of a serous pigment epithelium detachment, and fibrosis) and 25 MA regions with precursors external to the neovascularization itself (i.e., MA caused by drusen or subretinal drusenoid deposits).

Eyes with Type 3 MNV are commonly complicated by MA and precursors of MA include causes associated with the development and exudation of MNV, as well as lesions unrelated to the neovascularization process itself

Abstract 173

IDIOPATHIC MACULAR NEOVASCULARIZATION UNDER THE AGE OF 40 YEARS: PROGRESSION BIOMARKERS AND MORPHOLOGICAL CHARACTERIZATION

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To investigate the development and progression patterns of idiopathic macular neovascularization (iMNV) in a population under the age of 40.

Retrospective study of eleven eyes of 11 patients with iMNV followed from its onset to progression and therapy over 48 months were studied. Patients with predisposing conditions that include pathological myopia, angioid streak, trauma or inflammation were excluded from the analysis. A longitudinal series of color fundus photographs (CFP), SS-OCT, OCTA along with BCVA recording were examined for the patterns of MNV.

The mean age was 31.2 ± 8.5 years. A female prevalence of 71.4% was recorded. All iMNV were classified as type 2 with presence of intraretinal fluid and thick hyperreflective subfoveal lesion. Two eyes presented at baseline with perifoveal hemorrhagic areas.
CFP showed round yellowish subfoveal lesion with smooth edges at baseline. OCTA revealed in all eyes a well-defined sea-fan shaped membrane with a dense branching pattern. All eyes underwent a loading phase of three intravitreal anti-vegf followed by a treat and extend regimen. By the end of the follow-up BCVA improved and iMNV appeared inactive in all eyes.

Results showed a well defined distinct pattern in lesion morphology and progression of iMVN in patients aged under 40 years. A prevalence in female gender was evidenced and a complete and stable resolution was observed during follow-up in all patients. Further research is warranted to address etiopathogenesis in this population.

Abstract 420

FIVE YEARS OUTCOMES AND PREDICTORS OF VISUAL ACUITY CHANGE OF A DISCONTINUOUS ANTI-VEGF TREATMENT IN PATIENTS WITH NEOVASCULAR-AGE RELATED MACULAR DEGENERATION (N-AMD).

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To investigate long-term functional and anatomical outcomes of a discontinuous anti-vascular endothelial growth factor (anti-VEGF) pro re nata (PRN) regimen in treatment-naive patients with neovascular-age related macular degeneration (n-AMD), and to define biomarkers of response.

Medical records of consecutive n-AMD patients, who were treated at the Department of Ophthalmology, University of Foggia, between 2016 and 2022, were retrospectively evaluated in this study. Patients who were treated according to a "discontinuous" PRN protocol, with a follow-up ≥ 12 months, were considered.
Mean BCVA and CMT were assessed at baseline (T0), at one month after the last injection (T1) and at last visit (T2). The mean number of anti-VEGF injections, the maximum "injection-free" interval, proportion of eyes where treatment was interrupted, were investigated. Biomarkers of response were evaluated at baseline and last visit.

Out of 1154 identified charts, eighty eyes of 65 patients (mean age:77±8.9 years) were included. The mean number of visits and injections were 21.8 (±10.6) and 14.8 (±9.8) respectively, over a mean period of 51 (±24.3) months. Mean baseline LogMAR BCVA (0.46 ± 0.4) and CMT (426.39±207 μm) significantly decreased to 0.74 (± 0.62) and to 292.46 (±187.6) respectively at last visit (P = 0.0005). A worse final BCVA and a lower number of injections, significantly correlated with the presence of outer retinal disruption at T2. Treatment interruption was reported in 32 eyes (40%) with no further BCVA deterioration.

Functional results suggest a suboptimal anti-VEGF treatment can lead to irreversible retinal damage, thus seriously affecting final vision in n-AMD eyes. Treatment interruption, with regular follow-up, could be carefully considered in very selected cases with evidence of extensive chronic retinal changes.

Abstract 110

VASCULAR REMODELING OF CHOROIDAL NEOVASCULARIZATION UNDER FARICIMAB THERAPY FOR AGE-RELATED MACULAR DEGENERATION

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To assess qualitative optical coherence tomography angiography (OCTA) changes of choroidal neovascularization (CNV) under faricimab therapy for age-related macular degeneration (AMD).

30 AMD eyes showing CNV lesions with activity signs (i.e., intra and/or subretinal fluid) treated with intravitreal injections of faricimab with a minimum follow-up of 6 months were included. All eyes underwent a complete examination including, spectral domain OCT, fluorescein and indocyanine angiography, and OCTA, at baseline and at each follow-up visit.

On baseline OCTA, all eyes presented an immature CNV pattern: 11/30 (36.7%) eyes showed a sea fan pattern, 13/30 (43.3%) a medusa pattern, and the remaining 6/30 (30%) an indistinct pattern. At the last follow-up,in 12/30 (40%) eyes, the immature CNV pattern remained unchanged, corresponding to 5/12 (41.7%) medusa, 3/12 (25%) sea fan, and 4/12 (33.3) indistinct patterns. In these 12 cases, structural OCT revealed exudative signs in 11/12 (91.6%) eyes, at the last evaluation ($p<0.05$). In the remaining 18/30 (60%), CNV pattern changed to mature pattern with no exudation signs at the last follow-up, in 17/18 (94.4%) ($p<0.05$).

Intravitreal faricimab therapy may induce qualitative OCTA vascular changes which seem to be strongly related with exudative CNV activity.

Abstract 427

CROCODILE SKIN RETINAL APPEARANCE: MILIARY DISTRIBUTION OF BILATERAL IDIOPATHIC MULTIFOCAL RETINAL PIGMENT EPITHELIAL DETACHMENTS

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To report an unusual appearance of bilateral idiopathic multifocal retinal pigment epithelial detachments (PEDs).

A patients with multiple PEDs, initially diagnosed as drusen, was referred for evaluation. The patient underwent comprehensive ophthalmic examination and multimodal imaging.

Patient's best-corrected visual acuity was 6/6 in both eyes. Fundoscopy revealed multiple idiopathic PEDs in a miliary distribution, resembling crocodile skin. Systemic workup excluded associated diseases. A diagnosis of bilateral idiopathic multifocal retinal pigment epithelial detachments was made.

The pathogenesis and progression of the condition are poorly understood, but prognosis is favorable without intervention unless complications arise.

Abstract 197

CHORIOCAPILLARIS IMPAIRMENT IN DRY AMD: INSIGHTS FROM SWEPT-SOURCE OCT ANGIOGRAPHY AND ASSOCIATIONS WITH STRUCTURAL BIOMARKERS.

Romano F.*, Overbey K., Ding X., Bennett C.F., Stettler I., Garg I., Ploumi I., Vingopoulos F., Yuan M., Laìns I.L., Patel N., Husain D., Vavvas D.G., Miller J.W., Miller J.B.

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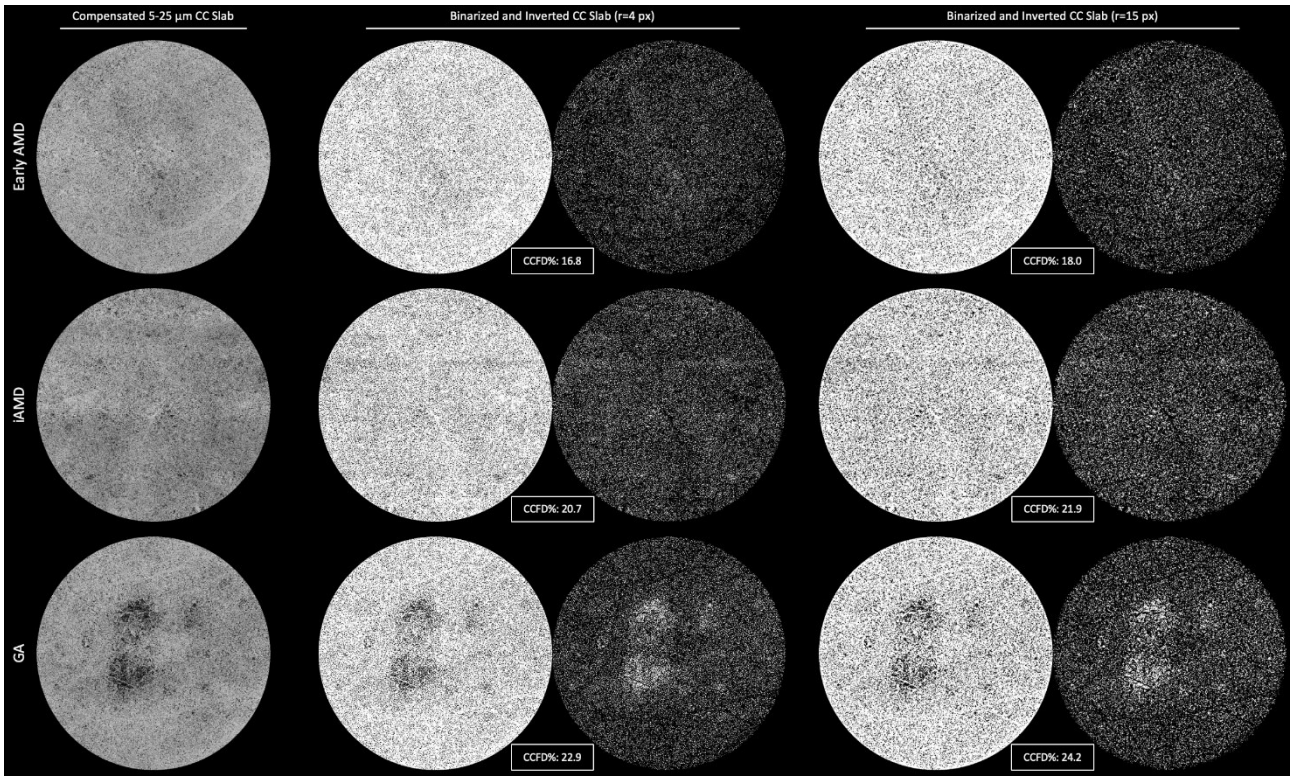
To assess choriocapillaris flow deficit percentage (CCFD%) across stages of dry age-related macular degeneration (AMD) using swept-source optical coherence tomography angiography (SS-OCTA).

Cross-sectional, observational study including 270 eyes (182 patients), classified as early (70 eyes), intermediate (121 eyes), and geographic atrophy (GA, 79 eyes).
Participants underwent a complete retinal evaluation including macular 6x6-mm SS-OCTA scans (PLEX® Elite 9000). Scans were reviewed for analyzed for subretinal drusenoid deposits (SDDs), size of retinal pigment epithelium (RPE) atrophy, and drusen volume (3 mm). CCFD% was calculated after compensation and binarization using Phansalkar's method (r=4-15 pixels) in various ETDRS sectors.
Linear mixed-effects models adjusted for age evaluated associations with AMD stages and other imaging biomarkers.

CCFD% progressively increased with advancing dry AMD stages. Intermediate AMD eyes showed higher CCFD% than early AMD eyes across all regions ($p<0.001$). GA eyes exhibited significantly higher CCFD% compared to early ($p<0.001$) and intermediate AMD eyes ($p<0.001$).
SDDs were significantly associated with higher CCFD% in early ($p<0.01$) and intermediate AMD ($p<0.05$) for almost all regions examined, but not in GA ($p>0.05$). Larger RPE atrophy size correlated with increased CCFD% in GA ($p<0.001$).

This SS-OCTA study provides a foundation for CCFD% assessment across dry AMD stages. CCFD% increased with AMD severity, SDDs (particularly in early-intermediate AMD), and with RPE atrophy size. Our findings support CCFD% as a valuable biomarker for clinical and research applications, warranting longitudinal studies to validate its prognostic value.


Compensated 5-25 µm CC Slab
Binarized and Inverted CC Slab (r=4 px)
Binarized and Inverted CC Slab (r=15 px)
Early AMD
iAMD
GA
CCFD%: 16.8
CCFD%: 18.0
CCFD%: 20.7
CCFD%: 21.9
CCFD%: 22.9
CCFD%: 24.2

Abstract 433

CHOROIDAL VASCULAR INDEX IN ATROPHIC AGE RELATED MACULAR DEGENERATION

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We aim to evaluate the choroidal luminal and stromal compartments in eyes with atrophic age-related macular degeneration (aAMD) using the choroidal vascular index (CVI).

In this retrospective study, patients with atrophic age-related macular degeneration (aAMD) were investigated using a multimodal imaging approach that included color fundus photography, swept-source OCT, and OCT-A (DRI Triton, Topcon). The choroidal vascular index (CVI), defined as the ratio of the luminal choroidal area (LCA) to the total choroidal area (TCA), was calculated subfoveally.

Twenty-nine eyes (from 15 patients) were included. The mean age was 72.9± 5.1 years. Twelve eyes were assessed with drusen and/or reticular pseudodrusen (RPD) and seventeen eyes with geographic atrophy (GA). CVI showed a different distribution; eyes with GA showed a lower CVI in comparison to eyes with drusen/RPD (66.08% vs 60,77%; p=0.05).

aAMD is characterized by impairments in the choroidal vascular component, which may reflect varying degrees of AMD severity. The choroidal vascularity index (CVI) could be considered a potential new biomarker for evaluating different stages of aAMD.

Abstract 275

NEAR INFRARED REFLECTANCE TO BLUE AUTOFLUORESCENCE IN PATIENTS WITH GEOGRAPHIC ATROPHY DUE TO AGE RELATED MACULAR DEGENERATION

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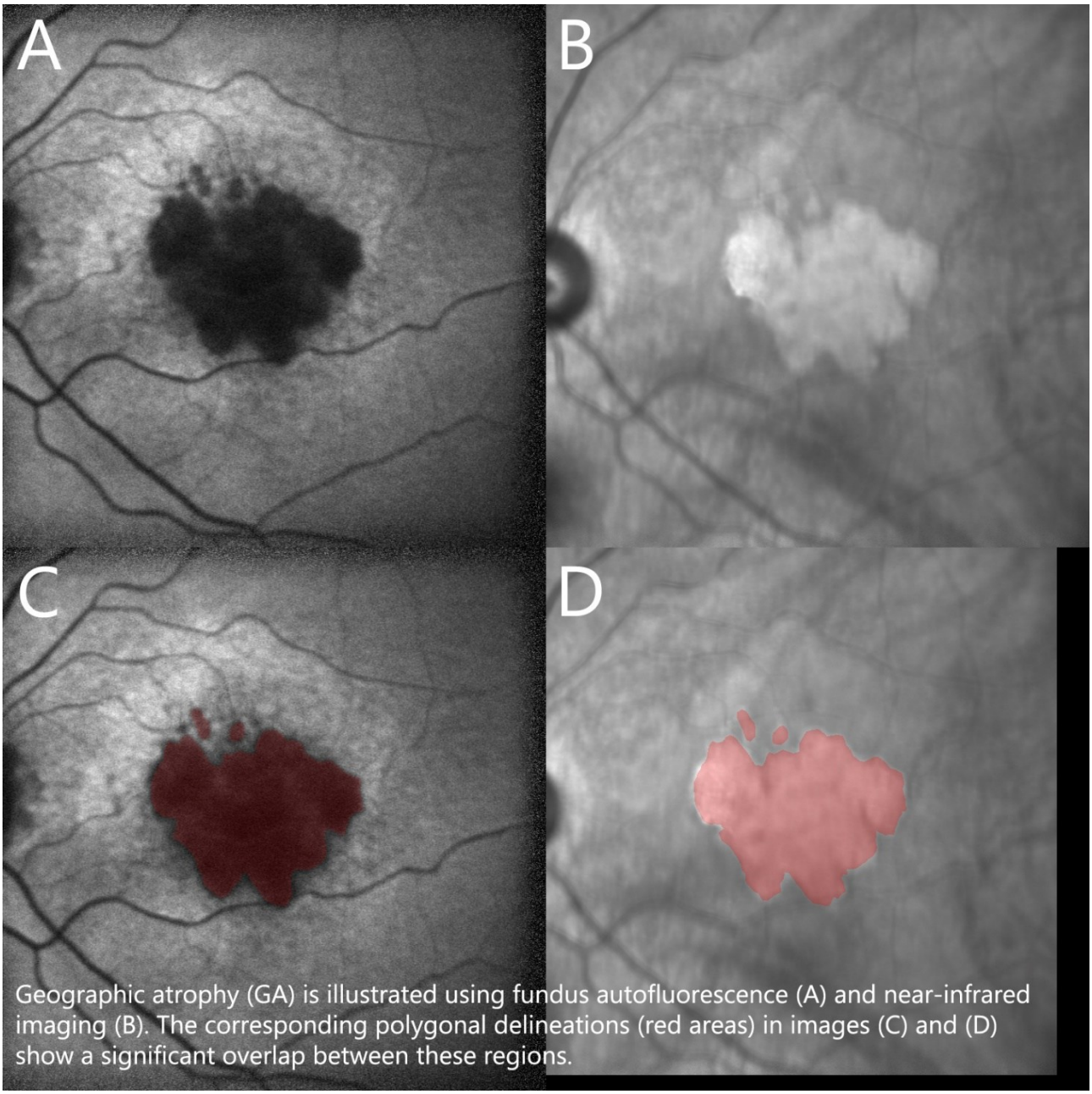
Geographic atrophy (GA) is an advanced, irreversible form of age-related macular-degeneration (AMD). Clinical trials define the primary outcome measure of GA area increase by blue autofluorescence (BAF). We aim to investigate the lesion size overlap between BAF and near-infrared (NIR) imaging in eyes affected by GA through image registration techniques.

GA images were extracted from patients' charts. Corresponding pairs of NIR and BAF images of the same eye and from the same day were matched. Two retina specialists validated and annotated GA regions using polygonal segmentations to ensure clinical accuracy and consistency across the dataset. Image pairs were aligned through registration, and the polygon annotations of GA were converted into binary masks, to evaluate overlap. Spearman's rank correlation test was used to evaluate correlations between polygonal size for BAF and NIR.
Similarity was evaluated using Intersection over Union (IoU) and the Dice coefficient.

146 pairs of images of 53 eyes from 37 patients were evaluated. The mean IoU was 0.916±0.081 , indicating an average overlap of over 91% between BAF and NIR images. The Dice score was used as a secondary metric, yielding an average of 0.954±0.048 and a median of 0.968 , confirming the strong agreement between the two modalities (r_s=0.99,$p<0.0001$).The rate of change in GA was similar for BAF and NIR (median 1.08 mm2/year vs 0.97 mm2/year,r_s=0.98,$p<0.0001$).

NIR is of high merit in foveal-sparing GA. We demonstrated high correlation between NIR and BAF overlap in perifoveal GA regions. NIR imaging demonstrates potential as a reliable method for evaluating GA, making it a valuable tool for clinicians and possibly serving as an alternative or complement to BAF imaging.



Geographic atrophy (GA) is illustrated using fundus autofluorescence (A) and near-infrared imaging (B). The corresponding polygonal delineations (red areas) in images (C) and (D) show a significant overlap between these regions.

Abstract 279

UPDATED GUIDELINES FOR IMAGING THE CHORIOCAPILLARIS IN EYES WITH AGE-RELATED MACULAR DEGENERATION USING SWEPT-SOURCE OCT ANGIOGRAPHY

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To update the recommended guidelines when quantifying choriocapillaris (CC) flow deficits (FDs) in eyes with age-related macular degeneration (AMD) using swept-source optical coherence tomography angiography (SS-OCTA).

Review of literature and experience of authors.

A current challenge in quantifying CC FDs is developing an objective strategy to compensate for signal attenuation under drusen in AMD. Our previous strategy adjusted for general SS-OCTA signal loss but lacked case-specific precision. We propose a parameter gamma (γ) for more tailored compensation, optimizing homogeneity across the CC structural slab to reduce artifacts. Additional challenges include hypotransmission defects (hypoTDs) caused by calcified drusen and hypertransmission defects (hyperTDs) from atrophy. We recommend outlining these on an en face sub-RPE slab between 64-400 µm beneath Bruch's membrane, excluding hypoTDs from quantification and avoiding hyperTD compensation to prevent artifactually increasing CC FDs.

Analyzing CC FDs in AMD requires careful handling of drusen, hypoTDs, and hyperTDs to avoid introducing artifacts. Proper compensation under drusen and accounting for hypoTDs and hyperTDs enhances measurement accuracy, improving confidence in studying CC flow impairment's role in AMD progression.

Abstract 62

INTER-READER AND INTER-MODALITY VARIABILITY IN MACULAR ATROPHY QUANTIFICATION IN NEOVASCULAR AMD: COMPARISON OF SIX IMAGING MODALITIES

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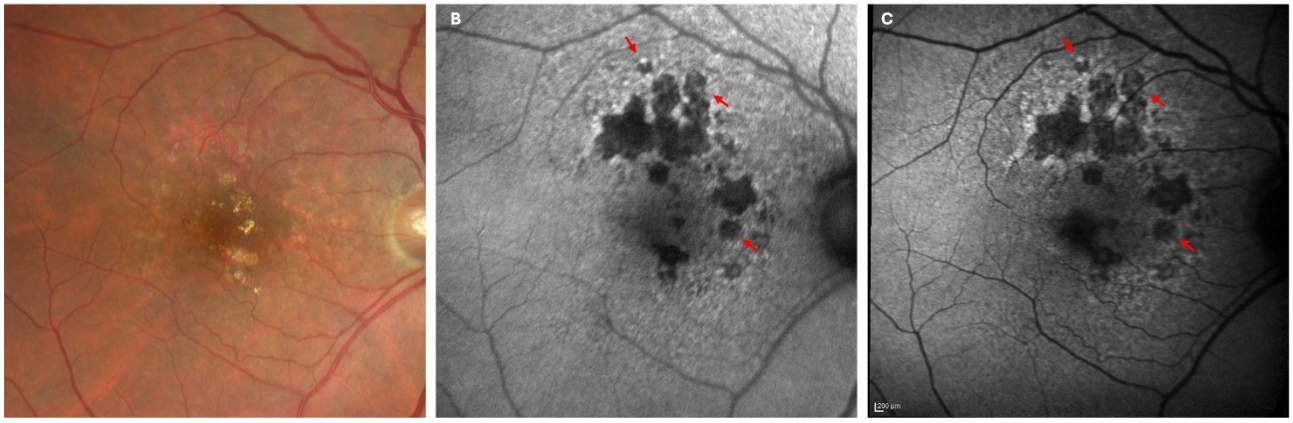
Macular atrophy is a common complication in neovascular age-related macular degeneration (AMD) and is associated with poorer visual outcomes. This study aimed to evaluate the inter-reader and inter-modality variabilities in measuring macular atrophy using six different imaging modalities.

Thirty participants with neovascular AMD, showing no signs of exudation at the time of enrollment, and exhibiting macular atrophy. During the same clinic visit, patients were imaged using six different imaging modalities: color fundus photography (CFP; Clarus, Carl Zeiss Meditec), near-infrared imaging (NIR; Spectralis; Heidelberg Engineering, Heidelberg, Germany), structural optical coherence tomography (OCT; Spectralis; Heidelberg Engineering, Heidelberg, Germany), green fundus autofluorescence (GAF; Clarus, Carl Zeiss Meditec), blue fundus autofluorescence (BAF; Spectralis; Heidelberg Engineering, Heidelberg, Germany), and pseudocolor imaging (MultiColor; Spectralis; Heidelberg Engineering, Heidelberg, Germany). Two readers independently measured the macular atrophy area.

The 95% coefficient of repeatability and the coefficient of variation were highest for CFP and NIR respectively, and both lowest for the OCT-based grading. Accordingly, the intraclass correlation coefficient was highest for OCT and lowest for CFP. The 6 different imaging modalities presented measurements with different mean values, with only a limited number of comparisons not significantly different between the instruments, although measurements were correlated. The largest size of macular atrophy was with the structural OCT-based grading (median=4.65 mm2; interquartile range [IQR]=4.78 mm2) and the smallest was with the CFP-based grading (median=3.86 mm2; IQR=5.06 mm2). Inconsistencies arose from various factors.

Macular atrophy measurements vary significantly depending on the imaging technique used. CFP-based assessments yielded the smallest sizes, while structural OCT-based assessments produced the largest. These discrepancies stem from both the inherent limitations of each modality in assessing RPE atrophy and factors related to neovascularization, such as the coexistence of fibrosis.



Abstract 295

PREDICTORS OF MACULAR ATROPHY SECONDARY TO SEROUS PED COLLAPSE IN EYES WITH TYPE 3 NEOVASCULARIZATION AND AMD.

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To identify optical coherence tomography (OCT) predictors of macular atrophy formation secondary to serous pigment epithelial detachment (PED) collapse in eyes with Type 3 macular neovascularization (MNV) undergoing anti-VEGF treatment.

Study inclused patients with age-related macular degeneration (AMD) and treatment-naïve Type 3 MNV, who experienced serous PED collapse following anti-VEGF therapy. Inclusion in the study required baseline OCT evidence of at least one serous PED that subsequently collapsed after treatment. Baseline OCT images were evaluated for features like sub-RPE hyperreflectivity and the diameters and height of the serous PED. Upon the first detection of PED collapse, OCT images were further analyzed to assess and measure the presence of complete retinal pigment epithelium (RPE) and outer retinal atrophy (cRORA). Multivariable regression analysis was conducted to identify significant predictors of macular atrophy.

Ninety eyes of 90 patients were included. The primary outcome was the development of cRORA after serous PED collapse, assessed using structural OCT B-scans. Macular atrophy was identified in 51 (56.7%) eyes following PED collapse. Sub-RPE non-multilaminar hyperreflectivity (p=0.044) and subretinal hyperreflective material (SHRM) (p=0.002) were significant predictors of atrophy. In contrast, PED size, the presence of SRF, and the presence of multilaminar hyperreflectivity were not associated with atrophy development. Additionally, a significant correlation was found between the diameter of the atrophic lesion and the baseline diameter of sub-RPE non-multilaminar hyperreflectivity.

This study identifies sub-RPE non-multilaminar hyperreflectivity and SHRM as significant predictors of macular atrophy following serous PED collapse in Type 3 MNV eyes. Sub-RPE non-multilaminar hyperreflectivity may serve as a novel OCT biomarker for atrophy risk in this population, informing more tailored management strategies for patients with Type 3 MNV.

Abstract 52

QUANTITATIVE MULTIMODAL IMAGING CHARACTERIZATION OF INTRARETINAL CYSTS VS DEGENERATIVE PSEUDOCYSTS IN NEOVASCULAR AGE-RELATED MACULAR DEGENERATION.

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Intraretinal cysts are a common manifestation in neovascular AMD. These may be interpreted as exudative/transudative intraretinal fluid (IRF) or degenerative pseudocysts. The differentiation of these types of cysts is challenging. The aim of this study is to provide quantitative multimodal imaging findings discriminating IRF from degenerative pseudocysts in neovascular AMD.

Imaging protocol included structural OCT, OCTA and DART-OCTA scans. We included only cysts with a diameter > 50µm to avoid possible images resolution biases. IRF was defined as the appearance of intraretinal cysts in the study visit, with no signs of the same cysts in the last follow-up. Degenerative pseudocysts were defined as persistent intraretinal cysts for at least three months. We evaluated cysts' perfusion characteristics, and the presence of hyperreflective foci (HF) in their context. The statistical model was built to assess the inter-imaging techniques agreement, the correlation with the clinical status of the patients, and fibrotic/atrophic changes.

We analyzed 387 intraretinal cysts. We found IRF cysts in 35/35 eyes (100%), whereas we found degenerative pseudocysts in 21/35 eyes (60%). IRF cysts were characterized by peri-cyst perfusion signal, significantly higher circularity values and the presence of HF in 89% of cases. Degenerative pseudocysts showed no sign of perfusion signal, significantly lower circularity values and the poor or null HF. DART-OCTA provided much more details than enface OCTA. The correlation analysis revealed an inverse relationship between the number of IRF cysts and fibrosis/atrophy. LogMAR BCVA showed an inverse significant correlation with the number of IRF cysts.

This study proposed a quantitative approach to categorize IRF cysts and degenerative pseudocysts, resulting clinically relevant in neovascular AMD setting. Future studies should be focused on the implementation of this quantitative strategy in AI-based tools.

Abstract 18

PROGRESSION OF GEOGRAPHIC ATROPHY IN AGE-RELATED MACULAR DEGENERATION ASSOCIATED WITH THE PRESENCE OR ABSENCE OF MACULAR NEOVASCULARIZATION

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The progression rate of geographic atrophy (GA) differs among individuals. Several risk factors are known to be associated with faster enlargement rates. The aim is to verify whether the development of macular neovascularization (MNV) in patients with GA impacts the rate of atrophy expansion in the same eye.

Longitudinal matched case-control study. Atrophic regions were delideated on serial registered fundus autofluorescence (FAF). We analyzed 28 eyes with GA and 28 eyes with GA which developed type I MNV (matched on baseline atrophic area, length of follow-up, and presence of subretinal drusenoid deposits (SDD)). Rates of square root transformed GA enlargement before and after the development of MNV were compared to corresponding time frames in eyes with GA only. The measurements of these areas were measured every 6 ± 2 months for a period of time non inferior to 3 years.

Estimated rates of GA atrophy growth were comparable in eyes with and without MNV before the development of MNV (estimate [95% CI], 0.57 [0.44, 0.7] vs. 0.5 [0.37, 0.63] mm/year, p = .46). After the development of MNV the rate of expansion significantly slowed down compared to the GA only group (mean [95% CI], 0.52 [0.42, 0.61] vs. 0.31 [0.22, 0.41], p = .003). Longitudinal analysis showed that estimated square root area was significantly smaller in the MNV group starting from 72 days before the development of MNV.

The development of MNV is associated with a slower GA rate expansion in the same eye, suggesting that the development of MNV may be a protective factor against the progression of atrophy.

Abstract 50

QUANTITATIVE OPTICAL COHERENCE TOMOGRAPHY DETECTION OF NEW NEOVASCULAR BRANCHES AND ASSOCIATION WITH EXUDATION RECURRENCE IN NEOVASCULAR AGE-RELATED MACULAR DEGENERATION.

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Macular neovascularization (MNV) is a common complication of age-related macular degeneration (AMD) patients. We tested a new OCTA multi-signal analysis based on the combined use of high-resolution (HR) and high-speed (HS) OCTA acquisitions. The main hypothesis is that HR-HS gap evaluation is useful to distinguish exudative from non-exudative MNV lesions.

The study was designed as an observational, cross-sectional study. We included type 1, type 2 or mixed type 1/2 MNV lesions. The quantitative OCTA pipeline was developed to isolate the MNV network and to highlight the presence of new secondary branches by calculating the HR-HS MNV gap. Moreover, we evaluated the agreement between the HR-HS MNV gap area and the fluid area, detected on enface OCT. We tested the relationship between HR-HS gap values and three subgroups of MNV: (I) clinically relevant fluid recurrence; (II) not clinically relevant fluid recurrence; (III) inactive lesion. P-values <0.05 were considered statistically significant.

Our study involved 32 MNV eyes of 32 AMD patients (mean age 74±5 years). MNV were classified as type 1 (17;53%), type 2 (11;34%) or mixed type (4;13%). Subretinal fibrosis was found in 17 out of 32 eyes (53%), whereas outer retinal atrophy interested 22 out of 32 eyes (69%). HR-HS MNV gap was significantly different among the three subgroups: 18% for Exudative subgroup, 12% for Minimally exudative subgroup and 4% for Dry subgroup ($p<0.05$). HR-HS MNV gap area highly overlapped with fluid area. HR-HS MNV gap significantly correlated with LogMAR BCVA, disease duration, fibrosis, and outer retinal atrophy.

Our study proposed a novel quantitative approach to evaluate the novel branches in neovascular AMD. Their detection is significantly associated with exudation recurrence. HR-HS MNV gap is potentially clinically useful, being associated with MNV activity, disease duration, fibro-atrophic evolution, and visual outcome.

Abstract 48

DETECTION OF SILENT CNV BY OCTA

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To highlight the signs of activity of silent CNV by OCTA and demonstrate its different patterns

Observational case study to review the different patterns of silent CNV in OCT and OCTA and the blood flow

OCTA proved to detect activity in 80% of the cases of silent CNV

Detection of activity of silent CNV by OCTA became mandatory to plan for early treatment and to get better response

Abstract 455

SEMI-AUTOMATED LONG-TERM ANALYSIS OF REGIONAL GROWTH OF GEOGRAPHIC ATROPHY

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Dry age-related macular degeneration (dAMD) is amongst the leading causes of irreversible blindness. Disease-slowing therapies are available in the US and at the doorstep in Europe. To identify patients that might profit most, we performed a semi-automated analysis of the regional growth of geographic atrophy (GA) in our long-term cohort.

Prospective, single-centre, observational study, conducted 02/2013-09/2024 at the Department of Clinical Neuroscience, Karolinska Institutet, Stockholm and at St. Erik Eye Hospital, Solna, Sweden. Patient charts with GA in dAMD with at least one follow-up (FU) fundus-autofluorescence (FAF) imaging were included. Exclusion criteria were exudative AMD, other retinal pathologies and misaligned images. A Matlab algorithm was developed to measure the marked GA and to calculate total area as well as regional growth in anatomical quadrants: nasal (N), inferior (I), temporal (T), superior (S). Left eye images were flipped to right eye format to be consistent with anatomy.

Images of 126 eyes (87 patients) were included and processed by the algorithm. The mean GA area at baseline (BL) was 10.39±7.02mm^2 and at the participants' last FU (LFU) 13.88 ±8.36mm^2. The median FU period of the included eyes was 20.5 months (interquartile range, IQR=28.5 months). The total growth rate (GR) between BL and LFU was 1.63 ±0.95mm^2/yr, square-root transformed GR (sqrtGR) was 0.25 ±0.13mm/yr. The sectoral growth was fastest for the superior and inferior quadrants (S: GR=0.43mm^2/yr, sqrtGR=0.11mm/yr; I: GR=0.41mm^2/yr, sqrtGR=0.13mm/yr). The Friedman test did not show statistically significant differences in GR and sqrtGR between the quadrants (all p>0.05).

In our long-term cohort, GA lesions seemed to expand concentrically as the regional growth rates were not significantly different. This may be clinically relevant, especially in patients with a GA lesion outside the fovea.

Abstract 310

HYPERREFLECTIVE FOCI ALONG THE RETINAL PIGMENT EPITHELIUM PREDICT THE ONSET OF LARGE CHOROIDAL HYPERTRANSMISSION DEFECTS IN AMD

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In eyes with intermediate age-related macular degeneration (iAMD), we separately quantified the hyperreflective foci (HRF) along the retinal pigment epithelium (rpeHRF) and the intraretinal HRF (iHRF) to determine if the location of the HRF predicted the progression from iAMD to the onset of large persistent choroidal hypertransmission defects (hyperTDs).

A retrospective analysis of a prospective AMD natural history database using swept-source OCT identified hypotransmission defects (hypoTDs) in choroidal slabs positioned 64-400 µm beneath Bruch's membrane. En face images were used with a semi-automated algorithm to quantify hypoTDs attributable to either iHRF or rpeHRF within a 5 mm fovea-centered circle. iHRF were identified on corresponding B-scans as hyperreflective lesions in the neurosensory retina, and rpeHRF as areas of RPE thickening. Multivariable survival analysis was performed to determine whether the area measurements of either iHRF or rpeHRF were more likely to predict the onset of large persistent hyperTDs.

Of the 171 eyes with iAMD included in this study, 82 (48%) developed at least one large hyperTD during a median follow-up of 59.1 months. Univariable Cox regression analyses showed that rpeHRF area ($P<0.001$), iHRF area ($P=0.003$), and drusen volume ($P<0.001$) were all significantly associated with the onset of the first large persistent hyperTD. However, a multivariable Cox regression model showed that only the rpeHRF area remained a significant predictor of disease progression ($P<0.001$).

In iAMD eyes, the area of rpeHRF was more predictive of disease progression than either the drusen volume or iHRF, which suggests that these rpeHRF serve as harbingers of focal atrophy formation and may predict where hyperTDs form.

Abstract 9 – Main Program

AI-DRIVEN BIOMARKER TRACKING: ENHANCING YOUR PATIENT OUTCOMES

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How AI can AI elevate ECP data analysis with OCT scans

AI in medical imaging facilitates the analysis of extensive datasets, ensuring an efficient and more accurate understanding of the complex data involved. Altris AI is a decision support platform designed to help ECPs optimize workflow efficiencies, improve diagnostic accuracy and enhance treatment planning. OCT macula scans can be analyzed to detect, identify and track over 70 different biomarkers, signs and pathologies

Enhanced data to identify and track patient data with AI analysis of OCT macula scans

Improved patient outcomes with AI analysis of OCT macula scans

Abstract 183

DEEP LEARNING MODEL FOR AUTOMATIC DETECTION OF DIFFERENT TYPES OF MICROANEURYSMS IN DIABETIC RETINOPATHY

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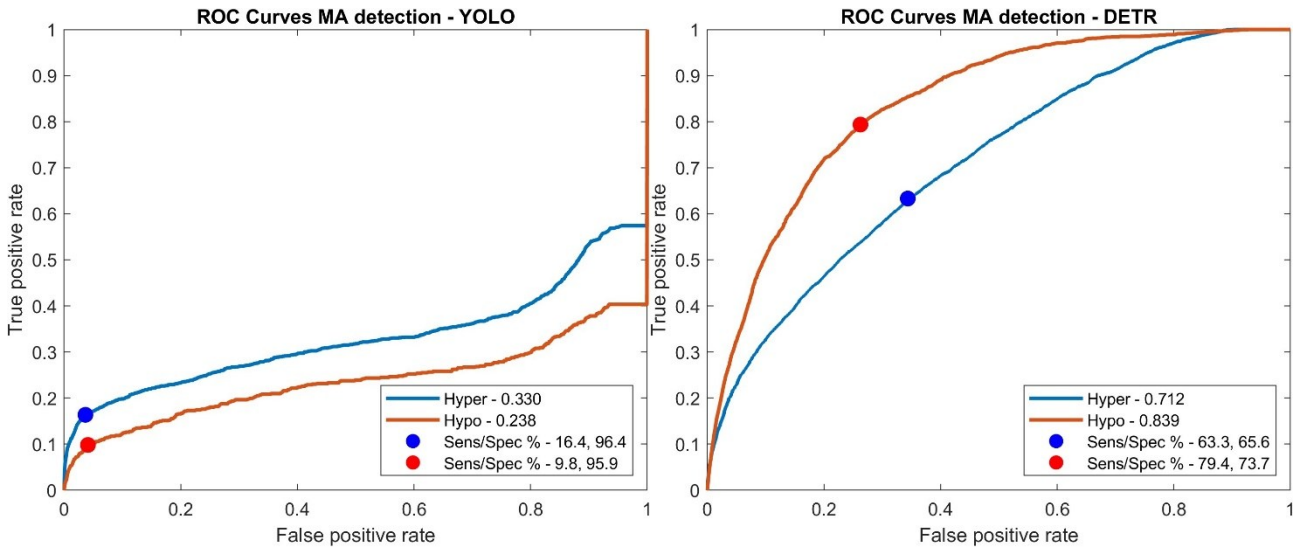
This study aims to develop a deep-learning-based software capable of detecting and differentiating microaneurysms (MAs) as hyporeflective or hyperreflective on structural optical coherence tomography (OCT) images in patients with non-proliferative diabetic retinopathy (NPDR).

A retrospective cohort of 249 patients (498 eyes) diagnosed with NPDR was analyzed. Structural OCT scans were obtained using the Heidelberg Spectralis HRA+OCT device. Manual segmentation of MAs was performed by five masked readers, with an expert grader ensuring consistent labeling. Two deep learning models, YOLO (You Only Look Once) and DETR (DEtection TRansformer), were trained using the annotated OCT images. Detection and classification performance were evaluated using the area under the receiver operating characteristic (ROC) curves.

The YOLO model performed poorly with an AUC of 0.35 for overall MA detection, with AUCs of 0.33 and 0.24 for hyperreflective and hyporeflective MAs, respectively. The DETR model had an AUC of 0.86 for overall MA detection, but AUCs of 0.71 and 0.84 for hyperreflective and hyporeflective MAs, respectively. Post-hoc review revealed that discrepancies between automated and manual grading were often due to the automated method's selection of normal retinal vessels.

The choice of deep learning model is critical to achieving accuracy in detecting and classifying MAs in structural OCT images. An automated approach may assist clinicians in the early detection and monitoring of diabetic retinopathy, potentially improving patient outcomes.



Abstract 333

A PROSPECTIVE ANALYSIS OF THE EFFECTIVENESS OF IMPLEMENTING AN AI ALGORITHM FOR SCREENING OF DIABETIC RETINOPATHY IN A TERTIARY CARE CENTER

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To evaluate the clinical effectiveness of using an AI algorithm based on color fundus images for early diagnosis of diabetic retinopathy in patients attending an endocrinology clinic in a tertiary care center.

Diabetic patients with a variable degree of diabetic control and disease duration were routinely screened in a tertiary center endocrinology clinic by a non-mydriatic NW-400 color fundus camera (Topcon Healthcare, Japan). Fundus images were interpreted using the AEYE-DS FDA approved diabetic retinopathy AI screening model (AEYE Health, USA). Patients who were found positive for more than mild diabetic retinopathy by the algorithm completed OCT scans of the macula and wide field fundus imaging and were examined by a retina specialist. All patients completed satisfaction questionnaires. Patient characteristics including severity of retinopathy, need for therapeutic intervention and baseline characteristics were evaluated.

Preliminary findings suggest a high level of patient satisfaction with the screening process, improved screening rates in the endocrinology clinic and a high rate of imageability. Further analysis is forthcoming and will be presented at the conference.

The ease of use, high patient satisfaction, and increased accessibility support the use of point of care AI based screening programs in the care of diabetes patients. Such programs have the potential to increase patient compliance, aid in early diagnosis and improve prevention of complications from diabetic retinopathy.

Abstract 171

THREE-DIMENSIONAL CHOROIDAL VESSELS ASSESSMENT IN HEALTHY EYES: A NOVEL DEEP-LEARNING APPROACH

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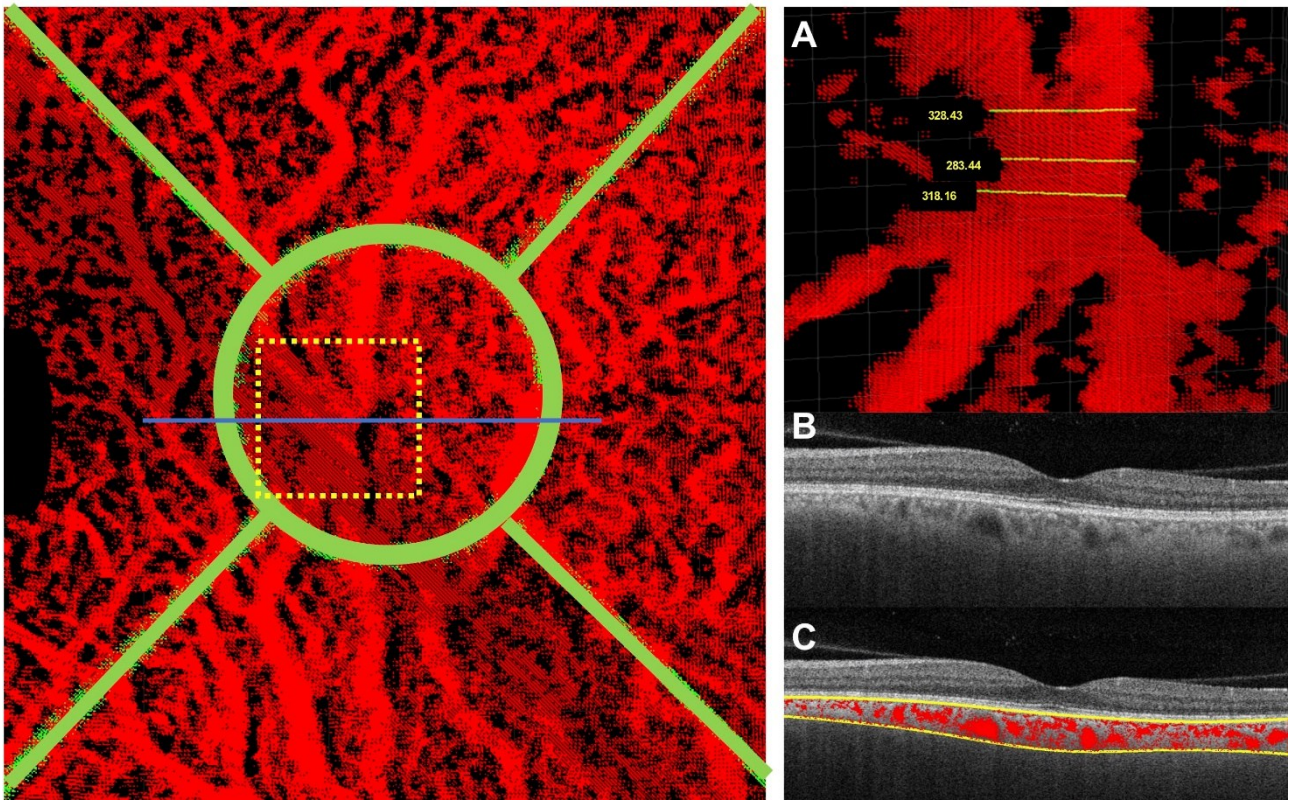
To assess the choroidal vessels in healthy eyes using a novel three-dimensional (3D) deep learning approach.

Swept-source OCT 6X6 mm scans on Plex Elite 9000 device were obtained. Automated segmentation of choroidal layer was achieved using deep-learning ResUNet model along with volumetric smoothing approach. Phansalkar thresholding was employed to binarize the choroidal vasculature. Choroidal vessels were visualized in 3D maps, and divided into five quadrants: nasal, temporal, superior, inferior, and central. Choroidal thickness (CT) and choroidal vascularity index (CVI) were calculated using the automated software. The three vessels for each sector were measured, to obtain the mean choroidal vessel diameter (MChVD). The inter-vessel distance (IVD) was defined as the distance between vessel and nearest non-collateral vessel.

Eighty eyes of 53 patients were included in the analysis. Mean age was 44.7 ± 18.5 years, and 54.7% were females. We observed that 33% of the eyes presented at least one choroidal vessel larger than 200 µm crossing the central 3000 µm of the macula. Also, we observed a significant decrease in CVI with advancing age in the nasal, temporal, superior, and central sectors ($p<0.05$), whereas no significant changes in MChVD and IVD were observed ($p>0.05$). Furthermore, CVI was increased in females compared to males in each sector, with a significant difference in the temporal sector ($p<0.05$).

MChVD and IVD did not show any changes with increasing age, whereas CVI decreased with increasing age, Also, CVI was increased in healthy females compared to males. This deep-learning approach represents an innovative, non-invasive technique for investigating choroidal vasculature, with potential applications in research and clinical practice.


A
328.43
283.44
318.16
B
C

Abstract 166

IDENTIFYING AND LOCALIZATION OF GEOGRAPHIC ATROPHY IN NEAR-INFRARED REFLECTANCE IMAGES USING ARTIFICIAL INTELLIGENCE

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Fundus autofluorescence (FAF) is the gold-standard for assessing Geographic Atrophy (GA) dimensions and progression. GA on NIR images is defined as sharply demarcated hyperreflective regions ≥250 µm in diameter. Our study aimed to use artificial intelligence (AI) algorithm to identify GA lesions and their location using NIR images automatically.

A total of 330 NIR images collected from 232 patients. Images divided into groups: eyes with no apparent retinal or choroidal pathology and eyes with GA secondary to AMD. Database allocated by the ratio 8:1:1 for training, testing, and validation. Convolutional neural-network-based (CNN) model was proposed to classify probability of existence of GA compared to normal based on binary image label. Additionally, we used the YOLOv8-seg (You Only Look Once) architectures for localizing GA lesions in NIR images. The performance of trained models was evaluated using precision, recall, F1-score, DICE coefficient, and IoU (Intersection over Union) to quantify its effectiveness.

Of the 330 images included, 54.2% were classified as GA by retinal specialists. We evaluated three different CNN models for GA classification: ResNet, EfficientNet, Vision Transformer (ViT), all showed high sensitivity and specificity. The ViT model achieved the best overall performance, with 99.4% confidence in classifying GA versus normal images, a sensitivity of 98.9%, and a specificity of 98%.
The YOLOv8 model applied for localizing GA lesions demonstrated a sensitivity of 0.9 and a precision of 0.89. The Intersection over Union (IoU) value was 0.84, and DICE coefficient was 0.87, indicating a substantial overlap between the predicted and actual labels.

GA can be identified and quantified reliably using NIR images. Early detection and identification of disease progression biomarkers will facilitate timely and effective intervention with the emerging treatment to slow the rate of GA progression.

Abstract 137

THE ROLE OF AI IN OPTICAL COHERENCE TOMOGRAPHY (OCT): REVOLUTIONISING DIAGNOSTIC PRECISION

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One of the most significant methods in retinal imaging is Optical Coherence Tomography (OCT). Interpreting these photos needed the expertise of humans, which led to unavoidable discrepancies within the product. Increased diagnostic accuracy, timeliness, and consistency can be attained by utilising Artificial Intelligence (AI) to support the OCT analytic processes.

Researchers reviewed the current literature within the inclusion criteria set. We were able to analyse the studies which allowed us to understand the impact AI interpretation has on OCT and to what extent it can be completely trusted upon. Extensive datasets of OCT images were used to design and train deep learning systems based on AI. Accuracy, sensitivity and specificity records of the models were obtained and compared with results from practising ophthalmologists in the United Kingdom (UK).

Machine Learning and Deep Learning achieved a statistically significant increased accuracy in diagnosis of retinal pathology compared to physicians, the figures of which we have explored in our work. The use of AI was also useful and efficient in decreasing the turnaround time of analysing images, producing accurate results almost instantly. In addition, a range of AI models showed similar values between the various datasets and thus contributed to less human misclassification.

Consistent with the studies, we found that AI in OCT enhances the rapid diagnosis of retinal pathology and has the potential to supplement the skills of healthcare professionals. This can transform the efficiency and accuracy of the diagnosis of retinal diseases and ultimately improve quality of care for the patients.

Abstract 332

OUTER RETINAL BANDS SEGMENTATION IN HEALTHY HUMAN SUBJECTS USING DEEP CONVOLUTIONAL NEURAL NETWORKS

Afonso J.*[1], Camacho P.[2], Pereira B.[2], Marques J.[4], Cabral D.[3], Lopes D.[1]

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To evaluate the reproducibility and performance of different strategies to measure the thickness of hyperreflective outer retinal bands in optical coherence tomography.

Cross-sectional, observational study based on foveal-centered spectral-domain optical coherence tomography (OCT) scans of healthy participants. Two retina specialists conducted three different structure segmentations: second hyperreflective band (band 2), third and fourth hyperreflective band (band 3 plus 4) and the photoreceptor outer segments (POS). These structures were measured twice using the Spectralis inbuilt caliper function at 400% magnification, to access intraclass correlation coefficient (ICC), and interclass correlation. Annotations from user 1 were further used to train different dCNN models. U-Net, U-Net++, DRUNET, and SegResNet architectures were evaluated. Segmentation performance was evaluated through Dice Score, accuracy, precision, recall and average pixel difference.

Twenty-one eyes were included in this analysis and annotated by each grader. The ICC values were 0.737 (0.689; 0.779), 0.830 (0.795; 0.860), and 0.878 (0.852; 0.900) for Band 2, Band 3 plus 4, and the POS, respectively. Similarly, the interclass correlation coefficients were 0.104 (-0.049; 0.253), 0.810 (0.740; 0.862), and 0.752 (0.678; 0.812) for the same regions. All dCNN networks achieved DICE scores above 85%, with DRUNET showing the best performance: 89.41% for Band 2, 93.25% for Band 3 plus 4 and 91.42% for POS. Pixel difference analysis between dCNN and grader 1 showed a deviation of 0.80 ± 0.19.

A high intraclass correlation indicates consistent manual segmentation accuracy among clinicians, though interclass correlation showed variability. The DRUNET outperformed other dCNN architectures, showing strong potential as an alternative to mitigate the interclass variability.

Abstract 270

ASSESSMENT OF PERIPAPILLARY CHOROID IN IDIOPATHIC NORMAL PRESSURE HYDROCEPHALUS USING A NOVEL DEEP-LEARNING ALGORITHM

Valsecchi N.[1], Elifani M.*[1], Davis E.[2], Nasar Ibrahim M.[2], Roda M.[1], Febbraro S.[1], Russo M.N.[1], Palandri G.[3], Vupparaboina K.K.[2], Schiavi C.[1], Chhablani J.[2], Fontana L.[1]

[1]Ophthalmology Unit, DIMEC, Alma Mater Studiorum University of Bologna, Italy ~ Bologna ~ Italy, [2]Department of Ophthalmology, University of Pittsburgh, School of Medicine, Pittsburgh, Pennsylvania, United States ~ Pittsburgh ~ United States of America, [3]Unit of Neurosurgery, IRCCS Istituto delle Scienze Neurologiche di Bologna, Bologna, Italy ~ Bologna ~ Italy

The present study aimed to assess the peripapillary choroidal vascular index (CVI) in patients affected by idiopathic normal pressure hydrocephalus (iNPH) before and after ventriculo-peritoneal (VP) shunt surgery.

iNPH patients and healthy controls were prospectively recruited between November 2021 and October 2023. Enhance depth imaging-optical coherence tomography (EDI-OCT) was performed to image the peripapillary region, using a 360-degree 3.4 mm diameter peripapillary circle scan. A novel deep-learning algorithm based on ResUNet, a validated deep-learning model, was used to evaluate the peripapillary CVI. iNPH patients were re-evaluated after a mean of 1 year from shunt surgery. Linear mixed models were used for the statistical analysis.

A total of 44 eyes of 22 iNPH patients and 44 eyes of 22 healthy subjects were included. Mean age of iNPH patients was 76.7 ± 4.2. The total peripapillary choroidal area was significantly increased in iNPH patients compared to healthy controls, with a significant increase in the stromal area($p<0.05$). No differences were observed in the CVI between iNPH and healthy controls($p>0.05$). After a mean of 14.9 ± 4.8 months from surgery, total peripapillary choroidal total area was significantly reduced in iNPH patients, with significant reductions in the stromal area($p<0.05$). No significant changes in CVI were observed after shunt surgery($p>0.05$)

The peripapillary choroid was thicker in iNPH patients compared to controls, with a significant increase in the stromal area. Shunt surgery reduced choroidal thickness in iNPH patients, mainly affecting the stromal components. Further research is necessary to explore the potential connection between increased choroidal stroma and neuro-inflammation in iNPH.

Figure 1: Steps in choroid layer boundary segmentation using ResUNet architecture: (a) representative peripapillary image; (b) choroid layer mask from ResUNet model output; and (c) CIB and COB overlaid on (a).

Figure 2: Manual boundary correction through inbuilt developed GUI, representative peripapillary OCT B-scan (left); manually marked sparse points on choroid layer boundary (middle); and CIB and COB detection based on spline interpolation (right).

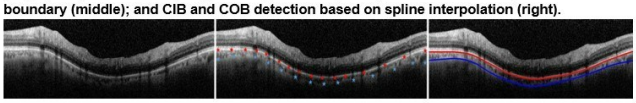


Figure 3: Graphical overview of the proposed method

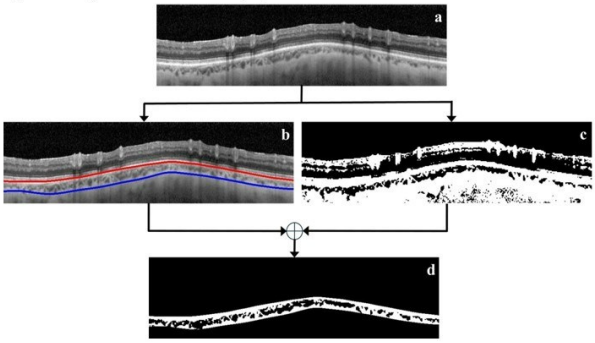
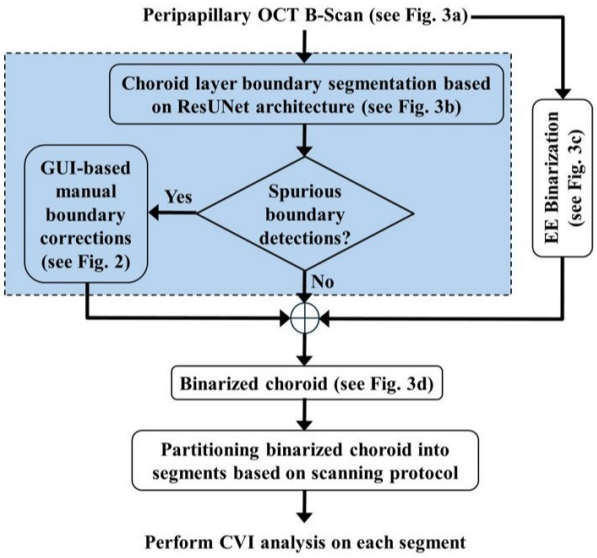


Figure 4: Workflow overview of the proposed method



Abstract 430

DEVELOPMENT OF ARTIFICIAL INTELLIGENCE BASED SYSTEMS (AI4RET) FOR THE DIAGNOSIS OF MACULAR PATHOLOGIES AND EDEMA IN OPTICAL COHERENCE TOMOGRAPHY IMAGES IN A PUBLIC HEALTH SYSTEM.

Díaz Aljaro P.*[1], Ruiz--Bilbao S.[1], Bouchikh El Jarroudi R.[1], Mugica X.[2], Besada Salgado I.[2], Isusquiza E.[2], Muñoz Moreno R.[1], Gómez Sanchez S.[1], Pouplana Sardà A.[1], Campos Figueroa P.[1], Sánchez--Fortún Sánchez A.[1], Vázquez Dorrego X.[1], Banderas Rodríguez S.[1], Matas García E.[1], Garcés A.[1]

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Development and testing of an optical coherence tomography (OCT) image classifier based on artificial intelligence (IA) and deep learning machine (DLM) for the identification of macular edema and macular pathology.

OCT images from clinical practice at a public hospital were used to develop two diagnostic aid models. Expert ophthalmologists annotated 3,152 OCT images into the following groups: normal OCT, OCT with macular edema, and OCT with pathological findings. For the macular pathology model, 1,592 images were used for training and 689 for testing; the macular edema model used 613 images for training and 258 for testing. Statistical analysis was performed on the following performance parameters: sensitivity, specificity, and positive predictive value.

The macular pathology diagnostic aid system showed a sensitivity of 0.88 (95% CI: 0.85-0.91) and a specificity of 0.87 (95% CI: 0.81-0.91), with a positive predictive value of 0.94 (95% CI: 0.92-0.96). In comparison, the macular edema diagnostic aid system showed a sensitivity of 0.75 (95% CI: 0.63-0.85), a specificity of 0.93 (95% CI: 0.89-0.96), and a positive predictive value of 0.80 (95% CI: 0.68-0.89).

Both AI-based systems show high sensitivity and specificity, confirming their value in the early and accurate detection of macular edema and related pathologies. This highlights the need for integrating AI diagnostic tools into clinical practice to improve care and diagnostic accuracy in ophthalmology

Abstract 271

A MACHINE DEEP LEARNING MODEL EVALUATING NON-PERFUSION AREAS IN ULTRA-WIDE FIELD SWEPT-SOURCE OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY IN DIABETIC RETINOPATHY.

Seah W.H.*[1], Tang N.[2], Chen H.[1], Loh T.Y.[1], Zhou S.W.[1]

[1]Tan Tock Seng Hospital ~ Singapore ~ Singapore, [2]Eye and ENT hospital of Fudan University ~ China ~ China

To validate a machine deep learning model in identifying and quantifying non-perfusion areas (NPA) and neovascularization (NV) on ultrawide field swept source optical coherence tomography (UWF SS-OCTA) for assessment of diabetic retinopathy (DR).

A cross-sectional study of 116 datasets (83 abnormal including all DR grades/33 normal) from 67 patients (50 cases/ 17 controls), imaged using UWF 26x21mm (1024x828 pixels) SS-OCTA images.

En-face OCTA images of retinal segmentation, with manual annotations of exact borders of NPA and NV by 2 separate graders with corroboration with a retinal specialist, were used to train a FastSAM learning model.
Results of the model's predicted images were then compared with separately annotated images and assessed for predictive accuracy.
Total NPA was derived based on area-to-pixel ratio of DREAM OCTA machine, while NV was quantified to a numeral if present.

The machine deep learning model demonstrated high agreement with the manually annotated ground truth with a mean predicative accuracy of about 75% in NPA. The model also demonstrated high sensitivity in detecting NVs. A larger total NPA is correlated with higher grade of DR severity.

The machine deep learning model was able to accurately detect and quantify NPA and identify NV on UWF SS-OCTA imaging. Additionally, the model’s capability further enhances the ability of UWF SS-OCTA to assess key biomarkers for grading and prognosticating clinically significant DR.

Abstract 296

ATROPHIC LESIONS IN FUNDUS AUTOFLUORESCENCE CORRELATE WITH MORPHOLOGICAL OUTER RETINAL CHANGES IN OPTICAL COHERENCE TOMOGRAPHY

Blair J.[1], Lasagni Vitar R.[1], Munk M.[2], Mantel I.[3], Jovic N.*[1], Ciller C.[1], Apostolopoulos S.[1], De Zanet S.[1]

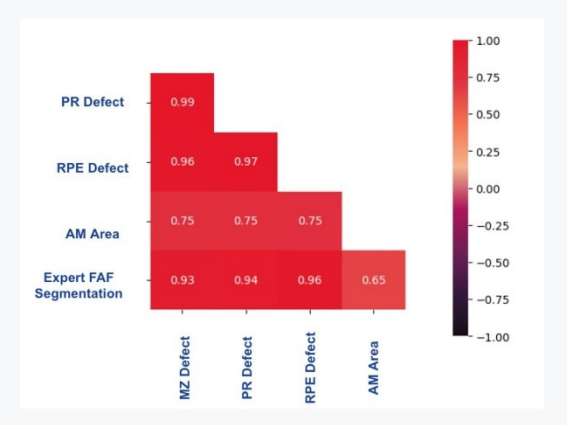
[1]Ikerian AG ~ Bern ~ Switzerland, [2]Augenarzt-Praxisgemeinschaft Gutblick AG ~ Pfäffikon ~ Switzerland, [3]Hopital ophtalmique Jules-Gonin ~ Lausanne ~ Switzerland

We aim to correlate the hypo-fluorescent lesion area in Fundus Autofluorescence (FAF) with retinal pigment epithelium (RPE) and photoreceptor (PR) loss area, and the presence of abnormal hyperreflective material (amorphous material, AM) on Optical Coherence Tomography (OCT) in patients with Geographic Atrophy (GA) secondary to Age-related Macular Degeneration (AMD).

We retrospectively analysed 180 OCT cube scans and corresponding FAF images (79 patients), obtained at the Medical Retina Department at the Jules-Gonin Eye Hospital. The retinal changes were automatically computed at a B-scan level using the segmentation output of a validated convolutional neural network (OCT Segmentation, RetinAI). Hypo-fluorescent lesions on FAF images were manually labelled and automatically aligned to infrared images to match atrophic areas for Dice score evaluation. We calculated en-face areas of structural loss (defect maps) of MZ, EZ+OPR+IZ (PR), RPE, and AM. OCT area measurements were correlated to FAF-measured atrophic areas using Pearson's correlation coefficient.

We observed strong positive correlations between lesion areas on FAF and areas of RPE, EZ+OPR+IZ, and MZ loss (0.96, 0.94, 0.93, respectively), and moderate correlations with AM areas (0.65). All correlations showed P-values<0.001. Mean lesion area was 4.70 mm2 (0.08-18.17 mm2) on FAF and 4.45, 6.04, and 5.86 mm2 for RPE, EZ+OPR+IZ, and MZ loss areas, respectively, on OCT. The difference between FAF-atrophic and OCT-RPE loss areas resulted in 0.258 ± 1.28 mm2; Dice score resulted in 0.731 (SD= 0.193).

Our results suggest that OCT and FAF measurements show a good correlation and that the assessment of RPE and PR loss in OCT represent reliable biomarkers for GA assessment that could be employed in pre-screening and screening in clinical trials and, later on, in clinical practice.



Correlation heatmap between GA lesion areas: FAF-measured and OCT area measurements. P-values < 0.001.

Comparison between area of GA lesion (FAF) vs. enface projections of MZ, EZ+OPR+IZ (PR), RPE loss and AM area (OCT).

Abstract 293

A MACHINE DEEP LEARNING MODEL EVALUATING NON-PERFUSION AREAS IN ULTRA-WIDE FIELD SWEPT-SOURCE OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY IN DIABETIC RETINOPATHY.

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En-face OCTA images of retinal segmentation, with manual annotations of exact borders of NPA and NV by 2 separate graders with corroboration with a retinal specialist, were used to train a FastSAM learning model.
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The machine deep learning model was able to accurately detect and quantify NPA and identify NV on UWF SS-OCTA imaging. Additionally, the model’s capability further enhances the ability of UWF SS-OCTA to assess key biomarkers for grading and prognosticating clinically significant DR.

Abstract 93

VALUE OF ARTIFICIAL INTELLIGENCE IN OCTA

Zeinab E.*

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To demonstrate the value of artificial intelligence as an image analysis tool in the diagnosis of vascular diseases by OCTA

In this review a simple explanation of the application of AI analysis of OCTA images will be done to clarify its usefulness and difficulties of interpretation.
It is a rapid review of published data collected and demonstrated in a brief presentation

AI can add to the usefulness of OCTA in diagnosis of vascular disorders eliminating the variables in interpretation especially in the presence of artifacts

With the growing adoption of OCTA in clinical practice and corresponding increase in the amount of available OCTA data, AI-based analysis may provide new insights and capabilities in the diagnosis

Abstract 143

LONG-TERM OUTER RETINA MODIFICATIONS AFTER MICROPULSE LASER TREATMENT IN CHRONIC CENTRAL SEROUS CHORIORETINOPATHY

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To evaluate the changes in outer nuclear layer (ONL), retinal pigment epithelium (RPE) thickness, and photoreceptor outer segment (PROS) length using spectral domain OCT (SD-OCT) images and measure overall retinal sensitivity (oRS) by microperimetry (MP) after micropulse laser (MPL) treatment (577 nm) for chronic central serous chorioretinopathy (CSCR).

Of 25 patients (20 male, 5 female), fifteen eyes with chronic CSCR treated with MPL with fixed parameters (5% duty cycle of 0.2sec, 100 microns, 250mW) were included, as with full available morpho-functional imaging. The mean age was 52.8 (9.18) years. They were followed up for a year with imaging at baseline, 4, 6, and 12 months, totalling 60 visits. Parameters analyzed included ONL thickness, RPE thickness, PROS length, subretinal detachment (SRD) height and width, and subfoveal choroidal thickness (SFChoT) using SD-OCT. Exclusion criteria included CSCR complications such as macular neovascularization (MNV), media opacities, or other retinal comorbidities.

After 12 months of treatment, BCVA significantly increased (77±4.83 to 81.2±4.46 ETDRS letters; p=.05) with a significant decrease in the height and width of SRD (150.4±88.03 to 41.8±58.77 microns; p= .005 and 3.075±1.088 to 1.035±1576 microns; p=.003, respectively). The ONL thickness increased from 58.4±10.41 to 65.7±22.06 microns (p=.36), while the PROS length decreased from 82.9±61.85 to 55±49.05 microns (p=.27). Furthermore the RPE thickness appeared to reduce from the baseline after 12 months (p=.40), with a slight increase at 4 months (p=.55). The SFChoT showed a trend in decrease (p=.21), while the oRS remained stable (p=.46) during the follow-up.

MPL effectively improved BCVA and reduced subretinal fluid in chronic CSCR patients, leading to increased ONL thickness and reduced PROS length. RPE thickness increased after a few months of treatment, while SFChoT slightly decreased at the end of the follow-up. Further studies are needed to confirm these findings.

Abstract 149

THREE-DIMENSIONAL CHOROIDAL VESSELS ASSESSMENT IN CENTRAL SEROUS CHORIORETINOPATHY

Valsecchi N.*[1], Sadeghi E.[2], Hasan N.[2], Ibrahim M.N.[2], Selvam A.[2], Zarnegar A.[2], Bollepalli S.C.[2], Sahel J.A.[2], Vupparaboina K.K.[2], Chhablani J.[2]

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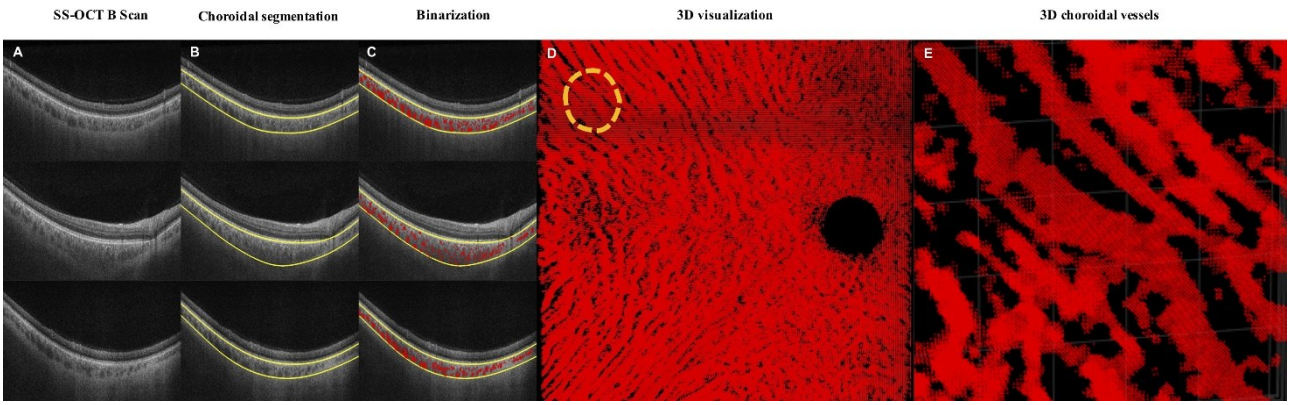
To assess the choroidal vasculature with a novel three-dimensional (3D) algorithm in patients with central serous chorioretinopathy (CSCR).

Patients >18 years old with chronic CSCR were retrospectively included. Swept-source optical coherence tomography 12X12 mm scans were obtained. Automated choroidal segmentation was performed based on deep-learning ResUNet model. Phansalkar thresholding was adopted to binarize choroidal vasculature. Choroidal vessels were visualized in 3D maps segmented into 5 quadrants. Mean choroidal vessel diameter (MChVD), inter-vessel distance (IVD), choroidal thickness (ChT) and choroidal vascularity index (CVI) were calculated in CSCR and healthy eyes. Linear mixed models were used for the analysis.

Thirty eyes of 25 CSCR patients and 30 eyes of 26 controls. Mean age of CSCR group was 51.2 ± 11.4 years, 24% were females. CSCR eyes showed significant increase in CTh and MChVD compared to controls (p<0,001), with reduced IVD (p<0.001). MChVD was increased in complex CSCR compared to simple CSCR, with significant differences in the nasal (p=0.021), and temporal sectors (p=0.020). CVI was reduced in complex CSCR compared to simple CSCR, with significant differences in the temporal (p=0.017) and inferior sectors (p=0.003). IVD in the central sector was reduced in active CSCR compared to inactive CSCR (p=0.031).

CSCR eyes demonstrated increased CTh and MChVD and decreased IVD compared to controls. Distinct features were observed between simple and complex CSCR. Choroidal 3D vessel assessment represents an innovative non-invasive method to explore choroidal changes in CSCR.



Abstract 303

UNVEILING THE LINK: PREDICTIVE VALUE OF OCT FINDINGS IN CENTRAL SEROUS CHORIORETINOPATHY AS CHOROIDAL THICKNESS, PHOTORECEPTOR ALTERATION, AND PSYCHOLOGICAL CORRELATIONS

De Luca L.*, Meduri A., Aragona P.

Ophthalmology Clinic, Department of Biomedical Sciences, University of Messina, Italy ~ Messina ~ Italy

To evaluate the role of Optical Coherence Tomography (OCT) in predicting the pathology of Central Serous Chorioretinopathy (CSCR) by analyzing choroidal thickness, retinal alterations, and their association with psychological factors like stress and personality traits.

The study included 160 participants (80 CSCR patients, 80 controls). Comprehensive data were collected, including medical history, corticosteroid use, and psychological evaluations using PID-5-BF and TEMPS-A-brief. OCT was employed to assess choroidal thickness, photoreceptor alteration, pigment epithelium detachment, and macular edema. Statistical analyses were performed to identify correlations between OCT findings, age, corticosteroid use, and psychological traits.

OCT findings showed a significant correlation between increased choroidal thickness and patient age, with older CSCR patients having higher values and increased risk of secondary choroidal neovascularization. Photoreceptor disruption and pigment epithelium detachment were also prominent OCT features. No significant link between corticosteroid use and choroidal thickness was found. Psychological assessments suggested a trend toward negative affectivity in CSCR patients but no statistical correlation.

OCT effectively predicts CSCR pathology, with choroidal thickness as a key indicator. Psychological factors, though not conclusively linked, may play a role, warranting further investigation.

Abstract 269

CHORIOCAPILLARIS FLOW IN TWO DIFFERENT PATTERNS OF EXUDATIVE TYPE 1 MACULAR NEOVASCULARIZATION

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To compare the characteristics of type 1 macular neovascularization (MNV) and the surrounding choriocapillaris (CC) perfusion in patients with neovascular age-related macular degeneration (nAMD) versus those with pachychoroid neovasculopathy (PNV) using swept-source optical coherence tomography angiography (SS-OCTA).

This retrospective study included 64 treatment-naïve eyes (37 nAMD, 27 PNV) with type 1 MNV. SS-OCTA images were analyzed to measure MNV area and perimeter, and CC flow deficits (FD) in five concentric rings surrounding the lesion. Flow deficit percentage (FD%), area (FDa), and number (FDn) were quantified. Intervortex anastomoses presence was also assessed.

MNV lesions in nAMD were significantly larger in area (2.94 vs 1.56 mm², p=0.013) and perimeter (8.76 vs 5.85 mm, p=0.004) compared to PNV. PNV eyes showed higher FD% and larger FDa across all rings ($p<0.05$), while FDn did not differ significantly. Intervortex anastomoses were more prevalent in PNV (81.5% vs 35.1%, p=0.0002). In nAMD, MNV size correlated positively with FD% in inner rings and FDn in all rings. In PNV, MNV size correlated only with FDn.

Despite smaller MNV lesions, PNV eyes demonstrated more extensive CC flow deficits compared to nAMD. The distinct CC flow patterns and their correlations with MNV characteristics suggest different pathophysiological mechanisms underlying these conditions. These findings may have implications for differential diagnosis and tailored treatment approaches in nAMD and PNV.

Abstract 116

LONG-TERM EFFECT OF PHOTODYNAMIC THERAPY ON CHOROIDAL VASCULARITY INDEX VERSUS CHOROIDAL THICKNESS AS BIOMARKERS FOR CHRONIC CENTRAL SEROUS CHORIORETINOPATHY

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Karl Landsteiner Institute for Retinal Research and Imaging, Vienna, Austria; Clinic Landstraße, Vienna Healthcare Group ~ Vienna ~ Austria

To investigate the long-term impact of photodynamic therapy (PDT) on chorioretinal architecture in eyes compromised by chronic central serous chorioretinopathy (cCSCR) through a wide range of qualitative and quantitative imaging biomarkers, including the comparison between previously established subfoveal choroidal thickness (SFCT) and novel choroidal vascularity index (CVI).

This post-hoc analysis included prospectively collected swept-source optical coherence tomography (SS-OCT) images of 29 eyes and fellow eyes (FE) with unilateral cCSCR, which were treated with half-fluence PDT. Analysis occurred at three time points: baseline (BSL) before PDT, 1 and 12 months after PDT. Scans were graded for CVI, total choroidal area (TCA), luminal area (LA) and stromal area (SA) using validated image binarization technique. SFCT, central macular thickness (CMT) and subretinal fluid (SRF) were further assessed. Longitudinal changes of chorioretinal metrics following PDT, the relationship between SFCT and CVI and differences between affected and FE were investigated.

At month 1, CVI, TCA, LA, SFCT and CMT were significantly decreased (all $p<0.001$). From month 1 to 12, CVI ($p<0.001$) and LA ($p=0.01$) increased again but remained significantly lower than at BSL ($p=0.001$ and $p<0.001$, respectively). In contrast, SFCT and CMT remained stable (both $p=1.0$). SA and all parameters in the FE control group showed no significant changes at any time point. Comparing affected eyes and FE, there were significant CVI differences at BSL ($p<0.001$), month 1 ($p=0.01$) and 12 ($p<0.001$).
SRF presence was significantly associated with higher CVI ($p<0.001$), higher LA ($p=0.031$), higher SFCT ($p=0.038$) and CMT ($p<0.001$).

Half-fluence PDT significantly affects chorioretinal vasculature, both in the short- and longterm. Use of CVI as both a treatment response and disease activity marker is merited. There is a large discrepancy between established SFCT and novel CVI, suggesting for CVI to be a more specific and reliable biomarker for CSCR.

Abstract 14 – Main Program

RETINAL MICROANEURYSMS MORPHOLOGY AND BLOOD FLOW NETWORK CONNECTIVITY IN DIABETIC RETINOPATHY AS REVEALED BY OCT ANGIOGRAPHY DENSE ART SCANS.

Arrigo A.*, Aragona E., Saladino A., Battaglia Parodi M., Bandello F.

IRCCS San Raffaele Scientific Institute ~ Milan ~ Italy

Retinal microaneurysms (MAs) are among the earliest signs of diabetic retinopathy (DR) and can be classified in several subtypes by multimodal retinal imaging. The main aim of the present study is to characterize retinal MAs perfusion properties and their blood flow network connectivity by means of Dense Automatic-RealTime (DART) OCTA.

A cross-sectional, observational study setting was chosen. Multimodal retinal imaging included confocal multicolor, OCT, OCTA and DART OCTA. We classified retinal MAs accordingly with the recently proposed multimodal retinal imaging classification and we tested the role of DART OCTA for detecting retinal MAs blood flow network connectivity. We also tested the relationship with clinical parameters. P-values <0.05 were considered statistically significant.

We included 206 retinal MAs of 36 DR eyes. We categorized retinal MAs as red (70;34%), mixed (106;51%) and green (30;15%), corresponding to precise characteristics on structural OCT and OCTA images. The agreement between enface and DART OCTA techniques for detecting MAs perfusion was very high (overall ICC 0.98; p<0.01). However, DART OCTA provided clearer visualization than enface OCTA for detecting the blood flow network connectivity of retinal MAs, especially looking at the afferent and efferent MAs capillaries. Multimodal retinal imaging classification of retinal MAs provided significant correlations with DR duration, DR stage, and macular capillary non-perfusion.

DART showed unprecedent level of morphological detail characterizing DR-related retinal MA, providing several new insights on retinal MAs characteristics and their blood flow network connectivity.

Abstract 6 – Main Program

LARGE RETINAL CAPILLARY ANEURYSM: A DELPHI CONSENSUS STUDY AND UPDATED NOMENCLATURE FOR A SIGNATURE OPTICAL COHERENCE TOMOGRAPHY LESION

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To develop consensus nomenclature amongst international retinal specialists for the distinctive optical coherence tomography (OCT) finding of a lesion originating from the retinal capillary bed, measuring ≥100 µm in size, and characterized by a hyperreflective wall with a hyporeflective lumen.

In this Delphi consensus study of international retinal specialists, a comprehensive literature search was performed from inception to January 2024 on three databases to elicit publications reporting on relevant vascular abnormalities and corresponding nomenclature. A panel of retinal specialists with expertise in this topic reviewed the list of candidate terms and proposed other names for the lesion of interest. A refined list was then incorporated into a Delphi survey, which was distributed to the general membership of the International Retinal Imaging Society (IntRIS). Consensus was defined as at least 70% agreement amongst participants.

A panel of 11 experts reviewed the following candidate names for the lesion: large capillary aneurysm, perifoveal exudative vascular anomalous complex, significant actively leaking microaneurysms on OCT, macro-microaneurysm, retinal capillary macroaneurysm, telangiectatic capillary, and large retinal capillary aneurysm (LRCA). Review of relevant OCT cases revealed poor agreement amongst panel members regarding lesion name(s). In the first round of the Delphi survey (n=70 IntRIS members), the need for a unified nomenclature was highlighted and two leading candidate names were established for consideration: LRCA (n=38,54.3%) and retinal capillary macroaneurysm (n=14,20.0%). A second survey (n=54 members) established LRCA (n=44,81.5%) as the consensus term.

This Delphi project reached consensus on a unifying term, large retinal capillary aneurysm, for an OCT lesion characterized by a hyperreflective aneurysmal wall and a hyporeflective lumen. Identification of this characteristic OCT finding and adoption of this unifying term may facilitate diagnosis, guide therapeutic decisions, and improve scientific communication.

Abstract 174

EARLY CHOROIDAL CHANGES IN EYES WITH PANRETINAL PHOTOCOAGULATION WITH PASCAL AND NAVILAS FOR DIABETIC RETINOPATHY

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To compare the choroidal alterations in eyes treated with panretinal photocoagulation (PRP) for early proliferative diabetic retinopathy (PDRP) with PASCAL (PAttern SCAn Laser photocagulator) and NAVILAS (NAVIgated LASer Photocoagulation).

This is a cross-sectional study in which a total of 29 eyes of 29 patients who underwent PRP with PASCAL (15 eyes) and NAVILAS (14 eyes) due to early PDRP at Beyoğlu Eye Training and Research Hospital between April and May 2023 were examined. Enhanced-depth imaging optical coherence tomography images at baseline and 1 hour after PRP were analyzed to measure choroidal parameters including central macular thickness (CMT), subfoveal choroidal thickness(SFCT), total choroidal area (TCA), total stromal area (TSA), total vascular area (TVA) and choroidal vascular index (CVI). Parameters were compared between the two groups treated with different laser devices.

Both PASCAL(15 eyes) and NAVILAS(14 eyes) groups shared similar age (60.93 and 59.01 respectively,p=0.615), and had similar years lived with diabetes(p=0.749) and other demographic features. There was no statistically significant difference between the two groups in CMT(p=0.531),SFCT(p=0.838),TCA(p=0.787),TSA(p=0.823),TVA(p=0.408),CVI(p=0.184) values at baseline.Both groups received similar mean number of spots and total energy(p>0.05).One hour after laser photocoagulation, PASCAL group showed no statistically significant difference in TCA,TSA,TVA andCVI (p>0.05 for all) but SFCT and CMT increased significantly(p=0.002 and p=0.005 respectively).Similarly in NAVILAS group,there was also no difference in TCA,TSA,TVA andCVI(p>0.05 for all) compared to baseline,when SFCT and CMT increased significantly (p=0.003 and p=0.021 respectively).

In patients who underwent PRP for early PDRP,an increase in subfoveal-choroidal and central-macular-thickness was observed in the very early post-laser period with both NAVILASand PASCAL.No difference was detected in the CVI and vascular areas.Inflammatory effect may be observed in early-acute period,and choroidal blood flow did not change during this period.

Abstract 462

MICROANEURYSM TURNOVER IN NONPROLIFERATIVE DIABETIC RETINOPATHY: SIX-MONTH RESULTS OF CHART STUDY

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Microaneurysm (MAs) plays an important role in the progression of diabetic retinopathy. This present study aims to evaluate the MA formation and disappearance rates and MA turnover in eyes with nonproliferative diabetic retinopathy (NPDR) over a six-month period.

One-hundred and seventy-six eyes from patients with type 2 diabetes with mild to severe NPDR were included in this six-month analysis (CHART study, NCT04636307). Eyes were classified according to the Early Treatment Diabetic Retinopathy Study (ETDRS) scale. Microaneurysm assessment was automatically performed based on color fundus photographs using the RetmarkerDR (Retmarker SA, Meteda Group, Italy). The number of MAs was recorded at each visit (baseline and 6-month) allowing the calculation of the MA formation and disappearance rates. MA turnover (MAT) was computed by the sum of the MA formation and MA disappearance rates.

Seventy-seven eyes (44%) were graded as mild NPDR (ETDRS grade 35), 57 eyes (32%) as moderate NPDR (ETDRS grade 43), 35 eyes (20%) as moderately severe NPDR (ETDRS grade 47) and 7 eyes (4%) as severe NPDR (ETDRS grade 53). MA formation and disappearance rates and MAT showed statistically significant changes that allowed discrimination between different ETDRS severity grades. When retinopathy reached ETDRS grade 53, there was a particularly marked increase in MAT.

The MAT calculated with RetmarkerDR provides good discrimination of NPDR stages, likely representing increase of intraretinal microvascular abnormalities. It offers major insights for monitoring changes over time in moderate to severe stages of NPDR.

Abstract 63

IMAGING BIOMARKERS AS PREDICTORS OF RESPONSE TO TREAT-AND-EXTEND TREATMENT IN DIABETIC MACULAR EDEMA

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To investigate imaging biomarker on optical coherence tomography (OCT), fluorescein angiography (FA), and OCT angiography (OCTA) of diabetic macular edema (DME) patients during the intravitreal Treat and Extend (T&E) Aflibercept treatment.

In this prospective, non-randomized, and interventional study, 28 patients with DME were included and received 5 monthly aflibercept injections. The T&E up to 16-week dosing regimen was based on central subfield thickness (CST) and best-corrected visual acuity (BCVA) change through 18 months. Number of hyperreflecive foci (HRF) and choroidal vascular index (CVI) were calculated on OCT images, Leakage area and count of microaneurysm (MA) were calculated on FA images, and nonperfusion area and alterations in intraretinal microvascular abnormalities (IRMA) were examined in OCTA images.

Treatment interval was shortened in 39.3%, extended to maximum in 60.7%, and completely dry macula was maintained in 22.6%. HRF and CVI were significantly decreased after loading injections in completely dry group. Decrease of leakage area and MA count on were significantly greater in completely dry group. Percentage of minimal leakage (<1㎟) at last visit were 10% in shortened interval group, and 85.7% in completely dry group. On OCTA, IRMA regression were significantly higher in completely dry group (75%) compared to shortened interval group (10.3%). In the logistic regression analysis, IRMA regression was significantly higher in the maximal extension group.

Recent advancements in retinal imaging and identification of promising new biomarkers using OCTA for DME have the potential to predict response to anti-VEGF treatment.

Abstract 412

TOMOGRAPHIC PREDICTORS ASSOCIATED WITH NON-RESPONSE TO BEVACIZUMAB IN DME PATIENTS.

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Optical coherence tomography (OCT) plays a crucial role in assessing diabetic macular edema (DME) and guiding anti-VEGF treatments such as bevacizumab.
This study aims to identify OCT-based tomographic features that predict non-response to bevacizumab in DME patients.

A retrospective analysis was conducted on 154 eyes from 154 DME patients treated with bevacizumab, categorized as responders (n=54) or non-responders (n=100). OCT data included central macular thickness (CMT), macular volume, and qualitative features, such as cystoid spaces, subretinal fluid, integrity of the IS-OS line, and the external limiting membrane (ELM). Statistical analyses were performed to identify predictive factors for non-response.

Non-responders exhibited significantly higher baseline CMT (473.9±117µm) compared to responders (384.8±79µm, p=0.007) and larger macular volumes (9.43±1.33µm³ vs. 8.13±0.77µm³,p<0.001). Cystoid spaces were more prevalent among non-responders (68.5% vs. 51%, p=0.036), as was subretinal fluid (48% vs. 20.4%, p=0.001). Disruptions of the ELM and IS-OS line were more frequent in non-responders (ELM: 59% vs. 20.4%,p<0.001; IS-OS: 59% vs. 20.4%, p<0.001). Additional indicators of non-response included a higher incidence of retinal exudates (98% vs. 70.4%, p<0.001), pronounced disorganization of retinal inner layers (DRIL) in 71% of non-responders versus 14.8% of responders (p<0.001), and a greater prevalence of ischemic maculopathy (55% vs. 31.5%,p=0.005).

Key OCT features, including increased CMT and macular volume, presence of cystoid spaces, subretinal fluid, and disrupted retinal layer integrity (ELM and IS-OS), are significant predictors of non-response to bevacizumab in DME patients. These tomographic markers provide valuable insights that may enhance individualized treatment strategies for DME.

Abstract 245

CLINICAL IMPACT OF OCT-A IMAGES ENHANCED BY A NEWLY DEVELOPED AI DENOISING PROGRAM FOR RETINAL VASCULAR VISUALIZATION.

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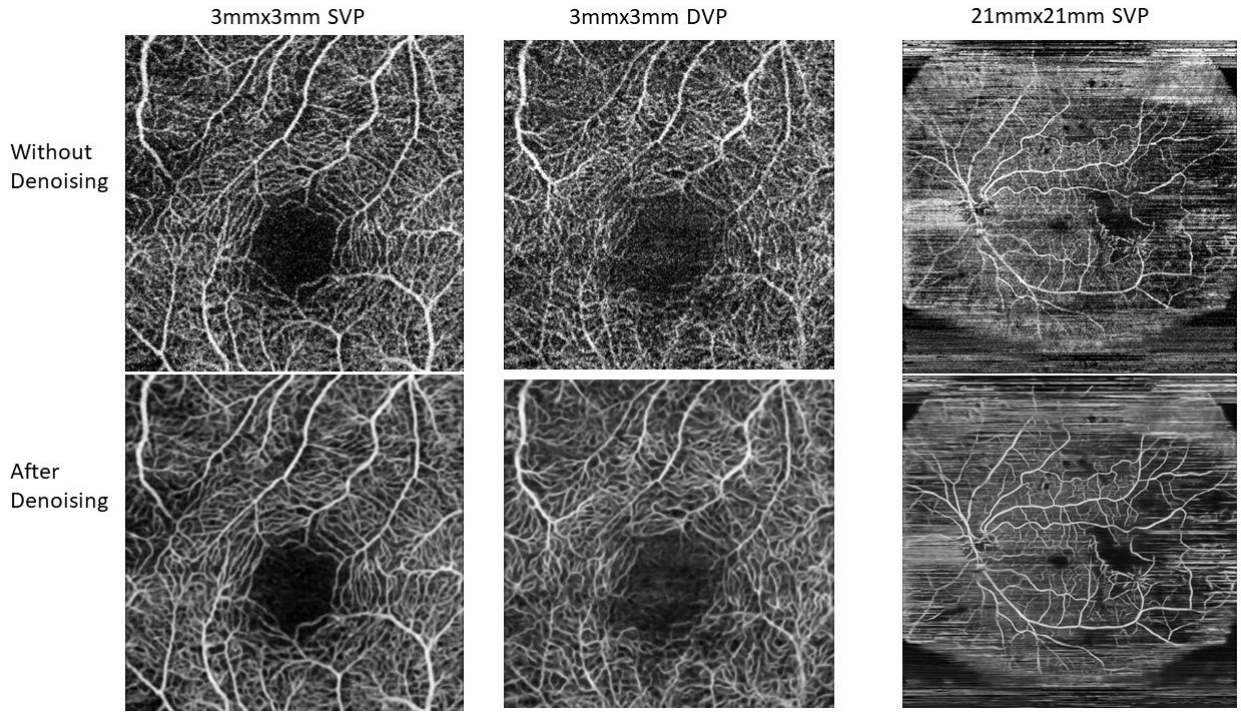
To evaluate the ability to visualize capillary bed and non-perfusion areas in OCTA with and without AI denoising

We compared OCT-A images (Triton OCT, Topcon Corp, Japan) before and after AI-denoising with Noise2Void model, which processes only enface OCT-A images without the need for averaged images. The ability to visualize capillary bed was graded qualitatively from grade 1 (not visible) to grade 5 (details well-visualized). Furthermore, 21mmx21mm OCTA were obtained with a wide-field attachment lens and were subjected to the AI denoising algorithm. Visualization of large and medium retinal vessels and areas of peripheral non-perfusion were graded from grade 1 (not discernible) to grade 5 (clearly discerned with distinct boundaries). Gradings before and after AI denoising was compared.

We included 13 pairs of images (seven 3mmx3mm, one 6mmx6mm, two 9mmx9mm, three 21mmx21mm). For capillary bed visualization, the grading improved from mean 3.3±0.67 before denoising to 4.7±0.67 after denoising, with a mean improvement of +1.4±0.52 in the superficial plexus. In the deep plexus, the grading improved more markedly from mean 2.8±0.42 to 4.5±0.85, with a mean improvement of +1.7±0.48. In the 21mmx21mm images, visualization of large and medium vessels improved from 1.67±0.58 to 3.33±0.48, with a mean improvement of 1.67±1.15. Regarding area of non-perfusion, the grading improved from 2.0 to 3.33±0.57, with an average improvement of +1.3±0.58.

Newly developed OCT-A AI denoising improves the visualization of capillary bed in the macula area and of non-perfusion area in the peripheral area. These improvements are expected to have significant clinical utility.


3mmx3mm SVP
3mmx3mm DVP
21mmx21mm SVP
Without Denoising
After Denoising

Abstract 461

ONE-YEAR PROGRESSION OF CAPILLARY HYPOPERFUSION IN NONPROLIFERATIVE DIABETIC RETINOPATHY: THE CHART STUDY

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To evaluate the one-year progression of capillary hypoperfusion in eyes with nonproliferative diabetic retinopathy (NPDR) with Early Treatment Diabetic Retinopathy Study (ETDRS) severity grade 35 (mild) to grade 53 (severe) in a multinational, observational, prospective and longitudinal study (CHART-NCT04636307) conducted with four visits (baseline, 3-month, 6-month and 1-year).

A total of 169 eyes were included in this one-year analysis. Eyes were classified according to the ETDRS criteria based on seven-field color fundus photography (CFP): ETDRS grade 35 (78 eyes), ETDRS grade 43 (57 eyes), ETDRS grade 47 (29 eyes) and ETDRS grade 53 (5 eyes). All participants underwent spectral domain optical coherence tomography angiography (SD-OCTA) using AngioPlex (ZEISS, USA). Skeletonized vessel density (SVD) and perfusion density (PD) metrics were evaluated for superficial and deep capillary plexuses (SCP and DCP). Microaneurysm (MA) assessment was automatically performed based on CFP using the RetmarkerDR (Retmarker SA, Meteda Group, Italy).

Progression of capillary hypoperfusion was identified in the one-year follow-up in OCTA metrics SVD and PD. For SVD at the outer ring in the SCP, ETDRS grade 35 decreased from 16.31±1.78 to 15.64±2.21 [mm-1] ($p=0.002$), ETDRS grade 43 decreased from 16.32±1.70 to 15.35±2.03 [mm-1] ($p<0.001$) and ETDRS grade 47 decreased from 16.75±1.48 to 15.78±2.08 [mm-1] ($p=0.024$). In contrast, the ETDRS grade 53 shows a stabilization of the retinal perfusion. In addition, there was a marked increase in microaneurysm turnover with severity grade increase.

NPDR progression in mild to moderately severe grades is characterized by hypoperfusion with decreases in SVD and PD in all retinal vascular layers. At the most severe NPDR stage (ETDRS 53), hypoperfusion appears to stabilize and is identified by an increase in MA turnover.

Abstract 247

HARD EXUDATES AS BIOMARKERS OF FARICIMAB EFFICACY IN CHRONIC BILATERAL DME: A CASE REPORT OF A PATIENT SWITCHED FROM AFLIBERCEPT

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Chronic or treatment-resistant diabetic macular edema (DME) poses a clinical challenge. In the YOSEMITE and RHINE trials, faricimab reduced hard exudates (HE) more effectively than aflibercept. We present a case of a patient previously treated with corticosteroids and aflibercept, who was switched to faricimab due to treatment-resistant DME.

The patient first received two intravitreal triamcinolone injections, followed by three 2 mg aflibercept injections. Due to persistent DME, treatment was switched to faricimab, with three injections administered at six-week intervals in both eyes. Biomarkers of DME, including HE, were monitored using optical coherence tomography (OCT, Heidelberg) and color fundus photography (CFP, Clarus). Visual acuity was assessed at each visit using the Snellen chart (in decimal notation). These evaluations, made possible by utilizing HE as a biomarker, helped track the patient's response to faricimab.

Following the administration of three intravitreal faricimab injections per eye, both eyes showed significant reductions in HE. Visual acuity improved by one line in the right eye and three lines in the left eye. OCT and CFP confirmed reduced CFT and HE in both eyes. These improvements suggest that faricimab's dual inhibition of VEGF-A and Angiopoietin-2 effectively addressed the resistant DME, particularly in a patient who had previously shown a limited response to corticosteroid and aflibercept injections as assessed by using the aforementioned biomarker: HE.

This case study highlights faricimab's dual inhibition of Angiopoietin-2 and VEGF-A, which significantly reduced HE in a chronic DME patient, even after limited response to corticosteroids and aflibercept. The patient's improved visual acuity demonstrates faricimab's potential in treating resistant DME, using HE as a reliable biomarker.

Abstract 51

RETINAL MICROANEURYSMS MORPHOLOGY AND BLOOD FLOW NETWORK CONNECTIVITY IN DIABETIC RETINOPATHY AS REVEALED BY OCT ANGIOGRAPHY DENSE ART SCANS.

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Retinal microaneurysms (MAs) are among the earliest signs of diabetic retinopathy (DR) and can be classified in several subtypes by multimodal retinal imaging. The main aim of the present study is to characterize retinal MAs perfusion properties and their blood flow network connectivity by means of Dense Automatic-RealTime (DART) OCTA.

A cross-sectional, observational study setting was chosen. Multimodal retinal imaging included confocal multicolor, OCT, OCTA and DART OCTA. We classified retinal MAs accordingly with the recently proposed multimodal retinal imaging classification and we tested the role of DART OCTA for detecting retinal MAs blood flow network connectivity. We also tested the relationship with clinical parameters. P-values <0.05 were considered statistically significant.

We included 206 retinal MAs of 36 DR eyes. We categorized retinal MAs as red (70;34%), mixed (106;51%) and green (30;15%), corresponding to precise characteristics on structural OCT and OCTA images. The agreement between enface and DART OCTA techniques for detecting MAs perfusion was very high (overall ICC 0.98; p<0.01). However, DART OCTA provided clearer visualization than enface OCTA for detecting the blood flow network connectivity of retinal MAs, especially looking at the afferent and efferent MAs capillaries. Multimodal retinal imaging classification of retinal MAs provided significant correlations with DR duration, DR stage, and macular capillary non-perfusion.

DART showed unprecedent level of morphological detail characterizing DR-related retinal MA, providing several new insights on retinal MAs characteristics and their blood flow network connectivity.

Abstract 121

DIFFERENCE VISIBILITY OF BIOMARKERS IN DIABETIC RETINOPATHY BETWEEN HIGH RESOLUTION AND HIGH SPEED OCT

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To prove the difference between the high resolution and High speed OCT scan in the visibility and idendification of biomarkers in the early and proliferative diabetic retinopathy

We perform to all the eyes examinated both scan with SPECTRALIS OCT and a standard scan with another oct (Heidelberg Engineering GmbH, Heidelberg, Germany and Topcon Maestro). We have observed and evaluate OCT biomarkers, including intraretinal cyst (IRC) size, disorganization of retinal inner layers (DRIL), external limiting membrane (ELM)/ellipsoid zone (EZ) integrity, retinal hyperreflective foci (HRF), subretinal fluid (SRF) and vitreomacular (VM) status. We have investigated the correlation between the better visibility of the biomarkers in the scan and the early diagnosis and a better treatment in diabetic retinopathy

40 eyes were examinated with early and proliferative diabetic retinopathy. In 37 eyes we have performed both scan, in 3 eyes we have performed only the high speed scan due to a poor fixation. We have observed a huge difference in the visibility of identification between the two scan also a difference between the Spectralis and the Topcon.

This work strongly demonstrates strongly that high resolution OCT scan help us to identify all the biomarkers since the early phase of the diabetic retinopathy and in the proliferative to evaluate correct treatment to do

Abstract 81

THE IMPACT OF PERIPHERAL LESIONS IN THE DIABETIC RETINOPATHY SEVERITY LEVEL USING UWF IMAGES

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To investigate the presence of peripheral lesions (outside the 7-fields area) in diabetic patients and its impact in the ETDRS DR severity level.

A cross-sectional analysis of the prospective study ClarusDR (NCT05746975) in 147 diabetic type II eyes. All patients underwent two 90º images (nasal and temporal) on the CLARUS 500TM, combined into a 133º image, and a 200º central image on the OPTOS California. The ETDRS-DRSS was evaluated by two graders across three regions: inside the ETDRS 7-fields grid, the peripheral area outside the 7-fields, and the entire area (inside and outside the 7-fields). DR severity levels were assessed independently for each region using both Clarus and Optos images.

In the 7-fields area, CLARUS showed 42 eyes (28.6%) with DR level 35, 35 eyes (23.8%) with level 43, 67 (45.6%) with level 47, and 3 (2.0%) with level 53. OPTOS results were 50 eyes (34.0%) with DR level 35, 25 (17.0%) with level 43, 71 (48.3%) with level 47, and 1 (0.7%) with level 53. In the peripheral area, DR severity was lower, with 10 eyes (CLARUS) and 9 eyes (OPTOS) showing no DR. When combining both areas, 83% (CLARUS) and 84.4% (OPTOS) maintained the same DR level. Severity increases were linked to better visualization of IRMAS and hemorrhages.

Although our patients showed the presence of peripheral lesions, it seems that these are less serious and with less impact on DR severity than central changes. Clarus and Optos devices are useful imaging tools that improve DR staging and characterization.

Abstract 134

OCTA IN DETECTING PRECLINICAL DIABETIC RETINOPATHY PROGRESSION: A 5-YEAR PROSPECTIVE STUDY

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To analyse OCTA features in patients with type 1 diabetes mellitus (T1DM) with no clinical signs of diabetic retinopathy (DR)

46 eyes of 23 T1DM patients with no apparent DR were included in the study. The mean duration of DM was 10,8 ± 6,9 years. All participants underwent BCVA, contrast sensitivity and LLVA assessment, as well as 3×3 mm optical coherence tomography angiography (DRI OCT Triton, Topcon (Japan). For OCT-A scans we evaluated the foveal avascular zone (FAZ) area (mm2), acircularity index, vessel density (VD) and skeletonized density in superficial vascular plexus (SVP), intermediate capillary plexus (ICP) and deep capillary plexus (DCP), choriocapillaris flow deficits (FD).

There was no difference in FAZ area after 1-year observation, however we discovered significant changes in two years (0,25 ± 0,05 and 0,28±0,06 mm2, $p<0.0001$). Vessel density and skeletonized density were reduced in the SVP and DCP after the first year, and this trend persisted till the 5 year. FD density was higher after 5 years (12.10 ±1.82 and 10.53 ± 3.09, $p<0.0001$).

We discovered an increase in FAZ area, acircularity and reduction of vessel density and skeletonized density in SVP and DCP, as well as changes in CC flow at the preclinical stage of DR after 5-year observation. These changes can represent signs of DR progression in T1DM patients without apparent DR.

Abstract 80

CAN CLARUS AND OPTOS UWF IMAGES REPLACE THE STANDARD 7-FIELDS FUNDUS PHOTOGRAPHS? COMPARISON BETWEEN THE 3 DEVICES

Almeida A.C.*[1], Pinto I.[1], Santos A.R.[1], Marques I.[1], Rocha A.[1], Almeida F.[1], Baltar A.[2], Cunha--Vaz J.[1]

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To understand if CLARUS and/or OPTOS devices can replace the standard 35o ETDRS 7-fields photography in the assessment of diabetic retinopathy (DR) severity level.

A cross-sectional analysis of the prospective study ClarusDR (NCT05746975) was conducted in 147 eyes from 81 T2D patients. All patients performed 7-fields CFP at 35º on a standard Topcon camera, UWF images at 133º on CLARUS 500TM by an automatic montage of two 90º images and a UWF central image on OPTOS California at 200º. All images were classified by two graders according to the ETDRS-DRSS. A 7-fields grid was applied using both Clarus and Optos viewer software's and a comparison of the obtained ETDRS level in these 3 techniques was made considering only the area inside the 7-fields.

In 35º ETDRS 7-field images, 56 eyes were graded as DR level 35, 49 as level 43, and 42 as level 47. Comparing these with Clarus UWF images, DR level was the same in 89 eyes (60.5%), higher in 54 (36.7%), and lower in 4 (2.7%). With the Optos device, 90 (61.2%) eyes were graded with the same ETDRS level, 53 (36.1%) were higher, and 4 (2.7%) with lower levels than the 7-fields. Increased severity in both UWF techniques was due to better visualization of IRMAs and hemorrhages, while loss of severity was caused by less defined images and artifacts.

UWF images showed similar results with the standard 35º 7-fields images, pointing out that they can be a good alternative to replace the standard method with less discomfort for patients. Nonetheless, both UWF images, showed a better visualization of IRMAS, which can contribute to a better assessment of DR severity.

Abstract 86

TITLE UWF-FA FINDINGS IN IDIOPATHIC EPIRETINAL MEMBRANE: A LEAKING DISEASE.

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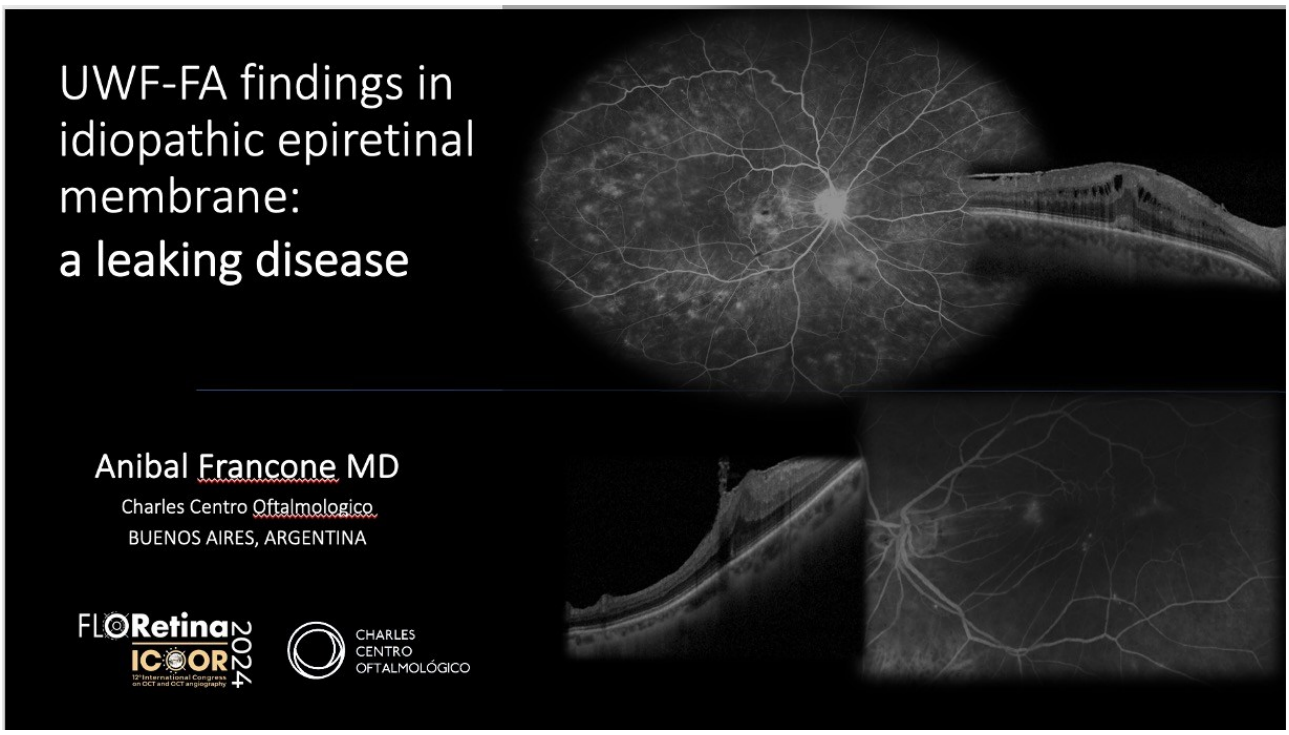
To describe the clinical and surgical significance of preoperative ultra-wide-field fluorescein angiography (UWFA) findings in patients with epiretinal membrane (ERM) and its relation to spectral-domain optical coherence tomography (SD-OCT) findings.

A retrospective and observational review of clinical charts, SD-OCT, optical coherence tomography angiography and ultra-wide-field fluorescein angiography (UWFA) images of 276 eyes of 270 consecutive patients diagnosed with idiopathic epiretinal membranes (ERM) was conducted. All patients had UWFA and SD-OCT imaging prior to pars plana vitrectomy, epiretinal and internal limiting membrane peel.
ERM were classified according to Govetto et al; and ERM-foveoschisis was also included.
UWFA findings in the posterior pole and in the periphery were identified and described. Associations of UWFA findings with OCT and other morphometric parameters were assessed by means of linear or multiple logistic regressions.

Diffuse leakage at the posterior pole was diagnosed in 184 out of 276 eyes (67%) with ERM ; 100% of stage 4, 55% of stage 3 and 20% of stage 2 ERMs showed this pattern. The likelihood to develop diffuse leakage increased at advanced ERM stages.
Petaloid leakage was present in 55 out of 276 eyes (20%) and was more frequent in stage 3 ERM (65%, p=0.03); 76% percent of eyes with preoperative CME had recurrence of CME after 35.6 days on average post vitrectomy, requiring additional anti-inflamatory treatment.
Mean follow-up time was 45.8 months (range 65.6 months).

To our knowledge, this study is the first to report ERM findings in UWFA. Late stages of ERM presented a greater chance of fluorescein leakage due to traction. The presence of ERM-associated CME correlates with peripheral leakage, no PVD , worse final BCVA and recurrence of CME after PPV.


UWF-FA findings in idiopathic epiretinal membrane:
a leaking disease
Anibal Francone MD
Charles Centro Oftalmologico
BUENOS AIRES, ARGENTINA
FLORetina ICOOR 2024
CHARLES CENTRO OFTALMOLÓGICO

Abstract 3 – Main Program

IMPORTANCE OF BASELINE FLUORESCEIN ANGIOGRAPHY FOR PATIENTS PRESENTING TO TERTIARY UVEITIS CLINIC

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To ascertain whether the use of ultra-wide-field fluorescein angiography (UWFFA) at baseline visit alters the assessment of disease activity and localization, as well as the management of patients presenting to a tertiary uveitis clinic.

Baseline visits of 158 patients who presented to the Uveitis Clinic at Stanford were evaluated by three uveitis-trained ophthalmologists (I.K., A.B., and H.G.). Each eye had undergone clinical examination with ultra-wide-field fundus photography (UWFFP), spectral-domain optical coherence tomography (SD-OCT) and UWFFA at the baseline visit. Investigators were asked to successively determine disease activity, localization of disease (anterior, posterior or both), and management decisions based on clinical examination and UWFFP and SD-OCT (Set 1), then Set 1 plus UWFFA (Set 2). Primary outcome was the percentage of eyes whose management changed based on the availability of UWFFA, compared with Set 1.

Mean age was 46.9±22.4(7-96); 91(57.6%) were female. With Set 1 alone, 138(55.2%) eyes were found to have active disease; localization was anterior in 58(42.0%) eyes, posterior in 53(38.4%) eyes and anterior + posterior in 27(19.6%) eyes. With Set 2, 169 eyes of 107 patients had active anterior, posterior or pan-uveitis. In comparison with Set 1, assessment with Set 2 identified an additional 31(18.3%) eyes with active disease ($p=0.006$), and additional 31(18.3%) eyes having disease in both anterior + posterior segments ($p<0.001$). Regarding the primary outcome, management was changed in 68 (27.4%) eyes in Set 2, compared to Set 1.

Baseline UWFFA may alter assessment of disease activity, localization, and management decisions compared to clinical examination with only UWFFP and SD-OCT. Thus, UWFFA may be considered as an essential tool in the evaluation of uveitis patients at the baseline visit.

Abstract 218

IS ARPE (KRILL DISEASE) REAL?

Fouad Y.*[1], Cicinelli M.V.[2], Marchese A.[2], Casalino G.[3], Jampol L.[4]

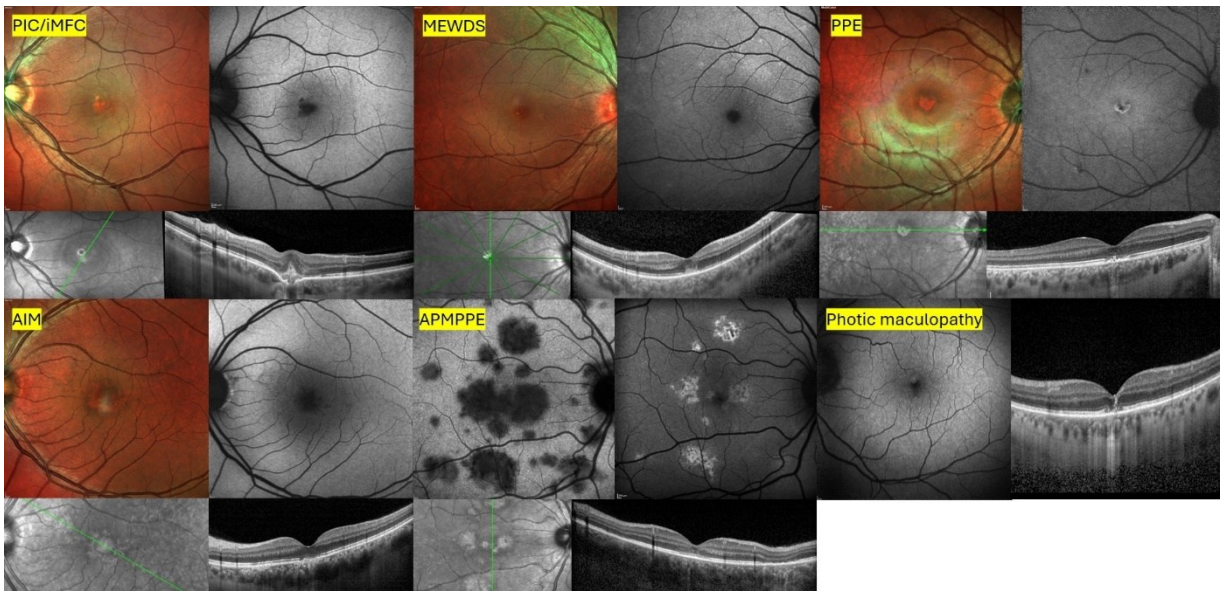
[1]Ain Shams University ~ Cairo ~ Egypt, [2]Vita-Salute San Raffaele University ~ Milan ~ Italy, [3]Foundation IRCCS Ca' Granda Ospedale Maggiore Policlinico ~ Milan ~ Italy, [4]Northwestern University ~ Chicago ~ United States of America

To re-evaluate whether acute retinal pigment epitheliitis (ARPE) is a valid diagnostic entity in light of our current understanding of modern macular pathology through multimodal imaging.

A systematic review of the literature of all published ARPE cases to date over a 50-year period. Independent review of cases with advanced multimodal imaging analysis was carried out by two graders. Cases with complete multimodal imaging that included optical coherence tomography where evaluated for possible alternative diagnoses.

The final analysis included 41 articles (86 patients, 98 eyes) and revealed marked heterogeneity in disease presentation, associations, clinical and imaging features. An alternative diagnosis could be provided for 90% of the cases, the most common being multiple evanescent white dot syndrome (30%), followed by photic maculopathy (17%), punctate inner choroidopathy (15%), pachychoroid disease (8%), acute idiopathic maculopathy (6%), acute posterior multifocal placoid pigment epitheliopathy (6%), macular drusen (4%), and vitelliform maculopathy (4%). The remaining 5 cases (10%) that did not fit an alternative diagnosis still did not exhibit homogenous clinical or imaging features.

There is insufficient evidence to support the existence of ARPE as a standalone entity in light of our current understanding of macular disorders and their imaging features. This study emphasizes the importance of multimodal imaging in refining our definition of macular disorders.



Abstract 102

MACROPHAGES-LIKE CELLS INCREASE IN VIVO IN ACTIVE UVEITIS AND RESPOND TO ANTI-INFLAMMATORY TREATMENT

Perez Jimenez Y.S.*[1], Pichi F.[1], Neri P.[1], Carreño E.[2]

[1]Cleveland Clinic Abu Dhabi ~ Abu Dhabi ~ United Arab Emirates, [2]Instituto de Investigación Sanitaria Fundación Jiménez Díaz, ~ Madrid ~ Spain

To highlight the utility of en-face swept-source optical coherence tomography angiography (SS-OCTA) in assessing macrophage-like cells (MLCs) on the retinal surface of patients with active uveitis and their dynamics

In this prospective, single-center study, 80 eyes from active uveitis patients were analyzed using six 6 × 6 mm macular scans at three time points: active inflammation (baseline), clinically improving (T1), and resolved inflammation (T2). MLCs were visualized using 3µm en face OCT slabs on the inner limiting membrane. The MLC number, density, and size variation over time was assessed, and MLC measurements were compared with clinical grading.

At baseline, MLC count was significantly higher (552.5) than healthy controls (478.2 MLCs), with a density of 15.3 cells/mm². MLC number decreased significantly to 394.8 ($p = 0.007$) at T1, with a density of 10.9 cells/mm² ($p = 0.007$). MLC size reduced from 6.8 µm to 6.3 µm at T1 ($p = 0.009$) and remained stable at T2 ($p = 0.3$). Correlation coefficients between inflammatory parameters (AC cells and NEI haze) and MLC count indicated a positive correlation at baseline ($r = 0.53$), weakening at T1 ($r = 0.36$), and becoming negative at T2 ($r = -0.24$).

En-face SS-OCTA revealed increased MLC number and size in active uveitis, likely due to monocyte recruitment. Post-inflammation control, MLC number, size, and density significantly decreased, returning to normal despite residual AC cells or vitreous haze.

Abstract 313

PARACENTRAL ACUTE MIDDLE MACULOPATHY (PAMM) RELATED TO IGA NEPHROPATHY (IGAN)

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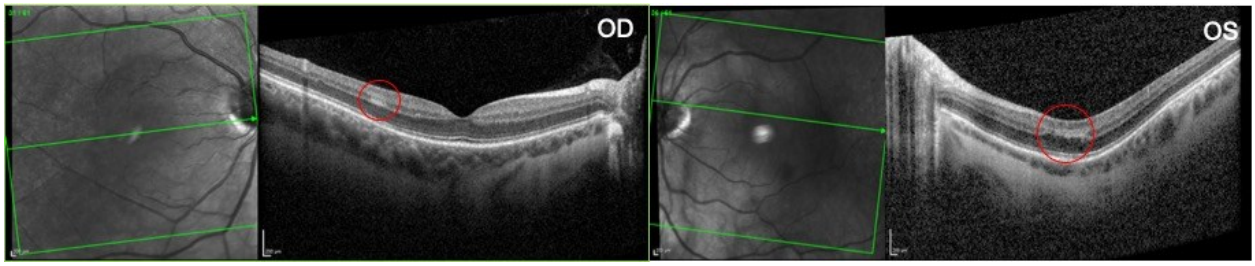
UZ Leuven ~ Leuven ~ Belgium

Ocular manifestations are rarely observed in IgA Nephropathy (IgAN). This case features a young healthy woman who was diagnosed with IgAN after presenting with bilateral scotoma that were caused by paracentral acute middle maculopathy (PAMM). The etiology of PAMM is unknown but a vascular/ischemic cause is suspected.

A 34-year-old female with no documented medical history presented with the complaint of a single scotoma in the left eye since 2-3 months. Fundoscopy of the left eye showed one dot-blot hemorrhage. OCT revealed an area of hyperreflectivity in the INL, next to thinning of the GCL, compatible with a PAMM, suggesting a microvascular ischemic injury. FA was normal except for a micro-aneurysm inferior of the fovea in the left eye.
During follow-up, she developed asymptomatic macular cotton wool spots, fluctuating in both eyes. Eventually, a scotoma in the right eye was noticed that corresponded to a new PAMM lesion.

Extensive systemic examinations were conducted, including CT thorax, MRI of the brain, cardiovascular examination, complete blood analysis and urine sample. All these examinations were normal except for an intermittent high blood pressure and proteinuria and hematuria. Additional kidney biopsy confirmed an IgAN with secondary hypertension. The following treatment was initiated: calcium channel blockers, ACE inhibition and a low-sodium-diet. In addition, oral steroids were associated to prevent further inflammation and production of pathological immune complexes. In the meantime, steroid sparing drugs were initiated.
Scotoma persisted over the follow-up of 3 months. On OCT, the lesions evolved to partial middle/inner retinal atrophy.

To our knowledge, this is the first case report of a PAMM related to IgAN, a systemic autoimmune disease. It shows the importance of a urine sample in the workup of PAMM. When the diagnosis of IgAN has been made, prompt initiation of tailored treatment is necessary.



Abstract 283

OCT FEATURES OF BALAD IN OCULAR TOXOPLASMOSIS

Patel A.*[1], Pathengay A.[1], Kelgaonkar A.[2]

[1]LV Prasad Eye Institute, GMRV Campus ~ Vizag ~ India, [2]LV Prasad Eye Institute ~ Bhubaneshwar ~ India

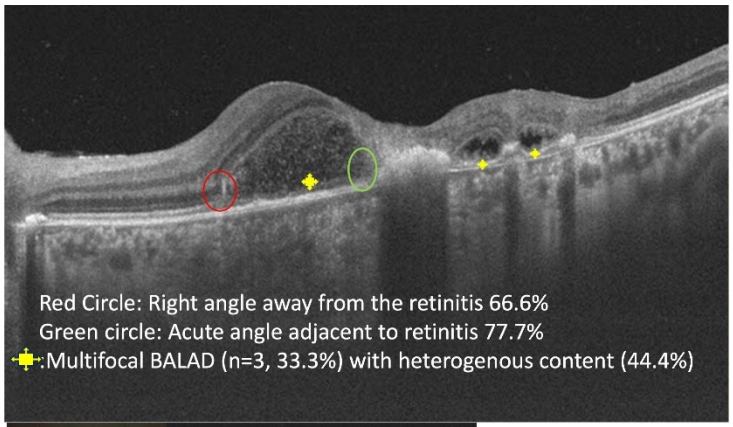
To study the morphological and ocular imaging characteristics of bacillary layer detachment(BALAD) in toxoplasma retinitis

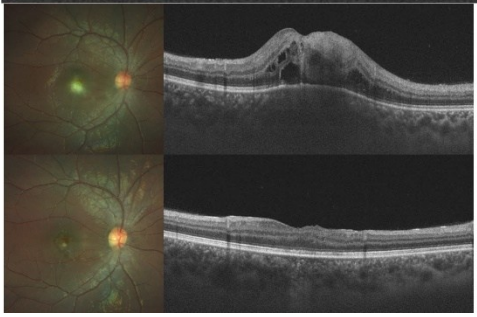
A retrospective analysis of cases diagnosed with ocular toxoplasmosis between January 2016 and December 2022 was conducted at a tertiary eye care centre.
Demographic data, clinical features, treatment modalities, and resolution patterns were analysed for toxoplasma retinitis with BALAD.Among the 150 cases of ocular toxoplasmosis with OCT, bacillary layer detachment was observed in nine eyes which were selcted for the study.

The patients ranged in age from 14-25, predominantly male (n=6, 56%), with a mean follow-up of 39 weeks. BALAD was observed at the fovea in 66.6% of cases, with a pyriform shape in 77.7%. The content was primarily heterogeneous (77.7%). Acute angles at the edge of retinitis were noted in 77.7%, while right angles away from retinitis were observed in 66.6%. Unifocal BALAD was seen in 55% of eyes. Hyperreflective edges at the base and floor of BALAD were seen in 100% of eyes. The average resolution time on OCT was 15 weeks, with focal attenuation observed in 88.8%.

BALAD in ocular toxoplasmosis represents structural changes in photoreceptors within the parafoveal region, best seen on OCT. It leads to attenuation of IS-OS after resolution with no change in visual acuity. Rarely, it could lead to complete loss of outer retina.

OCT characteristics of BLD at presentation	N=9	%
Location		
Foveal	6	66.6%
Parafoveal	3	33.3%
Shape		
Pyriform	7	77.7%
Dome	2	22.2%
Content		
Homogenous	2	22.2%
Heterogenous	7	77.7%
Type of BLD		
T1 heterogenous	4	44.4%
T2 membranes	3	33.3%
T3 empty cavity	2	22.2%
Angle of BLD away from retinitis		
Acute	2	22.2%
Obtuse	1	11.1%
Right angle	6	66.6%
Angle of BLD adjacent to retinitis		
Acute	7	77.7%
Obtuse	1	11.1%
Right angle	1	11.1%
Number of BLD		
One	5	55.5%
Two	1	11.1%
Three	3	33.3%
Split at the Myoid zone	9	100%
Hyperreflective Ceiling of BLD	9	100%
Hyperreflective Floor of BLD	8	88.8%
Second Hyperreflective band below BLD		
Present	3	33.3%
Absent	6	66.6%
ELM anterior to BLD		
Traceable	5	55.5%
Non traceable	4	44.4%





Average resolution on OCT : 15 weeks with focal attenuation at IS-OS : n=8 (88.8%)

Abstract 238

CONCURRENT STREPTOCOCCAL SUBRETINAL ABSCESS AND SEPTIC ARTHRITIS IN AN IMMUNOSUPPRESSED PATIENT FOLLOWING DENTAL PROCEDURE

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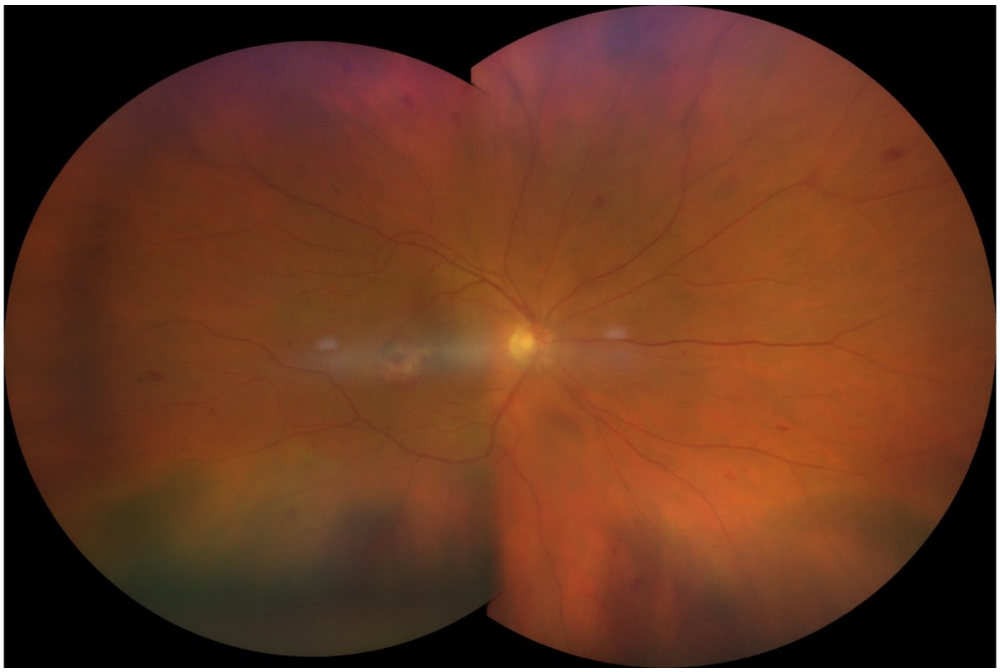
Subretinal abscess in the setting of bacterial endogenous endophthalmitis is a quite rare manifestation. We report a case of subretinal abscess secondary to Streptococcus mitis/oralis bacteraemia in an immunosuppressed patient, which was successfully treated with intravenous antibiotics.

A 65-year-old man presented to our emergency department with a 1-day history of ocular discomfort, visual impairment with a “central black spot”, photophobia and floaters affecting his right eye. The patient was on azathioprine for Crohn’s disease. The patient had a dental surgery for periodontal abscess three months before. Slit-lamp examination revealed anterior uveitis with 1mm hypopyon, mild vitritis, an elevated juxtafoveal red-yellow lesion and Roth spots. The patient was initially treated with topical corticosteroids and cycloplegics. Two days later, the patient developed septic arthritis and was admitted to the hospital. Arthrocentesis and blood culture were positive for Streptococcus mitis/oralis.

During his follow-up in Uveitis clinic, OCT scan over the red-yellow elevated lesion showed subretinal hyperreflective material with overlying retinal thickening and vitreous cells. Combined with the findings from his systemic investigation and ophthalmic examination, these features were suggestive of subretinal abscess.
Both the subretinal abscess and the septic arthritis responded well to intravenous antibiotics (Benzylpenicillin sodium, followed by ceftriaxone). The right eye’s visual acuity improved from 6/18 at presentation to 6/9 and the OCT scan revealed resolution of the subretinal infiltrate with regression of the subretinal abscess into intraretinal hyporeflective lacunae due to necrosis and into atrophic chorioretinal scarring.

This is a rare case of endogenous bacterial endophthalmitis presenting with subretinal abscess and Roth spots in an immunosuppressed patient, caused by haematogenous dissemination of bacteria. Endogenous bacterial subretinal abscess can appear with less severe vitreous involvement. Early diagnosis and prompt treatment with systemic antibiotics can lead to favourable outcomes.



Abstract 242

THE PROGNOSTIC SIGNIFICANCE OF ACUTE HENLE FIBER LAYER HYPERREFLECTIVITY IN PLACOID DISEASES

Scandale P.*[1], Cicinelli M.V.[1], Menean M.[1], Marchese A.[1], Ramtohul P.[2], Bandello F.[1], Miserocchi E.[1]

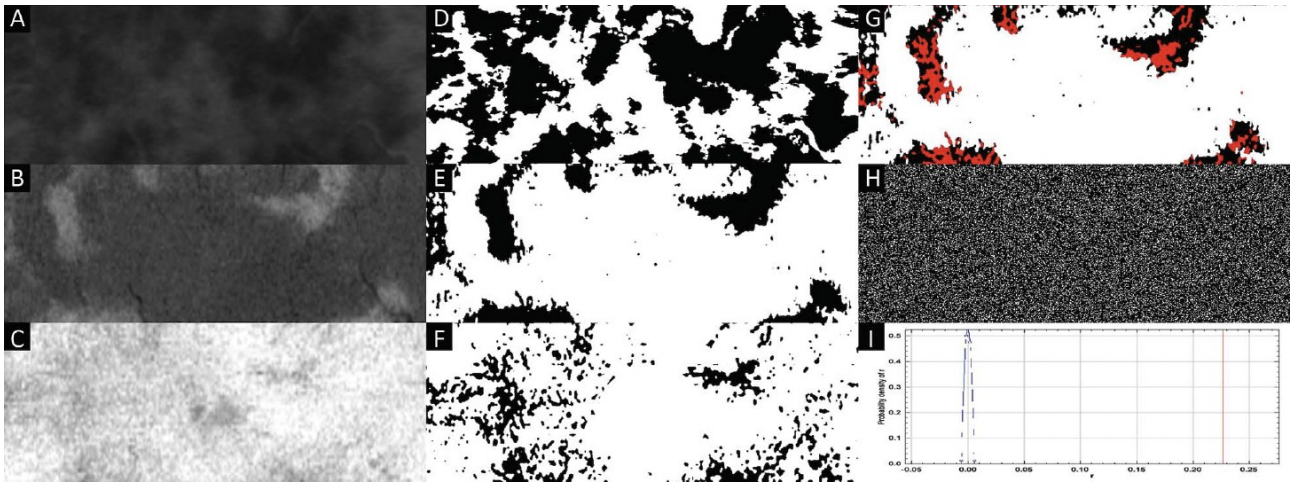
[1]Università Vita-Salute San Raffaele ~ Milan ~ Italy, [2]Aix-Marseille Université ~ Marseille ~ France

To investigate the pathophysiology and prognostic significance of acute Henle fiber layer (HFL) hyperreflectivity in placoid diseases by examining its relationship with impaired choroidal flow and persistent photoreceptor disruption.

Retrospective–prospective observational study on patients with placoid diseases. Indocyanine green angiography and optical coherence tomography were performed during the acute phase and follow-up. Impaired choroidal flow, HFL hyperreflectivity, and persistent ellipsoid zone disruption, their colocalization index, and their associations with initial and final visual acuity were explored.

Sixteen eyes from eight patients (mean age, 25.3 6 6.44 years) were included (median follow-up, 13.5 months). Quantitative analysis revealed significant correlations between areas of impaired choroidal flow, HFL hyperreflectivity, and persistent ellipsoid zone disruption (correlation coefficients of 0.69, 0.63, and 0.46, respectively). Impaired choroidal flow area exceeded HFL hyperreflectivity (P = 0.002) and ellipsoid zone disruption (P = 0.003). A noteworthy 94% nonrandom overlap between HFL hyperreflectivity and ellipsoid zone disruption was observed. Worse initial visual acuity correlated with foveal involvement (P = 0.0002), thicker choroid (P = 0.001), larger impaired choroidal flow areas (P = 0.02), and thinner outer retina post lesion inactivation (P = 0.04).

Henle fiber layer hyperreflectivity predicted photoreceptor recovery potential in placoid diseases. If HFL hyperreflectivity corresponds to acute HFL damage, it may suggest more severe involvement of the entire photoreceptor length.



Abstract 362

ACUTE POSTERIOR MULTIFOCAL PLACOID PIGMENT EPITHELIOPATHY: A CLINICAL CASE

Aidi N.*, Khallouli A., Weslati Y., Kallel Z., Hachicha I., Maalej A.

Department of Ophthalmology at the Main Military Hospital of Tunis ~ Tunis ~ Tunisia

Acute posterior multifocal placoid pigment epitheliopathy (APMPPE) is a rare inflammatory chorioretinopathy, part of White Dot Syndromes, affecting adults aged 20-40. It presents with bilateral blurred vision and scotomas. Typically self-limiting, steroids may be used for severe cases to aid recovery.We report a case of a 22-year-old female patient.

A complete clinical examination was performed, along with optical coherence tomography (OCT) and Fluorescein angiography.

This is a 22-year-old female with no significant medical or ophthalmological history who presented with redness and blurred vision in both eyes. Visual acuity was 9/10 bilaterally, with conjunctival hyperemia and moderate anterior chamber inflammation. Fundoscopy showed round white-yellow lesions at the posterior pole. OCT revealed ellipsoid zone and external limiting membrane disruption, and OCT angiography showed choriocapillaris hypoperfusion. Fluorescein angiography displayed hypofluorescence in early phases and mild late staining. Neurological and biological evaluations were normal. Diagnosed with plaque epithelialopathy, she was treated with oral corticosteroids, resulting in significant improvement and resolution of lesions.

Plaque epitheliopathy represents a significant yet often underdiagnosed condition in ophthalmology. Although many cases resolve without intervention, timely diagnosis and appropriate management are essential to prevent long-term visual impairment. A careful clinical assessment and a thorough differential diagnosis are essential to ensure appropriate treatment.

Abstract 158

A NOVEL OCT FINDING OF CHORIO-RETINAL INFECTIONS

Rissotto F.*, Sacconi R., Oldoni G., Beretta F., Bandello F., Miserocchi E., Querques G.

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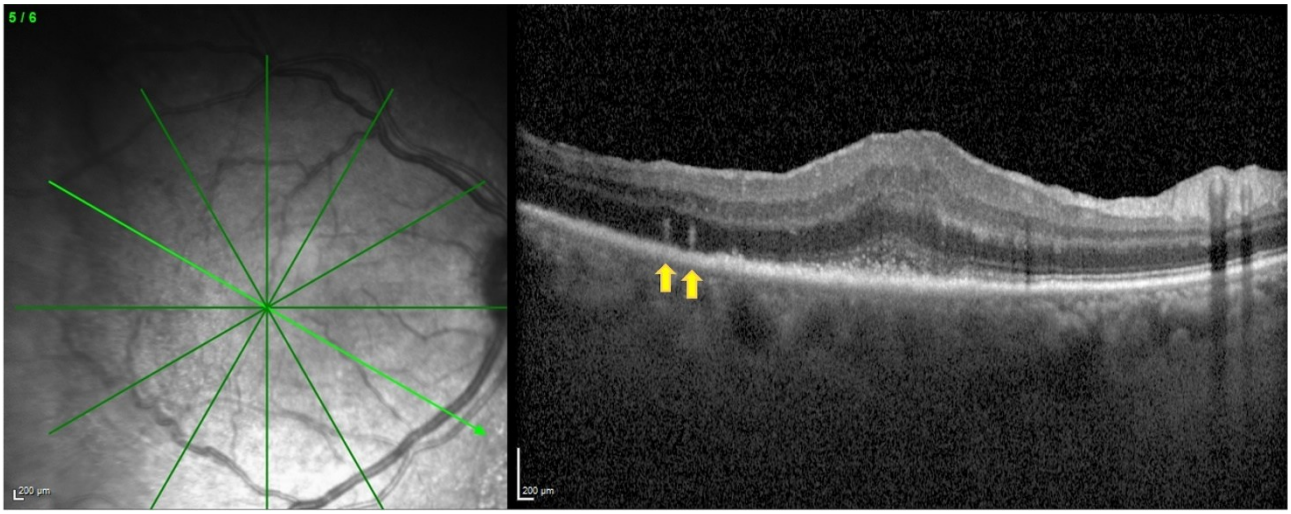
The purpose of our study is to describe a peculiar OCT finding found in patients affected by endophthalmitis and a case of acute syphilitic posterior placoid chorioretinitis

We evaluated the multimodal imaging features of patients affected by endophthalmitis or acute syphilitic posterior placoid chorioretinitis. Patients underwent comprehensive ophthalmic examination, including ultra-wide field fundus photography, fluorescein angiography, and spectral-domain optical coherence tomography.

this finding was characterized by hyper-reflective lesions located between the RPE and the outer plexiform layer involving almost the outer nuclear layer

We suggest that this finding could be a sign of outer retina inflammation related to the infections such as endophtalmitis or Syphilis and may be helpful in the early diagnosis and response to treatment of these diseases



Abstract 351

FOCAL HYALOID PRECIPITATES IN OCULAR TUBERCULOSIS

Patel A.*[1], Tufail A.[2]

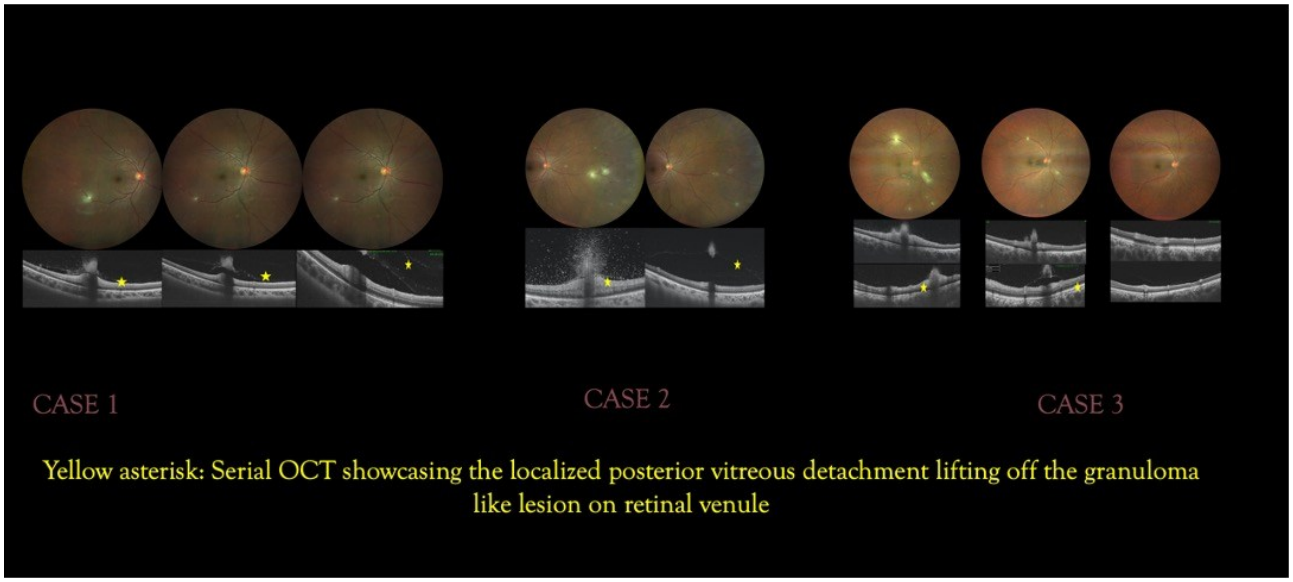
[1]LV Prasad Eye Institute, GMRV Campus, Moorfield Eye Hospital ~ London ~ India, [2]Moorfield Eye Hospital ~ London ~ United Kingdom

To study the OCT features of granuloma like lesion in ocular tuberculosis

Three patients of ocular tuberculosis were studied. One female and two male were included in study who had ocular signs of tuberculosis. All three patients had yellowish granuloma like change on retinal vein which on optical coherence tomography appeared as bright-hyperreflective lesion.

All patient were treated with oral steroids and ATT. Within 1-2 weeks, localised posterior healed detachment was noted and the granuloma like lesion seen on OCT, lifted up off with the progression of localised posterior vitreous detachment. Serial OCT in each visit captured the induction of posterior vitreous detachment, lifting the granuloma off from the vessel in all three cases.

Focal hyaloid precipitates is a unique sign of ocular tuberculosis in TB endemic country like India. OCT is a useful tool in capturing the evolution of this sign in ocular tuberculosis.



Abstract 393

FERN-LIKE RETINAL VASCULOPATHY IN INTERMEDIATE UVEITIS: PATHOGENESIS, NATURAL HISTORY, AND CLINICAL IMPLICATIONS

Balduzzi E.*[1], Cicinelli M.V.[1], Barresi C.[1], Ziafati M.[2], Bianco L.[1], Ramtohul P.[3], Bandello F.[1], Miserocchi E.[1]

[1]Ospedale San Raffaele ~ Milan ~ Italy, [2]IRAN University of Medical Sciences ~ Tehran ~ Iran, Islamic Republic of, [3]Vitreous Retina Macula Consultants of New York ~ New York ~ United States of America

To investigate peripheral vascular changes and their progression in intermediate uveitis characterized by a fern-like leakage pattern and examine their relationship with macular vascular changes to elucidate their pathogenesis, natural history, and clinical implications.

Ultra-widefield fluorescein angiography (UWF-FA) images were analyzed. Vessel Length Density (VLD), Fractal Dimension (FD), and Branchpoints Density (BPD) were compared across different leakage extents (posterior pole/diffuse[Zone 1], mid-periphery[Zone 2], and far periphery[Zone 3]) and control eyes using linear mixed-effects models. The foveal avascular zone (FAZ) was manually traced.

Early-phase UWF-FA revealed significant alterations in study eyes, including dilated capillaries, reduced branching, delayed venous filling, and telangiectatic post-capillary dilations, especially in non-perfused areas. Eyes with intermediate uveitis had lower VLD, FD, and BPD, mainly in the far peripheral retina and in eyes with diffuse leakage [Zone 1](interaction p-values: 0.04 for VLD, 0.007 for FD, and 0.045 for BPD). Negative correlations were found between these vascular metrics and enlarged FAZ areas, linking peripheral and macular perfusion ($p < 0.05$). Fern-like leakage persisted despite immunosuppression, and while some vascular changes progressed, others, such as non-perfusion and neovascularization, showed signs of reversibility.

We propose "Fern-Like Retinal Vasculopathy" to describe vascular changes in intermediate uveitis, likely caused by increased venous pressure and peripheral stagnation, rather than inflammation. Identifying this condition is key to optimizing treatment and avoiding unnecessary long-term immunosuppression, especially in young adults.

Abstract 104

ANTERIOR SEGMENT OPTICAL COHERENCE TOMOGRAPHY IN EYES WITH ENDOPHTHALMITIS

Mautone L.*[1], Ponti L.[2], Sanchis P.[1], Birtel J.[1], Skevas C.[1], Spitzer M.[1]

[1]Department of Ophthalmology, University Medical Center Hamburg-Eppendorf ~ Hamburg ~ Germany, [2]Institute of Ophthalmology, University of Modena and Reggio Emilia ~ Modena ~ Italy

Anterior segment optical coherence tomography (AS-OCT) is a diagnostic tool that may assess the inflammatory activity of the anterior chamber even in cases with corneal opacification. This pilot study aims to investigate the applicability of AS-OCT in eyes with bacterial endophthalmitis.

Retrospective single-center case series. Electronical records, slit lamp photography, anterior segment infrared images, and swept-source AS-OCT scans (Anterion, Heidelberg Engineering, Heidelberg, Germany) were assessed.

Thirteen eyes with postoperative (n=6 after cataract surgery; n=6 after anti-VGEF-injection) and endogenous (n=1) endophthalmitis were included. Visual acuity was light perception (n=3), hand movements (n=6) and >1.30 LogMar (n=4). The visibility of the anterior chamber was reduced due to corneal edema (n=7). On clinical examination, hypopyon (n=12) and fibrin formation (n=5) were seen. AS-OCT demonstrated hypopyon (n=12) and fibrin formations (n=10). Hypopyon presented as hyperreflective thin lamellar prolongation on the corneal endothelium (n=10); fibrin was organized in single-strand (n=2), stroke-nest-like (n=1), cloth-like (n=4), and mixed-type (n=1) patterns. Fibrine exerted tractions on the posterior corneal surface (n=4).

Anterior segment optical coherence tomography may be useful for investigating inflammatory activity in endophthalmitis cases with reduced visibility due to corneal edema.

Abstract 256

UVEITIS MYSTERY CASE: WHAT LIES UNDER THE BALAD?

Belletti M.*[1], Bolletta E.[2], De Simone L.[2], Gozzi F.[2], Gentile P.[2], Cimino L.[3]

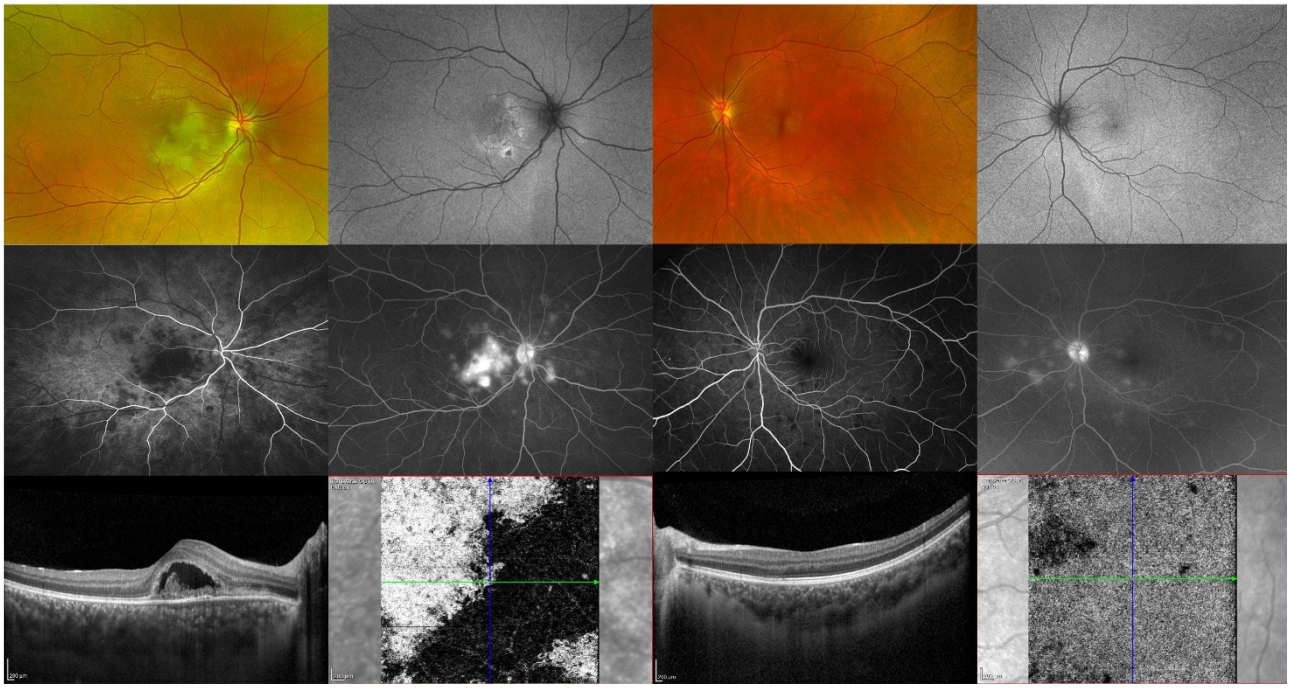
[1]University of Bologna, IRCCS Azienda Ospedaliero-Universitaria Policlinico di Sant'Orsola ~ Bologna ~ Italy, [2]Ocular Immunology Unit, Azienda USL-IRCCS of Reggio Emilia, Reggio Emilia, Italy. ~ Reggio Emilia ~ Italy, [3]Ocular Immunology Unit, Azienda USL-IRCCS of Reggio Emilia, Reggio Emilia, Italy. - Department of Surgery, Medicine, Dentistry and Morphological Sciences, with Interest in Transplants, Oncology and Regenerative Medicine, University of Modena and Reggio Em

To describe the diagnostic and therapeutic management of a case of panuveitis presenting anteriorly with bilateral fine keratic precipitates (KPs) and posteriorly with a unilateral bacillary layer detachment (BALAD) of unknown origin, in a young caucasian woman.

A complete clinical ocular assessment was carried out, comprehensive of best corrected visual acuity (BCVA), intraocular pressure (IOP) measurement, and a slit-lamp biomicroscopy examination of the anterior and posterior segment of both eyes.
Invasive and non-invasive multimodal imaging of the posterior segment, including optical coherence tomography (OCT), OCT angiography (OCT-A), fundus autofluorescence (FAF), fluorescein angiography (FA) and indocyanine green angiography (ICG) was performed to complete the ocular assessment.
Blood tests to investigate infectious agents and rule out other possibly associated diseases were performed. Systemic assessment was finalized requiring a brain magnetic resonance imaging (MRI).

BCVA was 20/320 in the right eye (RE) and 20/25 in the left eye (LE). Bilateral IOP was within normal range.
The fundus of the RE showed a yellowish placoid macular lesion, while the LE was apparently unremarkable.
OCT revealed a unilateral BALAD, together with bilateral multiple areas of ellipsoid zone (EZ) and retinal pigment epithelium (RPE) alterations. OCT-A demonstrated the associated choriocapillaris (CC) hypoperfusion.
FA highlighted bilateral early hypofluorescence with late hyperfluorescence corresponding to early and late hypofluorescence in ICGA.
Blood tests were unremarkable, and brain MRI did not identify any pathological areas.

The patient was diagnosed with acute posterior multifocal placoid pigment epitheliopathy (APMPPE). Considering the inflammatory nature of the lesion and the foveal involvement, systemic treatment with corticosteroids was started.
The follow-up was carried out through OCT and OCTA, evidencing the partial restoration of the EZ, RPE, and CC flow bilaterally.



Abstract 74

OPTICAL COHERENCE TOMOGRAPHY AND OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY IN THE DIAGNOSIS AND FOLLOW-UP OF MACULAR COMPLICATINS IN A PATIENT WITH ENDOGENOUS CANDIDA ENDOPHTHALMITIS.

Kubicka--Trzaska A.*, Karska--Basta I., Pociej--Marciak W.

Department of Ophthalmology, Jagiellonian University Medical College; Clinic of Ophthalmology and Ocular Oncology, University Hospital ~ Kraków ~ Poland

To demonstrate the outcomes of treatment and to diagnose macular complications caused by Candida albicans intraocular inflammation.

We discuss a case of a 41-year-old woman with a history of acute intermittent porphyria presented with a progressive vision loss in her left eye. The patient underwent ophthalmological screening involving best corrected visual acuity, tonometry, anterior segment, fundus examination and multimodal imaging using fundus photography, swept-source OCT and OCT-angiography were performed.

The OCT revealed findings consistent with a fungal etiology, which was confirmed by the culture of swabs collected from a central vein catheter. The outcomes of intravenous fluconazole treatment were not satisfactory, and repeated intravitreal injections with amphotericin B were introduced leading to a gradual regression of inflammatory lesions. However, follow-up examinations revealed active macular neovascularization (MNV) on OCT and OCTA scans. The patient was administered intravitreal bevacizumab injections. At the 15th month of a follow-up, OCT and OCTA scans showed significant inflammatory lesions regression with macula scarring, and no MNV activity was detected.

This case highlights the importance of OCT and OCTA as valuable noninvasive imaging techniques for the identification of ECE, the monitoring of its clinical course, and the diagnosis of macular complications.

Abstract 314

SD-OCT AND MICROPERIMETRIC ANALYSIS OF PATIENTS WITH PSEUDOXANTHOMA ELASTICUM FOR VISION RAHABILITATION

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The purpose of this study was to reinforce the structural and functional relevance of ocular fundus alterations for pseudoxanthoma elasticum (PXE). Moreover, vision rehabilitation procedure adopted in accordance with morpho-functional deficits was described.

Eight eyes of 4 patients were included. Patients enrolled underwent to a ophthalmological evaluation: best corrected visual acuity, reading acuity, contrast sensitivity and reading speed. Moreover, dark-adapted, mesopic and photopic fundus-controlled perimetry with MP-3 microperimeter (Nidek-technologies) and retinal imaging with spectral-domain optical coherence tomography (SD-OCT) were performed. The location and stability of the preferred retinal locus (PRL) along with the associated SD-OCT segmented images and retinal sensitivities were determined and compared. Subsequently, a vision rehabilitation program was defined in order to meet patients' demands for activities of daily living, in particular for reading. Moreover, vision function questionnaire (VFQ-25) was administered.

On microperimetry, PRL was located superior to the former fovea in 75% of eyes analyzed. Moreover, fixation stability, defined as bivariate contour ellipse area encompassing 68,2% (°2), had a mean of 4,4 ± 3,5°2. Mean retinal sensitivity was of 3,2 ± 2 dB, 4,7 ± 3,98 dB and 9,3 ± 6,5 dB, for dark adapted scotopic, mesopic and photopic testing, respectively. Average of central retinal thickness was 226 ± 140,1 µm. A positive relationship was found between retinal sensitivity and central retinal thickness ($p<0.05$). Eyes with lower central retinal thickness and retinal sensitivity were rehabilitated monocularly for reading.

A detailed understanding of the morpho-functional characteristics is a key prerequisite for the design and achievement of the goal for vision rehabilitation pathway. Microperimetry seems to represent a powerful tool to detect such alteration and to map retinal sensitivity in PXE eyes.

Abstract 22

OPTICAL COHERENCE TOMOGRAPHY BIOMARKERS IN INHERITED MACULAR DISORDERS- SERIES OF CASES

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Macular dystrophies (MD) are a group of inherited retinal disorders that affect the vision of both eyes. Diagnosing, assessing, and monitoring these conditions can pose significant challenges. Recent advances in fundus imaging, particularly OCT, have improved our understanding and the diagnosis of MD.

In this study, we present 3 patients with Stargardt disease (STGD), 2 with diagnosis of pattern dystrophy, 2 with best vitelliform macular dystrophy, and 4 with autosomal dominant drusen.

Patients with STGD were diagnosed in different stages of disease. Areas of macular RPE, photoreceptor, and choriocapillaris loss were present in all OCT patients. Flecks, yellowish deposits in the outer retina resembling drusen, are seen as subretinal or intraretinal hyperreflective deposits. Pattern dystrophies are characterized by the presence of a yellowish-grey deposit at the level of the RPE in the macula. OCT funding differs depending on the stage of disease in best vitelliform macular dystrophy (BVMD).
Autosomal dominant drusen on oct imaging present a dome-shaped, saw-toothed, or diffuse hyperreflective deposits with an elevation between the RPE and Bruch's membrane.

OCT enables the identification of neurosensory retinal disorganization patterns and the extent of damage to retinal pigment epithelium (RPE) and photoreceptor cells in the dystrophies before visible macular pathology appears on fundus examinations.

Abstract 148

SWEPT-SOURCE OPTICAL COHERENCE TOMOGRAPHY CHANGES AND VISUAL ACUITY AMONG PALESTINIAN RETINITIS PIGMENTOSA PATIENTS: A CROSS-SECTIONAL STUDY

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Retinitis pigmentosa (RP) is a heterogeneous group of inherited ocular diseases that result in progressive retinal degeneration. This study aims to describe different Swept-source Optical Coherence Tomographic (SS-OCT) changes in Palestinian RP patients and to explore possible correlations with Visual Acuity (VA).

A cross-sectional observational study was conducted on Retinitis Pigmentosa patients diagnosed with RP in a tertiary eye hospital. Full history and ocular examination were made. SS-OCT imaging was done for all eyes assessing the presence of cystoid macular edema, epiretinal membrane, macular holes, and external limiting membrane, ellipsoid zone status. Also, central macular thickness and choroidal vascular thickness were measured.

161 eyes of 81 patients; 53 males and 28 females. The average age was 26.1 years. 26 eyes were of syndromic RP patients, mostly Usher syndrome. The mean LogMAR BCVA of the patients was 0.66 ± 0.7. The most prevalent change was CME [28 eyes, (17.4%)], followed by ERM [17eye, (10.6%)]. A macular hole was noted only in one eye. Ellipsoid zone and ELM were absent in 55 eyes and 60 eyes . Vitreous hyperreflective foci were found in 35 eyes . BCVA was associated significantly with CME ($p = 0.001$), ellipsoid zone($p = 0.001$), and ELM ($p = 0.001$).

Detailed SS-OCT assessment in Palestinian patients with RP identified different morphologies from other populations. CME and vitreous hyperreflective foci may reflect signs of early or intermediate stages of the disease. Disease progression can be monitored by measuring the length/width (area) of ellipsoid zone +/- ELM and choroidal vascular thickness.

Abstract 56

DRUSEN VOLUME AS CLINICAL OUTCOME MEASURE IN SUBJECTS WITH MALATTIA LEVENTINESE

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To assess if drusen volume can serve as structural clinical outcome marker in Malattia Leventinese (ML), and to evaluate whether cones or rods are more affected by its progression, using multimodal imaging and mesopic and two-color scotopic microperimetry.

This was a prospective monocentric cohort study of participants with genetically confirmed ML. Participants were classified according to morphology. Mean drusen volume, calculated from SD-OCT, was compared to microperimetry parameters (mesopic retinal sensitivity, scotopic red and cyan function, difference between scotopic cyan-red function).

Fourteen participants (28 eyes) were enrolled. Mean drusen volume increased (bilaterally P=0.028) and mesopic retinal sensitivity decreased with later stage (OD: P=0.028; OS: P=0.050). Scotopic microperimetry showed that scotopic cyan function was lower than scotopic red function in moderate stage. Scotopic red function decreased in severe stage. Mean drusen volume correlated to mesopic retinal sensitivity (OD: P<0.001; OS: P=0.007).

Retinal sensitivity diminishes with ML progression. Rod function declines prior to cone function, while cone loss predominates later. Drusen accumulation, initially speckled around the macula and optic disc and confluent with progression, correlates significantly with vision loss and impaired quality of life. Thus, therapeutically reducing drusen accumulation could be efficacious.

Abstract 421

SPECKLE VARIANCE OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY DEPENDS ON DISTANCE TO FOCUS POSITION

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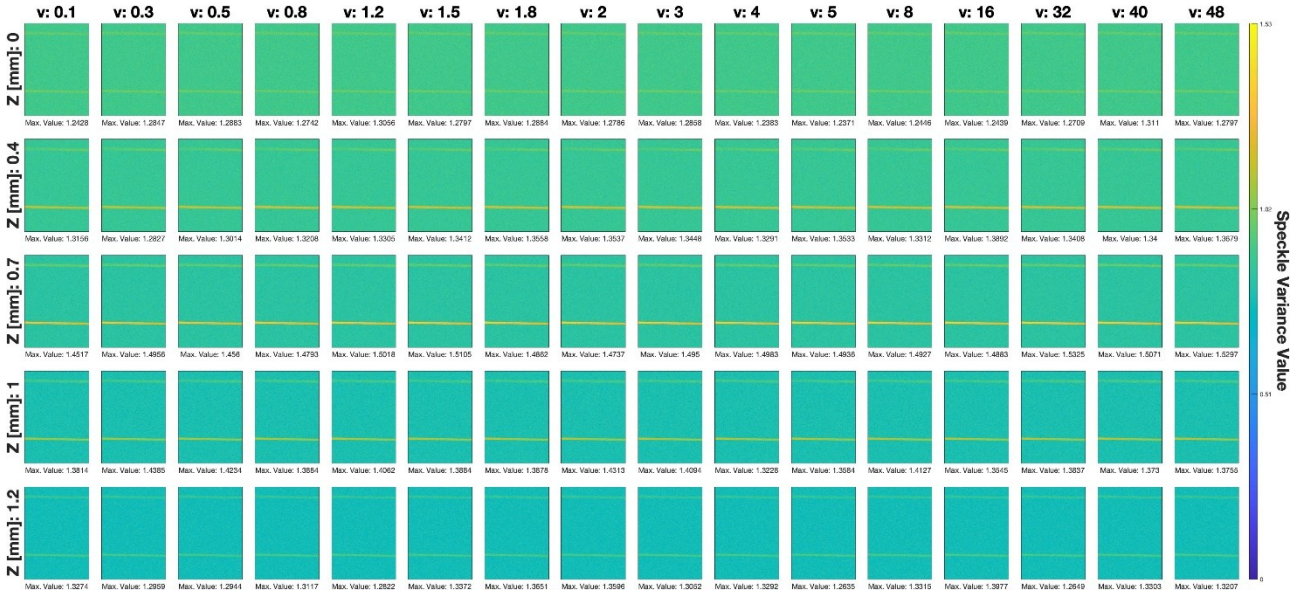
Optical Coherence Tomography Angiography (OCTA) gains more and more attention in research and clinical practice. Interscan time was identified as an influence on OCTA intensity, potentially allowing for flow velocity quantification. This study demonstrates the additional influence of the distance to optimal focus on speckle variance intensity.

A 248 kHz OCT system was used. (Ganymede GAN612C1, Thorlabs, lens OCT-LK4-BB) A microfluidic chip (Microfluidic 156, Microfluidic Chipshop) was perfused with a mixture of homogenized milk (3,5% fat) and distilled water in a volume ratio 1:10. Mounted to a stage, the perfused channel was placed at five different distances to the OCT scanner.
A syringe pump (Harvard Aparatus Pump Elite 11) was used to perfuse the channel. Speckle variance datasets were taken and mean projection was performed along Z in a slab with fixed thickness and manually set position. The full channel height was included.

Setting the closest position to the scanner as a reference, included positions were located at Z = {0; 0.4; 0.7; 1.0; 1.2} mm. 16 flow velocities (v in mm/s) were set as indicated in figure 1. The upper channel was filled with air, the lower was perfused. Speckle Variance values increased slightly with increasing flow speed when in focus, as expected. Note the high scan rate. Additionally, speckle variance values depend on the distance to the optimal focus position. Larger distances were associated with lower speckle variance values. Despite this variation, the structural OCT did not change remarkably.

OCTA intensity values are related to the focus position with regard to the vessel despite plausible structural OCT data. Careful focussing will be necessary to ensure maximum contrast. Implications for vasculature quantification remain to be clarified. The role of vessel caliber and scatterer size is unclear.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v: 0.3
v: 0.5
v: 0.8
v: 1.2
v: 1.5
v: 1.8
v: 2
v: 3
v: 4
v: 5
v: 8
v: 16
v: 32
v: 40
v: 48
Z [mm]: 0
Max. Value: 1.2428
Max. Value: 1.2847
Max. Value: 1.2883
Max. Value: 1.2742
Max. Value: 1.3056
Max. Value: 1.2797
Max. Value: 1.2884
Max. Value: 1.2786
Max. Value: 1.2858
Max. Value: 1.2383
Max. Value: 1.2371
Max. Value: 1.2446
Max. Value: 1.2439
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Max. Value: 1.311
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Max. Value: 1.3208
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Max. Value: 1.3312
Max. Value: 1.3892
Max. Value: 1.3408
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Max. Value: 1.4983
Max. Value: 1.4936
Max. Value: 1.4927
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Max. Value: 1.5071
Max. Value: 1.5297
Z [mm]: 1
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Max. Value: 1.3884
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Max. Value: 1.3584
Max. Value: 1.4127
Max. Value: 1.3945
Max. Value: 1.3837
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Max. Value: 1.3755
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Max. Value: 1.2944
Max. Value: 1.3117
Max. Value: 1.2822
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Max. Value: 1.3596
Max. Value: 1.3052
Max. Value: 1.3292
Max. Value: 1.2635
Max. Value: 1.3315
Max. Value: 1.3977
Max. Value: 1.2649
Max. Value: 1.3303
Max. Value: 1.3207
1.53
1.02
0.51
0
Speckle Variance Value

Abstract 15

EYE AND HEART SYNCHRONISATION: TIME-RESOLVED DYNAMIC OPTICAL COHERENCE TOMOGRAPHY WITH ELECTROCARDIOGRAPHIC COUPLING

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To develop and evaluate a method for acquiring electrocardiography (ECG) coupled optical coherence tomography (OCT) data, aiming to understand blood flow propagation from the heart to the retina, and to introduce the heart-retina time (HRT) as a potential biomarker for cardiovascular health.

We developed a method to synchronously record time-resolved dynamic OCT B-scan images and ECG signals. Time-resolved dynamic OCT was acquired at the optic nerve head. The B-scans of the OCT time series were registered using rigid body transformations and synchronised with the ECG data through timestamps with milliseconds precision. The centres of the arterioles were manually annotated on each B-scan, and adjacent subvolumes were extracted. Blood flow velocity profiles within the arterioles were determined using fringe washout analysis. The HRT was calculated using signal cross-correlation between the ECG R-Peak and the sharpest rise in the retinal flow-velocity profile.

Synchronous ECG and OCT acquisition was successfully performed in all five included subjects, demonstrating the feasibility of this technique, and confirming previously found pulsatile blood flow profiles. The cross-correlation of the ECG and the blood flow profiles in retinal arterioles revealed the propagation of the blood column within a cardiac cycle, with a HRT of 144 ± 19 ms (mean ± SD). The method showed good reproducibility with an intrasubject coefficient of variation of 0.11 ± 0.03 and an intersubject coefficient of variation of 0.09.

The synchronised acquisition of ECG with dynamic OCT offers a method to explore cardiovascular and ocular health interconnections. This study establishes the foundation for utilising the HRT as a potential biomarker in evaluating systemic and ocular vascular conditions.

Abstract 177

HIGH RESOLUTION OPTICAL COHERENCE TOMOGRAPHY REVEALS DETAILS OF REGENERATION AFTER SELECTIVE RETINA THERAPY

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To investigate the course of retinal regeneration after selective retina therapy (SRT) using high-resolution spectral-domain optical coherence tomography (High-Res-OCT).

SRT was performed in patients with diabetic retinopathy using the SPECTRALIS CENTAURUS device (HuCE-optoLab, BFH-TI, Switzerland). SRT laser lesions were observed over a follow-up period of 6 months using High-Res-OCT (Heidelberg Engineering, Germany). High-Res-OCT enables imaging with increased axial resolution of up to 3 µm due to increased bandwidth of 130 nm (central wavelength: 840 nm) compared to conventional spectral-domain OCT devices (bandwidth: 40 nm, axial resolution 7 µm).

360 laser lesions with different laser pulse energy in the retina of 8 subjects were analyzed over a follow-up period of six months. Laser lesions with higher laser pulse energy lead to an initial hyperreflectivity in the outer retinal layers, which disappeared within the first week. After one week, a local proliferation and hyperreflectivity on the level of the retinal pigment epithelium (RPE) was observed. In SRT lesions with the desired laser energy, hyperreflectivity normalized over the course of six months. However, laser lesions with higher energy remain detectable using High-Res-OCT.

High-Res-OCT represents a great imaging tool for detection of subtle retinal changes after SRT and for follow-up over time. SRT lesions lead to focal proliferation of the RPE with regeneration over time without observation of permanent scar formation or induction of neovascularization.

Abstract 25

INSIGHTS FROM THE MAIA AGREEMENT STUDY: MESOPIC MICROPERIMETRY RESULTS IN HEALTHY CONTROLS

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To evaluate the agreement and repeatability of the new MAIA (MAIA3) microperimeter compared with MAIA 2013 EDITION (MAIA2) on healthy subjects.

34 healthy subjects underwent a total of four microperimetric (MP) exams on one randomly selected eye. MP exams were performed in two sessions during a single visit (one exam per device in each session) using a 4-2 strategy and a 10-2 grid plus the fovea. MP exams with Fixation Losses >30% and average pupil size during tests >2.8mm were excluded. A total of 136 MP exams were analyzed. The agreement between the two devices and the intra-device test-retest (TRT) repeatability was evaluated both with Mean Sensitivity (MS) and pointwise (PWS) with Bland-Altman technique. Exams duration for both devices were investigated.

Mean Difference (MD) between MAIA3 and MAIA2 was 0.44 dB. On average MAIA3 slightly overestimated MAIA2 by a non-clinically significant amount (< 1dB). LoA were wider than MAIA2 LoR by +0.49 dB for MS and by +0.95 dB for PWS. Intra-device MD was close to 0 dB (-0.23 dB MAIA3, -0.34 dB MAIA2). MAIA3 LoR were narrower than MAIA2 LoR by 0.60 dB for MS and by 0.25 dB for PWS. These results are shown in Fig1.
The average difference in exam duration between MAIA2 and MAIA3 (514.12 and 478.03 seconds) was 36.09 seconds.

MAIA3 agreed well with MAIA2 exams globally and at the point-wise level with a minimal bias (<0.5dB). MAIA3 achieved better TRT repeatability than MAIA2. The average exam duration was reduced for MAIA3. These data suggest that MAIA3 and MAIA2 are interchangeably. Recruitment of patients with retinal pathologies is ongoing (NCT06071546).

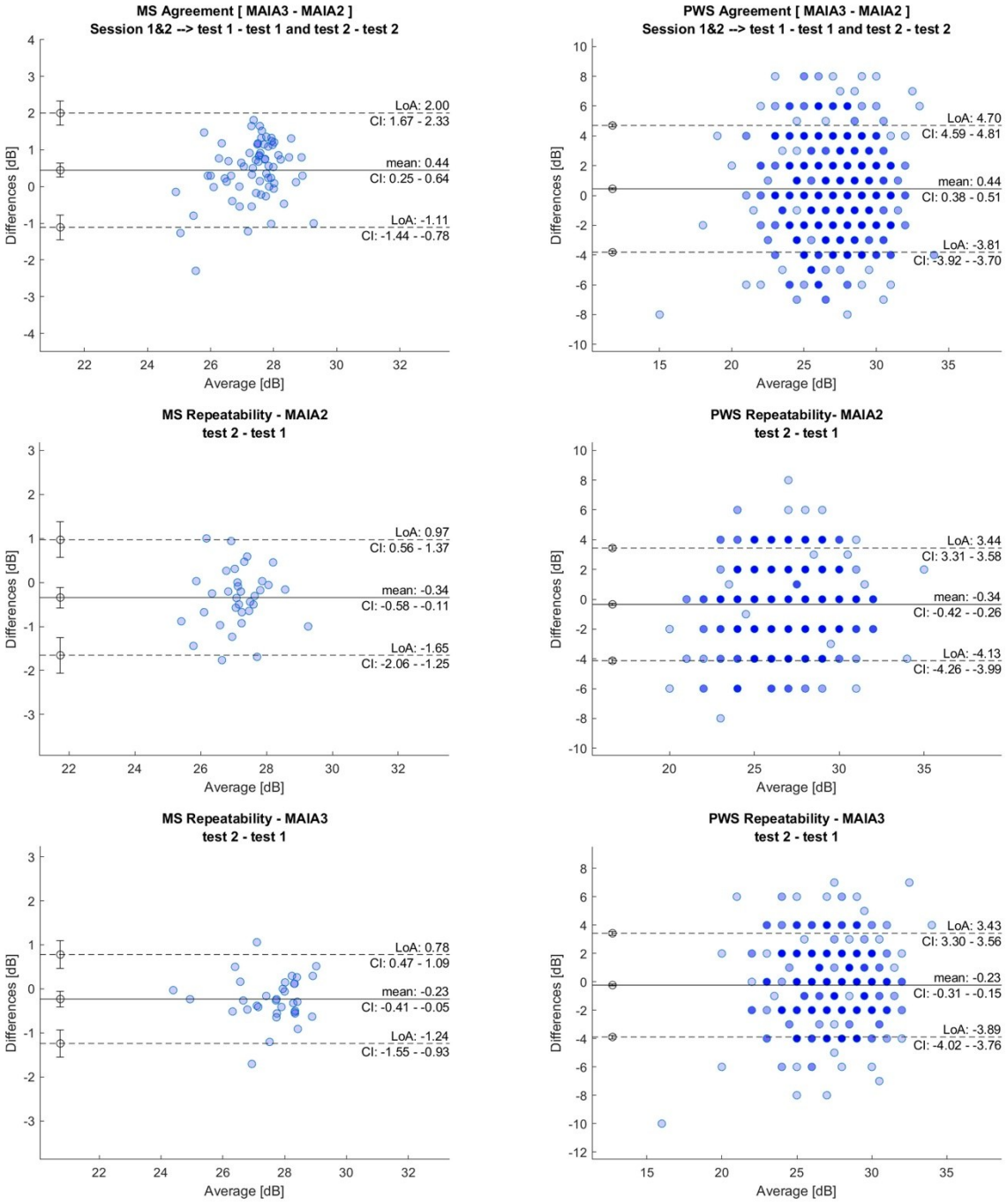

Fig1. Bland-Altman of MAIA3 and MAIA2 for Agreement and Repeatability, MS and PWS

Abstract 274

GANGLION CELL LAYER (GCL) AND RETINAL NERVE FIBER LAYER (RNFL) ALTERATIONS' PATTERNS IN MACULAR DISEASES

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PURPOSE: This study aims to analyze morphological changes in the inner retina across different macular diseases and assess their potential implications in the diagnosis of glaucomatous optic neuropathy.

DESIGN: Observational cross-sectional study.
METHODS: This multi-center study included patients diagnosed with vascular or tractional retinal diseases affecting the posterior pole and macular area. Healthy patients of similar age served as the control group. Primary outcome measures included changes in GCL, RNFL, and inner nuclear layer (INL) on Heidelberg Spectralis Optical Coherence Tomography (OCT) maps. Secondary outcome measures assessed modifications in peripapillary RNFL thickness and minimum rim width (MRW).

RESULTS:Preliminary analysis from 240eyes of 120patients revealed distinct patterns in GCL and RNFL maps corresponding to different macular alterations based on underlying pathophysiology. Vascular and tractional diseases such as Central Serous Chorioretinopathy, Macular Edema or Atrophy due to Retinal Vein or Artery Occlusion, Diabetic Macular Edema, Epi-retinal Membranes, Full thickness, Pseudo or Lamellar Macular Holes, Choroidal Neovascularization among others, induced focal or diffuse changes in these maps, which could impact glaucoma diagnosis. Specifically, focal or diffuse increases or decreases in inner retinal layer thickness were observed due to tractional and exudative conditions, potentially mimicking or obscuring glaucomatous or neuropathic damage.

CONCLUSIONS:Preliminary data from this pilot study indicate that eyes with various macular diseases exhibit specific and pathognomonic alterations in the inner retinal layer maps.Such changes may complicate the diagnosis of glaucoma by masking or simulating characteristic glaucomatous damage, highlighting the need for comprehensive assessment in patients with co-existing retinal conditions.

Abstract 60

OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY IN PARKINSON'S DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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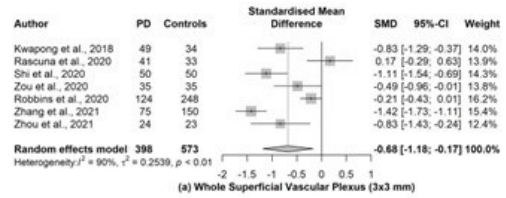
To examine the association between optical coherence tomography angiography (OCTA) retinal measurements and Parkinson's disease (PD).

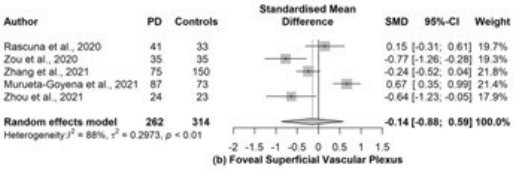
We searched MEDLINE and EMBASE from inception up to November 5th, 2021 for studies examining the differences between OCTA retinal measurements in PD patients and healthy controls. We used the Hartung-Knapp-Sidik-Jonkman random-effects method to combine study-specific standardized mean differences (SMD) in pooled effect estimates and a meta-analytic extension of the E-value metric to quantify the confounding bias capable of nullifying the pooled estimates.

Nine eligible studies for our systematic review were identified. The pooled SMD between the retinal vessel density of PD patients and healthy participants in the whole superficial vascular plexus (SVP), foveal SVP, parafoveal SVP and foveal avascular zone (FAZ) was -0.68 (95% CI: -1.18 to -0.17, p value = 0.02, n = 7 studies), -0.14 (95% CI: -0.88 to 0.59, p value = 0.62, n = 5 studies), -0.59 (95% CI: -1.41 to 0.23, p value = 0.12, n = 5 studies) and -0.20 (95% CI: -0.79 to 0.38, p value = 0.39, n = 5 studies), respectively.

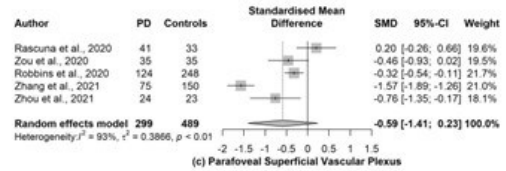
Our results provide evidence on an inverse association between whole SVP vessel density and PD.



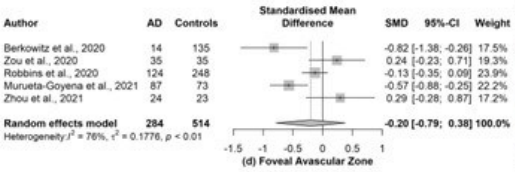
(a) Whole Superficial Vascular Plexus (3x3 mm)



(b) Foveal Superficial Vascular Plexus



(c) Parafoveal Superficial Vascular Plexus



(d) Foveal Avascular Zone

Table 2. OCTA machine and parameters of included studies*

Author, Country, Year	OCTA machine	OCTA parameters assessed within macula	Macular scan diameter (mm)
Kwapong et al., China, 2018	Optovue	**Vessel density (%)** of SVP, DVP and whole retinal capillary plexus (Ø 0.6–2.5 mm) and **FAZ (mm²)**	2.5
Berkowitz et al., USA, 2020	Optovue	FAZ (mm²)	6
Rascunà et al., Italy, 2020	Optovue	**Vessel density (%)** of SVP, DVP, outer retinal layer (whole [3mm diameter circle], fovea [1mm diameter circle] and parafovea [Ø 1-3mm])	3 and 4.5
Shi et al., China, 2020	Optovue	**Vessel density (%)** and skeleton density (%) of SVP and DVP (Ø 0.6–2.5 mm)	2.5
Zou et al., China, 2020	Zeiss	**Perfusion density (%)** and vessel length density (mm) of SVP (1mm, 3mm and 6mm diameter circles, Ø 1-3mm and Ø 3-6mm) and **FAZ (mm²)**	6
Robbins et al., USA, 2020	Zeiss	**Perfusion density (%)** and vessel density (mm) of SVP (whole [6mm diameter circle], parafovea [Ø 1-3mm] and perifovea [Ø 3-6mm]) and **FAZ (mm²)**	6
Zhang et al., China, 2021	SVision	Flow density (mm²) and **flow ratio (%)** of SVP and DVP (whole [3mm and 6mm diameter circles] and fovea [1mm diameter circle])	6
Murueta-Goyena et al., Spain, 2021	Heidelberg Engineering	**Perfusion density (%)**, skeleton density (1/mm) and fractal dimension (Dbox) of SVP and DVP (whole [2.5mm diameter circle], fovea [1mm circle diameter] and parafovea [Ø 1-2.5mm]) and **FAZ (mm²)**	2.5
Zhou et al., China, 2021	Zeiss	**Vessel density (/mm)** of SVP (whole [6mm diameter circle], fovea [1mm circle diameter], parafovea [Ø 1-3mm] and perifovea [Ø 3-6mm]) and **FAZ (mm²)**	6 and 3

* DVP: Deep Vascular Plexus. FAZ: Foveal Avascular Zone (mm²). SVP: Superficial Vascular Plexus. Ø: ring around fovea. Meta-analyzed metrics of each study appear in bold.

Author, country, year	Study design	No. of participants/ no. of eyes	Males/ females	Mean age ± SD	Mean disease severity score ± SD	Mean PD duration	Mean UPDRS score ± SD	Adjustments	NOS
Kwapong et al., China, 2018	Cross-sectional	38/49 PD 28/34 controls	NR NR	62.95 ± 7.97 61.18 ± 5.74	NR NR	3.84 ± 2.80 NA	NR NR	Age and IOP	9/10
Berkowitz et al., USA, 2020	Cross-sectional	7/14 PD NR/135 controls	NR NR	NR NR	NR NR	NR NR	NR NR	Age matching	8/10
Rascunà et al., Italy, 2020	Cross-sectional	21/41 PD 17/33 controls	12/9 9/8	61.5 ± 6.5 65.1 ± 10.7	HY: 1.9 ± 0.4 NA	2.28 ± 1.19 NA	25.0 ± 6.9 3.2 ± 2.7	None	7/10
Shi et al., China, 2020	Cross-sectional	25/50 PD 25/50 controls	13/12 13/12	61.9 ± 7.6 59.0 ± 5.8	HY: 2.2 ± 1.0 NA	3.7 ± 2.4 NA	NR NR	Age and sex matching	9/10
Zou et al., China, 2020	Cross-sectional	35/35 PD 35/35 controls	16/19 20/15	61.86 ± 5.46 60.20 ± 6.75	HY: 1.7 ± 0.7 NA	3.2 ± 2.0 NA	NR NR	Age matching	8/10
Robbins et al., USA, 2020	Cross-sectional	69/124 PD 137/248 controls	15/14 10/16	71.7 ± 7.0 70.9 ± 6.7	MMSE: 28.4 ± 2.4 MMSE: 29.0 ± 2.8	NR NA	30.9 ± 6.7 NA	Age and sex matching	9/10
Zhang et al., China, 2021	Cross-sectional	42/75 PD 75/150 controls	NR 32/43	55.92 ± 7.53 54.68 ± 6.66	HY: 1.42 ± 0.55 NA	3.2 ± 2.0 NA	16.92 ± 7.6 NA	Age, sex, IOP, inter-eye correlation	9/10
Murueta-Goyena et al., Spain, 2021	Cross-sectional	49/87 PD 40/73 controls	33/16 13/27	64.6 ± 7.9 62.1 ± 8.0	MoCA: 24.4 ± 4.1 MoCA: 25.7 ± 2.5	7.1 ± 4.1 NA	16.92 ± 7.6 NA	Age, sex and hypertension	9/10
Zhou et al., China, 2021	Cross-sectional	24/24 PD 23/23 controls	18/6 11/12	65.88 ± 6.50 63.43 ± 7.11	HY: 2.0 ± 0.3 MMSE: 28.5 ± 1.6 NA	5.3 ± 4.2 NA	26.5 ± 12.3 NA	Age, sex and hypertension	9/10

* PD: Parkinson's disease. HY: Hoehn and Yahr. MMSE: Mini-Mental State Exam. MoCA: Montreal Cognitive Assessment. NOS: Newcastle-Ottawa Scale. NR: not reported. NA: not applicable. SD: Standard Deviation.

Abstract 335

LAMELLAR MACULA HOLE AND CHORIOCAPILLARIS IMPAIRMENT: NATURAL COURSE AND IMAGING CHARACTERISTICS IN PATHOLOGIC MYOPIA AND PACHYCHOROID PIGMENT EPITHELIOPATHY

Catania F.*[1], Feo A.[2], Macario F.[2], Trevisi M.[2], Allegrini D.[2], Romano M.R.[2]

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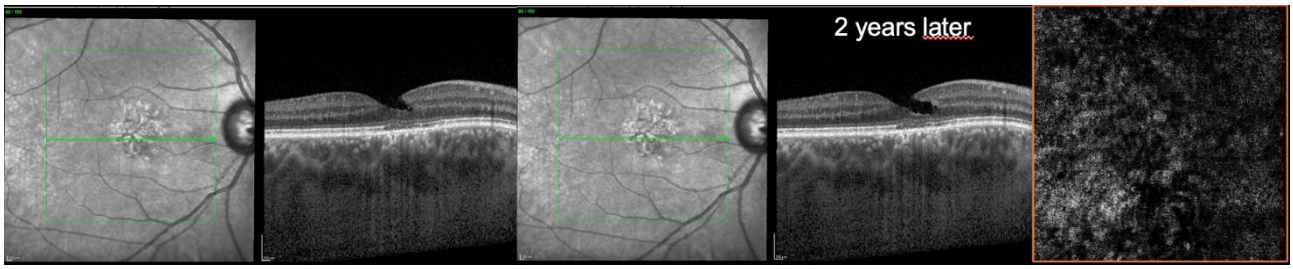
To analyze the differences in natural history and optical coherence tomography(OCT) characteristics between idiopathic lamellar macular holes(LMHs), pathologic myopia-associated LMHs and LMH developing in pachychoroid pigment epitheliopathy (PPE)

Retrospective screening of patients with OCT-based diagnosis of LMH was performed. Eyes with either pathologic myopia, or PPE or otherwise healthy retina for whom baseline and >1 year follow-up OCT and OCT angiography(OCTA) were available were included. Previously treated eyes(either anti-VEGF or pars plana vitrectomy) were excluded. Only one eye for each patient was considered. OCT and OCTA biomarkers at baseline and 1-year follow-up were analyzed.

Forty-five(45) eyes were included. Myopic LMHs were associated to higher tissue loss(TL) and lower best-corrected visual acuity(BCVA) compared to both idiopathic and PPE-associated LMHs. TL was located prevalently in quadrants showing higher choriocapillaris flow deficit density(CC-FDD). The presence of a foveal bump was protective towards visual deterioration. In PPE-associated LMHs, TL colocalized with EZ damage and pachydrusens and was higher in quadrants with higher CC-FDD.

This is the first detailed report of characteristics of LMHs in the context of PPE. LMHs associated to myopia and PPE are characterized by a worse prognosis and morphology of the LMHs reflects specific microvascular impairments of these diseases.



Abstract 84

MICROVASCULATURE ALTERATIONS OF THE INNER RETINAL LAYERS IN EARLY STAGES OF PARKINSON'S DISEASE

Christou E.E.*[1], Konitsiotis S.[1], Pamporis K.[2], Giannakis A.[1], Asproudis C.[1], Stefaniotou M.[1], Asproudis I.[1]

[1]University of Ioannina ~ Ioannina ~ Greece, [2]Aristotle University of Thessaloniki ~ Thessaloniki ~ Greece

To investigate microcirculation characteristics of the inner retinal layers at the macula and the peripapillary area in patients in early stages of Parkinson's disease using Optical Coherence Tomography Angiography (OCT-A).

We included 32 Parkinson's disease patients and 46 age- and gender-matched healthy controls in this cross sectional study. Microcirculation parameters at each separate macular region (fovea, parafovea, and perifovea) in terms of vessels density, perfusion and fovea avascular zone, and the peripapillary area in terms of peripapillary capillary perfusion density and flux index of the inner retinal layers were analyzed using OCT-A imaging.

Individuals with Parkinson's disease had lower parafoveal, perifoveal and total vessel density and perfusion in the superficial capillary plexus (SCP) than controls, while foveal vessel density and perfusion were higher in Parkinson's disease eyes than that of controls. Parkinson's disease eyes had significantly smaller foveal avascular zone area and perimeter accompanied by decreased circularity at the SCP as compared to controls. Concerning the peripapillary area, individuals with Parkinson's disease had significantly lower radial peripapillary capillary perfusion density and flux index at the SCP than controls.

Our study indicates alterations of the inner retinal layers at the macula and the peripapillary area at the early stages of Parkinson's disease. OCT-A parameters could potentially comprise usefull biomarkers for Parkinson's disease screening and improve the diagnostic algorithms.

Abstract 280

CARDIO-OCULAR SYNDROME: RETINAL MICROVASCULAR CHANGES IN ACUTELY DECOMPENSATED HEART FAILURE

Abdin A.D.*[1], Abdin A.[2], Abu Dail Y.[1], Mahfoud F.[2], Boehm M.[2], Seitz B.[1]

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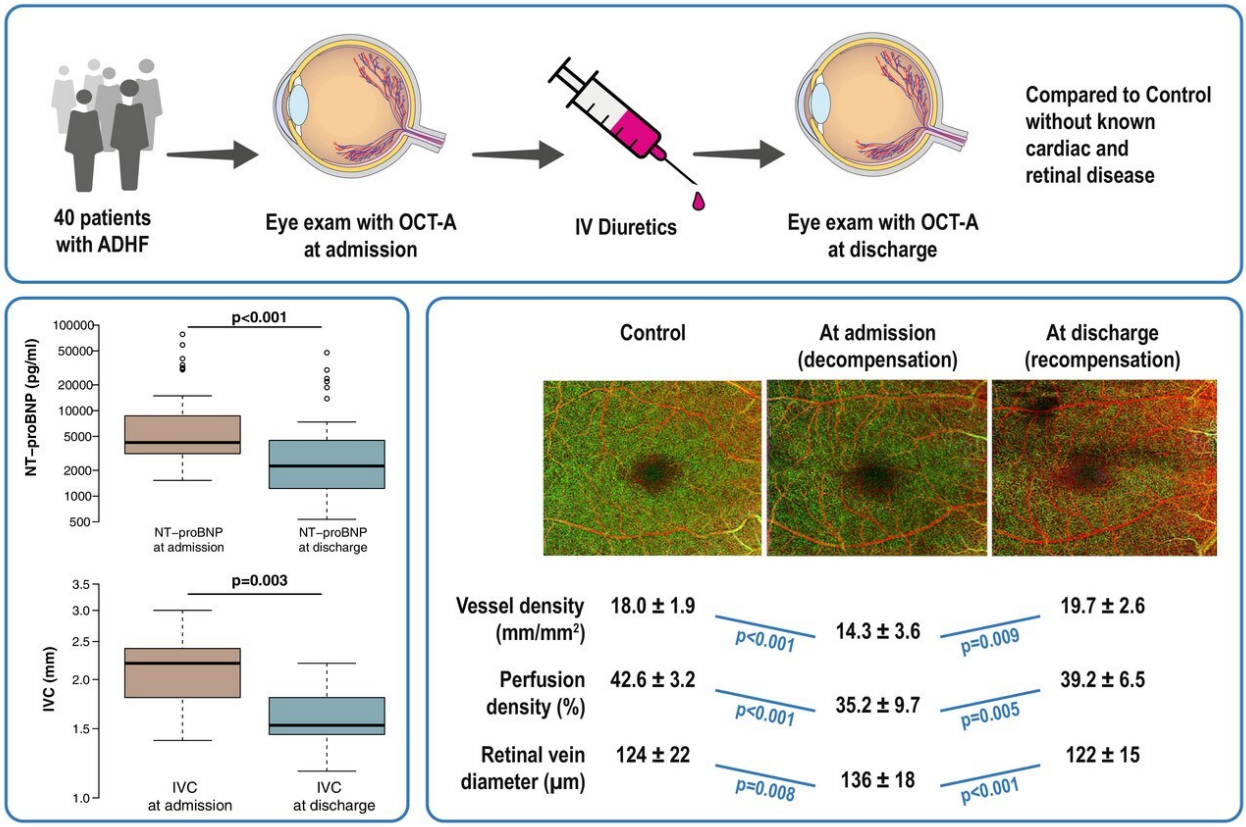
To investigate the changes in retinal microvasculature by contemporary imaging techniques during episodes of acute decompensated heart failure (ADHF) and following recompensation compared to age-matched controls without known cardiac or retinal disease.

Adult patients hospitalized with a primary diagnosis of ADHF, regardless of left ventricular ejection fraction (LVEF) and treated with a minimum dose of 40 mg of intravenous furosemide or equivalent were included. Transthoracic echocardiography was conducted in all patients. Eye examinations were performed out within the initial 24 h after admission and after recompensation before discharge. All eyes underwent a general examination, including a best corrected visual acuity test, dilated fundoscopy, spectral-domain optical coherence tomography (OCT) as well as OCT angiography (OCT-A). In addition, 40 participants without documented cardiac or retinal diseases served as controls.

Forty patients with ADHF (mean age 78.9 ± 8.8 years; 32% female) were included. Compared to the control group, patients with ADHF showed on admission impaired visual acuity, reduced macular vessel density and perfusion density. After recompensation, the mean overall vessel density and mean overall perfusion density were markedly increased at discharge. The mean diameter of the superior temporal retinal vein at admission was significantly larger compared to the control group and decreased significantly at discharge ($p < 0.001$)

This analysis revealed a remarkable reversible change in retinal microvasculature after ADHF. This could provide a valuable evidence for use of OCT-A in the assessment of overall microperfusion and haemodynamic status in patients with acute heart failure.


40 patients with ADHF
Eye exam with OCT-A at admission
IV Diuretics
Eye exam with OCT-A at discharge
Compared to Control without known cardiac and retinal disease
NT–proBNP (pg/ml)
p<0.001
NT–proBNP at admission
NT–proBNP at discharge
IVC (mm)
p=0.003
IVC at admission
IVC at discharge
Control
At admission (decompensation)
At discharge (recompensation)
Vessel density (mm/mm²)
18.0 ± 1.9
p<0.001
14.3 ± 3.6
p=0.009
19.7 ± 2.6
Perfusion density (%)
42.6 ± 3.2
p<0.001
35.2 ± 9.7
p=0.005
39.2 ± 6.5
Retinal vein diameter (µm)
124 ± 22
p=0.008
136 ± 18
p<0.001
122 ± 15

Abstract 294

THE PITCHFORK SIGN: A COMPARATIVE STRUCTURAL OCT STUDY IN PATIENTS AFFECTED BY INFLAMMATORY AND NON-INFLAMMATORY CHOROIDAL NEOVASCULARIZATION

Lingardo S.*, Battista M., Ferri A., Beretta F., Sacconi R., Bandello F., Querques G.

San Raffaele Hospital ~ Milan ~ Italy

To evaluate the prevalence of the pitchfork sign in eyes of patients affected by non-inflammatory type 2 choroidal neovascularization (CNV).

Eyes of patients affected by non-inflammatory CNV (i.e. myopic CNV, CNV in angioid streaks, idiopathic CNV) and inflammatory CNV were evaluated. The two groups were furtherly subdivided based on the presence or absence of retinal hemorrhage associated with the onset of the CNV and into foveal or extrafoveal locations. Fluorescein angiography and/or optical coherence tomography-angiography were reviewed to confirm the presence of the CNV and structural optical coherence tomography was used to assess the presence of the “pitchfork sign”. Clinical data, including patient demographics, best-corrected visual acuity, retinal hemorrhage location and treatment strategies for the CNV, were collected and analyzed.

Overall, 50 eyes affected by non-inflammatory CNV and 50 eyes affected by inflammatory CNV were analyzed. A pitchfork sign was observed, respectively, in 10% and 45% of cases. In particular, an intraretinal hemorrhage was observed in all cases of non-inflammatory CNV and pitchfork sign at OCT. The observed prevalence of pitchfork sign in CNVs associated with retinal hemorrhage was 80% in foveal localization and 20% in extrafoveal localization.

The OCT pitch fork sign is not pathognomonic for inflammatory type 2 CNV, but can also be observed in type 2 CNV due to different etiologies, occurring in both foveal and extrafoveal localizations. This could be explained by the different arrangement of Henle fibers in the foveal and extrafoveal areas.

Abstract 54

OCT-T0P0GRAPHY OF RETINAL GANGLION CELL AXON DAMAGE IN GLAUKOMA AND NEUROLOGICAL DISEASES AS BIOMARKER FOR DIFFERENTIAL DIAGNOSIS OF OPTICAL NEUROPATHIES OF VARIOUS ORIGINS

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To identify differences in OCT patterns of damage to the retinal nerve fiber layer (RNFL) and ganglion cell complex (GCC) in optical neuropathies of glaucoma and non-glaucoma origin.

3 groups of patients were examined: with primary open–angle glaucoma of stage 1-2 (19 patients – 19 eyes); with previous nonarteritic anterior ischemic optic neuropathy (ON) (8 patients - 10 eyes); with previous neuritis associated with multiple sclerosis (MS) (10 patients – 14 eyes). The groups were comparable in terms of gender, age, and average thickness of RNFL and GCC. The RNFL and GCC topography, shape and area of local defects were evaluated.

3 patterns of RNFL and GCC damage in various ON were defined: "glaucoma", "ischemic", "degenerative".
RNFL defects of the temporal half of the superior and/or inferior quadrants of the optic nerve head, arcuate GCC defects were detected in patients with glaucoma. The maps color palette characterizes the process stretched over time.
In ischemic RENAL diffuse lesions occupied both superior and/or inferior quadrants. GCC lesions were horizontally oriented. Monochrome maps characterize simultaneous axon rupture.
The "degenerative" pattern identified in MS patients is characterized by symmetrical GCC lesions of the upper and lower hemispheres, RNFL lesion of the temporal quadrant.

It is obvious that the different patterns of RNFL and GCC damage are due to the pathogenesis of primary neuron damage. These differences can be used as differential diagnostic criteria for glaucoma and non-glaucoma optical neuropathy in routine clinical practice.

Abstract 151

THE INFLUENCE OF BRIGHTNESS ON CHOROIDAL VASCULARITY INDEX.

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To study the influence of brightness on choroidal parameters obtained through the ImageJ software for processing and analysis of scientific images.

The sample consisted of 148 eyes of 74 patients with a mean age of 30.7 ± 8.5 years (from 23 to 61 years). All patients underwent a complete ophthalmological examination including slit lamp, fundus, ocular biometry and OCT-EDI assessments. OCT images were obtained at two different brightness levels. Total choroidal area (TCA), choroidal vascularization index (CVI), choroidal stromal area (SCA), and luminal choroidal area (LCA) were measured at both lower and higher brightness levels. To avoid any operator-dependent bias, lower and higher brightness TCA were obtained by two methods: manual tracking mode and fixed area.

In both tracking modes, compared to low-brightness images, high-brightness images showed lower LCA (-8.52% ± 5.01%, -7.73% ± 2.82%; p >0.001) and CVI (-8.01% ± 2.82%, -7.73% ± 2.82%; p>0.001), and higher SCA (+28.71% ± 17.71%, + 26.32% ± 13.96%; p>0.001), while no statistically significant changes were detected in TCA (p>0.05).

The results of this study highlight that brightness affects choroidal parameters, therefore taking into account this aspect during image acquisition is mandatory.

Abstract 35

THE EYE AS A WINDOW TO CARDIOVASCULAR DISEASE: A SMALL CASE SERIES AND LITERATURE REVIEW OF RETINAL ISCHAEMIC PERIVASCULAR LESION (RIPL)

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Retinal ischaemic perivascular lesions(RIPL) are characterized on Spectral Domain Optical Coherence Tomography(SD-OCT) as focal thinning of the inner nuclear layer associated with outer nuclear layer(ONL) upward expansion, described in recent literature to be associated with cardiovascular disease(CVD). We present a small case series of 11 patients, along with literature review.

We report a retrospective review of 11 patients with RIPL incidentally identified on SD-OCT by two consultant ophthalmologists during routine medical retina clinic. We obtained a thorough medical history to identify cardiovascular risk factors and establish diagnosis of cardiovascular diseases by using electronic patient records and telephone consultation.

A literature search was conducted using PubMed, Google Scholar and Scopus using all relevant keywords: 'retinal ischaemic perivascular lesion', 'retinal ischaemic perivascular lesion AND cardiovascular disease', 'retinal ischaemic perivascular lesion AND atrial fibrillation', 'retinal ischaemic perivascular lesion AND coronary artery disease' and 'retinal ischaemic perivascular lesion AND cerebrovascular disease'.

We report a RIPL bilaterality of 77.8%. The most common cardiovascular risk factor was diabetes(90.9%), followed by hypertension(81.9%). A diagnosis of arrhythmia was determined in 36.4% patients, coronary artery disease in 27.3%, cerebrovascular events in 36.4%, peripheral vascular disease in 27.3% and carotid artery stenosis in 8.3%.

Seven original research were described in literature. Six of these were case-control studies and patients identified based on CVD. The prevalence of RIPL varied from 34.62% to 91%. One described a case series with participants identified based on RIPL; an incidence of 72.7% newly diagnosed CVD was reported.

RIPL is a potential biomarker to be used in assessing cardiovascular status. We can expect half to two-thirds of patients with CVD to have RIPL; the number of lesions ranging from 2.3 to 3.5. Further studies are needed to determine the timing and development of CVD in patients with RIPL.

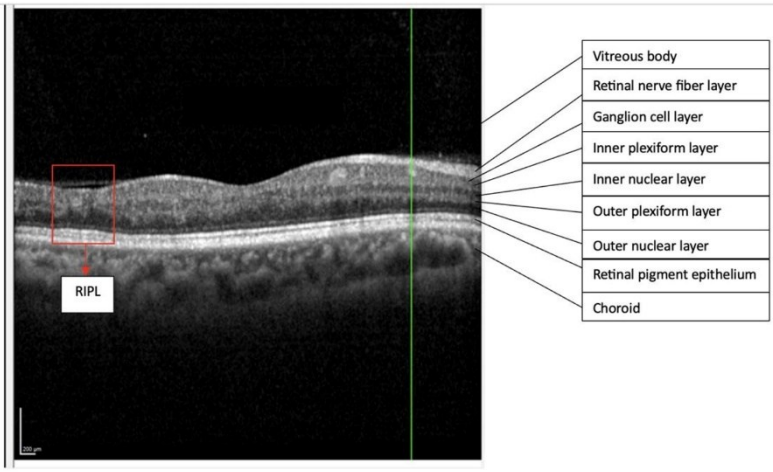

Figure 1: SD-OCT scan shows two RIPL lesions demonstrating an 'M' shape on patient 4. The superior points of the letter 'M' coincide with the outpouching of outer nuclear layer along with narrowing of the inner nuclear layer.

Table 1: Summary of bibliography: participant identification based on cardiovascular disease

Participant identification based on cardiovascular disease

Author	Study design	Disease of interest	Number of study participants	Number of control	Prevalence of RIPL in study patients	Prevalence of RIPL in control
Long et. al (2021)	Case-control	CAD	84	76	56% 2.8 RIPL lesions	32.9% 0.8 RIPL lesions
Zhang et. al (2023)	Case-control	CAS	22	11	3.5 RIPL lesions	1.2 RIPL lesions
Bakhoum et. al (2023)	Case-control	AF	106	91	57.5%	37.4%
Drakopoulos et. al (2023)	Case-control	CAS	23	14	91% 3.4 RIPL lesions	71% 2.0 RIPL lesions
Kwapong et. al (2024)	Case-control	SSI	105	80	34.62%	4.17%
Bousquet et. al (2024)	Case-control	CAD (with/without MI)	54 (CAD with MI)	263 (CAD without MI)	59.3% 2.3 RIPL lesions	35.7% 1.2 RIPL lesions

Table 2: Summary of bibliography: participant identification based on RIPL

Participant identification based on RIPL

Author	Study design	Inclusion criteria	Number of study participants	No. of control	New diagnosis of cardiovascular disease
Madala et. al (2023)	Case series	RIPL	11	No control	8 (72.7%)

Abstract 4

NEURORETINAL AND MICROVASCULAR RETINAL FEATURES IN DEMENTIA WITH LEWY BODY ASSESSED BY OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY.

Romano E.*

La Sapienza ~ Rome ~ Italy

To explore retinal changes in patients with Dementia with Lewy Bodies (DLB) using Spectral Domain-Optical Coherence Tomography (SD-OCT) and Optical Coherence Tomography Angiography (OCTA), aiming to identify biomarkers for diagnosis and monitoring.

A cross-sectional study analyzed 15 DLB patients and 18 matched controls. Participants underwent physical, neurological, neuropsychological, and ophthalmological evaluations, including SD-OCT and OCTA. Logistic regression, adjusted for age, sex, and inter-eye correlation, was employed to identify markers indicative of DLB.

OCTA revealed that DLB is associated with reduced superficial and deep vessel densities (SVD and DVD) in the macula ($p<0.01$), as well as decreased peripapillary vessel density (ppVD, $p<0.01$). SD-OCT parameters showed correlations with DLB, including reduced central macular thickness (CMT, $p<0.001$) and thinning of the ganglion cell layer-inner plexiform layer (GCL-IPL, $p<0.01$). Logistic regression ($R^2=0.26$) pinpointed reduced ppVD as a significant predictor of DLB ($p=0.030$).

Impairments in retinal capillaries, especially lower ppVD, might mirror cerebral hypoperfusion in DLB, potentially due to reduced Vascular Endothelial Growth Factor (VEGF) levels and increased α-synuclein. These findings suggest the possibility of ocular biomarkers for DLB, meriting further investigation to validate their connection to disease severity and progression.

Abstract 39

POSTERIOR POLAR CATARACTS: USING ANTERIOR SEGMENT OCT TO EVALUATE THE POSTERIOR CAPSULE STATUS

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Posterior polar cataracts are often referred to the vitreoretinal services as there is a higher risk of posterior capsule rupture, if the capsule is involved.
Anterior segment optical coherence tomography (AS-OCT) can be a useful tool in determining the posterior capsule status

• Retrospective review of electronic patient records (Medisoft) for cases diagnosed as PPC and cases who had lens status AS-OCT performed. From Jan 2022 to Aug 2023.
• Of these how many had an AS-OCT scan to assess the integrity of the posterior capsule.
• AS-OCT scans reviewed and compared to surgical outcomes, PC rupture or not.

11 cases identified as PPC diagnosis via Medisoft with 9 cases proceeding with cataract Sx.
5 cases had uneventful cataract surgery after a normal anterior segment OCT scan.
1 case had an anterior segment OCT scan that showed interrupted or discontinous posterior capsule which resulted in a posterior capsule rupture and was management successfully by a vitreoretinal surgeon.

AS-OCT is a useful tool in helping to determine which Posterior polar cataract involve the posterior capsule
Literature shows high NPV, so we can be confident that if a PC looks intact on AS-OCT, only a small number will lead to PCR, so can be managed by non vitreoretinal surgeon.

Abstract 253

DECREMENT OF CHOROID VASCULARIZATION DURING SPONTANEOUS MIGRAINE ATTACKS: AN OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY STUDY

Trigila V.*[1], Romozzi M.[2], Cuffaro G.[3], Marcelli S.[3], Iannone L.F.[5], Calabresi P.[2], Savino G.[3], Vollono C.[4]

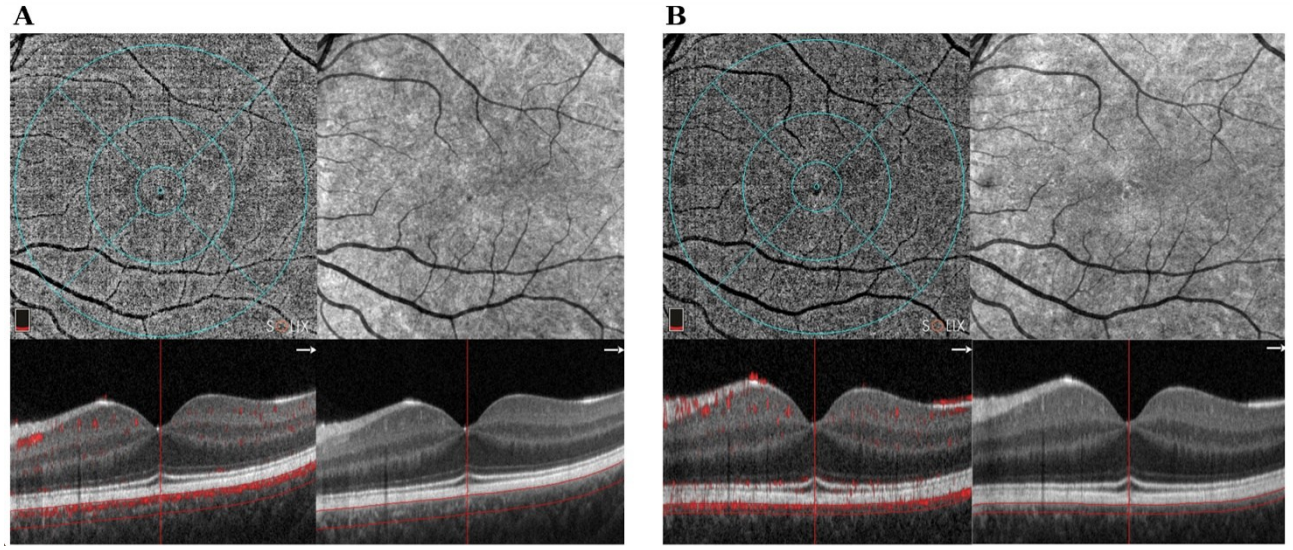
[1]Dipartimento di neuroscienze, Organi di Senso e Torace, Università Cattolica del Sacro Cuore, Rome, Italy. ~ Rome ~ Italy, [2]Neurologia, Dipartimento di neuroscienze, Organi di Senso e Torace, Fondazione Policlinico Universitario Agostino Gemelli IRCCS, Rome, Italy. ~ Rome ~ Italy, [3]Oculistica, Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome, Italy ~ Rome ~ Italy, [4]Neurofisiopatologia, Dipartimento di neuroscienze, Organi di Senso e Torace, Fondazione Policlinico Universitario Agostino Gemelli IRCCS, Rome, Italy ~ Rome ~ Italy, [5]Section of Clinical Pharmacology and Oncology, Department of Health Sciences, University of Florence, Florence, Italy ~ Florence ~ Italy

This study aimed to analyze the microcirculation of the macula, the optic nerve, and the choroid in patients with migraine by optical coherence tomography angiography (OCTA) during spontaneous migraine attacks, comparing the findings with scans performed in the interictal period in the same subjects.

In this prospective study, patients diagnosed with migraine who underwent an OCTA during a migraine attack were enrolled. A cohort of healthy controls (HCs) was recruited for comparison. Data from ocular and orthotic examinations and clinical and demographical information were collected. All subjects were imaged with Solix full range OCT, recording the following parameters: macular vessel density (VD), inside disc VD, peripapillary VD, disc whole image VD, fovea choriocapillaris VD, fovea VD, parafovea VD, peripapillary thickness, fovea thickness, parafovea thickness, macular full retinal thickness, and foveal avascular zone (FAZ).

13 patients (26 eyes individually assessed) with a diagnosis of migraine were included (9 without aura [69.2%] and 4 with aura [30.7%], with a mean age of 25.2±3.4 years) and scanned during the ictal and interictal phase. Fifteen age-matched HCs (30 eyes individually assessed) were included. The foveal choriocapillaris VD was significantly lower in the ictal phase (63.3±2.47%) compared to the interictal phase in the same patients (64.9±2.79%)(p=0.0019). Comparing the ictal scans from migraine patients and HCs, the FAZ area was significantly larger, and the inside disc, fovea, and fovea choriocapillaris VDs were significantly lower.

Our data showed, for the first time, a dynamic decrement in the choroidal vascularization in migraine patients during spontaneous migraine attacks.


A
B

Abstract 217

EXTRAFOVEAL HEMORRHAGE SIMULATING CENTRAL BOUQUET ON STRUCTURAL OCT IN TYPE 2 CHOROIDAL NEOVASCULARIZATION: THE EXTRAFOVEAL CBH SIGN

Battista M.*, Lingardo S., Ferri A., Beretta F., Sacconi R., Bandello F., Querques G.

San Raffaele Hospital ~ Milan ~ Italy

to describe the structural optical coherence tomography (OCT) appearance of extrafoveal type 2 choroidal neovascularization (CNV) associated with retinal hemorrhage simulating central bouquet hemorrhage (CBH), and to estimate its prevalence

This retrospective longitudinal study included eyes of patients diagnosed with extrafoveal type 2 CNV associated with retinal hemorrhage. Fluorescein angiography and/or optical coherence tomography-angiography (OCT-A) were collected to confirm the presence of extrafoveal type 2 CNV, while structural OCT was used to investigate the appearence of extrafoveal hemorrhage simulating CBH. Clinical and demographical data, including extrafoveal type 2 CNV etiology, type 2 CNV location, best-corrected visual acuity (BCVA), treatment strategies and outcomes were collected and analyzed for eyes with the “extrafoveal CBH sign” on structural OCT. Prevalence analysis of the extrafoveal CBH sign in relation to different etiologies was conducted.

A total of 50 eyes of 41 patients affected by extrafoveal type 2 CNV associated with retinal hemorrhage were analyzed. 15 eyes showed the “extrafoveal CBH sign” on structural OCT. Of these, 7 eyes had high myopia (>6 diopters), 3 eyes had angioid streaks and 5 eyes had inflammatory choroidal diseases.

CBH can occur in extrafoveal locations due to type 2 CNV, even where Henle fibers are not arranged in a bouquet. The "extrafoveal CBH sign” suggests that type 2 CNV may lead to alterations in the extrafoveal fibers of the outer plexiform layer, resulting in central bouquet hemorrhage like pattern.

Abstract 196

CHARACTERIZING VASCULAR ALTERATIONS IN MACULAR TELANGIECTASIA TYPE 2: A COMPREHENSIVE OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY STUDY

Romano F.*, Stettler I., Ding X., Overbey K., Bennett C.F., Garg I., Alhoyek S., Vingopoulos F., Laìns I.L., Patel N., Husain D., Vavvas D.G., Miller J.W., Miller J.B.

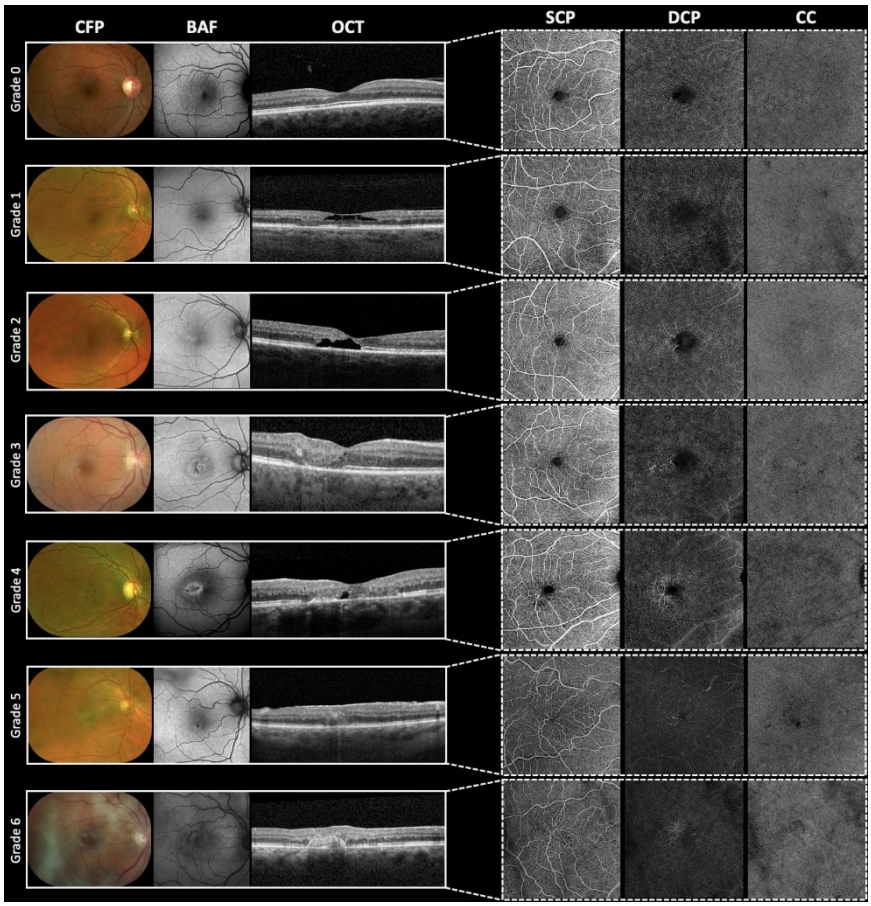
Massachusetts Eye and Ear ~ Boston ~ United States of America

To investigate the retinal microvascular and choriocapillaris changes across the newly proposed 7-step classification for Macular Telangiectasia type 2 (MacTel) using swept-source optical coherence tomography angiography (SS-OCTA).

Cross-sectional, observational study including 111 MacTel eyes (56 patients) and 120 matched control eyes.
Participants underwent an ophthalmic examination including macular 6x6-mm SS-OCTA. MacTel eyes were categorized into one of the seven grades (0-6) proposed by the MacTel Project, using multimodal imaging.
OCTA scans were processed for: (1) vessel density (VD) and vessel skeletonized density (VSD) for retinal plexuses, (2) foveal avascular zone (FAZ), and (3) choriocapillaris flow deficit percentage (CCFD%) for 15 µm-thick slabs.
Differences between groups were assessed using generalized mixed-effects models. Cluster analysis was conducted with selected OCTA metrics to detrmine agreement between clinical grades and OCTA-based clusters.

36 eyes were classified as grade 0 (32%), 10 as grade 1 (9%), 20 as grade 2 (18%), 5 as grade 3 (5%), 17 as grade 4 (15%), 14 as grade 5 (13%), 9 as grade 6 (8%).
MacTel eyes exhibited significant VD and VSD alterations, particularly in the central 1-mm, temporal and inferior sectors, compared to controls. CCFD% was consistently higher across all sectors in MacTel. Advanced grades (5-6) demonstrated significant differences in VD, VSD, and CCFD% compared to lower grades.
Agreement between MacTel grading and OCTA-based clusters was fair-to-moderate (ARI=0.233), being higher for grades 0 and 4-6.

Our comprehensive SS-OCTA study highlights significant retinal vascular and choriocapillaris impairment in MacTel, with alterations following disease severity. The results of our cluster analysis reveal a fair-to-moderate agreement between the proposed MacTel classification and OCTA-detected vascular changes, affirming the utility of SS-OCTA in MacTel assessment.


CFP
BAF
OCT
SCP
DCP
CC
Grade 0
Grade 1
Grade 2
Grade 3
Grade 4
Grade 5
Grade 6

Abstract 168

OCT-ANGIOGRAPHY FEATURES AND FLOW-BASED CLASSIFICATION OF RETINAL ARTERY MACROANEURYSMS

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[1]Southampton University ~ Southampton ~ United Kingdom, [2]University Hospital Southampton ~ Southampton ~ United Kingdom, [3]Beauregard Hospital USL Azienda della Valle d'Aosta ~ Aosta ~ Italy

To propose a flow-signal based classification of retinal artery macroaneurysms (RAMs) using optical coherence tomography angiography (OCTA) and to compare the findings with fundus fluorescein angiography.

A retrospective review of 45 RAM cases over a 6-year period (October 2017 – March 2023) in a retinal clinic at the University Hospital Southampton, UK. Electronic clinical records, fundus fluorescein angiography and OCTA images (en-face and B-scan) were reviewed to ascertain pathology and to evaluate the flow profile within the RAM lesions.

Following exclusion of cases with incomplete data, 30 eyes of 30 patients were identified. Mean patients' age was 76 (range 49-91), with 17 females and 13 males. All eyes had OCTA identifying 3 different type of flow signal: High (9 eyes), Low (10) and Absent (9) while 2 eyes had blood related artefact. Thirteen eyes underwent FFA, showing similar flow to OCTA: high (4 eyes), low (6) and absent flow (2) with 1 ungradable case. A discrepancy in flow was noted in 1 case. FFA and OCTA showed agreement in level of flow, r=0.79 (p=0.004, Spearman correlation).

OCTA flow profiles were directly comparable to FFA. OCTA successfully identified different levels of blood flow signal behaviour in RAMs. The flow-based RAM classification proposed gives clear guidance for prognosis, indication for treatment, follow-up and safely allows for recurrent imaging in clinical practice.

Abstract 160

MULTIMODAL IMAGING OF AN ATYPICAL CASE OF CHOROIDAL OSTEOMA

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To report a very rare and atypical case of an elderly Caucasian female patient who developed perilesional multiple polypoidal choroidal vasculopathy (PCV) as a probable complication of choroidal osteoma (CO), associated to preretinal neovascular membrane overlying the lesion.

Observational case report.

A 60-year-old woman presented with blurred vision in her right eye (RE). Fundus examination revealed a round white-yellowish calcified lesion in the juxta-papillary area, measuring 4-disc-diameters, with well-defined scalloped margins and irregular surface. B-scan ultrasonography and orbital tomography confirmed the diagnosis of choroidal osteoma. Further investigation with multimodal imaging highlighted the presence of multiple aneurysmal choroidal dilations around the CO, corresponding to PCV. We also noted the presence of a preretinal neovascular membrane overlying the CO. The patient was monitored with regular follow-up since no signs of activity were detected on multimodal imaging.

Our case-report represents an exceptional atypical association between pre-retinal neovascularization, PCV and CO. While the mechanisms underlying the development of PCV and pre-retinal neovascularization are not well understood, it is imperative for ophthalmologists to recognize this association as a potential cause of vision loss in patients with CO.

Abstract 88

ROLE OF ULTRASOUND EXAMINATION IN RETINAL BREAKS DETECTION IN EYES WITH MEDIA OPACITIES

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The aim of this study is to analyze the accuracy of ocular ultrasound in retinal detachment and break detection using A and B-Scan ultrasonography in eyes with media opacities, especially in vitreous hemorrhages

A retrospective evaluation was conducted on 63 consecutive patients who underwent ultrasounds for vitreous hemorrhage from March 2022 to March 2024. The study aimed to assess the accuracy of diagnosing retinal detachment and retinal breaks. Ultrasound was performed using the Absolu machine by Quentel Medical, equipped with a 15 MHz B-Scan probe and a 7.5 MHz Standardized A-Scan probe. Patients had vitreous hemorrhage due to various causes, including diabetic retinopathy, retinal breaks, vitreous detachment, penetrating and non-penetrating trauma, age-related macular degeneration, vascular occlusions, post-traumatic cataract, infections, and anticoagulant therapy. Ultrasound exams were conducted within five days prior to any surgery.

The number of retinal detachment correctly detected with ocular ultrasound was 22/23 patients (error in a severe vitreoretinal traction without detachment), the rate of retinal breaks was 94,73% (17/19). The number of retinal hemorrages without R.D. correctly evaluated was 40/41 (97,56%)

Ultrasound effectively detects vitreous hemorrhage and retinal detachment, aiding timely retinal surgery. Experienced practitioners can often identify retinal tears, but distinguishing small breaks from significant vitreo-retinal proliferation can be challenging.

Abstract 223

MACULAR VOLUME REDUCTION AS A BIOMARKER OF VISUAL AND NEUROLOGICAL DYSFUNCTION IN RELAPSING-REMITTING MULTIPLE SCLEROSIS: A COHORT STUDY USING OPTICAL COHERENCE TOMOGRAPHY

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The purpose of this study is to assess the association between macular volume reduction (MVR) and visual as well as neurological dysfunction in multiple sclerosis (MS) patients using optical coherence tomography (OCT). Additionally, we explore the utility of OCT in monitoring neurodegeneration in patients with and without optic neuritis (ON).

This prospective observational study included 10 patients with relapsing-remitting MS (RRMS, diagnosed according to the 2017 McDonald criteria) who underwent comprehensive neuro-ophthalmological evaluations. Neurological disability was assessed using the Expanded Disability Status Scale (EDSS) and the Multiple Sclerosis Severity Score (MSSS). Ophthalmological examination included SD-OCT imaging, which measured peripapillary RNFL thickness, GCL thickness, and ultimately, MVR. Moreover, patients were divided into two groups: those with and without a history of ON. The primary endpoints were the correlation of MVR with visual acuity, RNFL and GCL thinning, and its association with neurological disability as measured by EDSS and MSSS scores.

All 10 patients demonstrated increased MVR, greater values observed in patients with a history of ON. A strong inverse correlation was found between MVR and visual acuity ($P<0.001$), indicating that as MVR increased (i.e.: macular volume decreased), visual acuity declined. Furthermore, MVR was also inversely correlated with neurological dysfunction, as measured by EDSS ($P=0.003$, $r=-0.35$) and MSSS scores ($P=0.01$, $r=-0.30$), suggesting that retinal thinning indicates more severe neurological disability. Importantly, patients without ON also showed macular volume loss, although less pronounced than in those with ON, highlighting that neurodegeneration occurs in MS independently of optic neuritis.

This study shows that MVR inversely correlates with visual impairment and neurological dysfunction in RRMS patients. Retinal changes reflect CNS neuro-degeneration and may serve as a predictive biomarkers for monitoring MS morbidity and recovery. Future studies may use OCT to feasibly monitor such changes in other neuro-degenerative diseases as well.

Abstract 431

THE RELEVANCE OF OCT ANGIOGRAPHY IN THE EARLY DIAGNOSIS OF PRIMARY OPEN-ANGLE GLAUCOMA

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To assess the relevance of OCT Angiography (OCTA) in evaluating peripapillary microvascular changes in patients with ocular hypertension and to investigate whether OCTA could serve as a potential biomarker for early glaucomatous damage.

This cross-sectional observational study included a group of patients with ocular hypertension (n=35 eyes) and an age-matched control group (n=29 eyes). All participants underwent a comprehensive ophthalmological evaluation, visual field assessment, and structural OCT of the optic disc. To examine peripapillary vascular density, two parameters were measured via OCTA: the flow index (FI) and vascular perfusion density (VPD).

The mean VPD was significantly lower in the ocular hypertension group compared to the control group (p=0.0235). Regarding FI, the mean value was lower in the ocular hypertension group compared to controls, although this difference was not statistically significant, but approached significance (p=0.0627). Statistically significant differences were observed in the inferior (p=0.0200), nasal (p=0.0204), and temporal quadrants (p=0.0239). Additionally, the diagnostic capability of OCTA in detecting early vascular changes was evaluated using ROC curve analysis. The FI in the inferior quadrant demonstrated the highest diagnostic capability (AUC = 0.670, p=0.015) and showed the highest sensitivity at 80% specificity (54%).

This study supports the notion that vascular density changes may indeed precede structural and functional decline, suggesting that these alterations may be valuable in the early diagnosis and monitoring of glaucoma.

Abstract 266

PARACENTRAL ACUTE MIDDLE MACULOPATHY ASSOCIATED WITH PRESUMED LEBER'S OPTIC NEUROPATHY- A CASE REPORT

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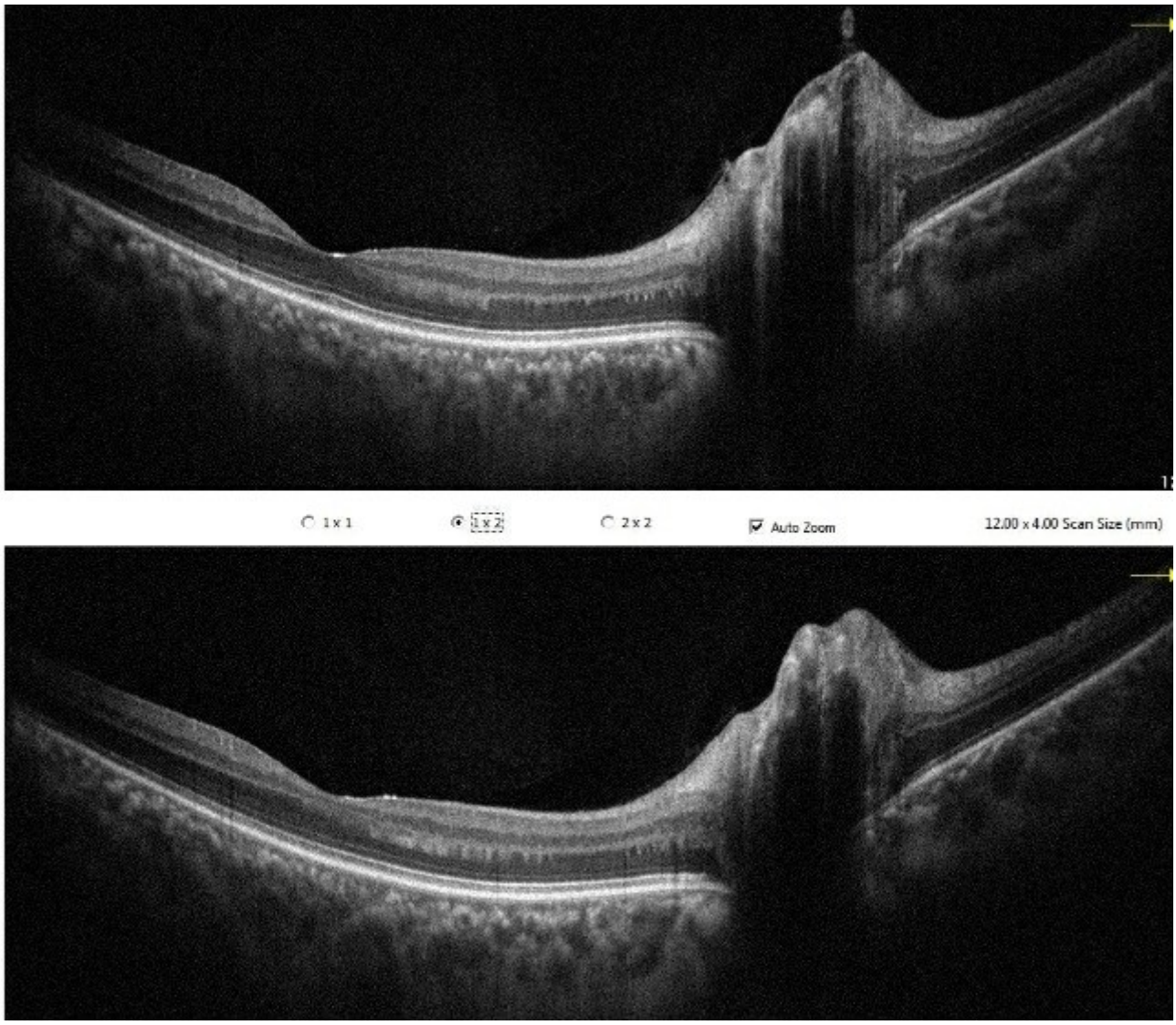
In this case report, we present an optical coherence tomography(OCT) finding such as paracentral acute middle maculopathy (PAMM) in a young male patient with bilateral optic disc oedema, presumed Leber Hereditary Optic Neuropathy(LHON) in order to understand the role of PAMM in diagnosis, also in prognosis of LHON.

We report the case of a 20-year-old male patient was referred to our clinic with a prediagnosis of asynchronous bilateral optic disc edema unresponsive to steroids from another hospital. He had no comorbidities and no previous surgery. There was no history of allergies, neither medication nor supplements. Anamnesis revealed that his aunt also had visual loss. Bilateral visual acuity was 0.70 logMAR. Bilateral intraocular pressure was normotonic. Globe movements were normal and diplopia was not detected. Biomicroscopic examination was normal. Fundus examination revealed bilateral optic disc oedema with peripapillary telangiectasia. Bilateral increased tortuosity was also found in retinal arterioles.

Multimodal retinal and optic disc imaging was performed. Oct- retinal nerve fiber layer analysis confirmed bilateral optic disc edema. Peripapillary telangiectasias accompanying optic disc oedema were recorded with fundus camera. Retinal microstructure was analyzed by OCT. Bilateral macular configuration was normal. No pathological findings other than PAMM were detected.

We think that Leber's optic neuritis should be included in the differential diagnosis of bilateral optic neuritis in young male patients, multimodal imaging should be performed to make a correct diagnosis, and additional studies should be performed to understand the importance of OCT finding PAMM in the diagnosis and follow-up.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Abstract 268

THE CORRELATION BETWEEN RETINAL AND CHOROIDAL THICKNESS WITH AGE-RELATED WHITE MATTER HYPERINTENSITIES IN PROGRESSIVE SUPRANUCLEAR PALSY

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to explore potential differences in choroidal structure between Progressive Supranuclear Palsy (PSP) patients and healthy controls (HC), and to describe the relationship between retinal layers' thickness and volume, using spectral-domain optical coherence tomography (SD-OCT) and age-related white matter change scores (ARWMC) using magnetic resonance imaging (MRI) of the brain.

choroidal thickness (ChT) and choroidal vascularization parameters in the area between 750 microns nasally and at 750 microns temporally to the fovea were analyzed in 26 PSP patients and 26 HC using standard SD-OCT with enhanced depth imaging (EDI) approach and ImageJ. For 16 of these PSP patients, retinal layers' segmentation, the macular layers' thickness (Mt) and volume (Mv) in the 1 mm diameter-macular area and their mean thickness (Meant) and volume (Meanv) in the 3 mm diameter-macular area were achieved using standard SD-OCT; finally, the same patients underwent brain MRI, and their cerebral white matter changes (ARWMC) were calculated.

choroidal structure and vascularization showed not-statistically significant differences between PSP patients and HC ($p>0.05$). In PSP patients, ARWMC score in occipital lobes was positively correlated with mtRPE ($r = 0.502$, $p = 0.048$) and negatively with macular thickness (Mt) (all layers) ($r = -0.533$, $p = 0.034$), inner retinal layers (mtIRL) ($r = -0.533$, $p = 0.033$) and MvIRL thickness ($r = -0.499$, $p = 0.049$), Meant inner nuclear layer (INL) ($r = -0.535$, $p = 0.33$) and Meanv INL ($r = -0.519$, $p = 0.039$). None of these parameters were correlated with age and axial length (AL).

PSP patients' neurological alterations go hand in hand with retinal ones, independently from age and axial length. Our results suggest a mutual relationship between cerebral and retinal structure pathological alterations. On the other hand, no significant differences in the choroidal evaluation between PSP and HC were detected.

Abstract 107

ANTIPHOSPHOLIPID SYNDROME PRESENTING WITH ANTERIOR ISCHAEMIC OPTIC NEUROPATHY AND BRANCH RETINAL ARTERY OCCLUSION - OCT-ANGIOGRAPHY AIDED DIAGNOSIS

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To describe the use of OCT angiography (OCT-A) in the diagnosis of ischaemic optic neuropathy and associated branch retinal artery occlusion in a patient with undiagnosed anti-phospholipid syndrome (APS).

Case report describing the tomographic and angiographic features of anterior ischaemic optic neuropathy and associated retinal artery occlusion. A 44-year old lady presented to the emergency clinic with a sudden onset blurring of vision in her left eye. Optic nerve head swelling and exudation was noted on examination. Infectious causes were ruled out and the patient was subsequently started on systemic corticosteroid therapy but no improvement was noted over the following weeks. The patient was referred for further uveitis work-up and evaluation at which point OCT-A was carried out after a vascular event was suspected.

Loss of the superficial peripapillary fibres was noted with an associated disappearance of the superficial vascular complex surrounding the inferior retinal artery arcade explaining the worsening visual field defect described by the patient over the previous weeks following the initial presentation. Further details provided on systemic enquiry and the OCT-A results obtained prompted further systemic work-up including a thrombophilia screen. A raised anti-nuclear antibody (ANA) and anti-cardiolipin antibody titres were noted. The patient was then diagnosed with primary ANA positive primary APS.

This case report further adds to the growing body of evidence in favour of the use of OCT-A in the work up of optic neuropathy aiding in the diagnosis of vascular pathologies such as ischaemic optic neuropathies.

Abstract 105

MACULAR DEVELOPMENT IN A CASE OF AGGRESSIVE ROP (A-ROP) TREATED WITH RANIBIZUMAB AND LATE LASER ABLATION

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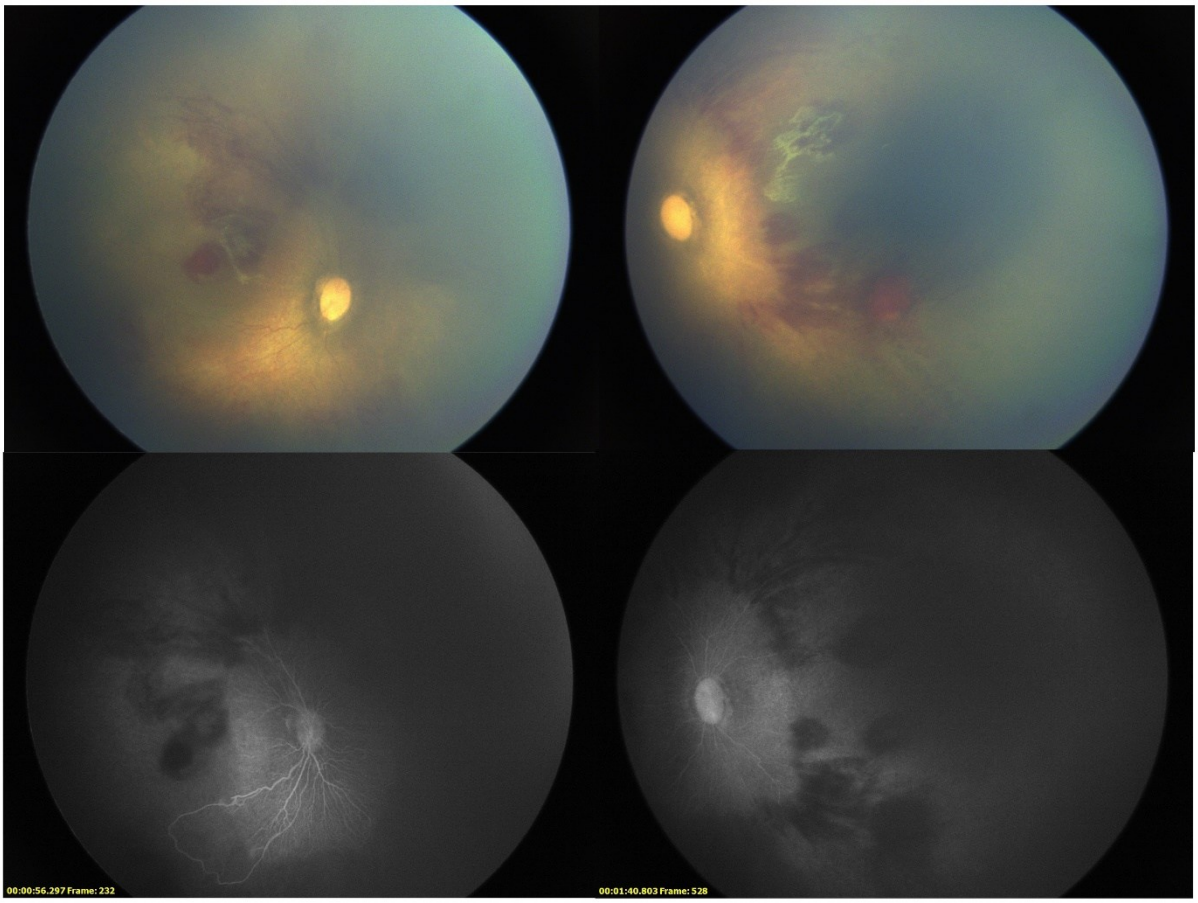
Retinopathy of preterm (ROP) is an ischemic-proliferative disease linked to the pathological vascularization caused by the retinal immaturity of the pre-term newborn. Its severity is related to the degree of prematurity in particular low gestational age and low birth weight.
Aggressive ROP is a particularly severe form.

Premature baby with a gestational age at birth of 27 weeks and a weight of 910g affected by A-ROP will be analyzed. We present some retcam color photos and retinal fluorescein angiography that document the absence of vascularization of the entire macular region and retinal periphery
The baby underwent 3 ranibizumab intravitreal injections and the progressive recovery of the retinal vascularization documented by serial fluorescein angiographies at 32-48-54-62 weeks and 1 year after birth documenting the progression of the vascularization up to the middle retinal periphery
Laser treatment of the residual peripheral avascular areas was also performed around the 49th week

Injection therapy with anti-VEGF made it possible to obtain a complete revascularization of the macular region and the retinal media periphery documented by serial fluorescein angiographic examinations performed over time

Anti-VEGF increases the success of the treatment of ROP in zone 1 or A-ROP. This allows a peripheral progression of the retinal vasculature with less reduction of the visual field and development of macular hypoplasia, although it is not yet known how functional these areas of the retina may be.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Abstract 402

OCT SCANS ARTIFACTS IN GLAUCOMA PATIENTS

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To highlight and identify possible imaging artifacts that can affect OCT scans in diagnosis and follow up of glaucoma patients

Highlighting different artifacts that can be encountered during OCT imaging such as motions artifacts or scanning in patients with difficult fixation or the presence of dense media opacities and how to avoid them. The presence of vitreomacular traction VMT or epiretinal membrane ERM can falsely alter the RNFL thickness. High myopia patients posses some difficulties with possible artifacts during scanning.

OCT has an important role in follow up of glaucoma progression as well as diagnosis with special consideration to green or red disease for accurate interpretation of results.

OCT is a very indispensable tool for both diagnosis and follow up of glaucomatous patients provided that accurate and well aligned scans are obtained with good interpretion of results by avoiding any possible scans artifacts.

Abstract 83

DOME-SHAPED MACULA CURVATURE: DEFINITION, CLINICAL CHARACTERISTICS AND ASSOCIATION WITH NON-NEOVASCULAR SUBRETINAL FLUID

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To test a new quantitative metric focused on the evaluation of dome-shaped macula curvature (DSMC) and to assess its clinical role for the evaluation of DSM eyes with and without non-neovascular subretinal fluid (nSRF).

This was a retrospective cross-sectional study involving patients affected by DSM secondary to high myopia. DSMC was calculated by measuring the base (chord length) and height (distance from the chord to the apex) of the DSM. These measurements were then used to determine the radius (R) of the hypothetical circle representing the curvature of the DSM, followed by the calculation of the curvature (K). Additional factors considered included choroidal thickness (CT), choroidal deepening subtypes (CD), presence of nSRF, and complications related to DSM.

Overall, 44 eyes of 44 patients (15 males, 33%) with a mean (standard deviation) age of 62.66 (15.25) years were evaluated. DSMC proved to be a reliable method to define DSM subtypes. Additionally, our quantitative pipeline incorporating DSMC and CD subtypes was clinically relevant in highlighting differences between eyes with and without nSRF. Eyes with nSRF had significantly higher DSMC ($p<0.001$) and subfoveal-CT ($p<0.001$) compared to those without nSRF. Furthermore, eyes with nSRF were significantly associated with sub-dome CD, while eyes without nSRF showed a higher prevalence of peri-dome CD ($p<0.01$). nSRF had no significant effect on visual acuity ($p>0.05$).

DSMC proved to be a valuable and objective metric for evaluating DSM. Combined with CD-based assessment, it offered new insights into nSRF pathogenesis. Our findings suggest that lower scleral curvature, higher CT, and sub-dome CD may direct choroidal blood flow toward the DSM apex, contributing to nSRF development.

Abstract 225

PARS PLANA LENGTH MEASUREMENT USING AS-OCT IN HIGHLY MYOPIC EYES: IMPLICATIONS FOR TROCAR PLACEMENT

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Evaluate pars plana length in highly myopic eyes, where it tends to be longer than in eyes of normal axial length. Using AS-OCT, we measured pars plana to assess the need for trocar placement further posteriorly, beyond the standard 3.5-4 mm from the limbus, to optimize surgical safety and outcomes.

We recruited highly myopic patients for pars plana length measurement using the CASIA 2 AS-OCT system. Participants were not limited to those undergoing pars plana vitrectomy (PPV). For patients who underwent PPV, intraoperative pars plana measurements were additionally taken using scleral indentation to compare with preoperative AS-OCT findings. The data were analyzed to assess the correlation between pars plana length and axial length, and to determine whether posterior trocar placement was necessary based on the extended pars plana in highly myopic eyes.

Preliminary findings show a significant correlation between pars plana length and axial length in highly myopic eyes. The pars plana often exceeded the standard trocar placement guidelines of 3.5 or 4 mm. CASIA 2 AS-OCT proved to be a reliable tool for preoperative measurements, and intraoperative comparisons confirmed the need for more posterior trocar placement in certain cases, improving surgical outcomes.

CASIA 2 AS-OCT offers an effective method for accurately measuring pars plana length in highly myopic eyes. These measurements suggest that standard trocar placements may need to be adjusted posteriorly, correlating with axial length, contributing to safer and more precise vitrectomy procedures.

Abstract 130

LONGITUDINAL PROGRESSION OF MYOPIC MACULOPATHY IN A LONG-TERM FOLLOW-UP: A NATURAL HISTORY STUDY OF A EUROPEAN COHORT

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To determine the long term evolutive pattern of each type of fundus lesion found in eyes with myopic maculopathy in a European population. Moreover, we wanted to collect data regarding the incidence of myopic traction maculopathy (MTM) and myopic neovascular maculopathy (MNM) in this cohort.

The medical records of 1228 eyes of 729 consecutive patients with high myopia (refractive error more than -8.00 diopters [D] or axial length >26.5 mm), followed for at least 5 years starting from 2008 to 2024, were collected. Data regarding best-corrected visual acuity (BCVA), axial length (AXL) measurements, color fundus photography and optical coherence tomography (OCT) were collected. At baseline, the presence of posterior staphyloma was assessed and classified. Baseline photos were classified as tessellated fundus (category 1), diffuse chorioretinal atrophy (category 2), patchy atrophy (category 3) and macular atrophy (category 4). The development of MTM and MNM was recorded.

Mean follow-up was 11.4 years and 51.3% of eyes showed progression. At baseline, tessellated fundus (31%) and macular atrophy (29%) were mostly observed. At the end, the majority of eyes showed patchy atrophy (32%) or macular atrophy (44%). Patchy atrophy at baseline significantly correlated with macular involvement. BCVA decreased from 0.40±0.29 to 0.33±0..32 Snellen (p=0.01). MNM developed in 164 eyes (13%), and it was significantly associated with the presence of a dome-shaped macula and with the progression towards macular atrophy. Finally, 228 eyes (19%) developed MTM, associated with the presence of a type 1 or type 2 staphyloma.

We reported that 51% of eyes with myopic maculopathy tends to progress, leading to macular atrophy in 44% of cases, in particular in eyes with patchy atrophy at baseline and in eyes developing MNM. The development of MTM is primarily associated with the type of myopic staphyloma.

Abstract 410

A CASE OF DOUBLE MYOPIC MACULAR NEOVASCULAR MEMBRANE (MNVM)

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To report a case of double myopic macular neovascular membrane (MNVM)

Color fundus photography, optical coherence tomography (OCT) and optical coherence tomography angiography (OCT-A) were used for the investigation of the visual complaints of a myopic patient.

Signs of degenerative myopia were documented in both eyes (OU). Additionally, OS showed tilted disc, chorioretinal atrophy as well as one Foster-Fuchs spot and one grayish lesion in the fovea. OCT revealed two dome-shaped subretinal hyperreflective areas above the retinal pigment epithelium (RPE) with minimal subretinal fluid (SRF). OCT-A demonstrated the presence of two separate lacy networks of new vessels above the RPE suggestive of the diagnosis of two myopic MNVMs. The introduction of intravitreal injections of anti-VEGF was decided and the patient achieved visual acuity of 6/10 in OS. The MNVMs remained inactive throughout the six months of follow-up.

One of the most devastating complications of myopia is the macular neovascularization. The OCT-A is non-invasive and easily reproducible multimodal imaging that facilitates the diagnosis of MNVMs. In our case, OCT-A enabled the diagnosis of two distinct MNVMs within the same eye of a myopic patient.

Abstract 285

RETRO-MODE IMAGING IN VITREORETINAL LYMPHOMA

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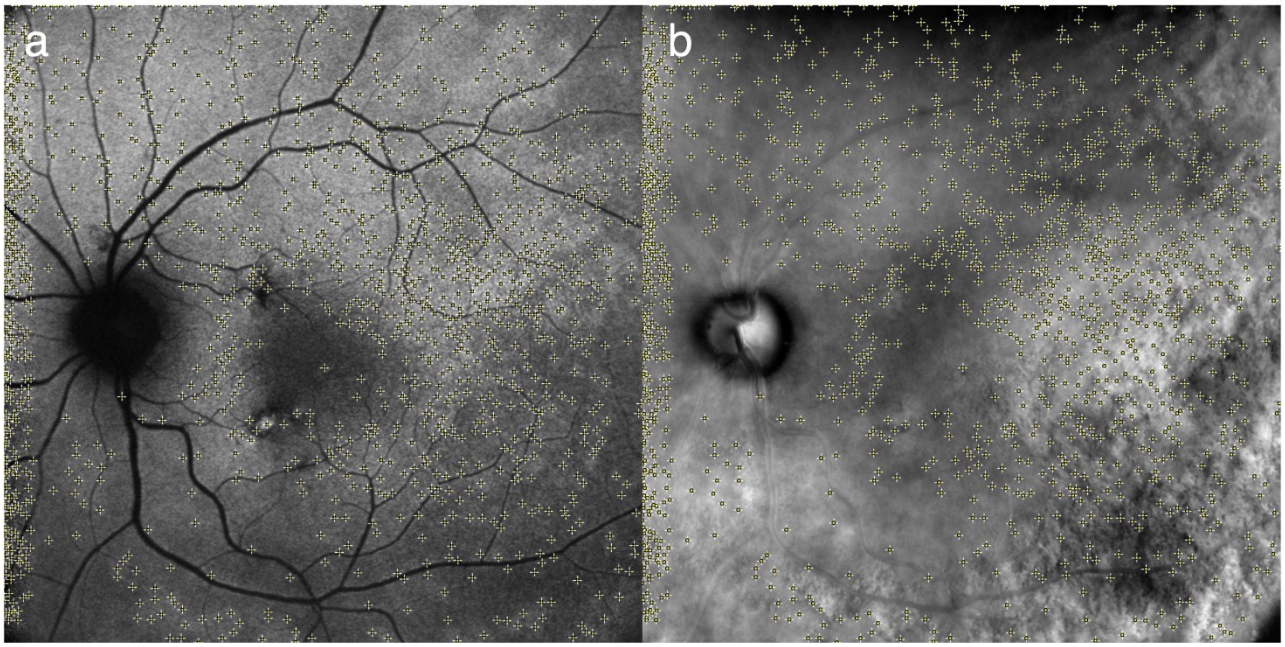
The purpose of this study was to evaluate Retromode as an adjunct diagnostic tool in vitreoretinal lymphoma (VRL). By integrating Retromode findings with multimodal imaging, we aimed to enhance lesion detection of VRL lesions in the retina.

This monocentric retrospective pilot study was conducted at the Ocular Oncology unit of San Raffaele Scientific Institute, Milan. Six consecutive patients with biopsy-proven vitreoretinal lymphoma (VRL) were analyzed. Comprehensive retinal examinations and multimodal imaging, encompassing Retromode, pseudocolor fundus photography, fundus autofluorescence (FAF), and optical coherence tomography (OCT). The study specifically focused on the role of Retromode findings used in conjunction with traditional imaging modalities like FAF and OCT to enhance lesion detection associated with VRL. Imaging analysis was conducted using ImageJ software.

Retromode identified detailed structural abnormalities in the deep retinal layers and RPE, revealing additional or more widespread lesions in all eyes compared to FAF imaging. Retromode pinpointed areas affected by VRL for further examination with OCT. However, in patients with vitreitis—a common condition in VRL—Retromode did not yield quality images or meaningful information.

Retromode imaging proved to be a valuable adjunct in the multimodal imaging approach to VRL. Its capacity to delineate subtle retinal changes facilitates a tailored diagnostic strategy, enhancing lesion detection and characterization in VRL.



Abstract 353

MULTIMODAL IMAGING OF JUXTAPAPILLARY RETINAL CAPILLARY HEMANGIOMA: A CASE REPORT

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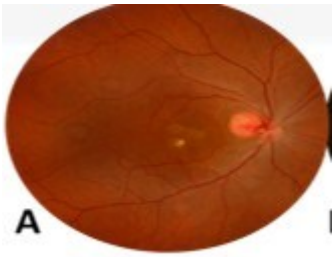
to describe a rare case of Juxtapapillary Retinal Capillary Hemangioma.

A single case report.

A 46-year-old woman presented with a 3-week history of vision loss and metamorphopsia in her right eye. Best-corrected visual acuity (BCVA) was 20/63 in the right eye and 20/20 in the left. Fundus examination revealed a raised, reddish-orange retinal lesion near the optic nerve, with macular edema and exudates. Fluorescein angiography showed hyperfluorescence, and OCT confirmed cystoid macular edema and serous detachment. OCT angiography displayed a hyperintense lesion. Systemic screening for Von Hippel-Lindau disease, including MRI, was negative. Based on clinical findings, the patient was diagnosed with solitary retinal capillary hemangioma.

Although juxtapapillary retinal capillary hemangiomas are benign and slowly growing tumors, their potential to cause blindness underscores the importance of early treatment, given their close proximity to the optic nerve and macula. Multimodal imaging is indispensable for accurate diagnosis and effective management of these lesions.



Abstract 41

CENTRAL SEROUS CHORIORETINOPATHY IMAGING BIOMARKERS AS POTENTIAL INDICATOR OF RESPONSE TO TREATMENT WITH A SUBTHRESHOLD NANOSECOND LASER

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The aim of the study was to evaluate optical coherence tomography (OCT) and indocyanine green angiography (ICGA) biomarkers in patients with chronic central serous chorioretinopathy (cCSC) as potential indicator of response to treatment with subthreshold nanosecond laser (NSL).

In this retrospective study, we examined 37 eyes of 33 cCSC patients after NSL. High responder (HR) was defined as complete resolution of subretinal fluid (SRF) after first NSL treatment (within 3 months). Biomarkers included among others: central macular thickness (CMT), subfoveal choroidal thickness (SFCT) and intervortex venous anastomosis (IVA).

Patients were on average 53±12 years old, 86% were male, OCT at baseline showed mean CMT of 371±140 µm, SFCT of 249±47 µm, 57% showed IVA in ICGA. HR was seen in 62% and poor responder (PR) in 38%. Higher IVA rates (79% vs. 43%, P=0.04) predicted short-term poor response after the first NSL.

OCT and ICGA biomarkers may play a role as indicators of anatomical responses to NSL. Patients with IVA at baseline showed a poor first response and may need repetitive laser treatments.

Abstract 172

PERIPAPILLARY ALTERATIONS IN IDIOPATHIC NORMAL PRESSURE HYDROCEPHALUS

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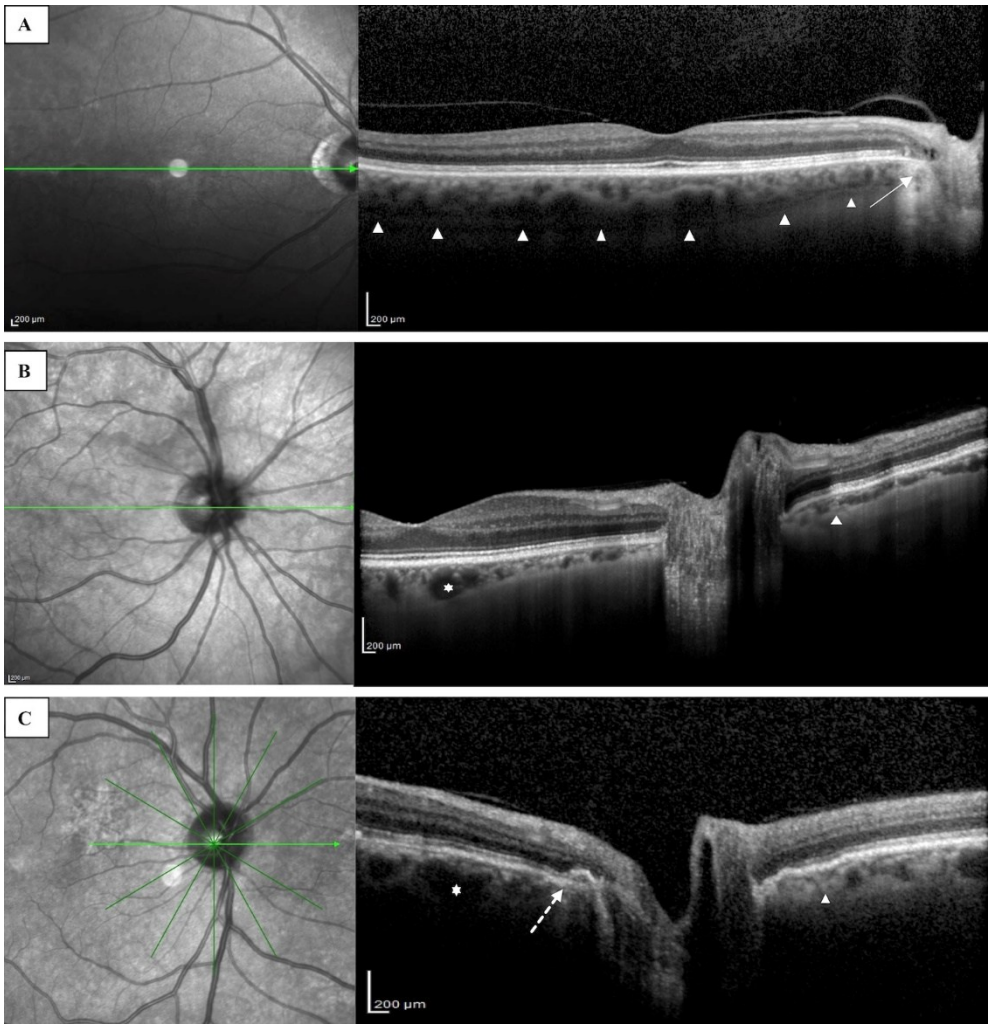
To evaluate the peripapillary area in eyes of patients with Idiopathic Normal Pressure Hydrocephalus (iNPH) before and after shunt surgery.

Twenty iNPH patients were prospectively recruited. Enhance depth imaging-optical coherence tomography (EDI-OCT) was performed to image the peripapillary region. Using a 360-degree 3.4 mm diameter peripapillary circle scan, the peripapillary choroidal thickness (PPCT) was manually measured and compared with 20 healthy-age-matched controls. PPCT was assessed before and after at least 6 months from VP shunt surgery in 12 patients.

Mean age of iNPH patients was 75 ±7.4 years. Mean PPCT was increased in non-shunted iNPH patients compared to healthy individuals (p=0.026). Also, OCT scans in the peripapillary region showed a set of recurrent alterations, such as subclinical optic disc edema (ODE) (30%), choroidal folds (40%) peripapillary intraretinal cysts (30%), peripapillary atrophy (85%), peripapillary pigment epithelium alterations (45%), and pachyvessels (70%). After 79± 29 weeks from VP shunt surgery, 84% of iNPH patients presented a reduction in PPCT (p=0.011), associated with a subjective improvement of neurological symptoms, and resolution of ODE (75%), intraretinal cysts (66%), and choroidal folds (20%).

The ophthalmological findings observed in iNPH patients may be attributed to a framework of venous overload choroidopathy. Shunt surgery relieved peripapillary choroidal congestion with symptomatic and ophthalmological improvement.


A
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Abstract 361

OCT-BASED PREDICTION OF NEOVASCULARIZATION IN PACHYCHOROID SPECTRUM DISEASE

Moscara F.*, Viggiano P., Laterza M., Salvelli A., Petruzzella G., Scotti G., Boscia G., Boscia F.

Università degli studi di Bari ~ Bari ~ Italy

The aim of this study was to assess the thickness of shallow pigment epithelial detachments (PED) and choroidal layers in patients diagnosed with pachychoroid spectrum disease, both with and without macular neovascularization (MNV).

A total of 138 eyes from 121 patients diagnosed with pachychoroid neovasculopathy (PNV) and central serous chorioretinopathy (CSC) in at least one eye were evaluated. Swept-source OCT angiography (SS-OCTA) was used to assess PED thickness and choroidal layer thickness, specifically examining both Sattler's and Haller's layers. The presence of subretinal fluid and intervascular anastomosis was also recorded.

The study demonstrated a substantial difference between the two groups in terms of choroidal layer thickness. The Sattler's layer was significantly thinner in patients with MNV, measuring 34±8 μm, compared to 89±15 μm in patients with CSC ($p=0.001$), suggesting its strong predictive value. In contrast, neither PED height nor Haller's layer thickness reached statistical significance between the two groups ($p> 0.05$).

Simple, non-invasive measurements obtained through OCT can serve as effective predictors of macular neovascularization in patients with pachychoroid spectrum disease.

Abstract 2 – Main Program

400K SPEED OCT COMES. WHAT MAKES TOWARDPI DIFFERENT

Zhou J.*

TowardPi Medical Technology ~ Shanghai ~ China

Ophthalmologists have been used to see similar specifications and functions across brands in the OCT industry for almost 20 years. Has anyone thought about the reason of this similarity behind it? Seven years ago, TowardPi was founded and decided to do some revolutional improvement for ophthalmic OCT.

OCT device is combination of so many different technologies. Optic, mechanic, electric, algorithm, etc. The best performance of OCT is decided by the weakest point of the entire system. Instead of seeking supplies from industrial field, TowardPi designed and produced most components by themselves, for the best of ophthalmic purpose only.

400kHz OCT speed, UWF-OCTA acquired in 7-15 secs, same resolution as high as small scan, up to 200° scan field, 10 billion voxel from one capture, 15mm depth, Choroid vessel, Anterior Segment OCTA, 3D OCTA, laser spot detection, dynamic vitreous, 3D-CVI, retina curvature, comprehensive quantifications for all sizes...The reward is huge with the home-made parts building OCT.

For the first time. There's an OCT/OCTA device generally designed for eye care professionals, in terms of both hardware and software. 400kHz UWF-OCTA has entered the guide line for diabetic retinopathy and retinal vein occlusion in mature markets. It will be more and more popular all over the world.

Abstract 456

SILENT BUT STRIKING: MULTIMODAL ULTRAWIDEFIELD IMAGING IN A DIABETIC PATIENT.

Bellisario G.*, Alhelaly M., Sadda S.R.

Doheny Image Reading Center, Doheny Eye Institute ~ Los Angeles, California ~ United States of America

To report a case of an asymptomatic diabetic patient with an unexpected retinal vascular finding.

A case report of a 43-year-old asymptomatic man with type 2 diabetes mellitus (DM) presented to our retina clinic for diabetic retinopathy (DR) monitoring. He had been diagnosed with DM II three years ago, following an episode of acute pancreatitis. The baseline screening for DR was unremarkable except for a cotton-wool spot in the left eye. The patient was lost to follow-up for three years. At presentation, his visual acuity was 20/20 in both eyes, and the anterior chamber examination was unremarkable, with normal intraocular pressure in both eyes. Ultrawide field (UWF) multimodal imaging was performed.

The UWF pseudocolor fundus photography (Optos plc) showed diffuse creamy-white vessels consistent with lipemia retinalis, along with a few microaneurysms suggestive of mild non-proliferative diabetic retinopathy (Fig.1). The optical coherence tomography (OCT) (Heidelberg HRA+OCT) revealed a normal foveal profile. Numerous inner hyper-reflective circular/oval spots of variable caliber were observed in the B-scan, corresponding to the blood vessel. A 21x26 mm UWF-swept-source (SS)-OCT (Intalight Dream OCT) displayed the inner hyper-reflective findings extending to the periphery (Fig.2). UWF OCT angiography (OCT-A) showed no definite microvascular changes or nonpersufion areas. Patient was urgently referred to his primary care physician for evaluation and treatment.

Lipemia retinalis (LR) is a rare ocular condition and a potentially lethal metabolic condition, but it is frequently missed. We report the use of UWF multimodal imaging for identifying LR, even in asymptomatic patients, thereby enabling timely intervention for this serious yet treatable condition.

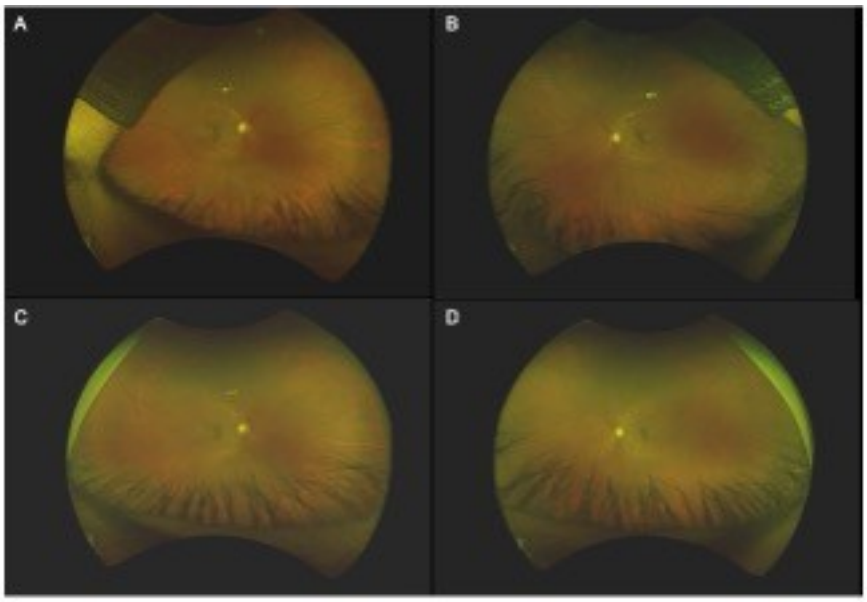

Fig. 1 Ultra wide-field (UWF) color fundus photography. (A,B) Baseline presentation. (C,D) Current presentation, *lipemia retinalis* with diffuse creamy white blood vessels

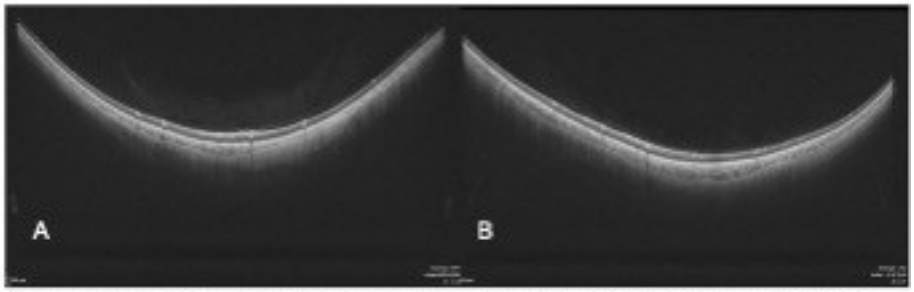

Fig. 2 21x26 mm Swept-source Ultra-wide field Optical Coherence Tomography (Dream OCT-Intalight). Inner hyper-reflective point-like dots of variable caliber corresponding to the blood vessel.

Abstract 58

ULTRA-WIDE FIELD OPTICAL COHERENCE TOMOGRAPHY: OCULAR WALL IMAGE DISTORTION AND VITREOUS FACE STATUS IN SEVERE AXIAL MYOPIA COMPARED WITH ANNULAR ARRAY ULTRASOUND

Fisher Y.*[1], Naderi A.[2], Spaide R.[2]

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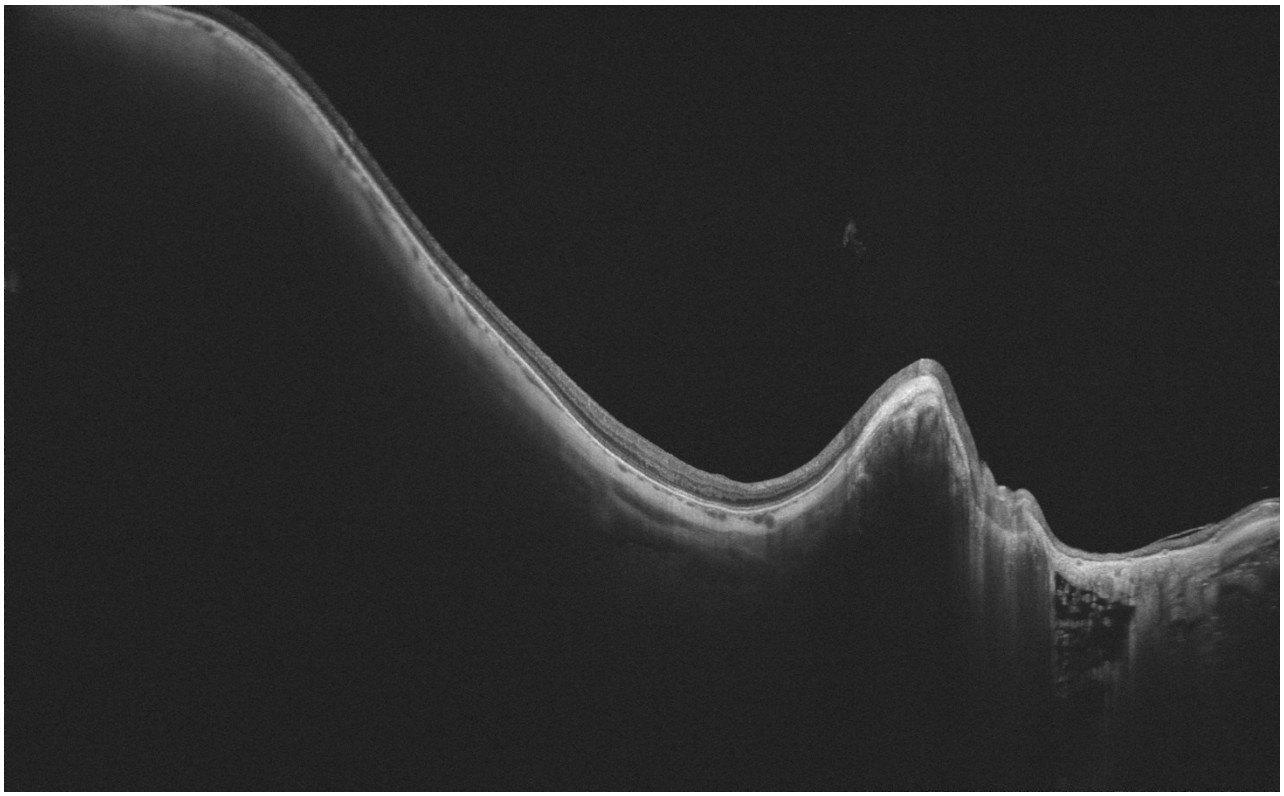
Compare ocular wall shape and vitreous face position with UWFOCT and Annular Array Ultrasound in patients with severe axial myopia.

Structural Ultra-Wide OCT (Intalight “Dream” UWFOCT 26 x 21 mm) and 20 MHz Annular Array ABSolu (Lumibird) devices were used to image 20 eyes (10 patients) for ocular wall shape and vitreous face position. Still images of the posterior pole were obtained with UWFOCT. Real time, ultrasonic, anterior-posterior examinations (with movie segments storage) were obtained with Annular Array posterior B-Scan. Comparison of ocular wall shape and formed vitreous face position were evaluated and saved. Axial length measurements were obtained with IOLMaster500 (Zeiss).

Axial Lengths ranged from 28.5-37mm.
Posterior ocular wall shape distortions (apparent elongation and exaggeration of staphyloma changes) were noted in every case of UWFOCT imaging when compared to Annular Array ultrasound. Detection of vitreous face position was possible with each device. UWFOCT images had greater structural axial and lateral resolution than ultrasonic B-Scan but lacked real time movement. UWFOCT with increased scan length and image depth windows provided more extensive detection of vitreous face position than previously possible.

Current UWFOCT images in severe axial myopia demonstrate excellent formed vitreous face detection and status. Ocular wall shape distortion appears due in part to UWFOCT signal processing and mapping algorithms. Annular array ultrasound provides less structural ocular wall distortion with addition of real time and more anterior examination.



Abstract 317

INFRARED IMAGING IN RETINOSCHISIS

Pociej--Marciak W.*, Kubicka--Trzaska A., Romanowska--Dixon B., Karska--Basta I.

Division of Ophthalmology and Ocular Oncology, Department of Ophthalmology, Jagiellonian University Medical College, Kraków, Poland; Department of Ophthalmology and Ocular Oncology, University Hospital, Kraków, Poland ~ Kraków ~ Poland

The aim of the study is to present the role of infrared imaging in diagnosing and monitoring retinoschisis.

We demonstrate infrared imaging of retinoschisis of case series. High quality infrared images of patients treated in Division of Ophthalmology and Ocular Oncology, Department of Ophthalmology, Jagiellonian University Medical College in Cracow, Poland are presented and described. Heidelberg Spectralis® HRA machine (Heidelberg Engineering, Heidelberg, Germany) was used to obtain infrared images on each study eye.

Characteristic features for retinoschisis were found on infrared photos and described. Hypo-reflectance on infrared imaging was noted in all cases. Accentuated vasculature of the retinoschisis and retinal holes were visualized with infrared imaging.

Infrared imaging offers a quick and non-invasive way to diagnose and monitor progression of retinoschisis. This may help to choose appropriate treatment.

Abstract 7

RETINAL ARTERY AVULSION

Virginia L.*, Pérez--Dieste M.

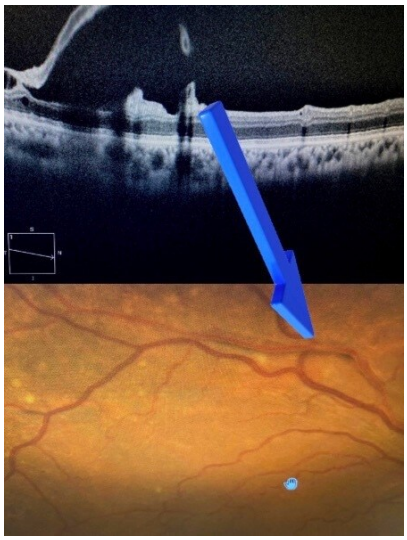
Miranza Muinos ~ Tenerife ~ Spain

To show that OCT scan provides high resolution cross-sectional images of the retina and vitreous above, giving a more realistic anatomical information than a classic fundus retinography.

A 67-year-old woman developed a branch retinal artery avulsion after posterior vitreous detachment. The patient complained of blured vision and fundus examination showed mild bleeding along with retinal artery anterior displacement indicating its avulsion. The OCT scan showed an impressive image of the artery displacement.

The OCT scan was able to show the complete artery section disinsertion and to keep a conservative attitude instead of planning a vitrectomy to remove the vitreous traction.

The difference between OCT scan and fundus Photograpy is that OCT scan gives us a more realistic impression in the vitreoretinal area.



Abstract 352

CORRELATION BETWEEN FUNDUS AUTOFLUORESCENCE AND CHOROIDAL THICKNESS E CHOROIDAL VASCULARITY INDEX IN EYE WITH EPIRETINAL MEMBRANE TREATED WITH VITRECTOMY

Perillo C.*, Chiosi F., Calabrò F., Magliozzi P., Manzi G., Paolillo E., Polzella E., Minutillo E., Russo A.

U.O.C. Oculistica Monaldi ~ Naples ~ Italy

The purpose of this study was to evaluate potential correlation between fundus autofluorescence and choroidal thickness e choroidal vascularity index in eye with epiretinal membrane treated with vitrectomy

Participants in the study were 10 patients diagnosed with iERM, who underwent PPV, We have performed an OCT and FAF exam before and after the surgery with SPECTRALIS OCT (Heidelberg Engineering GmbH, Heidelberg), and the analysis of the CVI.

We observed in 8 eyes an increase of the CVI and of the choroidal thickness at least for 3 month in eye with epiretinal membrane treated with PPV, also this is related to a change of the FAF. In 1 eye there is no significant changes before and after PPV. 1 required to repeat a PPV.

The increase of the CVI and of the choroidal thickness persist at least for 3 month also FAF changes persist in this period

Abstract 11 – Main Program

SUBRETINAL DELIVERY OF INVESTIGATIONAL ABBV-RGX-314 AS A GENE THERAPY FOR NEOVASCULAR AGE-RELATED MACULAR DEGENERATION (NAMD): INTERIM RESULTS OF BILATERAL DOSING FROM A FELLOW EYE STUDY

Ho A.*

Wills Eye Hospital ~ Philadelphia ~ United States of America

ABBV-RGX-314 is an investigational, single administration gene therapy designed to deliver a transgene for a soluble anti-VEGF Fab. The fellow eye (FE) sub-study (FESS) of ABBV-RGX-314 will be the first for nAMD to examine safety of bilateral treatment with an investigational gene therapy.

The objectives of the FESS study are to assess the safety, efficacy, and immunogenicity of subretinal ABBV-RGX-314 administration in the fellow eye of participants having bilateral nAMD who previously received a subretinal injection of investigational ABBV-RGX-314 in their study eye. Fellow eyes of patients are eligible if they completed one of the parent clinical studies, including a phase I/2a open-label dose-escalation study, a phase 2 open-label pharmacodynamic study, and two masked pivotal studies. Patients that enrolled in the sub-study received a subretinal administration of ABBV-RGX-314 in the fellow eye.

ABBV-RGX-314 was generally well-tolerated in the phase 1/2a study through 2 years and in the phase 2 pharmacodynamic study through 6 months, with no reports of clinically-determined immune responses, drug-related ocular inflammation, or post-surgical inflammation beyond what is expected following routine vitrectomy. At doses over 6.0x1010 GC/eye, patients demonstrated measurable protein expression, stable to improved BCVA, and meaningful reductions in anti-VEGF injection burden (78% injection free and 97% reduction in treatment burden). Ten patients from the open-label studies and 10 patients from the pivotal studies enrolled in the FESS sub-study (N=20), nine-month data for the open label FESS patients (n=10).

Second eyes achieved similar safety and efficacy outcomes to first eyes treated with ABBV-RGX-314 with sustained vision and anatomy, similar protein production and clinically meaningful reductions in anti-VEGF injection burden. The FESS study will generate information about the potential for bilateral dosing of one-time administration of subretinal ABBV-RGX-314 for nAMD.

Abstract 19 – Main Program

COMPARISON OF PREDICTIVE VALUE OF SHRM IN A REAL-WORLD POPULATION OF WAMD PATIENTS TREATED WITH BROLUCIZUMAB OR AFLIBERCEPT.

Chisci E.*[1], Vadalà M.[1], Li Greci G.[1], Sorce A.[2], Gagliardo M.[1], La Felice A.[1], Bonfiglio V.M.E.[1]

[1]1Biomedicine, Neuroscience and Advance Diagnostic (BIND) Department, University of Palermo, Palermo, Italy. ~ Palermo ~ Italy, [2]3 Department of Health Promotion Sciences, Maternal and Infant Care, Internal Medicine and Medical Specialties G. D'Alessandro (PROMISE), Unit of Nephrology and Hypertension, European Society of Hypertension Excellence Centre, University of Palermo, Paler

To gather real-world data on the role of Subretinal Hyperreflective Material (SHRM) as OCT biomarker in a population of wet Age Related Macular Degeneration (wAMD) patients treated with intravitreal injections (IVT) of brolucizumab (6 mg) or aflibercept (2 mg) according to a treat and extend regimen.

Monocentric, real-world observational study where 62 wAMD naïve patients were consecutively treated with aflibercept (group A n=31) or brolucizumab (group B n=31) in a treat and extend protocol based on presence/absence of retinal fluid and BCVA assessments after a loading dose of 3 monthly injections and assessed for 52 ± 4 weeks. Demographic, clinical factors, including changes in SHRM thickness, CRT (central retinal thickness) and best-corrected visual acuity (BCVA, LogMAR), were analyzed and compared between groups. Interaction and mediation analysis were performed to evaluate the effects of treatments and the role of SHRM on BCVA with respect to retinal fluids.

Morphologic and functional parameters improved in both groups ($p<0.001$ for SHRM, $p=0.004$ for BCVA, $p<0.001$ for CRT). While the same improvement in SHRM thickness and CRT was obtained with the two drugs, we observed a significant group per factor interaction regarding temporal trend ($p=0.011$ and $p<0.001$ respectively), showing a stronger and earlier reduction with brolucizumab. There was a significant correlation between SHRM and BCVA ($p=0.001$), still significant after correction for CRT ($p=0.02$). Mediation analysis showed that this correlation is mediated by the CRT only for 22% of its value, highlighting the clinical role of SHRM versus the retinal fluids.

Despite comparison with aflibercept showed no meaningful differences, brolucizumab demonstrated its effect on SHRM and CRT earlier that aflibercept. This study, together with long-term data, could support the role of SHRM as a tomographic biomarker of brolucizumab treatment response being predictive of visual acuity improvements and higher fluid resolution.

Abstract 16 – Main Program

TREAT-AND-EXTEND 2.0: A MODIFIED TREATMENT PLANNING TO IMPROVE REAL-LIFE FEASIBILITY MAINTAINING CLOSE FLUIDS CONTROL WITH FARICIMAB.

Arrigo A.*, Aragona E., Bandello F.

IRCCS San Raffaele Scientific Institute ~ Milan ~ Italy

Faricimab proved to stably reach and maintain q16 interval in treat-and-extend (T&E) regimen. However, the difficulty of ensuring proper visit and treatment planning in real-life may interfere with optimal patients' management. Here we describe a modified treat-and-extend regimen, focused on reducing the visits maintaining the optimal control of retinal fluids.

We included patients affected by newly onset neovascular age-related macular degeneration (nAMD) treated with faricimab alone. The treatment planning included the loading dose, followed by a modified T&E. We administered two consecutive injections considering the same interval, performing the control visit only after the second injection, then deciding to extend or not, still planning two injections instead of one. We named this modified scheme T&E 2.0 because of the "double injection" strategy adopted. The statistical model was built to assess fluids control, visual acuity changes, compared with standard T&E regimen.

We included 30 nAMD eyes (15 eyes treated by T&E 2.0 and 15 eyes treated by standard T&E). The total follow-up was 18 months. The treatment was associated with significant visual acuity improvement and macular thickness reduction. At the final timepoint, all the patients reached q16 interval. The patients underwent bilateral OCT examination at each injection to ensure control of both eyes. The modified T&E regimen led to statistically significant reduction of the visits with respect to standard T&E regimen (3 vs 6 visits) ($p<0.05$) and one injection more (9 vs 8). No complications have been observed.

Although this should be considered a pilot study, the modified regimen allowed to reduce the burden of visits, although guaranteeing a long-term treatment planning and an optimal control of retinal fluids. Larger studies should better assess the economic and management benefits of the proposed T&E 2.0 scheme.

Abstract 20 – Main Program

TALON, A PHASE IIIB STUDY OF BROLUCIZUMAB VERSUS AFLIBERCEPT IN A MATCHED (TREAT-AND-EXTEND) REGIMEN IN PATIENTS WITH NEOVASCULAR AGE-RELATED MACULAR DEGENERATION: 64-WEEK RESULTS

Vadalà M.*[1], Regillo C.[2], Kertes P.J.[3], Kaiser P.K.[4], Gillies M.[5], Maio--Twofoot T.[6], Guenther S.[6], David L.[6], Holz F.G.[7]

[1]1Biomedicine, Neuroscience and Advance Diagnostic (BIND) Department, University of Palermo, Palermo, Italy. Euro-Mediterranean Institute of Science and Technology, IEMEST, Palermo ~ Palermo ~ Italy, [2]Retina Service, Wills Eye Hospital, Thomas Jefferson University, Philadelphia, PA, USA ~ Philadelphia ~ United States of America, [3]The John and Liz Tory Eye Centre, Sunnybrook Health Sciences Centre, Toronto, ON, Canada ~ Toronto ~ Canada, [4]Cole Eye Institute, Cleveland Clinic, Cleveland, OH, USA ~ Cleveland ~ United States of America, [5]Clinical Ophthalmology and Eye Health, Sydney Eye Hospital, The University of Sydney, Sydney, Australia ~ Sydney ~ Australia, [6]Novartis Pharma A.G., Basel, Switzerland ~ Basel ~ Switzerland, [7]Department of Ophthalmology, University of Bonn, Germany ~ Bonn ~ Germany

TALON is a 64-week, randomized, double-masked, prospective Phase IIIb study evaluating the efficacy and safety of brolucizumab (BRO) 6mg compared with aflibercept (AFL) 2mg using a matched (Treat-and-Extend) treatment regimen in patients with neovascular age-related macular degeneration.

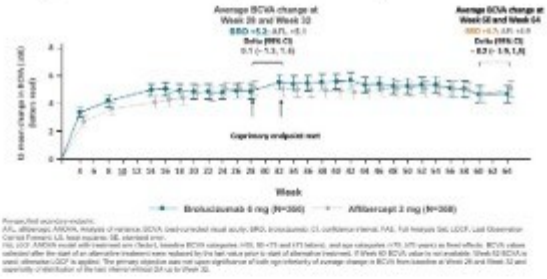
Patients received BRO 6mg (n=366) or AFL 2mg (n=368) at Weeks 0, 4, 8, and 16, followed by 4-week interval adjustments depending on disease activity (DA) up to a maximum treatment interval of q16w. Efficacy endpoints included distribution of the last treatment interval with no DA at Week 64, average change in best-corrected visual acuity (BCVA) from baseline at Week 60 and Week 64, and average change from baseline in central subfield thickness (CSFT) at Week 60 and Week 64. Incidence of adverse events (AEs) was also reported.

At Week 64, more BRO patients had last treatment interval with no DA of q16w (28.4% [BRO] vs 12.2% [AFL]) while more AFL patients had q4w interval need. Mean BCVA gains were comparable to AFL and 24.3% (BRO) vs 24.7% (AFL) patients gained ≥15 letters from baseline. BRO achieved greater average reductions in CSFT at Weeks 60 and 64 and fewer BRO patients had IRF and/or SRF (26.6% vs 34.4%). Incidence of ocular AEs, serious ocular AEs and ocular AEs of special interest in the BRO vs AFL arms were 31.1% vs 27.7%, 2.7% vs 0.8%, 6.0% vs 1.6% respectively.

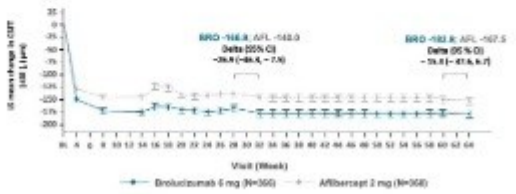
In TALON, more BRO patients achieved longer treatment intervals without DA while maintaining comparable visual gains, and with better anatomic outcomes compared to those treated with AFL. AEs of special interest occurred in line with what has been previously reported, supporting the overall benefit/risk profile of brolucizumab.

Week 64: A higher proportion of brolucizumab patients had a last treatment interval of q16w with no disease activity, while more aflibercept patients demonstrated a q4w interval need

BCVA gains achieved with brolucizumab 6 mg were maintained through Week 64 and were comparable to aflibercept



Brolucizumab achieved greater reductions vs aflibercept in CSFT from baseline at Weeks 60 and 64 consistent with Weeks 28 and 32



Abstract 1 – Main Program

COMPARING REAL-WORLD OUTCOMES: FARICIMAB POST-BEVACIZUMAB (2ND LINE) VS. POSTAFLIBERCEPTRANIBIZUMAB (3RD LINE) IN EXUDATIVE DISEASES TREATMENT

Loewenstein A.*, Wattad A., Trivizki O.

Tel Aviv medical Center ~ Tel Aviv ~ Israel

this study aimed to evaluate the functional and anatomical outcomes of faricimab treatment in patients with diabetic macular edema (DME), neovascular age-related macular degeneration (nAMD), and MNV due to central serous chorioretinopathy (mCSCR) that had already been treated with either dexamethasone, aflibercept, bevacizumab, or ranibizumab.

This retrospective, observational, consecutive-case study included patients diagnosed with DME, nAMD, or CSCR who were non-naive to treatment with dexamethasone, aflibercept, bevacizumab, or ranibizumab and were subsequently treated with faricimab. Faricimab was administered monthly, with up to 4 injections as per drug labeling. All participants were followed for ≥4 months after the initiation of faricimab treatment. The primary outcomes were changes in best-corrected visual acuity (BCVA) and central macular thickness (CMT). Data regarding age, sex, number of previous injections, and best-corrected visual acuity (BCVA) were collected. CMT was measured by optical coherence tomography

A total of 124 eyes were included. Ninety one percent of patients had AMD , followed by 24% with DME, and 3% with CSCR. Patients received a mean of 4±2 faricimab injections. After switching to faricimab, the mean BCVA improved slightly, from 0.407±0.2 logMAR to 0.415±0.2 . Mean CMT significantly improved from 389±121 µm to 328±96 µm. The mean CMT reduction when switching from aflibercept, bevacizumab, ranibizumab, or dexamethasone to faricimab was -52±100 µm, -90±118 µm, -61±71 µm, and -107±147 µm, respectively. A trend toward better anatomical improvement was observed in patients switching from bevacizumab.

Intravitreal faricimab was associated with significant improvement in CMT, but no significant improvement in BCVA, in non-treatment-naïve patients with retinal diseases. A trend toward better outcomes was observed with second-line treatment. In addition, a trend indicated greater anatomical improvements in patients switching from bevacizumab suggesting earlier switching may be beneficial.

Abstract 395

RETINAL PIGMENT EPITHELIUM ELEVATION VALUES AS A MARKER IN DETERMINING THE ANATOMICAL PROGNOSIS AND TREATMENT REGIMEN OF TYPE 2 MACULAR NEOVASCULARIZATION

Degirmenci M.F.K.*

Ankara Ulucanlar Eye Training and Research Hospital ~ Ankara ~ Turkey

To determine the prognostic value of the retinal pigment epithelial (RPE) elevation area (RPE-el-a) or volume (RPE-el-v) and the other morphological optical coherence tomography (OCT) biomarkers in neovascular age related macular degeneration (nAMD) cases

Fifty-one eyes of 51 naive patients with nAMD were included. The patients treated with treat-and-extend (T&E) regimen. Firstly, three doses of intravitreal bevacizumab (IVB) were administered (loading phase). After the loading phase, eyes were divided into two groups according to the presence of intraretinal and/or subretinal fluid (IRF/SRF). Three doses of intravitreal aflibercept were loaded in eyes with refractory or recurrent fluid after IVB treatment. Treatment was continued with treat-and-extend regimen in both groups. Central retinal thickness, morphological characteristics, central 3 and 5 mm RPE-el-a and volume were evaluated by OCT.

After IVB loading, 27 of 51 patients had IRF/SRF, while 24 did not. When BCVA change in the 3rd, 6th and 12th months was compared between groups according to the presence of SHRM, the gain was higher in non-SHRM group (p=0.011, p=0.016 and p=0.023, respectively). Table-1 shows baseline characteristics of groups. The absence of a sub-RPE hyperreflective column was found to be a risk factor for fluid resistance after IVB loading (p=0.002). While baseline 3 mm RPE-el-a and 3mm RPE-el-v values were increasing, the risk of fluid resistance after IVB loading was significantly increased (OR,1.49, p=0.028 and OR,7.98, p=0.037, respectively).

At one year follow-up, the presence of subretinal hyperreflective material, higher RPE area and volume at presentation seem to be associated with a poorer visual and anatomical outcome in eyes treated with T&E regimen. These may be considered as an indicator for which treatment regimen should be chosen initially.

Table-1: Baseline characteristics of the groups and their comparison

Baseline characteristics	Group 1 (n:27)	Group 2 (n:24)	p value
	mean±SD / median (IQR)		
Age (years)	72.8±9.9	73.5±5.8	0.794
Gender (male/female)	17/10	11/13	0.267
BCVA (logMAR)	-1.17±0.54	-1.25±0.54	0.612
Sub-rpe hip.ref.col. (n)	7	17	0.002
IRF (n)	17	15	0.990
SRF (n)	27	24	0.990
SHRM (n)	19	15	0.569
HRD (n)	20	20	0.508
VMT (n)	5	1	0.195
ELM-EZ int (n)	13	8	0.394
CMT	377±102	342±107	0.241
SRFH	143±86	135±87	0.771
Rpe el. area 3mm	3.12±1.77	2.01±1.56	0.024
Rpe el. area 5mm	4.88±3.25	3.58±2.95	0.198
Rpe el. volume 3mm	0.22 (0.05/0.72)	0.08 (0.02/0.29)	0.037
Rpe el. volume 5mm	0.29 (0.09/0.86)	0.15 (0.04/0.50)	0.131

Mean ± standard deviation results were given in table (additionally, median, 25th and 75th percentiles were given in parenthesis for nonparametric test results)
IRF: Intraretinal fluid, SRF: Subretinal fluid, Sub-rpe hyp.col.: Subretinal hyperreflective column, SHRM: Subretinal hyperreflective material, HRD: Hyperreflective dots, VMA/VMT: Vitreomacular adhesion/traction, ELM-EZ int.: external limiting membrane/ellipsoid zone integrity. P<0,05 was considered statistically significant in 95% confidence interval, BCVA: Best corrected visual acuity, CRT: Central retinal thickness, Rpe el. Area: Retinal pigment epithelium elevation area, Rpe el. volume: Retinal pigment epithelium elevation volume

Abstract 243

REDUCTION IN PIGMENT EPITHELIAL DETACHMENTS WITH FARICIMAB VS AFLIBERCEPT IN PATIENTS WITH TREATMENT-NAÏVE NAMD: A TENAYA/LUCERNE POST HOC ANALYSIS

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Faricimab, a dual angiopoietin-2 (Ang-2)/vascular endothelial growth factor-A (VEGF-A) inhibitor, demonstrated greater drying than aflibercept during head-to-head dosing in the TENAYA/LUCERNE (NCT03823287/NCT03823300) neovascular age-related macular degeneration (nAMD) trials. This post hoc analysis evaluated the impact of faricimab vs aflibercept on pigment epithelial detachment (PED) during head-to-head dosing in TENAYA/LUCERNE.

Patients with treatment-naïve nAMD (pooled N = 1329) were randomised to faricimab 6.0 mg up to every 16 weeks (n = 665) after 4 initial every-4-week (Q4W) doses or aflibercept 2.0 mg every 8 weeks (n = 664) after 3 initial Q4W doses. PED was defined as a retinal pigment epithelium elevation with width ≥350 µm. Baseline PED characteristics and changes in maximum PED thickness during head-to-head dosing (through week 12) were assessed in eyes with PED thickness ≥125 µm at baseline. The time to first reduction of maximum PED thickness by 50% from baseline through week 60 was evaluated.

At baseline, 500 and 496 patients in the faricimab and aflibercept arms, respectively, had PED with thickness ≥125 µm. Baseline mean (SD) maximum PED thickness measured within the 6-mm Early Treatment Diabetic Retinopathy Study grid was: faricimab, 303.9 µm (188.0); aflibercept, 290.3 µm (187.8). Mean changes from baseline in maximum PED thickness at week 12 were: faricimab, –119.1 µm vs aflibercept, –101.4 µm (nominal P = 0.0028). The median time to first reduction of maximum PED thickness by 50% was 48 weeks with faricimab vs not reached with aflibercept. Faricimab was well tolerated with a safety profile comparable to aflibercept.

Dual Ang-2/VEGF-A inhibition with faricimab improved PED outcomes compared with aflibercept during and after head-to-head dosing in patients with treatment-naïve nAMD. These findings are consistent with the greater drying of retinal fluid observed with faricimab vs aflibercept during head-to-head dosing.

Abstract 394

EXTENDED DEPTH OF FOCUS INTRAOCULAR LENS IMPLANTATION IN PATIENTS WITH AGE-RELATED MACULAR DEGENERATION

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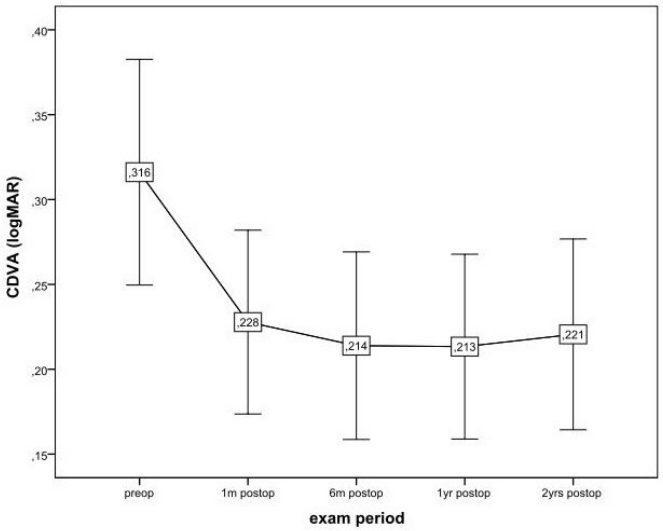
To evaluate the visual performance of an extended depth of focus (EDOF) intraocular lens (IOL) in patients with age-related macular degeneration (AMD).

This prospective study included 36 eyes (18 patients), who had a history of dry AMD and secondary underwent bilateral cataract surgery involving implantation of a non-diffractive EDOF IOL, called Vivity (Alcon Laboratories, USA). According to Beckman clinical classification for AMD, 10 eyes (28%) had early, 20 (56%) had intermediate and 6 (16%) had late stage of AMD. Data collected included patient demographics, corrected distance visual acuity (CDVA) and corrected near visual acuity (CNVA). Patients' satisfaction, spectacle dependence and side effects reporting were evaluated with a self-reported questionnaire, given 3 weeks after surgery. Patients had a 2-year follow-up period postoperatively.

Patients' mean age was 72.33±7.15 years (56% male). Mean preoperative CDVA was 0.32±0.20 logMAR. Postoperative monocular CDVA and CNVA were 0.22±0.17 logMAR and 0.27±0.20 logMAR respectively. Eyes in early AMD stage had better visual performance in both distance and near visual acuity, compared to intermediate and late AMD stages. A standardized self-reported questionnaire for visual performance after cataract surgery revealed improvement in everyday activities 3 weeks postoperatively in all patients. Most of patients (83%, 30 eyes) did not report significant visual impairment due to dysphotopsia in their everyday life. 89% (32 eyes) were satisfied with their degree of spectacle independence.

Patients with AMD who were implanted the EDOF Acrysof Vivity IOL demonstrated intermediate as well as near vision improvement, compared to distance vision. This non-diffractive EDOF IOL may be a promising tool for patients with AMD. It provides a range of spectacle independence and maintenance of every-day life activities.



Mean Values	Preop	1m_postop	6m_postop	1yr_postop	2yrs_postop
CDVA	0.32±0.20	0.23±0.16	0.21±0.16	0.21±0.16	0.22±0.17
p-value		<0.001	<0.001	<0.001	<0.001
CNVA	0.46±0.18	0.12±0.20	0.12±0.18	0.18±0.20	0.22±0.14
p-value		<0.001	<0.001	<0.001	<0.001

Visual acuity is presented preoperatively and at all postoperative visits.
The data are presented as mean value ± standard deviation (SD) in (logMAR) values.
UDVA: Uncorrected Distance Visual Acuity (logMAR)
CDVA: Corrected Distance Visual Acuity (logMAR)

Abstract 246

A CASE OF ANTERIOR UVEITIS FOLLOWING THE LOADING DOSE OF FARICIMAB FOR THE TREATMENT OF NEOVASCULAR AGE-RELATED MACULAR DEGENARATION

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To present a case of uveitis following treatment with an intravitreal injection (IVI) of faricimab for neovascular age-related macular degeneration (nAMD). Faricimab is a bispecific antibody that targets VEGF-A and angiopoietin-2 and has been approved for the treatment of nAMD and diabetic macular edema.

A 70-year-old female patient with a history of nAMD presented to our clinic complaining of headache, redness and photophobia in her right eye (RE). She had received her 4th IVI of faricimab 8 weeks prior to the onset of her symptoms. Her best-corrected visual acuity was 0.8 in her RE and the intraocular pressure was 12mmHg. Slit lamp examination revealed ciliary injection, a mild anterior chamber reaction with a few small keratic precipitates and endothelial cellular “dusting”. Fundus examination revealed no sign of posterior segment inflammation.

She was treated with a course of topical dexamethasone drops along with cycloplegics. During her follow up visits her symptoms and signs gradually improved within a month, following the tapering of dexamethasone drops.

Intraocular inflammation in nAMD according to phase 3 studies was 2.7%-3.3%. Uveitis cases associated with faricimab treatment have also been documented in real world studies and a few cases/case series. We presented a case of anterior uveitis, possibly linked to faricimab IVI, which was successfully managed with topical steroid drops.

Abstract 89

TWO-YEARS REAL-LIFE EXPERIENCE OF A TERTIARY CENTER WITH INTRAVITREAL BROLUCIZUMAB SWITCH FOR TREATMENT OF EXUDATIVE NEOVASCULAR AGE-RELATED MACULAR DEGENERATION

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To analyze visual and anatomical outcomes in patients switchers to brolucizumab and previously treated with other intravitreal anti-vascular endothelial growth factor (anti-VEGF) agents for exudative neovascular age-related macular degeneration (nAMD) in a real-word experience of a tertiary center, in a follow-up of two years. Safety parameters have been also recorded.

This retrospective study included 35 eyes of 33 patients with exudative nAMD previously treated with at least three injections of another intravitreal anti-VEGF molecule. Twenty-five eyes of 25 patients has been treated with brolucizumab for at least 24 months from the switch. Patients have been treated with a Pro Re Nata (PRN) or a proactive regimen in our clinic between January 2021 and June 2024. Clinical and anatomical parameters have been evaluated and possible adverse events were collected.

After 24 months, the 25 patients analyzed showed a significant reduction in central macular thickness ($P = 0.047$) and choroidal thickness ($P < 0.001$). Visual acuity remains stable during the follow-up period. "Poor responders" were younger, had longer disease duration, received more injections, and had thicker choroids compared to "Good responders." Adverse events included 1 subretinal hemorrhage and 1 intraocular inflammation with 278 injections considered.

Treatment with brolucizumab is effective also in patients previously treated with other drugs. The best outcomes are achieved in patients who switch early. Treatment with brolucizumab in this population has an acceptable risk profile, with only one intraocular inflammatory event out of 278 intravitreal injections.

Abstract 255

EXTENSIVE MACULAR ATROPHY WITH PSEUDODRUSEN-LIKE APPEARANCE (EMAP): PROGRESSION KINETICS AND LATE-STAGE FINDINGS

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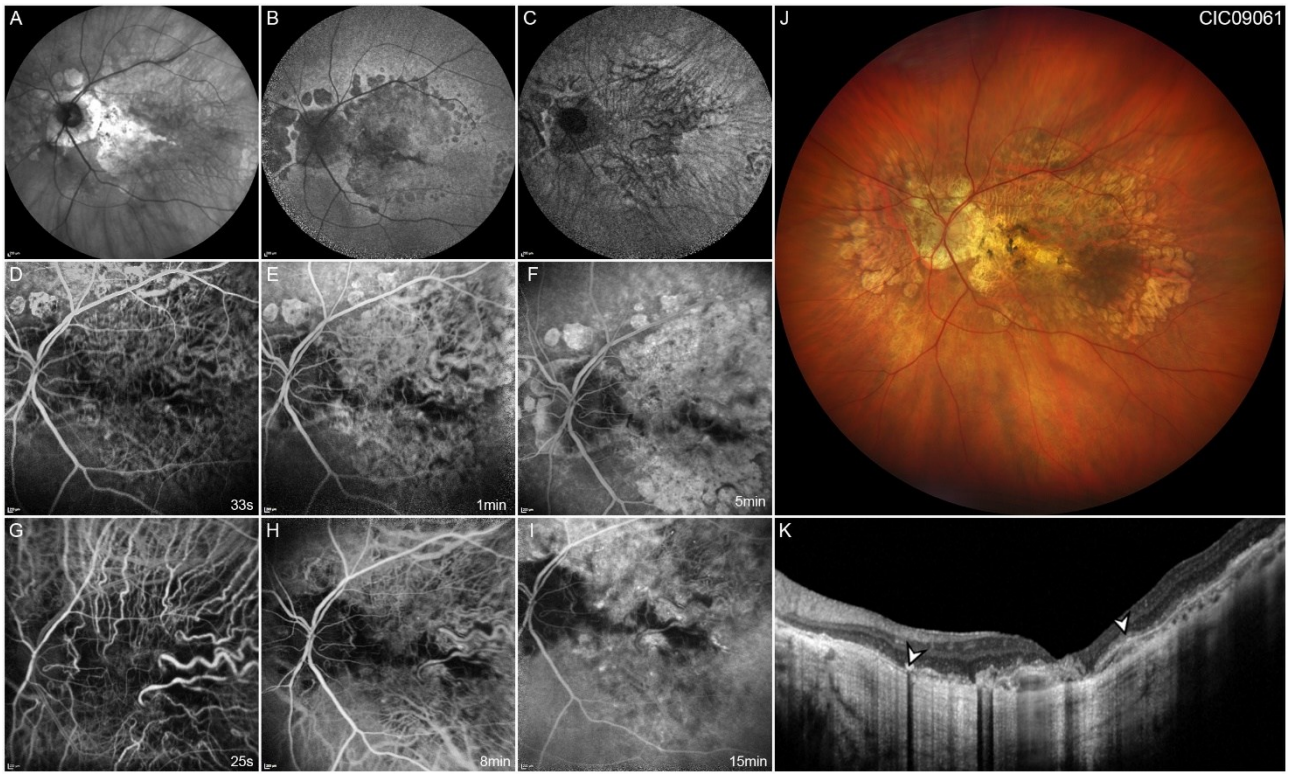
To describe the clinical outcome and late-stage findings of Extensive Macular Atrophy with Pseudodrusen-like appearance (EMAP).

Study design: Retrospective cohort study.
Participants: Seventy-eight patients (156 eyes) affected by EMAP.
We collected data on best-corrected visual acuity (BCVA), kinetic perimetry, optical coherence tomography (OCT), short-wavelength autofluorescence (SW-AF) and near-infrared autofluorescence (NIR-AF). Genetic testing for the TIMP3 and C1QTNF5 genes was performed via Sanger sequencing for 58 subjects, with no pathogenic variants identified.
Outcome measures: BCVA, visual field, and imaging findings at the last examination. Incidence rates and time-to-event curves for blindness with the United States Social Security Administration (US-SSA) and World Health Organization (WHO) criteria, foveal involvement, and atrophy enlargement beyond the 30° and 55° field of view.

At last visit, the mean age was 70.9 ± 5.2 years. 58.1% of the patients were blind with the US criteria. All eyes had large central scotomas, in 22.7% of the cases with visual field constriction. We detected focal openings or large dehiscences of the Bruch's membrane in 25.4% of the eyes. The incidence rates for blindness were 3.95/100-subjects-year with the US criteria and 1.54/100-subjects-year according to the WHO. The incidence rates were 22.8/100-eye-year for foveal involvement, 12.0/100-eye-year for atrophy enlargement beyond the 30° and 6.6/100-eye-year for atrophy enlargement beyond 55°. Estimates were not influenced by the age of onset.

We identified characteristic imaging findings, including Bruch's membrane ruptures, in elder EMAP patients and calculated incidence rates for different functional and anatomical outcomes.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Abstract 87

INCIDENCE AND REASONS FOR DISCONTINUATION OF ANTI-VEGF TREATMENT IN NEOVASCULAR AMD.

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To explore the factors and frequency of interruptions in intravitreal treatment for patients with neovascular age-related macular degeneration (AMD), and to evaluate the demographic and clinical factors linked to the reasons for discontinuation.

In this multicenter study, patients who began anti-VEGF treatment between January 2019 and December 2021 for treatment-naïve neovascular exudative AMD were retrospectively analyzed. The overall incidence of treatment discontinuation, along with the rates for each specific cause, was calculated. The probability of each cause of discontinuation over time from the start of treatment, as well as the risk factors associated with each case, were also determined.

Six hundred fifty-five individuals (28.5%) discontinued intravitreal anti-VEGF therapy. Among the five main causes for discontinuation (patient's decision, transfer to another clinic, clinical decision, systemic diseases, or death), clinical decision was the most common. Kaplan-Meier curve analysis suggests clinical decisions were more frequent in the first two years. Worse visual acuity increased the risk of discontinuation due to clinical decisions. Younger patients were more likely to stop therapy by choice. Better visual acuity and longer distance from the clinic increased the likelihood of continuing treatment elsewhere.

The discontinuation of anti-VEGF treatment is common among individuals with neovascular AMD. Causes of discontinuation include not only clinician decisions but also those related to the patient's health and personal choices.

Abstract 439

UNDERSTANDING THE EXPERIENCE OF GEOGRAPHIC ATROPHY SECONDARY TO AGE-RELATED MACULAR DEGENERATION FOR INDIVIDUALS LIVING IN SPAIN, FRANCE, AND GERMANY

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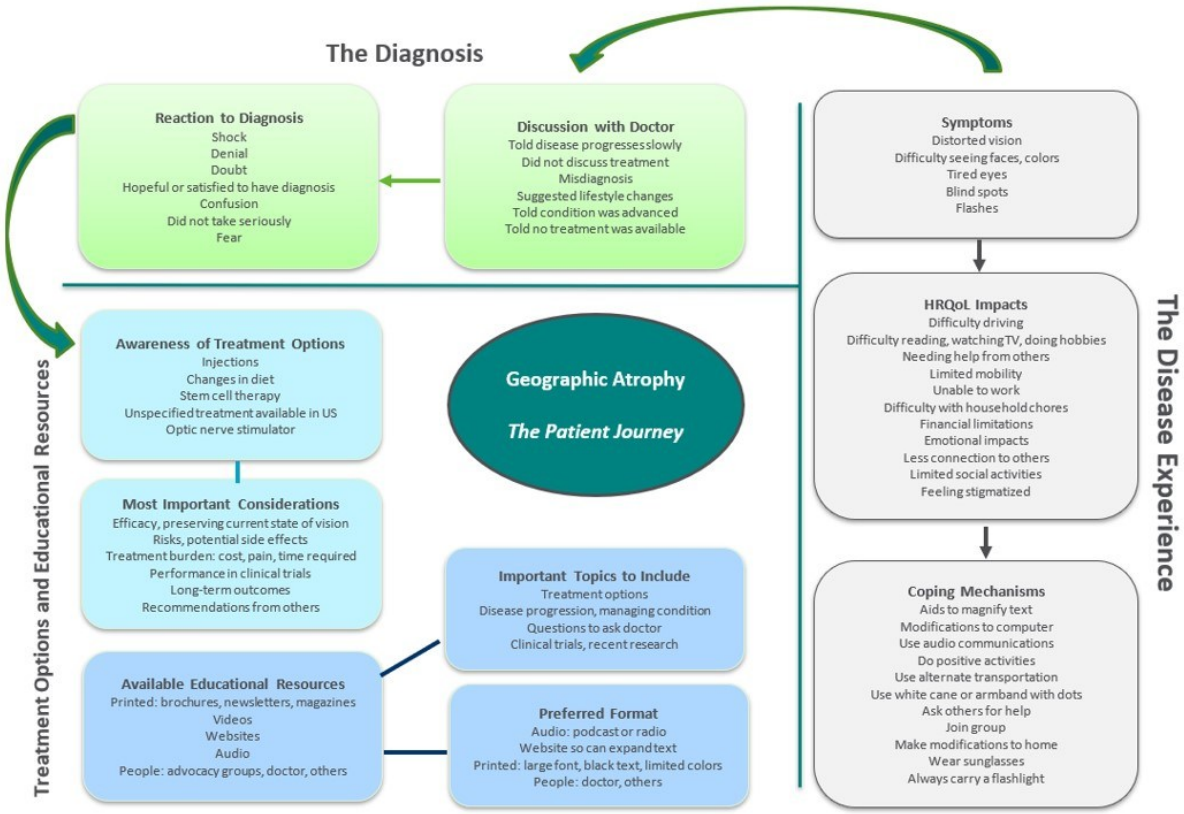
Geographic atrophy (GA), a severe form of age-related macular degeneration (AMD), causes vision loss in approximately 5 million people globally. Currently, treatments are only available in the United States. This research explored the patient perspective on future GA treatments, coping strategies for managing symptoms, and health-related quality of life (HRQOL).

Research documents were created and approved by a central ethics review board. Recruitment of interview participants was done in partnership with a patient advocacy group and a third-party recruiter. Eligible individuals provided written consent for interviews, which were conducted in their native language by trained interviewers using a semi-structured guide. Each 60-minute interview took place via telephone or web-based video, was audio-recorded, and transcribed into U.S. English. Transcripts were anonymized to remove identifiable information. Qualitative data coding and analysis were performed using Atlas.ti (version 9), resulting in comprehensive findings tables summarizing key concepts from participant quotes.

Thirteen interviews were conducted with adults in France (n=5), Germany (n=5), and Spain (n=3) diagnosed with GA secondary to AMD. Participants, aged 55 to 89 (mean=73.2), included 7 females and 6 males. Their journey to diagnosis included driving difficulties, distorted vision, and flashes of light. Common symptoms included difficulties with night vision, distinguishing colors, blurry vision, and facial recognition (Table 1). These symptoms affected quality of life, leading to challenges with driving (n=9, 69.2%) and reading (n=8, 61.5%). Most (n=11, 84.6%) were aware of potential treatments and all reported maintaining their current vision as a meaningful treatment outcome (Table 2).

GA symptoms limit HRQOL and independence, leading to frustration, stigma, and disconnection. Participants employ coping mechanisms and express concerns about the future. They are overwhelmingly interested in educational resources on new treatments, disease progression and knowing what questions to ask their doctors. Participants highlighted the need for accessible educational resources.

Figure 1: Geographic Atrophy Patient Journey: Conceptual Model



Abstract 286

KEY BASELINE DISEASE CHARACTERISTICS IN NEOVASCULAR AGE-RELATED MACULAR DEGENERATION WERE NOT PREDICTIVE OF DOSING INTERVAL EXTENSION OF AFLIBERCEPT 8 MG: A POST-HOC 96-WEEK PULSAR ANALYSIS

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In the PULSAR trial, dosing intervals in the aflibercept 8 mg arms could be shortened in Year 1 and shortened/extended in Year 2, according to prespecified criteria. This post-hoc analysis evaluated key baseline characteristics of patients grouped according to their last assigned dosing interval at Week 96.

PULSAR (NCT04423718) was a double-masked, 96-week, Phase 3 clinical trial in patients with neovascular age-related macular degeneration (nAMD). Patients were randomly assigned 1:1:1 to receive intravitreal aflibercept 8 mg every 12 weeks (8q12) or 16 weeks (8q16) or 2 mg every 8 weeks (2q8), each after 3 initial monthly injections. This post-hoc subgroup analysis evaluated baseline best-corrected visual acuity (BCVA), central subfield retinal thickness (CRT), and total choroidal neovascularization (CNV) lesion area in patients in the 8q12 and 8q16 arms grouped by their last assigned dosing intervals; only patients who completed 96 weeks of treatment were included.

Of 583 patients who completed 96 weeks of aflibercept 8 mg treatment, 185/291 (63.6%) and 229/292 (78.4%) patients initially assigned to 8q12 and 8q16, respectively, were last assigned to ≥q16 dosing. In patients receiving aflibercept 8 mg, mean±SD baseline BCVA, CRT, and CNV lesion area, respectively, according to last assigned dosing interval at Week 96, were 59.4±12.8 letters, 364±130 µm, and 6.1±5.0 mm2 in 162/583 patients assigned to q24 dosing; 61.0±13.0 letters, 352±122 µm and 6.2±5.1 mm2 in 141/583 patients assigned to q16; and 60.6±10.6 letters, 400±128 µm, and 7.1±5.9 mm2 in 71/583 patients assigned to q8.

Over 71.0% of patients with nAMD treated with intravitreal aflibercept 8 mg completed 2 years of aflibercept 8 mg treatment assigned to dosing every 16 weeks or longer. The investigated disease characteristics at baseline were not predictive of dosing interval at Week 96.

Abstract 389

TREAT-AND-EXTEND 2.0: A MODIFIED TREATMENT PLANNING TO IMPROVE REAL-LIFE FEASIBILITY MAINTAINING CLOSE FLUIDS CONTROL WITH FARICIMAB.

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Faricimab proved to stably reach and maintain q16 interval in treat-and-extend (T&E) regimen. However, the difficulty of ensuring proper visit and treatment planning in real-life may interfere with optimal patients' management. Here we describe a modified treat-and-extend regimen, focused on reducing the visits maintaining the optimal control of retinal fluids.

We included patients affected by newly onset neovascular age-related macular degeneration (nAMD) or diabetic macular edema (DME), treated with faricimab alone. The treatment planning included the loading dose, followed by a modified T&E. We administered two consecutive injections considering the same interval, performing the control visit only after the second injection, then deciding to extend or not, still planning two injections instead of one. We named this modified scheme T&E 2.0 because of the "double injection" strategy adopted. The statistical model was built to assess fluids control, visual acuity changes, compared with standard T&E regimen.

We included 20 nAMD and 20 DME. The total follow-up was 18 months. The treatment was associated with significant visual acuity improvement and macular thickness reduction. At the final timepoint, all the patients reached q16 interval. The patients underwent bilateral OCT examination at each injection to ensure control of both eyes. The modified T&E regimen led to statistically significant reduction of the visits with respect to standard T&E regimen (3 vs 6 visits) ($p<0.05$) and one injection more (9 vs 8). No complications have been observed.

Although this should be considered a pilot study, the modified regimen allowed to reduce the burden of visits, although guaranteeing a long-term treatment planning and an optimal control of retinal fluids. Larger studies should better assess the economic and management benefits of the proposed T&E 2.0 scheme.

Abstract 47

COMPARATIVE TREATMENT IN A BILATERAL NAIVE RAP LESION DEBUT AFLIBERCEPT 2MG VERSUS FARICIMAB

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Demostrate the power and efficacy of Faricimab compared with aflibercept 2 mg in a naive patient with bilateral debut of a type 3 neovascular AMD lesion.

A 70 year-old male presented with 1 month visual loss in both eyes. Initial exam showed 20/50 visual acuity in right eye (OD) and 20/80 in left eye(OS).Retinography showed a fundus compatible with macular degeneration.Ocular tomography (OCT)reveales intraretinal fluid (IRF), subretinal hipereflective material(SHRM),and hiperfluorescent focci (HFF) over fibrovascular bilateral retinal detachments(PED). He was diagnosed with AMD type 3 neovascularization in both eyes. Due to the bilateral debut and the symmetric findings we started with a treat and extend regimen with Faricimab in OD and Aflibercept 2 mg in OS to look for differences between treatments.

One month after the first dose VA improves in both eyes but more in OD. OCT findings show resolution of IRF and SHRM in both eyes but better reduction of intraretinal cysts and height of the PED´s in the eye treated with faricimab. One month after second dose, VA keeps improver with greater extend in OD , and OCT shows a progressive reduction of the HRF and PED height in the Faricimab treated eye. After both loading doses OD keeps stable with no signs of reactivation but OS shows a subtle increase of the PED.

The novel treatment Faricimab is a bispecific antibody that inhibits a dual pathway, VEGF and ANG -2. This case highlights the power and efficacy of Faricimab in naive patients showing a faster and better resolution of the PED compared to Aflibercept 2 mg after the initial loading dose.

Abstract 98

FARICIMAB COMPARATIVE OUTCOMES ON NON-NAIVE NAMD AND DME PATIENTS: FIRST VS. SECOND-SWITCH

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This study aimed to evaluate the functional and anatomical outcomes of faricimab treatment in patients with diabetic macular edema (DME), neovascular age-related macular degeneration (nAMD), and MNV due to central serous chorioretinopathy (mCSCR) that had already been treated other therapies

This retrospective, observational, consecutive-case study included patients diagnosed with DME, nAMD, or mCSCR who were non-naive to treatment with dexamethasone, aflibercept, bevacizumab, or ranibizumab and were subsequently treated with faricimab. Faricimab was administered monthly, with up to 4 injections as per drug labeling. All participants were followed for ≥4 months after the initiation of faricimab treatment. The primary outcomes were changes in best-corrected visual acuity (BCVA) and central macular thickness (CMT). Data regarding age, sex, number of previous injections, and best-corrected visual acuity (BCVA) were collected. CMT was measured by optical coherence tomography.

A total of 124 eyes were included. Majority of patients had AMD (91%), followed by 24% with DME, and 3% with mCSCR. Patients received a mean of 4±2 faricimab injections. After switching to faricimab, the mean BCVA improved slightly, from 0.407±0.2 logMAR to 0.415±0.2 (P=0.8). Mean CMT significantly improved from 389±121 µm to 328±96 µm (P<0.0001). The mean CMT reduction when switching from aflibercept, bevacizumab, ranibizumab, or dexamethasone to faricimab was -52±100 µm, -90±118 µm, -61±71 µm, and -107±147 µm, respectively. There was a trend toward better anatomical improvement observed in patients switching from bevacizumab.

Faricimab was associated with significant improvement in CMT, but no significant improvement in BCVA, in non-naïve patients with nAMD, DME, and CSCR. A trend toward better outcomes was observed with second-line treatment. Another trend indicated slightly greater anatomical improvements in patients switching from bevacizumab as second-line therapy.

Abstract 426

EXSUDATIVE AGE RELATED MACULAR DEGENERATION: STUDY OF QUALITY OF LIFE

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The aim of our study was to evaluate the quality of life (QOL) of patients with exudative AMD and to identify the factors influencing the QOL score.

This was a cross-sectional and descriptive study which spanned from March 2023 to September 2023 covering 42 patients followed for exudative AMD in the ophthalmology department A of the Hedi Raies institute. For every patient we determined a studied eye that has exsuadtive AMD in the unilateral forms and the worst visual acuity in the bilateral form. We also studied the adelphic eye .We used the National Eye Institute 25-Item Visual Function Questionnaire (NEI VFQ-25) to assess patients' QOL.

The QOL of our patients was acceptable with a mean total score of 67.32, a score > 70 in 23 patients or 55%. We concluded that a low socioeconomic level, bilateral AMD, legal blindness significantly alter the overall QOL score. We found a statistically significant link between the QOL score and these factors: VA from a distance (p=0.027), VA from near (p=0.008), the existence of inactive or fibrotic macular neovascularization OCT of the adelphic eye (p = 0.001). The multivariate statistical study demonstrated that the distance VA of the contra lateral eye influences the QOL of patients (p = 0.042).

Although the QOL of our patients was acceptable, exsudative AMD remains a potentially blinding disease. Patients with exsudative AMD should benefit from an assessment of their quality of life in addition to medical care.

Figure1: different domains of VFQ 25

Abstract 288

PREVENTION OF VISUAL ACUITY LOSS AND PRESERVATION OF PHOTORECEPTORS BY ANX007 IN DRY AGE-RELATED MACULAR DEGENERATION (AMD)/GEOGRAPHIC ATROPHY (GA) IN THE PHASE 2 ARCHER TRIAL, INCLUDING IN PATIENTS WITH LESS ADVANCED DISEASE

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[1]The Retina Clinic London ~ London ~ United Kingdom, [2]Duke department of Ophthalmology ~ Durham ~ United States of America, [3]Retina Foundation ~ Dallas ~ United States of America, [4]Ophthalmic Consultants of Boston ~ Boston ~ United States of America, [5]Retina Consultants of Texas ~ Texas ~ United States of America, [6]Annexon ~ California ~ United States of America

To assess the effect of ANX007 on visual function and retinal structure in patients with dry AMD/GA consistent with the neuroprotective mechanism of C1q inhibition. Additional analyses were conducted to determine the effect of ANX007 in the subset of patients with less advanced dry AMD/GA.

ANX007 is a Fab fragment that inhibits C1q, the initiator of the classical complement pathway. ARCHER is a multicenter, randomized, double-masked, sham-controlled Phase 2 study of ANX007 for the treatment of dry AMD/GA. Patients were randomized to intravitreal ANX007 5 mg monthly (EM), 5 mg every other month (EOM), or matched sham. Pre-specified functional and structural endpoints were best corrected visual acuity (BCVA) and low luminance visual acuity (LLVA), and ellipsoid zone (EZ) and retinal pigment epithelium (RPE) loss. Additional analyses evaluated ANX007 in less advanced dry AMD/GA (defined by baseline low LLVD, limited EZ loss and smaller lesion size).

Previous reports described significant protection from persistent BCVA ≥15-letter loss with ANX007 EM (5.6%; p=0.0021) and EOM treatment (9.8%; p=0.032) compared to sham (21.3%), and reduced EZ loss at month 12 (27% reduction in ANX007 treated eyes (p = 0.0457)). Among eyes with baseline LLVD <30, no eyes treated with EM ANX007 experienced ≤15-letter BCVA loss compared to 16.9% with sham (p=0.0013). At month 12, ANX007 EM reduced lesion growth 26% in lesions <4.0 mm2 at baseline (p=0.46). Among patients with ≥20% of EZ present in the central 2.0 mm subfield at baseline, ANX007 reduced EZ loss by 65% (p=0.0259).

ANX007 demonstrated significant visual acuity (BCVA ≤15-letter loss) and photoreceptor protection (EZ) in dry AMD/GA patients in the ARCHER study. Significant and more robust function/structure protection was demonstrated in subpopulations with less advanced disease treated with ANX007. Further evaluation of ANX007 in the Phase 3 ARCHER II study is underway.

Abstract 289

ROBUST VISION GAINS AND ANATOMICAL IMPROVEMENT WITH EXTENDED FARICIMAB DOSING AND POTENTIAL Q20W DOSING IN TREATMENT-NAÏVE PATIENTS WITH NAMD IN TENAYA/LUCERNE

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To assess outcomes for treatment-naïve patients with neovascular age-related macular degeneration (nAMD) always on extended faricimab dosing (≥ every 12 weeks [Q12W] or Q16W) in TENAYA/LUCERNE (NCT03823287/NCT03823300), determine the proportion of patients who could have potentially extended to Q20W dosing, and assess predictors of potential Q20W dosing.

Patients with treatment-naïve nAMD were randomised to faricimab 6.0 mg up to Q16W (n = 665) or aflibercept 2.0 mg Q8W (n = 664). Following disease activity assessments at weeks 20/24, faricimab-treated patients received fixed dosing until week 60 then treat-and-extend–based (T&E) dosing. Best-corrected visual acuity (BCVA) and central subfield thickness (CST) were evaluated for faricimab-treated patients always on ≥Q12W and always on Q16W dosing. The proportion of patients who received ≥1 faricimab dose during the T&E phase potentially eligible for Q20W extension was evaluated per T&E criteria. Baseline characteristics associated with eligibility for potential Q20W extension were analysed.

Mean (standard deviation) BCVA changes from baseline averaged over weeks 104–112 were: always ≥Q12W, +6.6 (12.9) letters; always Q16W, +7.5 (11.8) letters; overall faricimab arm, +4.7 (14.9) letters. Corresponding CST changes from baseline were: always ≥Q12W, –142.8 (112.7) µm; always Q16W, –145.3 (110.8) µm; overall faricimab arm, –147.1 (125.7) µm. 56% of patients who received ≥1 faricimab dose during the T&E phase could potentially have extended to Q20W dosing. Patients who met Q20W extension criteria had lower CST and pigment epithelial detachment thickness (PED), a higher proportion of fibrovascular PED and higher rates of intraretinal fluid.

Treatment-naïve patients with nAMD always on extended faricimab dosing in TENAYA/LUCERNE maintained disease control through 2 years, as indicated by robust and stable vision gains and anatomic improvement. The stable outcomes achieved with faricimab in patients always on extended dosing may allow for potential extension to Q20W dosing.

Abstract 377

LONG-TERM IMPACT OF DIABETIC RETINOPATHY ON RESPONSE TO ANTI-VEGF TREATMENT IN NEOVASCULAR AMD

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To explore the long-term effect of diabetic retinopathy on response to anti-VEGF treatment in age-related macular degeneration-associated type 1 MNV using OCTA.

A total of 45 eyes with nAMD with type 1 MNV were included in the analysis. Among them, 24 eyes of 24 patients had no history of DM in their anamnesis and were assigned to the Not Diabetic group; 21 eyes of 21 patients had mild diabetic retinopathy and were included in the Diabetic group. We considered the following outcome measures: (1) BCVA (2) CMT (3) MNV lesion area (4) MNV flow area. The OCTA acquisitions were performed at the following time points: (1) baseline ; (2) post-LP, at 1 month after the last LP injection; (3) 12-month follow-up visit.

Both the Diabetic group and the Not Diabetic group displayed a significant reduction of both MNV lesion areas and MNV flow areas at both the post-LP assessment and the 12 months assessment (MNV lesion areas: $P = 0.026$ and $P = 0.016$, respectively;$P = 0.039$ and $P = 0.025$, respectively),(MNV flow areas: $P < 0.001$ and $P = 0.012$, respectively) compared to baseline. A smaller reduction in the MNV lesion area was observed in the Diabetic group at both the post-LP evaluation ($P = 0.015$) and the 12-month follow-up ($P = 0.032$).

Our results indicated that the Diabetic group exhibited a smaller reduction in MNV lesion area after 12 months of anti-VEGF treatment. This highlights the importance of considering diabetic retinopathy as a potential modifier of treatment outcomes in nAMD management, with DM serving as a crucial risk factor during anti-angiogenic treatment.

Abstract 263

EYP-1901 (VOROLANIB INTRAVITREAL INSERT) VERSUS AFLIBERCEPT FOR PREVIOUSLY-TREATED WET AGE-RELATED MACULAR DEGENERATION: DAVIO 2 PHASE 2 1-YEAR RESULTS

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Patients with wet age-related macular degeneration (wAMD) face high treatment burden, highlighting the need for more durable therapies. EYP-1901 offers sustained delivery of the pan-VEGF receptor inhibitor vorolanib via a bioerodible intravitreal insert DURASERT E™. DAVIO 2 (NCT05381948) assessed the efficacy of a single EYP-1901 injection versus aflibercept every-8-weeks (q8W).

DAVIO 2 was a phase 2 clinical trial conducted over 56 weeks. Patients with previously-treated wAMD were randomized to receive a single injection of EYP-1901 2060µg or EYP-1901 3090µg, or aflibercept 2mg q8W after 3 aflibercept loading doses. All patients were eligible for supplemental aflibercept injections if prespecified best-corrected visual acuity (BCVA) and/or anatomic criteria were met. Primary endpoint was BCVA change from baseline from Day 1 to Week 28 and Week 32, averaged. Secondary endpoints included, but were not limited to, safety, mean change in central subfield thickness (CST), and number of eyes free of supplemental injections.

156 eyes received EYP-1901 2060µg (n=50), EYP-1901 3090µg (n=52), or aflibercept q8W (n=54). DAVIO 2 met its primary endpoint with EYP-1901 noninferior to aflibercept for BCVA change from baseline at Weeks 28/32 (mean difference versus aflibercept -0.3/-0.4 letters with EYP-1901 2060/3090µg). Year 1 data showed continued maintenance of vision and anatomic outcomes; compared with aflibercept, mean difference in vision was +0.4/0.0 letters and mean difference in CST was +10.0/-0.1µm with EYP-1901 2060µg/3090µg. At 1-year, 47% of EYP-1901 2060µg-treated eyes, and 52% of EYP-1901 3090µg-treated eyes were supplement-free. EYP-1901 was well-tolerated, with no EYP-1901-related ocular or systemic serious adverse events.

DAVIO 2 met its primary endpoint. Further 1-year data demonstrated that a single dose of EYP-1901 (with protocol-specified aflibercept supplementation) provided stable BCVA, strong anatomical control, and a favorable safety profile. Together, these data support the potential of EYP-1901 to substantially reduce treatment burden for patients with wAMD

Abstract 123

A PULSAR PHASE 3 TRIAL POST-HOC ANALYSIS: EVALUATING THE TIMING AND MAGNITUDE OF CONTROL OF DISEASE ACTIVITY WITH AFLIBERCEPT 8 MG AND FARICIMAB, APPLYING SIMILAR DISEASE ACTIVITY CRITERIA ACROSS DIFFERENT PIVOTAL PHASE 3 TRIALS FOR NAMD

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PULSAR (NCT04423718) evaluated the safety and efficacy of aflibercept 8 mg in neovascular age-related macular degeneration (nAMD). TENAYA/LUCERNE (NCT03823287/NCT03823300) evaluated the safety and efficacy of faricimab 6 mg in nAMD. We describe differences in timing/magnitude of disease control with aflibercept and faricimab, using similar disease activity (DA) criteria.

In TENAYA/LUCERNE, DA assessments were made 8 and 12 weeks after the fourth initial monthly dose of faricimab (Weeks 20 and 24). Patients not meeting DA criteria were considered to have control of DA, and were assigned to longer intervals of 16 weeks [q16]). This analysis determined the proportion of PULSAR patients randomised to receive 8 mg aflibercept q16 who achieved DA control (per TENAYA/LUCERNE DA criteria) at 8 or 12 weeks (Week 16 or 20) after the last (third) initial monthly dose of aflibercept 8 mg.

At study baseline, mean CNV lesion size was 6.6 mm2 in the aflibercept 8q16 group in PULSAR, and 4.7 mm2 for faricimab in TENAYA/LUCERNE; proportions of patients with subfoveal CNV were 77% in PULSAR, and 60% and 63% in the TENAYA and LUCERNE faricimab groups, respectively. The proportions of participants not meeting TENAYA/LUCERNE DA criteria 8 or 12 weeks after the last initial treatment dose were 64% for aflibercept 8mg in PULSAR (compared with 45% for faricimab in the original TENAYA/LUCERNE studies); no adjustments were made to compensate for fewer initial doses and more severe baseline DA in PULSAR.

This analysis showed patients receiving aflibercept 8 mg in PULSAR achieved control of disease activity earlier and in a numerically higher proportion of patients than reported for faricimab in TENAYA and LUCERNE using similar assessment criteria. While this post-hoc analysis was conservative in approach, results should be interpreted with caution.

Abstract 163

ACUTE ENDOPHTHALMITIS AFTER INTRAVITREAL INJECTION OF ANTI-VEGF AGENTS OR DEXAMETHASONE OZURDEX IMPLANT: RETROSPECTIVE ANALYSIS.

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This paper investigates cases of endophthalmitis after intravitreal injections of anti-VEGF and dexamethasone implant performed in our retina unit treated with vitrectomy surgery. The purpose of the study is to prove how the rate of this complication is very low, and to confirm how this procedure is completely safe.

This is a retrospective analysis of the 33450 intravitreal injections of anti-VEGF drugs and Ozurdex dexamethasone implants performed between January 2013 and July 2024 in our retina unit. This procedure was performed in an operating room setting with the use of sterile material for each injection. Between January 2022 and July 2024, injections were performed without the use of blepharostat. The diagnosis of acute endophthalmitis was made clinically, and the chosen treatment was vitrectomy via pars plana 25 GA under infusion of antibiotics (Vancomycin and Ceftazidime). Concomitant phacoemulsification of the lens and IOL implantation was performed in phakic eyes.

12 cases of acute post-injection endophthalmitis occurred in the mentioned time frame (0.036%). Of these, one case post-injection of Ranibizumab (8.3%), one post-injection of Brolucizumab (8.3%), 5 post-injection of Aflibercept (41.6%), and 5 post-injection of dexamethasone implant Ozurdex (41.6%). The time interval between injection and vitrectomy surgery was 2-8 days with mean interval of 4 days. 5 patients were diabetic (41,6%). In the period where injections were performed without the aid of blepharostat, there were 5 cases of endophthalmitis (0.037%). Visual recovery was above 20/50 in about 50% of cases. No eyes underwent evisceration surgery.

Intravitreal injections of anti-VEGF drugs and dexamethasone Ozurdex implantation are safe and reproducible large-scale procedures when performed in a sterile setting. Post-injection endophthalmitis remains a very severe but at the same time very rare complication.

Abstract 167

VISION AND ANATOMICAL OUTCOMES FOLLOWING A LOADING DOSE OF FOUR INTRAVITREAL AFLIBERCEPT OR FARICIMAB IN NAÏVE EXUDATIVE AGE-RELATED MACULAR DEGENERATION.

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To compare the anatomical and functional outcomes following a loading dose with 4 intravitreal injections of Aflibercept or Faricimab in patients with naïve exudative AMD

Retrospective review following monthly loading dose of patients with naive exudative AMD commencing treatment with Aflibercept (AFL) or Faricimab (FAR). Patients received 4 intravitreal injections at 4 weeks interval and were reviewed 8 weeks later with the fifth injection. Primary outcomes were best corrected visual acuity (BCVA) and central macular thickness (CMT) changes seen at spectral domain optical coherence tomography (SD-OCT). Secondary outcome was to identify specific tomographic biomarkers in response to treatment.

We identified 26 eyes that received AFL and 35 eyes that received FAR during the study period. Baseline BCVA±SD was 59± 14 for the AFL group and 51± 14 for the FAR group.. Baseline CMT±SD was 381±113 for the AFL group and 441±100 for the FAR group. Treatment with either AFL or FAR led to significant improvement in VA and CMT.
The reduction on CMT was 149±88μm with FAR and 94±86μm with AFL.
Two-sided-Chi-squared tests showed no difference between the two groups for the subretinal fluid, intraretinal fluid, exudates, subretinal hyperreflective material, pigment epithelium detachment height, blood or hyperreflective foci.

Vision and anatomical benefits following a loading dose of 4 monthly intravitreal injections were similar between FAR and AFL. Even though FAR was superior in reducing CMT, its value at baseline was higher in this group. The tomographic biomarkers analysis failed to identify better response to either drug.

Abstract 405

ASSESSING COMPLIANCE AND KNOWLEDGE OF AREDS 2 RECOMMENDED NUTRITIONAL SUPPLEMENTS AMONG PATIENTS WITH AGE-RELATED MACULAR DEGENERATION

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The Age-Related Eye Disease Study 2 (AREDS 2) demonstrated the advantages of supplementation in either preventing or slowing down the progression of AMD. We elaborated a survey to evaluate the utilization of nutritional supplements and to gauge the knowledge, attitudes, and practices of patients with AMD at a Spanish Hospital

A cross-sectorial study was conducted on patients attending the AMD clinic of a tertiary-level hospital between January and December 2022. We selected patients with an intermediate or unilateral advanced stage of AMD, corresponding to categories 3 and 4 according to the AREDS. Exclusion criteria included the presence of retinopathies different form AMD (diabetic retinopathy and vascular retinopathies) and cognitive impairment. A total of 148 selected patients, after obtaining informed consent, underwent a survey during their clinic visit which comprised four sections: demographic information, clinical data, adherence to treatment, and disease knowledge. Descriptive statistics were used for demographic and clinical data.

The primary outcome was the rate of adherence to AREDS recommendations, which was found to be 83%. The level of knowledge about the disease did not seem to affect adherence (p=0.145). Having affected family members and being female improved knowledge of the disease (p=0.018 and p=0.022, respectively). Among patients not taking their treatment daily, 79% attributed it to forgetfulness, 12% to cost of the treatment, 6% to medical problems, and 3% to difficulties in medication intake. Female gender (p=0.038), effective medication regimen management (p=0.00), and higher levels of education (p=0.00) emerged as independent factors significantly associated with adherence.

While ophthalmologists play a crucial role in addressing neovascular complications of AMD, they also bear the responsibility of promoting patient adherence to AREDS supplements. Achieving optimal compliance requires addressing the multifaceted factors identified in this study, with specific attention to patients' educational backgrounds and informational requirements.

Abstract 187

REAL-WORLD USE OF FARICIMAB FOR PATIENTS WITH NEOVASCULAR AGE-RELATED MACULAR DEGENERATION

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To assess Faricimab's efficacy and safety in real-world clinical settings for neovascular AMD patients previously treated with Aflibercept or naïve to anti-VEGF therapy

A multi-center, retrospective study was conducted at the Department of Ophthalmology, Humanitas Gradenigo Hospital, Turin and Humanitas Castelli Hospital, Bergamo. 55 eyes with neovascular AMD treated with Faricimab between November 2023 and September 2024 were enrolled. Inclusion criteria were persistent disease activity despite at least 5 anti-VEGF treatment with Aflibercept or newly diagnosed neovascular AMD. The following parameters were evaluated at baseline and eight weeks after the Faricimab 4 injections loading phase: central retinal thickness (CRT), intraretinal and subretinal fluid (IRF and SRF), pigment epithelial detachment (PED) thickness, change in best-corrected visual acuity (BCVA) and clinical signs of adverse effects

55 eyes were divided into two groups: 45 (81%) not responding NAMD and 10 (19%) newly diagnosed NAMD (10). Mean BCVA change baseline-week 8 was 10±5 ETDRS letters ($p<0.0001$) for non-responding NAMD and 10±3 ($p=0.06$) for newly diagnosed NAMD. Mean persistence of SRF and/or IRF was 16(36%) and 4(40%) for not responding and naïve groups, respectively. Mean PED thickness was 274±127µm at baseline and 187±150 µm at 8 months for not responding group ($p=0.03$) and 264±158 µm at baseline and 194±157 µm at 8 months for naive group ($p<0.0001$). No adverse events related to Faricimab were recorded for both groups

Overall, Faricimab real world use appears to be safe and effective in both naïve and not-responding to Aflibercept cases. Noteworthy, the not responding group presented the same BCVA increase trend of naïve cases. Moreover, our two study groups obtained comparable anatomical results after a 4-injections loading phase.

Abstract 150

POST-MARKETING DATA SUPPORT A DIFFERENTIATED SAFETY PROFILE OF AVACINCAPTAD PEGOL (ACP) FOR GEOGRAPHIC ATROPHY (GA) SECONDARY TO AMD

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To report post-marketing data on the safety profile of ACP, an FDA-approved aptamer against complement C5 used in the treatment of GA.

Intraocular inflammation (IOI) events from post-marketing data were reviewed. Anti-drug antibodies (ADAs) were measured in serum (n=616 samples) from participants in an ongoing, open-label study of ACP in GA. In vitro gel shift assays and structure modeling assessed C5-ACP binding.

As of 01JUL2024, 85,000 vials have been distributed. Infrequent IOI events reported post-marketing include 1 report each of retinal vasculitis (off-label use in Stargardt disease) and endophthalmitis. Immunogenicity of ACP was low, as measured by positivity for ADAs: 3.7% for anti-ACP, 2.6% for anti-polyethylene-glycol, and 1.1% for anti-aptamer antibodies. ACP has high binding affinity (KD=0.69±0.148 nM at 37°C) and specificity to C5; binding occurs at the MG7 domain of C5b, which inhibits C5 convertase binding and cleavage of C5.

To date, ACP has not been associated with retinal vasculitis in post-marketing surveillance data. ACP has low immunogenicity likely attributable to C5-specific binding.

Abstract 145

56-WEEK RESULTS FROM THE TALON OPEN-LABEL EXTENSION, A PHASE IIIB/IV STUDY OF BROLUCIZUMAB IN A TREAT-AND-EXTEND REGIMEN WITH MAXIMUM TREATMENT INTERVALS UP TO 20 WEEKS IN PATIENTS WITH NEOVASCULAR AGE-RELATED MACULAR DEGENERATION

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To present the 56-week results from the TALON open-label, one-arm extension (OLE) study, evaluating long-term efficacy and safety of brolucizumab (BRO) in a Treat-and-Extend (T&E) regimen with treatment intervals extended up to 20 weeks in patients with neovascular age-related macular degeneration who have completed the TALON core study (NCT04005352).

Patients enrolled in TALON OLE received BRO 6mg in a T&E regimen, irrespective of receiving aflibercept (AFL)/BRO throughout TALON core study resulting in BRO-only and AFL-BRO (switch) cohort. The first injection visit in TALON OLE was based on planned treatment interval at the last injection visit of TALON core study. Treatment intervals could be extended by 4 weeks at a time based on disease activity (DA) up to an interval of q20w. Co-primary endpoints were duration of the last treatment interval with no DA at Week 56 and average change in BCVA from OLE baseline to Weeks 52 and 56.

Overall, the q20w interval was the last interval with no DA at Week 56. The q20w interval was the most frequent last treatment interval (37.7%) in the BRO-only vs AFL-BRO (17.8%) cohorts. The least square (LS) mean standard error (SE) change in BCVA (letters) from extension baseline to Weeks 52 and 56 was −2.0 (± 0.67) in the BRO-only cohort vs −3.0 (± 0.74) in the AFL−BRO cohort. CSFT reductions from the core study were maintained in the extension study. The incidence of ocular TEAEs of special interest in the study eye was 2.8%.

The most frequent last treatment interval with no DA was q20w, and a higher proportion of patients treated with BRO-only achieved this interval compared to those who switched from AFL to BRO. Brolucizumab demonstrated an overall favorable benefit/risk profile consistent with the TALON core study.

Abstract 144

EFFECT OF PHOTOBIOMODULATION ON VISION-RELATED QUALITY OF LIFE AND VISUAL ACUITY IN PATIENTS WITH NONEXUDATIVE AGE-RELATED MACULAR DEGENERATION: A REAL LIFE STUDY.

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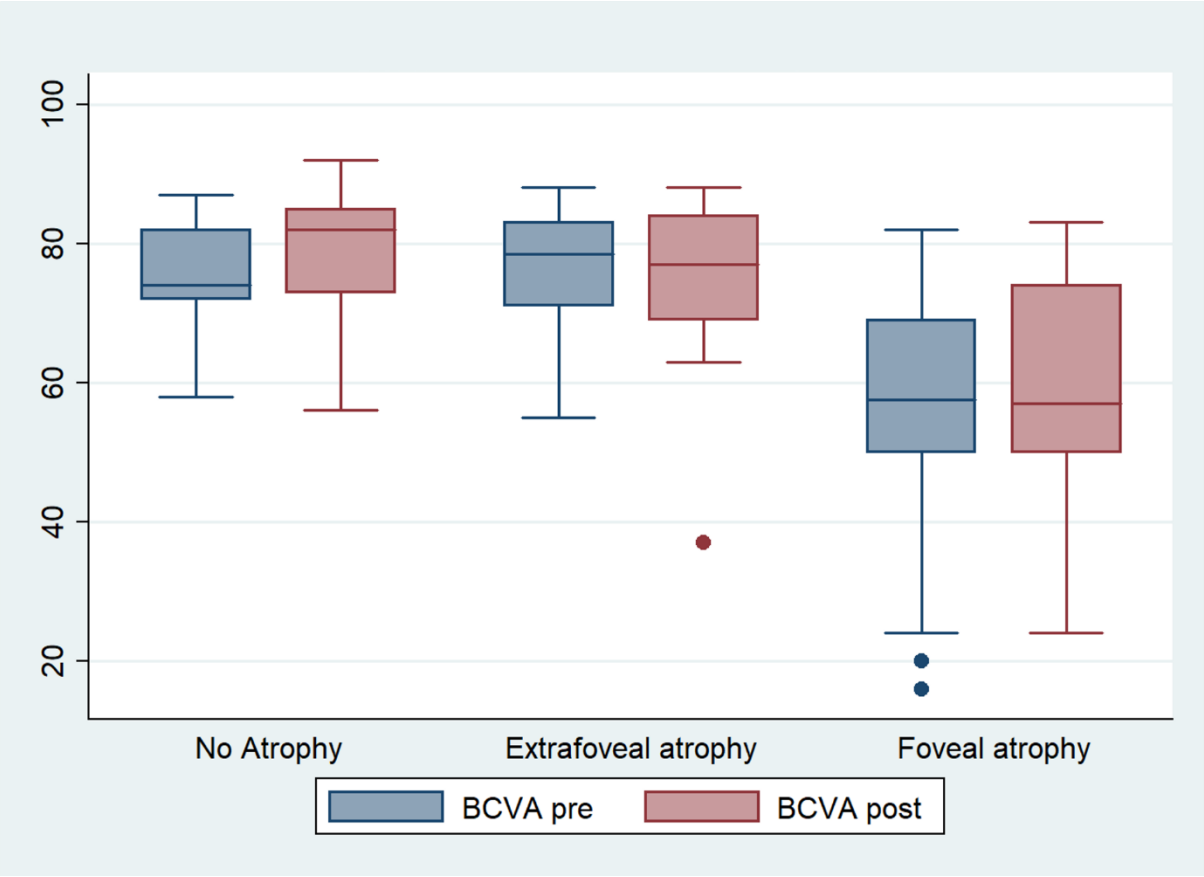
This study aimed to compare vision-related quality of life and visual acuity before and after photobiomodulation (PBM) therapy in patients with nonexudative age-related macular degeneration (AMD).

We performed an experimental before-and-after study among patients diagnosed with stage II–IV nonexudative AMD and best-corrected visual acuity (BCVA) ranging from 15 to 85 letters treated with a single cycle of nine PBM therapy sessions performed over three weeks, without a control group.

We evaluated 67 eyes of 43 patients. All patients completed all nine intervention sessions. The mean age was 76 years (SD 8.26), and 55 eyes (82.1%) were from female patients. The median scores from the Visual Function Questionnaire (VFQ-25) before and after the procedure were 67.5 (IQR 49.8–83.2) and 69 (IQR 53.2–81.4), respectively. The median BCVA was 72 letters (IQR, 60–79) before the procedure and 73 letters (IQR, 53–82) three week after completing treatment with PBM (p=0.01). Among patients without a complete retinal pigment epithelium and outer retinal atrophy, the BCVA improved from 72 to 84 letters (p=0.02).

Our findings indicate that while PBM did not lead to significant improvements in quality of life, there was a slight positive effect observed in patients with non-exudative AMD without geographic atrophy.


100
80
60
40
20
No Atrophy
Extrafoveal atrophy
Foveal atrophy
BCVA pre
BCVA post

Abstract 195

EFFICACY AND DURABILITY OF FARICIMAB IN NAÏVE EYES WITH NEOVASCULAR AGE-RELATED MACULAR DEGENERATION

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To evaluate functional and anatomical changes in patients with neovascular age-related macular degeneration (nAMD) treated with a loading dose of faricimab intravitreal injections (IVI).

18 eyes of 18 patients with active macular neovascularization (MNV) and nAMD were enrolled at the Ophthalmology Clinic of University G. D'Annunzio, Chieti-Pescara, Italy. All patients were scheduled for faricimab IVI as per lable. Enrolled patients underwent complete ophthalmic evaluation, including optical coherence tomography, fluorescein angiography and indocyanine green angiography. All measurements were evaluated at baseline (T0), and then monthly up to week 20 (T4). Main outcome measures were changes in best corrected visual acuity, central macular thickness, subfoveal choroidal thickness, pigment epithelial detachments presence and maximum height, intra-retinal fluid presence, subfoveal sub-retinal fluid presence and thickness.

BCVA improved and CMT reduced significantly during follow-up ($p<0.001$). In addition, SFCT decreased significantly ($p=0.031$). Between T0 and T4, SSRF presence reduced from 55.6% to 16.7% ($p=0.045$); IRF presence changed from 50% to 22.2% respectively ($p=0.074$). PED-MH was reduced in 58.8% of patients at T4. At week 20 72.3% of patients were in the q12/q16 interval.

Faricimab showed efficacy in the treatment of naïve nAMD patients with an improvement of anatomical and functional parameters and a treatment interval after the loading phase equal or greater than 12 weeks in the majority of patients.

Abstract 141

TALON, A PHASE IIIB STUDY OF BROLUCIZUMAB VERSUS AFLIBERCEPT IN A MATCHED (TREAT-AND-EXTEND) REGIMEN IN PATIENTS WITH NEOVASCULAR AGE-RELATED MACULAR DEGENERATION: 64-WEEK RESULTS

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TALON is a 64-week, randomized, double-masked, prospective Phase IIIb study evaluating the efficacy and safety of brolucizumab (BRO) 6mg compared with aflibercept (AFL) 2mg using a matched (Treat-and-Extend) treatment regimen in patients with neovascular age-related macular degeneration.

Patients received BRO 6mg (n=366) or AFL 2mg (n=368) at Weeks 0, 4, 8, and 16, followed by 4-week interval adjustments depending on disease activity (DA) up to a maximum treatment interval of q16w. Efficacy endpoints included distribution of the last treatment interval with no DA at Week 64, average change in best-corrected visual acuity (BCVA) from baseline at Week 60 and Week 64, and average change from baseline in central subfield thickness (CSFT) at Week 60 and Week 64. Incidence of adverse events (AEs) was also reported.

At Week 64, more BRO patients had last treatment interval with no DA of q16w (28.4% [BRO] vs 12.2% [AFL]) while more AFL patients had q4w interval need. Mean BCVA gains were comparable to AFL and 24.3% (BRO) vs 24.7% (AFL) patients gained ≥15 letters from baseline. BRO achieved greater average reductions in CSFT at Weeks 60 and 64 and fewer BRO patients had IRF and/or SRF (26.6% vs 34.4%). Incidence of ocular AEs, serious ocular AEs and ocular AEs of special interest in the BRO vs AFL arms were 31.1% vs 27.7%, 2.7% vs 0.8%, 6.0% vs 1.6%, respectively.

In TALON, more BRO patients achieved longer treatment intervals without DA while maintaining comparable visual gains, and with better anatomic outcomes compared to those treated with AFL. AEs of special interest occurred in line with what has been previously reported, supporting the overall benefit/risk profile of brolucizumab.

Abstract 237

IMPACT OF AGE AND TREATMENT TYPE ON HYEPERREFLECTIVE MATERIAL AND HYPERTRANSMISSION INTO THE CHOROID DEVELOPMENT IN ANTI-VEGF THERAPY

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Hyper-reflective material (HRM) and hypertransmission of signal into the choroid (HyperTC) on optical coherence tomography (OCT) are proxies for fibrosis and macular atrophy (MA) and occur despite anti vascular endothelial growth factor (anti-VEGF) therapy. We studied the effect of age on the development of these OCT features after anti-VEGF.

Data from three randomized controlled trials - BRAMD (n=91), GEFAL (n=58) (comparative effectiveness trials of anti-VEGF), and EDNA (n=380) (diagnostic accuracy) - were pooled for this analysis (N=529). OCT volume scans were graded for the presence of HRM and HyperTC. Logistic regression models were developed with HRM and HyperTC as outcome variables, using age quartiles (1st: 68.0(±4.0), n=146; 2nd: 75.2(±1.4), n=125; 3rd: 79.9(±1.4), n=123; 4th: 86.0(±2.7), n=134) as the independent variable, and adjusting for sex and treatment type (continuous=monthly, n=149; discontinuous = as needed, n=380) as covariates after a mean of 14.8 (±5.1) months of treatment.

At baseline, 95.8% of eyes exhibited HRM, while HyperTC was observed in 30.6%. At follow-up, HRM was present in 89% of eyes, with HyperTC increasing to 61.8%. Eyes in the 4th age quartile had significantly lower odds of HRM presence compared to those in the 1st quartile (OR: 0.38(0.17, 0.82), P=0.016). Similarly, eyes that received discontinuous treatment had lower odds of HRM presence compared to those on continuous treatment (OR: 0.34(0.15, 0.71), P=0.007). Although a significant association was not detected, there was a trend toward higher odds of HyperTC presence in the 3rd and 4th quartiles.

Older age and discontinuous treatment were associated with lower odds of HRM presence. Although not statistically significant, a trend toward increased HyperTC in older age groups was noted. These findings suggest that age may play a role in the development of fibrosis and macular atrophy.

Abstract 212

PREDICTIVE VALUE OF SHRM IN REAL-WORLD WAMD PATIENTS TREATED WITH BROLUCIZUMAB VERSUS AFLIBERCEPT

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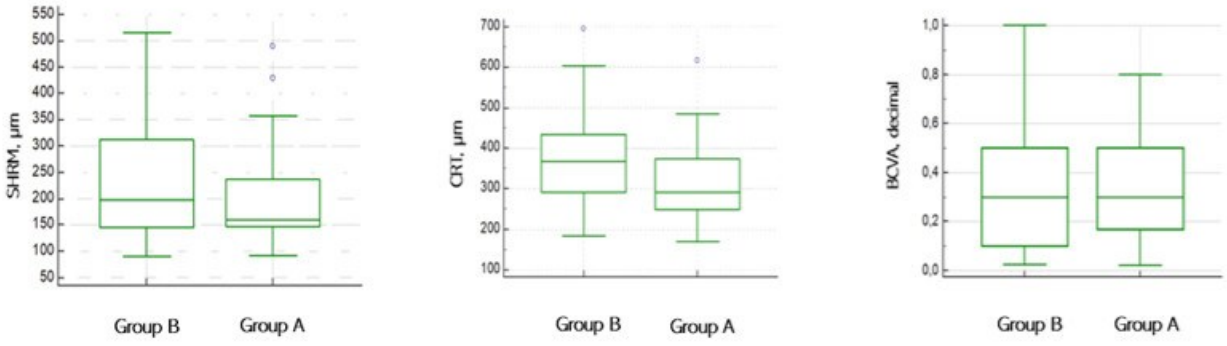
To collect real-world data on the role of Subretinal Hyperreflective Material (SHRM) as an OCT biomarker in wet Age-Related Macular Degeneration (wAMD) patients treated with intravitreal injections (IVT) of brolucizumab (6 mg) or aflibercept (2 mg) under a treat-and-extend regimen.

A monocentric, observational real-world study was conducted with 62 wAMD treatment-naïve patients consecutively treated with aflibercept (Group A, n=31) or brolucizumab (Group B, n=31) following a treat-and-extend protocol based on the presence or absence of retinal fluid and BCVA assessments. After a loading dose of 3 monthly injections, patients were followed for 52 ± 4 weeks. Key parameters including SHRM thickness, central retinal thickness (CRT), and best-corrected visual acuity (BCVA, LogMAR) were evaluated. Interaction and mediation analyses were performed to assess the effects of the treatments and the impact of SHRM on BCVA in relation to retinal fluids.

Both groups showed significant improvements in morphologic (SHRM and CRT) and functional (BCVA) parameters ($p<0.001$ for SHRM, $p=0.004$ for BCVA, $p<0.001$ for CRT). Despite similar overall reductions, brolucizumab demonstrated an earlier and stronger decrease in SHRM thickness and CRT compared to aflibercept, indicated by significant group-by-time interactions ($p=0.011$ and $p<0.001$, respectively). A strong correlation between SHRM and BCVA gain was found ($p=0.001$), which remained significant after adjusting for CRT ($p=0.02$). Mediation analysis revealed that CRT explained only 22% of the SHRM-BCVA relationship, underlining the independent clinical significance of SHRM compared to retinal fluids.

Brolucizumab showed an earlier effect on SHRM and CRT compared to aflibercept, although overall visual and anatomical outcomes were similar after 52 weeks. This study supports the role of SHRM as a tomographic biomarker for predicting visual acuity improvement and enhanced fluid resolution in response to brolucizumab treatment in wAMD.



Abstract 240

EYP-1901 (VOROLANIB INTRAVITREAL INSERT), A BIOERODIBLE, SUSTAINED-DELIVERY INTRAVITREAL INSERT FOR NEOVASCULAR AGE-RELATED MACULAR DEGENERATION: PRECLINICAL DEVELOPMENT TO PIVOTAL PHASE 3 TRIALS

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To establish if tyrosine kinase inhibitors (TKIs) can reduce treatment burden in neovascular age-related macular degeneration (nAMD). EYP-1901 is a bioerodible, sustained-delivery intravitreal insert delivering the pan-VEGFR inhibitor vorolanib, using established slow-release zero kinetics Durasert E technology.

IC50 values for vorolanib, a highly selective TKI, were compared to other investigational TKI's using competitive receptor binding assays. Anti-angiogenic effects were assessed in vitro, using HUVEC sprouting assay; and in vivo, using CAM assay. Neuroprotective effects of vorolanib were assessed in a mouse model of retinal detachment. Preclinical pharmacokinetic studies assessed ocular and systemic vorolanib concentrations over 12 months following intravitreal administration of EYP-1901 in rabbits. Safety and tolerability of EYP-1901 was evaluated in the phase 1 DAVIO trial, with efficacy assessed in the recently completed phase 2 DAVIO 2 trial.

Low IC50 confirmed potent pan-VEGFR inhibition by vorolanib, with no inhibition of TIE2 (critical for maintenance of vascular stability) at clinically relevant doses. Vorolanib effectively inhibited VEGF-induced angiogenesis both in vitro and in vivo; with these effects surpassing those of bevacizumab. Vorolanib demonstrated reduction in fibrosis and retinal atrophy in a mouse model of retinal detachment, with protective effects on contrast vision and visual acuity. EYP-1901 resulted in therapeutic levels in target tissues through ~9 months in rabbits, with plasma levels maintained below IC50. Correlation of preclinical to clinical results, and impact on phase 3 study design will be discussed.

Preclinical data confirmed that vorolanib is a potent pan-VEGFR inhibitor, effectively suppressing angiogenesis with neuroprotective and antifibrotic effects, along with extended durability. Supported by results from early phase clinical trials, EYP-1901 has the potential to reduce treatment burden in nAMD without compromising efficacy.

Abstract 122

PULSAR POST-HOC ANALYSIS: FLUID-FREE STATUS WITH AFLIBERCEPT 8MG AT WEEKS 16, 48, AND 96 BY BASELINE CRT AND BCVA

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Evaluate fluid-free status (no intraretinal or subretinal fluid) in the center subfield with aflibercept 8mg and 2mg at Week (W)16, W48, and W96 in patients with neovascular age-related macular degeneration (nAMD) stratified by baseline central subfield retinal thickness (CRT) and best-corrected visual acuity (BCVA) in the PULSAR trial.

PULSAR was a double-masked, 96W, non-inferiority Phase 3 trial. Patients were randomly assigned 1:1:1 to receive aflibercept 8mg every 12 or 16 weeks or 2mg every 8 weeks, each after 3 initial monthly injections. The proportions of participants who had fluid resolution at W16, W48, and W96 were evaluated according to baseline CRT and BCVA letter score, using a last observation carried forward approach. Subgroups were determined post hoc and analyses were exploratory.

In patients receiving aflibercept 8mg and 2mg, respectively, 54–70% and 36–66% were fluid free at W16; 62–79% and 54–71% were fluid free at W48; and 62–71% and 61–71% were fluid free at W96 across stratified baseline quartile CRT subgroups (≤278, 279–343, 344–422, and ≥423 µm). Fluid control was maintained from W16 to W96 for all baseline CRT subgroups. Similar trends were observed in subgroups stratified by baseline BCVA (≤54, 55–73, and ≥74 letters).

These results demonstrated that rapid fluid control was achieved at W16 and was maintained from W16 to W96 regardless of baseline disease severity. Resilient fluid control was achieved at W48 and W96 in a substantial proportion of patients with treatment-naïve nAMD receiving aflibercept 8mg with extended dosing intervals versus 2mg.

Abstract 119

IMPACT OF ANTI-VEGF THERAPY ON STRUCTURAL OCT PARAMETERS IN AMD PATIENTS WITH AND WITHOUT DIABETIC RETINOPATHY

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This investigation evaluates the impact of anti-vascular endothelial growth factor (anti-VEGF) therapy on visual function and retinal morphology in patients with neovascular age-related macular degeneration (nAMD) and type 1 macular neovascularization (MNV). We specifically focus on how concurrent diabetes and diabetic retinopathy (DR) influence treatment outcomes.

Our retrospective study analyzed 52 treatment-naive eyes diagnosed with nAMD-associated type 1 MNV. We divided participants into two groups: 28 eyes without diabetes and 24 eyes with mild non-proliferative diabetic retinopathy (NPDR). We measured central retinal thickness (CRT), pigment epithelial detachment (PED) height, presence of subretinal fluid (SRF) and intraretinal fluid (IRF), and best-corrected visual acuity (BCVA) at baseline and after 12 months of aflibercept treatment.

In patients without diabetes, anti-VEGF therapy resulted in significant improvements: BCVA enhanced from 0.62±0.32 to 0.45±0.24 logMAR ($p=0.006$), CRT decreased from 359.92±102.80µm to 263.11±64.44µm ($p<0.001$), and PED height reduced from 178.10±92.07µm to 138.64±99.62µm ($p=0.026$). In the diabetic group, BCVA showed a trend towards improvement (0.71±0.43 to 0.60±0.33 logMAR, $p=0.291$), CRT significantly decreased (309.05±60.18µm to 264.05±59.10µm, $p=0.009$), but PED height remained stable (145.62±76.47µm to 149.75±54.79µm, $p=0.830$). Comparative analysis revealed greater reductions in CRT ($p=0.048$) and PED height ($p=0.007$) among non-diabetic patients, though BCVA improvement was similar between groups ($p=0.260$).

Our study reveals distinct anatomical responses to anti-VEGF therapy in nAMD patients with and without diabetes. Individuals without diabetes showed more pronounced improvements in retinal thickness and PED height, while diabetic patients demonstrated resistance to PED height reduction.

Abstract 117

CLINICAL IMPACT OF THE PORT DELIVERY SYSTEM WITH RANIBIZUMAB (PDS) ON FIBROSIS IN PATIENTS WITH NEOVASCULAR AGE-RELATED MACULAR DEGENERATION (NAMD) IN THE PHASE 3 ARCHWAY TRIAL

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Fibrosis, an end-stage sequelae of nAMD, is associated with poor long-term visual outcomes. It occurs in ~50% of eyes within 2 years of initiating intravitreal anti-VEGF therapy. We analysed the impact of continuous delivery of ranibizumab via PDS on the prevalence and incidence of fibrosis in patients with nAMD.

Archway (NCT03677934) was a phase 3, randomised, active treatment–controlled trial. Patients received PDS with ranibizumab 100 mg/mL with fixed 24-week refill-exchanges or intravitreal ranibizumab 0.5-mg injections every 4 weeks. This was a post hoc analysis of findings from a revised image grading of study eyes to determine presence of subretinal fibrosis. Masked graders assessed colour fundus photography (CFP) images for the presence of subretinal fibrosis. If CFP images were of poor quality, optical coherence tomography scans were analysed. Two graders assessed all images; a senior grader confirmed all cases of fibrosis and adjudicated cases of disagreement between the graders.

Presence of fibrosis in PDS and ranibizumab arms, respectively, were low at baseline (5.4% [12/222] vs 4.7% [7/148]) and W96 (7.7% [17/222] vs 5.4% [8/148]). Few eyes without fibrosis at baseline developed fibrosis by W96 (PDS, 2.4% [5/210]; ranibizumab, 0.7% [1/141]). In study eyes with fibrosis, BCVA change from baseline at W96 in PDS vs ranibizumab arm was 3.2 (95% CI, –2.0, 8.4; n=17) vs –9.9 (–30.3, 10.6; n=8) letters. In study eyes without fibrosis, BCVA change from baseline at W96 in PDS vs ranibizumab arm was –0.6 (–1.8, 0.5; n=198) vs –0.2 (–1.6, 1.3; n=132) letters.

In this post hoc analysis, incidence rates of fibrosis were low in both treatment arms through W96. Both continuous drug delivery with PDS as well as monthly ranibizumab were effective in controlling the development of fibrosis while maintaining visual acuity in patients with nAMD.

Abstract 113

INTRAOCULAR PRESSURE OUTCOMES WITH INTRAVITREAL AFLIBERCEPT 8 MG AND 2 MG IN PATIENTS WITH NEOVASCULAR AGE-RELATED MACULAR DEGENERATION THROUGH WEEK 96 OF THE PULSAR TRIAL

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To report the effects of aflibercept 8 mg (70-µL injection volume) and aflibercept 2 mg (50-µL injection volume) on intraocular pressure (IOP)-related outcomes in the multicenter, randomized double-masked, 96-week, Phase 3 PULSAR trial (NCT04423718) in patients aged ≥50 years with treatment-naïve neovascular age-related macular degeneration (nAMD).

Patients were randomly assigned to receive intravitreal aflibercept 8 mg every 12 weeks (8q12, n=335), 8 mg every 16 weeks (8q16, n=338), or 2 mg every 8 weeks (2q8, n=336), each after 3 initial monthly doses. IOP was measured at all study visits. The study protocol required IOP to be measured pre-injection (bilaterally) and approximately 30–60 minutes post injection (study eye only). The reported post-injection IOP was the last measurement recorded before the patient was permitted to leave the study site. Treatment-emergent adverse events (TEAEs) and results are reported for the study eye through Week 96.

The TEAE of increased IOP was reported in 3.6% (8q12), 3.3% (8q16), and 3.0% (2q8) of patients, and the TEAE of ocular hypertension was reported in 1.2% (8q12), 1.2% (8q16), and 0.3% (2q8). Mean pre-dose IOP in the 8q12, 8q16, and 2q8 groups, respectively, was 14.9, 14.9, and 14.8 mmHg at baseline and 14.7, 15.0, and 14.5 mmHg at Week 96. The proportion of patients with any pre-dose IOP ≥25 mmHg was 2.7% (8q12), 2.1% (8q16), and 1.8% (2q8). At active dosing visits, mean±SD change from pre-dose to post-dose IOP was 3.4±3.8 (8q12), 3.5±3.7 (8q16), and 2.6±3.6 (2q8) mmHg.

Pre-dose IOP values in study eyes and the rates of the TEAEs of increased IOP or ocular hypertension were comparable across treatment groups. No clinically relevant differences in change from pre-dose to post-dose IOP and in mean IOP were observed across treatment groups through Week 96.

Abstract 1786

AFLIBERCEPT 8 MG VERSUS 2 MG: INTRAOCULAR PRESSURE CHANGES IN PATIENTS WITH NEOVASCULAR AGE-RELATED MACULAR DEGENERATION AND DIABETIC MACULAR EDEMA.

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To report the effects of intravitreal aflibercept 8 mg and 2 mg on intraocular pressure (IOP)-related outcomes in patients with neovascular age-related macular degeneration (nAMD) in the PULSAR trial (NCT04423718) and patients with diabetic macular edema (DME) in the PHOTON trial (NCT04429503). Aflibercept 8 mg was administered in a 70µL injection volume and aflibercept 2 mg in a 50µL injection volume.

IOP was recorded at all study visits pre-injection and approximately 30–60 minutes post injection. A combined analysis of PULSAR and PHOTON was performed to estimate the difference in IOP increase from pre- to post-injection between 2 mg (50µL) and 8 mg (70µL).

For PULSAR the mean number of aflibercept injections per patient through week 96 was 7.8, 9.2 and 11.9 in the 8q16, 8q12 and 2q8 groups, respectively. Mean pre-dose IOP was 14.9, 14.9, and 14.8 mmHg at baseline and 15.0, 14.7 and 14.5 mmHg at week 96 in the 8q16, 8q12 and 2q8 groups, respectively. For PHOTON mean number of aflibercept injections per patient through week 96 was 7.8, 9.5 and 13.8, injections in the 8q16, 8q12 and 2q8 groups, respectively. Mean pre-dose IOP was 14.9, 15.3 and 15.9 mmHg at baseline and 14.8, 14.8 and 15.3 mmHg at week 96 in the 8q16, 8q12 and 2q8 groups, respectively. The mean difference in increase from pre- to post-injection IOP between 2mg/50µL (n=6107 injections) and 8mg/70µl (n=9695 injections) was 0.83 mmHg (95% CI 0.70, 0.96).

In both nAMD and DME patients, IOP value with intravitreal aflibercept 8 mg and 2 mg were comparable, with minimal changes observed from baseline through 96 weeks in the PULSAR and PHOTON trial. Mean difference between 2mg and 8mg for pre-to-post injection IOP was less than 1mmHg. These findings suggest that intravitreal aflibercept at both doses has a similar IOP profile in patients with nAMD and DME.

Abstract 261

48 WEEK RESULTS FROM THE HELIOS PHASE 1 TRIAL EVALUATING INTRAVITREAL OTX-TKI FOR NON-PROLIFERATIVE DIABETIC RETINOPATHY

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To evaluate the safety and biological activity of intravitreal axitinib implant (OTX-TKI) in eyes with moderately severe to severe non-proliferative diabetic retinopathy (NPDR).

Multicenter, double-masked, 2:1 randomized Phase 1 clinical trial. Patients had moderately severe to severe NPDR (DRSS levels of 47 or 53) without CI-DME (as assessed by the investigator) and baseline visual acuity of ≥69 ETDRS letters (approximately 20/40 or better). Data includes 21 evaluable subjects (one patient died from an unrelated event). Patients received OTX-TKI (n=13) or sham procedure (n=8). The primary outcome was safety, and secondary outcomes included changes in Diabetic Retinopathy Severity Scale (DRSS) score, best corrected visual acuity (BCVA), central subfield thickness (CST), and rates of rescue therapy.

At 48 weeks, there were no reports of treatment- or injection procedure-related intraocular inflammation (e.g., iritis, vitritis, or retinal vasculitis) or ocular serious adverse events in the OTX-TKI group. At 48 weeks, OTX-TKI treatment resulted in a 1- or ≥2-step DRSS improvement in 46.2% of eyes (6/13) vs. 0% in sham eyes. No OTX-TKI-treated eyes had DRSS worsening through 48 weeks, whereas 25% (2/8) sham eyes did. PDR or CI-DME developed in 37.5% (3/8) sham eyes and in none of the OTX-TKI-treated eyes. No patients received rescue therapy in either arm.

OTX-TKI was generally well tolerated in NPDR patients through 48 weeks, with no ocular serious adverse events reported. Compared to sham, OTX-TKI eyes had greater DRSS improvement rates and no DRSS worsening or vision-threatening complications. OTX-TKI may be a promising treatment for NPDR, with potential to reduce anti-VEGF injection burden.

Abstract 229

SUBRETINAL DELIVERY OF INVESTIGATIONAL ABBV-RGX-314 AS A GENE THERAPY FOR NEOVASCULAR AGE-RELATED MACULAR DEGENERATION (NAMD): INTERIM RESULTS OF BILATERAL DOSING FROM A FELLOW EYE STUDY

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ABBV-RGX-314 is an investigational, single administration gene therapy designed to deliver a transgene for a soluble anti-VEGF Fab. The fellow eye (FE) sub-study (FESS) of ABBV-RGX-314 will be the first for nAMD to examine safety of bilateral treatment with an investigational gene therapy.

The objectives of the FESS study are to assess the safety, efficacy, and immunogenicity of subretinal ABBV-RGX-314 administration in the fellow eye of participants having bilateral nAMD who previously received a subretinal injection of investigational ABBV-RGX-314 in their study eye. Fellow eyes of patients are eligible if they completed one of the parent clinical studies, including a phase I/2a open-label dose-escalation study, a phase 2 open-label pharmacodynamic study, and two masked pivotal studies. Patients that enrolled in the sub-study received a subretinal administration of ABBV-RGX-314 in the fellow eye.

ABBV-RGX-314 was generally well-tolerated in the phase 1/2a study through 2 years and in the phase 2 pharmacodynamic study through 6 months, with no reports of clinically-determined immune responses, drug-related ocular inflammation, or post-surgical inflammation beyond what is expected following routine vitrectomy. At doses over 6.0x1010 GC/eye, patients demonstrated measurable protein expression, stable to improved BCVA, and meaningful reductions in anti-VEGF injection burden. As of May 15, 2024, ten patients from the open-label studies and 10 patients from the pivotal studies enrolled in the FESS sub-study (N=20). Nine-month data for the open label FESS patients (n=10) will be presented.

The FESS study will generate information about the potential for bilateral dosing of subretinal ABBV-RGX-314 and extend the results of the parent studies, which show potential for a one-time administration of investigational ABBV-RGX-314 to provide sustained clinical outcomes in the treatment of nAMD, with meaningful reductions in anti-VEGF injection burden.

Abstract 375

USE OF A LAMINAR AIR FLOW DEVICE IN A DEDICATED CLEAN ROOM SETTING FOR INTRAVITREAL INJECTIONS

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To compare the rate of Intravitreal injections (IVI)-related endophthalmitis observed in a tertiary retina referral center, before and after the introduction of a commercially available mobile LAF device, providing ultraclean unidirectional laminar air flow (LAF) to the surgical tray and head of the patient undergoing the IVI.

This was a retrospective study, conducted at Luigi Sacco Hospital, Milan. Logbooks of IVIs were inspected to obtain the total number of IVIs administered per month in two different study period, before and after the introduction in the clean room dedicated to the IVIs of a mobile LAF device(TOUL Operio). The two study periods were calibrated as to yield comparable numbers of IVIs, and span from July 1, 2017 to February 29, 2020 and from March 1, 2020 to December 31, 2023,respectively. Operating room electronic records were subsequently searched to obtain the total number of endophthalmitis occurred in the same periods.

A total of 101’976 IVIs was administered to 8’395 patients during the study period, with 20 post IVI endophthalmitis cases in 19 patients.
The overall cumulative incidence of post-IVI endophthalmitis was 0.02%(95%CI,0.012-0.03%) per IVI. Before and after the introduction of a LAF device, there were respectively 11 endophthalmitis per 33’478 IVIs and 9 endophthalmitis per 68’498 IVIs.
The rate of post-IVI endophthalmitis before and after the introduction of the LAF device was 0.033%(95% CI,0.016 – 0.059%), and 0.013%(95% CI,0.006–0.025%), respectively. This was a 63.2% reduction in the odds of developing a post-IVI endophthalmitis(Odds Ratio = 0.368,95% CI 0.14–0.966,p=0.04).

The use of a LAF device significantly decrease the rate of post-procedural endophthalmitis (63.2% reduction of the odds of developing post-IVI endophthalmitis) when IVI are performed in a dedicated clean room. The data are consistent to suggest the systematic use of a LAF device.

Abstract 396

PHOTOBIOMODULATION THERAPY IN DIFFERENT RETINAL DISEASES

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Photobiomodulation (PBM) is an emerging approach to reduce the progression of early and intermediate dry age-related macular degeneration (dAMD) to late AMD. PBM has also been investigated to treat central serous chorioretinopathy (CSCR) and pachychoroid pigment epitheliopathy (PPE). PMB uses low-intensity lasers to induce cell photoactivation without thermal damage.

The EYE-LIGHT® device utilizes two wavelengths, 590 nm (yellow) and 630 nm (red), in both continuous and pulsed modes. Patients diagnosed with early and intermediate dAMD, PPE and CRSC underwent two treatment sessions per week for four weeks. Safety, tolerability, compliance, as well as functional and anatomical outcomes, were evaluated after one month. Key outcomes included mean drusen, reticular pseudodrusen and pachydrusen volume changes and both basal laminar deposits (BLamD) and basal linear deposits (BLinD) thickness reduction. Additionally, reduction in subretinal fluid (SRF) level was evaluated in patient with CRSC.

Data from 26 patients (52 eyes) showed high compliance and excellent tolerability. No significant differences in central subfield thickness (CST) were found after one month. However, a statistically significant reduction in mean drusen, reticular pseudodrusen and pachydrusen volume and thickness of BLamD and BLinD was observed from baseline to one month. In patients with CRSC, PBM was associated with a significant decrease in subretinal fluid level.

Preliminary findings suggest PBM with the EYE-LIGHT® system is safe, well-tolerated, and effective in the short term for patients with dAMD, PPE and CRSC, as shown by functional and anatomical improvements.

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BROLUCIZUMAB IN PIGMENT EPITHELIUM DETACHMENT SECONDARY TO AMD

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To investigate effectiveness of brolucizumab in patients with pigment epithelium detachment (PED) due to exudative age-related macular degeneration (AMD)

Retrospective, comparative, cohort study conducted from November 2021 until July 2023. 41 eyes with wet-AMD (w-AMD) undergoing brolucizumab intravitreal injection were included . The sample was divided into two groups, the Bro-Switch group, and the Bro-Naïve group. The Bro-Switch group previously received a slot of other anti-VEGF intravitreal drugs. The Bro-Naïve group received Brolucizumab (Bro) as the first treatment. The OCT patterns of pigment epithelium detachment (PED) and the best-corrected visual acuity (BCVA) before and after Bro-injection were evaluated.

A significant reduction in PED measurement was registered in all eyes treated with Bro-injection ($p = 0.035$). The Bro-Naïve group improved better in PED measurement (mean difference: 297.92 ± 72,32) as compared to the Bro-Switch group (mean difference: 185.06 ± 11.07). On the contrary, no significant reduction in BCVA in the two groups was recorded ($p = 0.06$) even in presence of a trend to increase.

Brolucizumab injection for w-AMD with PED seems to be effective to anatomical outcomes such as PED flattening, but not similar in visual results. Although this study evaluated short-term outcomes, the hopeful results can lead to interesting medium-long time effects

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SEROUS AVASCULAR PED SECONDARY TO AMD COMPLICATED BY SUB-RETINAL FLUID: THE EFFECTS OF ANTI-VEGF TREATMENT

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To compare the visual and anatomical outcomes in patients with age-related macular degeneration (AMD) presenting with serous retinal pigment epithelium detachment (PED) and subretinal fluid in the absence of macular neovascularization (MNV), undergoing or not intravitreal anti-angiogenic treatment.

Eyes of patients with AMD showing PED and subretinal fluid at baseline OCT were selected, excluding those with MNV on OCT-A or ICGA. Patients were divided into two groups: the TREATED group, receiving intravitreal anti-VEGF, and the UNTREATED group. At each follow-up visit, a complete clinical examination and OCT were performed. Visual acuity (VA), central macular thickness (CMT), choroidal thickness (ChT), and maximum PED height were measured. The development of retinal atrophy was evaluated at the end of the follow-up period.

Five eyes were included in the TREATED group and eleven eyes in the UNTREATED group, with a mean follow-up of 50 months for the first group and 30 months for the second one. Mean baseline VA was 20/32 snellen equivalent in the TREATED group and 20/40 snellen equivalent in the UNTREATED group. At the final visit, VA had worsened to 20/63 snellen equivalent in the TRETATED group and 20/125 snellen equivalent in the UNTREATED group. Macular atrophy was observed in 66% of the eyes in the TREATED group and 30% of the eyes in the UNTREATED group.

In eyes with PED and subretinal fluid without MNV, intravitreal anti-VEGF lead to a higher rate of macular atrophy compared to untreated patients. It is hypothesized that in the absence of MNV, treatment does not significantly reduce subretinal fluid but instead contributes to a decrease in retinal trophism.

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REAL-WORLD EXPERIENCE WITH FARICIMAB AS TREATMENT FOR AGE-RELATED MACULAR DEGENERATION (AMD) AND DIABETIC MACULAR EDEMA (DME)

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To evaluate the real-world effectiveness and safety of Faricimab in patients with age-related macular degeneration (AMD) and diabetic macular edema (DME).

A retrospective cohort study was conducted using data from patients treated with Faricimab between June 2023 and March 2024 at Södra Älvsborgs hospital in Borås, Sweden. The study included 299 eyes from 258 patients (mean age 75.3 ± 13.3 years), of which 153 were female (59.3%). The patients/eyes were grouped into four cohorts: AMD naive (n=62/67), AMD switch (n=125/144), DME naive (n=23/27), and DME switch (n=/4161). The primary outcome was the change in best-corrected visual acuity (BCVA) from baseline to the last follow-up. The average follow-up duration was 6.4±2.0 months.

BCVA (logMAR) improved across most cohorts. The DME naive group showed significantly better outcomes (-0.17±0.29) compared to the AMD naïve group (+0.05±0.25); p=0.009; while AMD naive had worse outcomes than AMD switch (-0.01±0.17); p=0.027. DME switch showed slight improvement (-0.04±0.18). CMT reductions were most pronounced in the DME naive group (-94.7±95.8 µm), but no significant differences were found across cohorts mainly due to high variability. Prior anti-VEGF treatments averaged 14.1 for the DME switch group and 11.5 for the AMD switch group. One case of retinal vasculitis occurred in the AMD switch cohort, with an incidence rate of 0.3%.

In this cohort treated with Faricimab, DME naive patients had significantly better outcomes than AMD naive, while AMD naive showed significantly worse outcomes than AMD switch. A single case of retinal vasculitis was observed. Longer follow-up is needed to assess sustainability of extended treatment intervals.

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PIGMENT EPITHELIAL DETACHMENT AS LONG-TERM PREDICTORS OF FUNCTIONAL AND ANATOMICAL OUTCOMES OF INTRAVITREAL FARCIMAB INJECTIONS IN NAÏVE PATIENTS WITH NEOVASCULAR AGE-RELATED MACULAR

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To define pigment epithelial detachments (PED) as long-term treatment outcome predictors of intravitreal Faricimab (IVF) treatment in naïve patients with neovascular age-related macular degeneration (nAMD).

Patients diagnosed with active nAMD were included in the retrospective and prospective, single-arm, monocentric study. Patients were treated according to a treat-and-extend regimen after receiving four monthly IVF injections. At each visit, best corrected visual acuity (BCVA) assessment and SD-OCT (HeidelBerg Inc®) were performed. At baseline, PEDs were categorized based on type and localization. BCVA, compartment volumes and treatment intervals at month 12 were correlated not only with baseline OCT biomarkers such as PED height and central retinal thickness (CRT), but also with mean volumes of IRF, SRF and PED quantified using an AI-assisted tool (Discovery, Ikerian AG).

57 eyes (52 patients) with naïve nAMD receiving IVF were included in the study. At baseline, 82% of PEDs were fibrovascular and 78.4% were subfoveal; mean maximal PED height was 202,1±147,8µm.
PED height had a positive impact on IRF and SRF at M12, and had a negative association with treatment intervals. At baseline, CRT and PED volume were negative predictors of BCVA at M12; while BCVA was a positive predictor of BCVA at M12. IRF was a positive predictor of CRT at M12. Major changes of IRF and BCVA after the loading had a negative association with CRT at M12.

Pigment epithelial detachment could be considered as predictive OCT biomarkers for establishing long-term functional and anatomical outcomes of Faricimab intravitreal injections in the treatment of naïve patients with neovascular AMD. Moreover, parameter changes after baseline could be used as predictive indicators for anatomical outcomes at month 12.

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FOVEAL FUNCTION TESTS - RESOLUTION AND CONTRAST SENSITIVITY THRESHOLDS, AND DYNAMIC ADAPTATION TO LUMINANCE AND CONTRAST ACCURATELY DIFFERENTIATE EARLY AND MODERATE DRY AMD FROM HEALTHY CONTROLS: FINDINGS FROM A CONTROLLED CLINICAL STUDY

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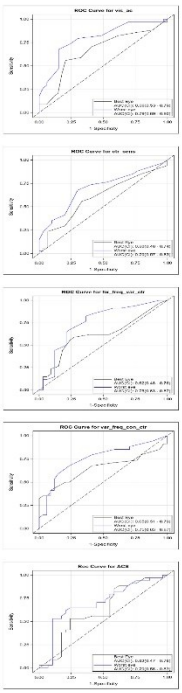
This study primarily aimed to validate the BCAM (BulbiCam) test, specifically the ACOLAPT procedure, for distinguishing early and moderate age-related macular degeneration (AMD) from healthy controls. Additionally, the study assessed the validity, reliability, repeatability, and stability of ACOLAPT measurements in individuals diagnosed with AMD.

This controlled clinical study involved 17 patients with early and intermediate dry AMD and 17 age-matched healthy controls. The BCAM device was used to assess foveal function, focusing on foveal resolution limit and contrast sensitivity, and foveal dynamic adaptation to luminance and contrast by two methods that quantify sub second cone-based dark adaptation latencies by strobe frequency and stimulus contrast. The study utilised both traditional measures, such as visual acuity tests, OCT, fundus photography, and advanced metrics, including the Agreement Index (AI) and Stability Index (SI), to evaluate the repeatability and stability of the tests.

The BCAM test distinguished early and moderate AMD from healthy controls, with all five tested variables showing potential as biomarkers. The study identified that tests using fixed contrast with variable strobe frequency, and the delta between contrast sensitivity without and with a 2 Hz strobe, demonstrated reliability, though repeated testing in clinical practice is advised. AI and SI provided enhanced metrics for evaluating the repeatability and stability of the clinical tests.

The ACOLAPT procedure was validated as an effective tool for early detection of AMD. The findings suggest that BCAM could contribute to improved patient outcomes by enabling more accurate and early detection of AMD, supported by the use of AI and SI metrics for assessing test reliability and stability.



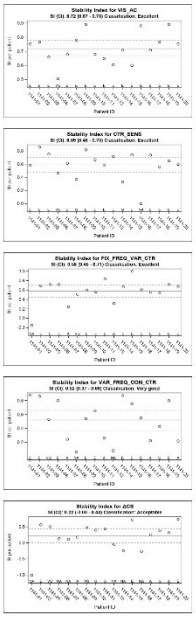


Table I: Validation of the Bulbicam tests. Comparison of Age-related macular degeneration (AMD) patients and age-matched health controls (HC) including receiver operating characteristic (ROC) analysis . The results are expressed by mean values, Standard Error (SE) and 95% confidence intervals (CI).

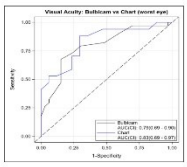
Test	Eye	Variable	AMD (mean±SE)	Health controls	AMD-HC Mean (95% CI)	ROC Analysis AUC	95% CI
Acolupx		Visual acuity	0.63(0.02)	0.49(0.02)	0.14 (0.08-0.21)	**0.79**	**0.69-0.90**
	Worst Eye	Contrast Sensibility	1.26(0.07)	1.69(0.02)	-0.34 (-0.23 - -0.05)	**0.70**	**0.57-0.83**
		Fixed frequency/Variable contrast	1.11(0.04)	1.32(0.04)	-0.21(-0.31 - -0.09)	**0.75**	**0.63-0.87**
		Variable frequency/ Fixed contrast	3.43(0.33)	5.18(0.33)	-1.75(-2.69 - -0.81)	**0.75**	**0.63-0.87**
		ΔCS	0.26(0.02)	0.20(0.02)	0.06(-0.00-0.12)	**0.70**	**0.58-0.83**
	Best Eye	Visual acuity	0.56(0.02)	0.49(0.02)	0.06(0.01-0.12)	**0.66**	**0.53-0.79**
		Contrast Sensibility	1.56(0.04)	1.63(0.04)	-0.07(-0.26-0.05)	0.66	0.46-0.74
		Fixed frequency/Variable contrast	1.26(0.05)	1.32(0.05)	-0.12(-0.26-0.02)	0.65	0.48-0.76
		Variable frequency/Variable contrast	4.45(0.37)	5.27(0.37)	-0.82(-1.88-0.24)	**0.65**	**0.51-0.79**
		ΔCS	0.24(0.02)	0.18(0.02)	0.06(-0.62-0.1)	0.62	0.47-0.76
OCT-ETDRS		CT	250.9 (11.2)	276.1 (11.2)	-25.2 (-57.6 - 7.3)	0.62	0.41 - 0.82
		ITT	330.6 (5.1)	327.9 (5.1)	-2.7 (-21.9 - 7.7)	0.55	0.39 - 0.79
		IST	330.7 (5.1)	338.0 (5.1)	-7.3 (-21.9 - 7.3)	0.64	0.44 - 0.85
		INT	329.7 (6.2)	339.0 (6.2)	-9.3 (-27.2 - 8.6)	0.65	0.45 - 0.86
	Worst Eye	IIT	353.4 (6.0)	334.0 (6.0)	-8.5 (-25.7 - 8.7)	0.59	0.39 - 0.80
		OTT	285.3 (5.7)	285.6 (5.5)	-3.2 (-13.1 - 6.8)	0.56	0.36 - 0.82
		OST	288.1 (5.6)	290.9 (4.6)	-0.8 (-14.1 - 12.4)	0.59	0.38 - 0.79
		ONT	294.1 (5.6)	300.3 (5.6)	-2.2 (-18.2 - 12.8)	0.56	0.28 - 0.72
		OIT	283.4 (6.2)	285.9 (4.7)	0.4 (-13.8 - 17.3)	0.50	0.29 - 0.71
		inner mean	311.5 (5.8)	323.0 (5.8)	-11.5 (-28.1 - 7.1)	0.61	0.41 - 0.81
		outer mean	292.0 (6.1)	295.1 (4.1)	-1.5 (-12.2 - 10.4)	0.55	0.22 - 0.76
	Best Eye	CT	269.9 (7.2)	277.6 (7.2)	-13.5 (-34.2 - 7.3)	0.66	0.39 - 0.88
		ITT	317.4 (5.5)	329.7 (5.5)	-11.8 (-24.7 - 6.6)	0.63	0.43 - 0.83
		IST	332.6 (4.9)	336.8 (4.9)	-4.8 (-19.0 - 9.4)	0.61	0.40 - 0.82
		INT	334.6 (5.6)	338.1 (5.6)	-3.5 (-19.6 - 12.7)	0.58	0.37 - 0.79
		IIT	322.8 (5.1)	332.5 (5.1)	-6.7 (-21.4 - 8.0)	0.64	0.42 - 0.86
		OTT	280.7 (3.3)	282.0 (3.3)	-1.7 (-11.1 - 7.6)	0.59	0.37 - 0.81
		OST	295.6 (3.5)	297.8 (2.5)	-1.9 (-12.8 - 8.2)	0.56	0.34 - 0.77
		ONT	306.9 (4.1)	307.3 (4.1)	-0.4 (-22.2 - 11.3)	0.55	0.34 - 0.77
		OIT	281.5 (3.5)	282.1 (2.5)	0.4 (-11.8 - 9.5)	0.58	0.36 - 0.79
		inner mean	314.8 (5.2)	322.2 (5.2)	-7.49 (-22.4 - 7.5)	0.61	0.40 - 0.81
		outer mean	291.1 (3.3)	292.2 (3.3)	-1.2 (-16.8 - 8.5)	0.59	0.38 - 0.81
Standard test		CP	14.6 (0.8)	13.8 (0.9)	0.1 (-2.4 - 2.6)	0.48	0.28 - 0.69
		Visual acuity	0.2 (0.1)	-0.1 (0.05)	0.3 (0.1 - 0.5)	**0.83**	**0.69 - 0.97**
	Worst Eye	Contrast sensitivity	1.5 (0.1)	1.6 (0.1)	-0.1 (-0.3 - 0.2)	0.53	0.30 - 0.76
		SFH	1.0 (0.5)	0.8 (0.5)	0.2 (-1.2 - 1.5)	0.50	0.29 - 0.71
		CYL	-0.8 (0.2)	-0.9 (0.2)	0.1 (0.1 - 0.6)	0.48	0.28 - 0.69
		AXIS	88.7 (12.7)	78.9 (12.7)	9.8 (26.9 - 46.6)	0.56	0.35 - 0.77
	Best Eye	CP	14.6 (0.8)	14.8 (0.9)	-0.04 (-2.4 - 1.9)	0.47	0.26 - 0.67
		Visual acuity	0.0 (0.05)	-0.1 (0.05)	0.10 (0.0 - 0.2)	0.67	0.48 - 0.87
		Contrast sensitivity	1.6 (0.05)	1.7 (0.05)	-0.1 (-0.2 - 0.1)	0.62	0.40 - 0.84
		SFH	0.8 (0.4)	1.0 (0.4)	-0.2 (-1.4 - 1.1)	0.54	0.34 - 0.75
		CYL	-0.7 (0.2)	-0.9 (0.2)	0.20 (-0.2 - 0.6)	0.59	0.38 - 0.80
		AXIS	89.8 (12.4)	69.3 (12.4)	29.5 (4.4 - 65.4)	0.66	0.46 - 0.86

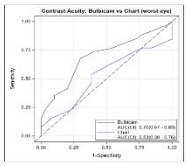
Table II: Reliability of the Bulbicam tests. The reliability is expressed by Inter Class Correlation (ICC) and the agreement within patients by Agreement Index (AI). The results are expressed by mean value, Standard Error (SE) and 95% confidence intervals.

Test	Eye	Variable	Day 1 Mean(SE)	Day 2 Mean(SE)	Day2 – Day1 Mean(95% CI)	ICC	AI
Acolupx	Worst Eye	Visual acuity	0.65 (0.03)	0.62 (0.03)	-0.03 (-0.13 - 0.06)	0.83	0.75
		Contrast Sensibility	1.51 (0.05)	1.51 (0.05)	0.00 (-0.16 - 0.15)	0.77	0.80
		Fixed frequency/Variable contrast	1.11 (0.06)	1.12 (0.06)	0.01 (0.16 - 0.18)	0.96	0.88
		Variable frequency/ Fixed contrast	3.51 (0.51)	3.24 (0.51)	-0.27 (-1.75 - 1.19)	0.81	0.25
		ΔCS	0.27 (0.03)	0.26 (0.03)	-0.01 (-0.09 - 0.07)	0.58	0.23
	Best Eye	Visual acuity	0.56 (0.03)	0.57 (0.03)	0.01 (-0.08 - 0.11)	0.83	0.72
		Contrast Sensibility	1.56 (0.06)	1.54 (0.06)	-0.03 (0.21 - 0.16)	0.82	0.79
		Fixed frequency/Variable contrast	1.15 (0.08)	1.7320.08)	0.07 (-0.15 - 0.30)	0.76	0.62
		Variable frequency/Variable contrast	4.73 (0.69)	4.06 (0.69)	-0.67 (2.67 - 1.23)	0.81	0.20
		ΔCS	0.27 (0.03)	0.22 (0.03)	-0.05 (-0.11 - 0.05)	0.11	-0.48

Table III: Stability of the Bulbicam tests. The six measurements are denoted as M1 to M6 and expressed by mean values. Stability is expressed by the Stability Index (SI) with 95% Confidence Intervals (CI).The classification is based on SI.

Test	Eye	Variable	M1	M2	M3	M4	M5	M6	SI (95%CI)	Classification
Acolupt	Worst Eye	Visual acuity	0.7	0.6	0.6	0.6	0.6	0.6	0.72 (0.67-0.78)	Excellent
		Contrast Sensibility	1.5	1.5	1.5	1.5	1.5	1.5	0.59 (0.48-0.70)	Excellent
		Fixed frequency/Variable contrast	1.1	1.1	1.1	1.1	1.1	1.1	0.58 (0.45-0.71)	Excellent
		Variable frequency/ Fixed contrast	3.5	3.2	3.8	3.7	4.3	3.8	0.52 (0.37-0.66)	Very good
		ΔCS	0.3	0.3	0.3	0.3	0.3	0.3	0.23 (0.00-0.44)	Acceptable
	Best Eye	Visual acuity	0.6	0.6	0.6	0.6	0.6	0.6	0.64 (0.57-0.71)	Excellent
		Contrast Sensibility	1.6	1.5	1.5	1.5	1.6	1.5	0.73 (0.65-0.80)	Excellent
		Fixed frequency/Variable contrast	1.2	1.2	1.2	1.2	1.2	1.2	0.66 (0.56-0.75)	Excellent
		Variable frequency/Variable contrast	4.7	4.1	4.0	4.0	4.1	4.4	0.60 (0.48-0.72)	Excellent
		ΔCS	0.3	0.2	0.2	0.3	0.3	0.3	0.45 (0.25-0.66)	Very good





Abstract 259

IXOBEROGENE SOROPARVOVEC (IXO-VEC) INTRAVITREAL GENE THERAPY FOR NEOVASCULAR AGE-RELATED MACULAR DEGENERATION: PHASE 2 LUNA STUDY UPDATE

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LUNA is a multicenter, randomized, double-masked, 60-month study in treatment-experienced patients with neovascular age-related macular degeneration (nAMD) with a demonstrated response to anti-VEGF therapy. We assessed the safety, tolerability, and efficacy of a single intravitreal (IVT) injection of ixoberogene soroparvovec (previously known as ADVM-022) in anti-VEGF treatment-experienced nAMD patients.

Eligible participants were randomly allocated between two Ixo-vec doses, 6x1010 vg/eye (6E10) and 2x1011 vg/eye (2E11), and across multiple prophylactic regimens including local corticosteroids (topical difluprednate, IVT dexamethasone) with and without oral prednisone. The primary endpoint included the mean change in best-corrected visual acuity (BCVA) from baseline to Week 52. Key secondary endpoints included the mean change in central subfield thickness (CST), number of supplemental aflibercept injections, and the effectiveness of the prophylactic corticosteroid regimens in minimizing inflammation. A pre-specified interim analysis was performed once participants completed their Week 26 visit.

Sixty enrolled patients [mean age (± SD), 76.6 ±7.8 years, time since diagnosis 2.7 ± 3.0 years] received 9.9 ±2.1 annualized anti-VEGF injections prior to Ixo-vec. Baseline mean BCVA and CST were 72.3 (7.7) ETDRS letters and 350.6 (115.2) µm. At Week 26, BCVA and CST were maintained with a least squares mean change of -1.1 (6E10) and -2.2 ETDRS letters (2E11) and -12.6 (6E10) and -12.0µm (2E11), respectively. 76% (6E10) and 83% (2E11) of patients remained injection-free. The use of topical steroids with or without dexamethasone implant led to optimal control of inflammation.

The ongoing Phase 2 LUNA study evaluates the safety and efficacy of a single IVT injection of Ixo-vec in patients with nAMD. Overall, Ixo-vec was well tolerated with local corticosteroid prophylaxis effectively minimizing inflammation. An update of safety and efficacy results will be presented.

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NOVEL INSIGHTS IN THE PATHOGENESIS OF MACULAR NEOVASCULARIZATION TYPE 3

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Macular neovascularization type 3 (MNV3) is a multifactorial disease with distinct epidemiological, clinical, pathomorphological and topographical characteristics. This analysis discusses the latest experimental and clinical outcomes that explain the pathogenesis of retinal neovascularization. Accordingly, we suggest a new sequence of pathological events that ends with the development of retinal neovascularization.

A comprehensive review of the literature of the outcomes of recent multimodal, topographical, histological, and experimental studies with MNV3 and MNV3-like lesions.

The regional distribution of MNV3 lesions is characterized as confined to the parafoveal macula without any involvement of the rod-free foveal area. Furthermore, focal outer retinal atrophy and choroidal non-perfusion are the main structural features that occur prior to the development of retinal neovascularization. Also, histological and experimental studies of MNV3 and other non-neovascular age-related macular degeneration diseases complicated with MNV3-like lesions strongly suggest rod degeneration contributes to the pathogenesis.

We propose a sequence of pathological events that start with choroidal non-perfusion due to advanced age followed by hypoxia of the outer retina at the parafoveal area. This induces a remarkable degeneration of rods that triggers the growth of retinal neovascularization due to the imbalance of the angiogenic factors.

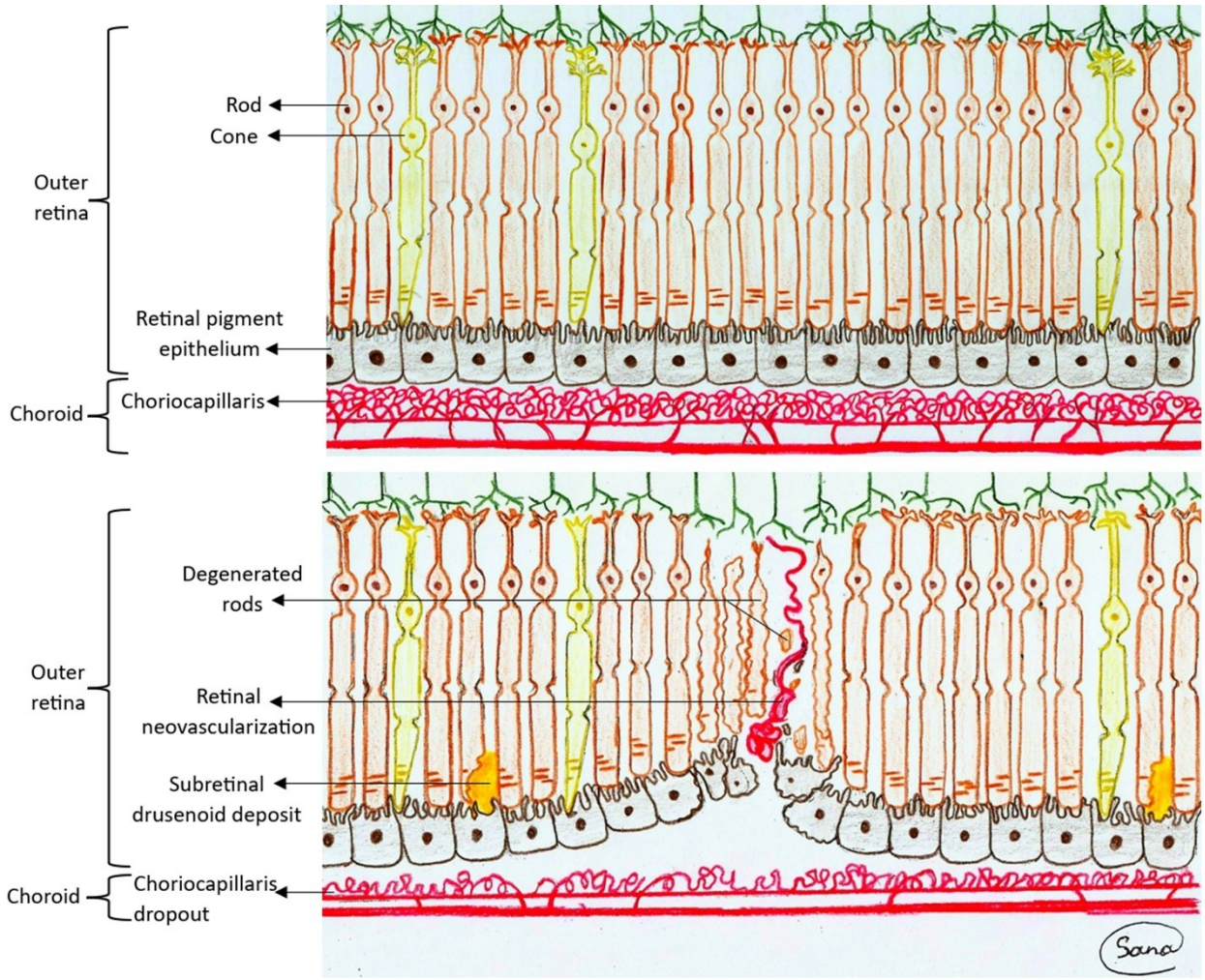

Figure 1: A schematic diagram of the early changes of macular neovascularization type 3 (MNV3). The upper image shows the normal retinal and choroidal structures. The lower image illustrates the early pathomorphological changes of MNV3. Note the primary remarkable thinning of the choroid and the decrease of the choroidal blood supply, in particular the choriocapillaris layer. This causes degeneration of rods that is manifested as thinning of the outer retinal layer and formation of subretinal drusenoid deposits. Consequently, retinal neovessels originating from the deep capillary plexus extend to the subretinal space through the degenerated neurosensory retina and retinal pigment epithelium.

Abstract 334

THE EFFECT OF RESVERATROL SUPPLEMENTS ON WET AMD: ONE-YEAR RESULTS FROM A PROSPECTIVE STUDY

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To assess the impact of resveratrol supplements as an additional therapy for wet AMD

Fifty previously untreated patients suffering from wet-AMD participated in our prospective study. They were randomly assigned in two subgroups, each consisting of 25 patients, according to the applied treatment regimen. Every participant was treated with 3 monthly intravitreal injections of 2.0 mg aflibercept followed by injections according to need (PRN protocol). The patients in the second group also consumed daily two tablets of resveratrol enriched oral supplements. The main outcome evaluations were changes in best corrected visual acuity (BCVA), number of applied anti-VEGF injections, contrast sensitivity status (Pelli-Robson test), and patient's quality of life assessed with a self-rating questionnaire (HADS)

No significant changes were present regarding the baseline demographic and clinical data ($p>0.05$ for all) between the groups. Over the 1-year period, a similar number of IAIs was applied in both groups, while the rest of the clinical data also did not differ significantly ($p>0.05$ for all), except for HADS Depression and HADS Anxiety questionnaires scores, which were significantly better in patients who undertook resveratrol oral supplements ($p<0.001$ for all). Furthermore, the mean change from baseline values of contrast sensitivity, HADS Depression, and HADS Anxiety scores, were significantly higher in the patients treated with resveratrol supplement.

Our findings suggest that resveratrol oral supplements could be considered as a complementary therapy in wet-AMD.

Abstract 458

EFFECT OF HIGH-DOSE INTRAVITREAL AFLIBERCEPT IN PATIENTS WITH NAMD: COMPARISON OF REAL-WORLD OUTCOMES WITH PHARMACOKINETIC MODEL

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To evaluate the correlation between the theoretical pharmacokinetic rationale for the high-dose aflibercept (8mg) regimen and its clinical effectiveness in patients with exsudative neovascular age-related macular degeneration (nAMD).

Prospective study of consecutive patients with nAMD with subfoveal type 1 macular neovascularization (MNV) who were switched from aflibercept 2mg (AFLI2) to aflibercept 8 mg (AFLI8). A time-dependent mathematical model was developed using Python to calculate aflibercept concentrations before and after intravitreal injection (IVI) at doses of 2 mg and 8 mg at different timepoints. The prediction was compared with the clinical outcomes (BCVA, central retinal thickness (CMT), neovascular activity).

The mean number of intravitreal injections before switch was 9 +/- 3, the mean BCVA was 0.193 logMAR and mean CMT was 378 +/- 89 µm. Analysis of clinical outcomes at 2 weeks following AFLI2 and AFLI8 showed a significant difference in neovascular activity (p=0.002) and CMT (p=0.001). Analysis of clinical outcomes at 4 weeks after AFLI2 and AFLI8 showed significant difference in BCVA (p=0.012) and CMT (p<0.001). Analysis between clinical outcomes 2 weeks after AFLI2 and 4 weeks after AFLI8 showed no significant difference in BCVA (p=0.35), neovascular exudation (p=0.67), or CMT (p=0.18).

A theoretical increment of 18 days predicted by the pharmacokinetic model seemed to correspond to clinical outcomes evaluated in this study. The significant response at 2 weeks demonstrates the efficacy of treatment, with no evidence of a dose-dependent ceiling, suggesting that higher doses continue to provide benefits.

Abstract 19

IOP OUTCOMES WITH AFLIBERCEPT 8 MG AND 2 MG IN PATIENTS WITH DME THROUGH WEEK 96 OF THE PHASE 2/3 PHOTON TRIAL

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IOP Outcomes With Aflibercept 8 mg and 2 mg in Patients With DME Through Week 96 of the Phase 2/3 PHOTON Trial

In PHOTON, patients (pts) with DME received aflibercept 8 mg every 12 or 16 wks after 3 monthly doses (8q12 or 8q16) or aflibercept 2 mg every 8 wks after 5 monthly doses (2q8). IOP outcomes through Wk 96 were evaluated for study and fellow eyes (untreated and treated with aflibercept 2 mg).

Mean pre-dose IOP in 2q8, 8q12 and 8q16 was 15.9, 15.3 and 14.9 mmHg at baseline (BL) and 15.3, 14.8 and 14.8 mmHg at Wk 96. Mean change in pre-dose IOP at Wk 96 with 2q8, 8q12 and 8q16 was –0.5, –0.6 and 0 mmHg. Mean change in pre-dose IOP from BL through Week 96 did not exceed ±1 mmHg in any treatment group. Cumulative incidence of pre-dose IOP ≥25 mmHg at 2 consecutive visits, or ≥30 mmHg at any visit with 2q8, 8q12 and 8q16 was 0%, 0% and 0.7% and 0%, 0.7% and 0% respectively.

In patients with DME, pre-dose IOP outcomes in study eyes receiving aflibercept 8 mg or 2 mg and in fellow eyes were comparable through Wk 96. No signal for IOP increase over time was seen with aflibercept 8 mg vs 2 mg.

Abstract 454

REDUCTION IN RISK PROBABILITY OF PERSISTENT VISION LOSS WITH AVACINCAPTAD PEGOL IN GEOGRAPHIC ATROPHY: 2-YEAR RESULTS FROM THE GATHER2 TRIAL

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Avacincaptad pegol (ACP) is an FDA-approved therapy for geographic atrophy (GA). In GATHER2, the risk probability of ≥15-letter persistent vision loss at Year 1 was lower with ACP 2 mg (3.1%) vs sham (7.7%). Here, we report the effect of ACP 2 mg on persistent vision loss at Year 2.

Patients with non-center-point-involving GA were randomized 1:1 and treated with monthly ACP 2mg (n=225) or sham (n=222). At Month 12, those on monthly ACP 2mg were rerandomized 1:1 to monthly or every-other-month ACP 2mg. Patients who were on sham continued with sham. Prespecified persistent vision loss was defined as loss of ≥15 letters from baseline at ≥2 consecutive visits up to Year 2. Prespecified sensitivity analyses were performed for persistent vision loss of ≥10 or ≥20 letters as well as a post hoc analysis of persistent vision loss of ≥25 letters at ≥2 consecutive visits from baseline to Year 2.

From baseline to Year 2, risk probability for persistent vision loss of ≥15 letters was 18.2% with ACP 2mg vs 19.3% with sham (hazard ratio [HR]: 0.90; 95% CI: 0.57, 1.42; log-rank P=0.6424). For persistent vision loss of ≥10 letters, risk probability was 31.0% with ACP 2mg vs 33.5% with sham (HR: 0.88; 95% CI: 0.62, 1.24; log-rank P=0.4591). For persistent vision loss of ≥20 and ≥25 letters, risk probability for ACP 2mg vs sham was 10.2% vs 13.8% (HR: 0.69; 95% CI: 0.38, 1.23; log-rank P=0.2025) and 7.4% vs 11% (HR: 0.65; 95% CI: 0.33, 1.28), respectively.

Two-year results from the Phase 3 GATHER2 study demonstrate a trending benefit with ACP 2mg vs sham in the reduction of risk probability for persistent vision loss, particularly for patients who experienced greater loss of vision. Further analyses are warranted to aid in interpretation of these results.

Abstract 350

UNLOCKING STRUCTURE/FUNCTION RELATIONSHIPS IN DRY AMD/GA: CENTRAL SUBDOMAIN PRESERVATION AND VISUAL ACUITY PROTECTION WITH C1Q INHIBITION

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C1q inhibition with ANX007 demonstrated consistent, significant visual acuity protection in the ARCHER study, but paradoxically did not meet the primary endpoint, GA lesion area change. This assessment seeks to understand the mechanism of action of C1q and identify structural markers that better correlate with visual function than RPE loss.

In the multicenter, double-masked, sham-controlled ARCHER trial, patients with dry AMD and GA lesions were randomized to intravitreal administration of ANX007 5 mg monthly (EM), 5 mg every other month (EOM), or matched sham for 12 months, followed by a 6 month off-treatment period. Pre-specified visual function endpoints (best corrected visual acuity (BCVA) and low luminance visual acuity (LLVA) were assessed along with structural changes (ellipsoid zone (EZ) and RPE) across the macula and in central subdomains around the foveal center. C1q expression and retina structure were also assessed in post-mortem sections from GA retinas.

ANX007 EM/EOM significantly reduced persistent BCVA ≥15-letter loss (5.6%; p=0.0021, 9.8%; p=0.032, respectively) compared to sham (21.3%). ANX007 treatment significantly reduced total EZ loss across the macula through 12 months (27% reduction; p=0.0457). Central subdomains (2.0mm,1.5mm diameters) experienced more robust EZ protection (48% (p=0.0218), 59% (p=0.0319), respectively). Similarly, there was a trend for greater preservation of RPE in the central 1.5mm subdomain with ANX007 treatment through 12 months (4% reduction across macula (p=0.71); 18% reduction in subdomain (p=0.40)). Assessment of postmortem GA retinas confirmed C1q association with photoreceptor synapses, and photoreceptor and synapse disruption distal to GA lesion.

Visual acuity benefits of C1q inhibition with ANX007 are associated with protection of structures in central retina subdomains – photoreceptors and RPE. Photoreceptor integrity is disturbed distal to RPE loss. Monitoring GA solely through RPE loss is disconnected from visual function. Phase 3 is underway to confirm ANX007 benefits.

Abstract 3

NON-NEOVASCULAR SUBRETINAL FLUID WITH SEROUS RETINAL PIGMENT EPITHELIAL DETACHMENT: (WAIT OR TREAT)

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To describe the course of subretinal fluid (SRF) in eye with serous pigment epithelial detachment (serous PED) in the absence of macular neovascularization (non-neovascular AMD).

This is a retrospective case study included one eye with non-neovascular SRF associated with serous PED. Swept source optical coherence tomography (SS-OCT) and optical coherence angiography (OCTA) were obtained at baseline and follow up with qualitative and quantitative analysis of macula, pigment epithelial detachment (PED), subretinal fluid (SRF) and the presence or absence of macular neovascular membrane (MNV) in addition to other multimodal imaging modalities like fluorescein angiography (FA) and fundus auto fluorescence (FAF).

Our 66-year-old female has presented with left serous (PED) , apical (SRF) and no MNV on OCTA with baseline best corrected vision BCVA=0.5.BCVA were stable over the initial 5-month follow-up observation period with no MNV. One month later, the patient received an intravitreal anti-VEGF injection outside our clinic. 1-month post-outside clinic injection, OCT showed a small RPE tear with flattening of RPE detachment and preservation of BCVA =0.5. 3rd month post-outside clinic anti-VEGF injection, the OCT showed slight flattening of RPE detachment with increase in SRF & still negative MNV that associated with a drop in BCVA to 0.3.

Many published studies provide preliminary data about non-neovascular AMD with SRF (2-7) as an important clinical entity that needs to be managed by observation and avoiding unnecessary anti-VEGF injection. However, some of these eyes may eventually develop MNV(2-5) that can be detected on multimodal imaging like OCT,OCTA& ICG.

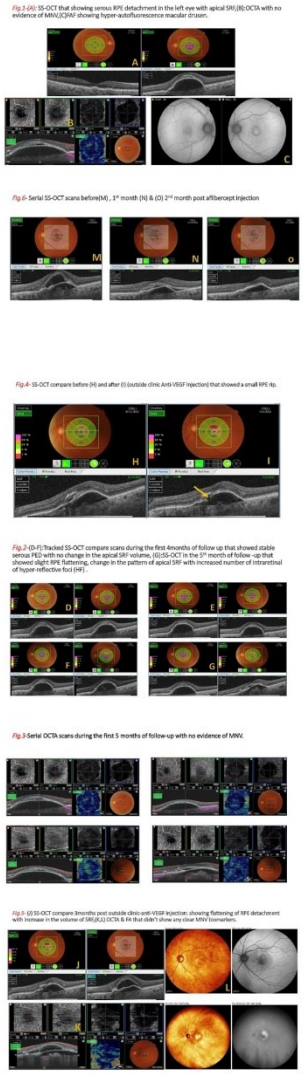
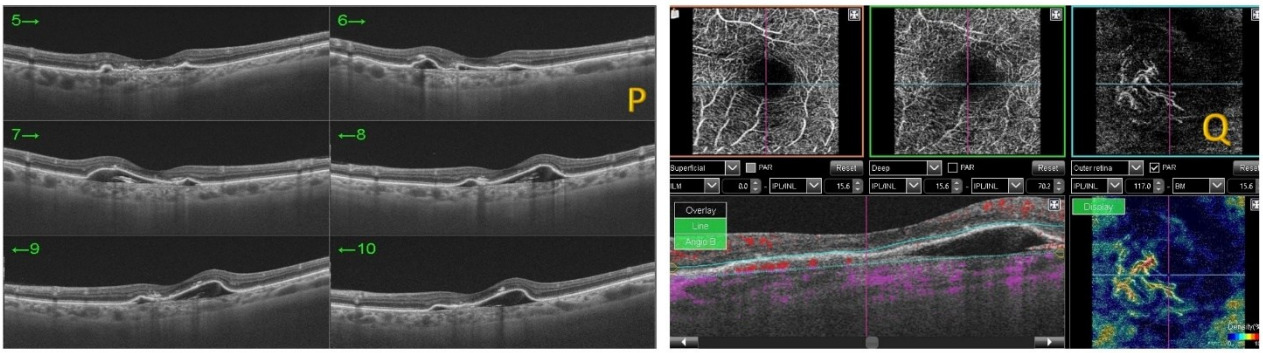


Fig.7- (P):SS-OCT radial scans after 5 monthly aflibercept injection showing flattening of RPE with no SRF or IRF,(Q):OCTA that showed MNV.



Abstract 309

FARICIMAB TREATMENT FOR PIGMENT EPITHELIUM DETACHMENT SECONDARY TO NEOVASCULAR AGE-RELATED MACULAR DEGENERATION, A PILOT STUDY.

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Barking, Havering and Redbridge University Hospitals NHS Trust ~ London ~ United Kingdom

To investigate the efficacy of intravitreal faricimab injections in reducing the maximum height of pigment epithelium detachments (PEDs) in naïve treatment patients with neovascular age-related macular degeneration (nAMD).

A retrospective review was conducted on 31 naive treatment eyes of 31 patients, with nAMD and presence of PED at baseline, treated with intravitreal faricimab injections, between December 2022 and September 2024, in London, Queen's Hospital, Barking, Havering and Redbridge University Hospitals NHS Trust. A minimum follow-up of 6 months was required. Background demographics, best corrected visual acuity (BCVA) in log mar and maximum height, type and location of PED, assessed using Optical coherence tomography, were recorded before initiating treatment, after 4 loading doses and at 6 months of treatment.

The mean age of patients was 79.96 years. 11 males and 20 females. 21 had foveal PEDs, 7 extrafoveal and 3 had both. 20 had fibrovascular PEDs, 5 had serous and 6 a combination of both. Before treatment, mean BCVA was 0.50 and mean PED height 294.43 microns. After 4 injections of faricimab, mean BCVA was 0.44 and mean PED height 173.62 microns. At 6 months of treatment, mean BCVA was 0.44 and mean PED height 168.74 microns. The height of PED showed a statistically significant reduction after loading dose (120.81 microns) and at 6 months (125.69 microns) (p value<0.0001).

Faricimab has demonstrated statistically significant reductions of PED height after loading dose, which maintained at 6 months of treatment. This shows promising results to consider it as a good first line treatment in cases of neovascular age-related macular degeneration with presence of PED.

Abstract 43

MONITORING SUB-RETINAL FLUID (SRF) FLUCTUATIONS, THE RESPONSE TO ANTI-VEGF THERAPY AND THE ROLE AS A PROTECTIVE BIOMARKER AGAINST MACULAR ATROPHY

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The objective of this study to evaluate the effect on subretinal fluid on visual acuity in patients treated with anti-VEGF injections.

The study conducted is a prospective cohort study. All patients are previously untreated, newly diagnosed (n-AMD) patients with present, developed choroidal neovascularization (CNV) and reduced visual acuity.Imaging and monitoring of fundus changes was performed exclusively on the DRI OCT Triton, OCT images and non-contrast angiography were performed in both eyes in the macular zone. . The drug aflibercept is given according to the so-called "treat and extend treatment" or T&E regime. All patients initially received 3 monthly doses of anti-VEGF and the 4th on the 4th month after what dose interval continued according to the morphologic and functional criteria.

At the beginning all patients had certain volume of sub-retinal fluid (SRF).
According to the number of applied doses, most of the respondents 20 (25.6%) received 6, i.e. 8 doses, while 7 doses received 13 (16.7%), 10 doses received 10 (12.8%), 6 (8.3%) received 9 doses, while the least respondents were 2 (2.6%) with 11 doses and with 5 doses were 1 (1.3%) of the respondents.
In the treated patients out of 78, 23 patients developed scar, of which fibrotic 7, and non- fibrotic 16.

In our study the fluctuation of subretinal fluid is showed to be in correlation with BCVA, and the response to the anti-VEGF injections. The larger volume of fluids is correlated with increased central retinal thickness and therefor declined visual acuity..

Abstract 345

PORT DELIVERY SYSTEM WITH RANIBIZUMAB (PDS) FOR CONTINUOUS TREATMENT IN DME AND DR: 2-YEAR DATA FROM THE PHASE 3 PAGODA AND PAVILION TRIALS

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To present 2-year data from the Pagoda and Pavilion trials investigating the PDS, an innovative drug delivery system for continuous delivery of a customised formulation of ranibizumab, with fixed 100 mg/mL refill-exchanges every 24 weeks (Q24W) for DME and 36 weeks (Q36W) for nonproliferative DR without centre-involved DME (CI-DME), respectively.

Pagoda (NCT04108156) and Pavilion (NCT04503551) are ongoing phase 3, randomised, visual assessor–masked trials. Pagoda: PDS Q24W or monthly ranibizumab 0.5 mg through W60; PDS implantation at W64 in monthly ranibizumab arm (IVT–PDS Q24W); refill-exchanges Q24W through W112 in both arms; patients eligible for supplemental ranibizumab at the 2 visits before each refill-exchange. Pavilion: PDS Q36W or control (clinical monitoring visits Q4W) until W60; PDS implantation, following 2 ranibizumab doses, at W64 in control arm (Control–PDS Q36W); refill-exchanges Q36W through W100 in both arms; patients eligible for supplemental ranibizumab at each study visit except refill-exchange visits.

Pagoda: Adjusted mean (95%CI) BCVA change from baseline maintained in both arms through W112 (PDS Q24W [n=301]: +9.8 [8.6–11.0]; IVT–PDS Q24W [n=197]: +9.4 [8.0–10.8] letters); CST reductions also sustained; >95% patients (both arms) received no supplemental treatment per refill-exchange interval. Pavilion: 80.2% (95%CI: 72.6–87.8%) of PDS Q36W (n=106) and 91.7% (80.6–100.0%) of Control–PDS Q36W (n=29) patients achieved ≥2-step DRSS improvement from baseline at W100; ≥99% of PDS Q36W (each complete refill-exchange interval) and 100% of control–PDS Q36W patients received no supplemental treatment. No new safety signals observed at year-2 in both trials.

The 2-year Pagoda and Pavilion results support the primary analysis, with the PDS demonstrating continued efficacy, and safety consistent with the primary analysis. PDS, the first continuous delivery treatment platform, could provide long-term functional and anatomic benefits in DME, and disease control in DR, with 1–2 refill-exchanges per year.

Abstract 248

OCT BIOMARKER QUANTIFICATION AS SHORT-TERM OUTCOME PREDICTORS OF INTRAVITREAL FARICIMAB INJECTIONS IN NAÏVE PATIENTS WITH NEOVASCULAR AGE-RELATED MACULAR DEGENERATION

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To report the impact of an Artificial Intelligence (AI) tool for the quantification of baseline OCT biomarkers as efficacy parameters and short-term treatment outcome predictors of intravitreal Faricimab (IVF) in naïve patients with neovascular age-related macular degeneration (nAMD).

Patients diagnosed with active untreated nAMD were included in this observational, single-arm, monocentric study. Patients were started on a loading phase of four monthly IVF. At baseline and at each following visit, best corrected visual acuity (BCVA) assessment and SD-OCT (HeidelBerg Inc®) were performed. Using an AI-assisted tool (Discovery, Ikerian AG), OCT biomarkers including INL+OPL (Inner Nuclear Layer, Outer Plexiform Layer), ONL+HFL (Outer Nuclear Layer, Henle Fiber Layer), EZ+OPR+IZ (Photoreceptors), RPE (Retinal Pigment Epithelium), CC+CS (Choriocapillaries and Choroidal Stroma), IRF (Intra Retinal Fluid), SRF (Subretinal Fluid), and PED (Pigment Epithelium Detachment) were quantified and correlated with functional variables.

43 eyes of 39 patients with naïve nAMD receiving IVF that completed the loading phase were included in the study. Mean age at baseline was 80,97±5,6 years, 31 patients (79.4%) were female. After the loading phase (M4), ONL+HFL, EZ+OPR+IZ, RPE, CC+CS were significantly decreased (all P<0.0001), as well as IRF, SRF, and PED (all P<0.0001). At M4, BCVA was positively associated with baseline EZ+OPR+IZ (P=0.0001), and negatively associated with baseline IRF and PED (P=0.049 and P=0.025, respectively). Baseline ONL+HFL was positively associated with IRF at M4 (P=0.0152).

OCT biomarkers quantified by an AI-assisted tool could be considered for a more precise assessment of early faricimab intravitreal injection efficacy and for establishing short-term functional outcomes in the treatment of naïve patients with neovascular AMD, guiding clinicians for a clearer and more personalized explanation of treatment outcomes.

Abstract 367

AI-POWERED OPHTHALMOLOGY: A REVIEW OF MEDICAL APPLICATIONS AND DEMONSTRATION OF A NOVEL TOOL POSTER

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To provide an overview of the current state and future potential of artificial intelligence (AI) in medical ophthalmology, and to showcase a novel AI-powered tool developed by the authors, two medical students. This review will explore the various AI techniques and their applications in diagnosing and managing ophthalmic diseases.

A comprehensive literature search was conducted to identify relevant studies and publications on AI in medical ophthalmology. The identified studies were analysed to assess the current applications of AI in areas such as disease diagnosis, patient monitoring, and clinical decision support. In addition, the author will demonstrate a novel AI-powered tool they developed as part of their MSc in Computer Science in collaboration with another medical student.

AI has demonstrated significant potential in improving the diagnosis and management of ophthalmic diseases. Current medical applications include automated image analysis for glaucoma, diabetic retinopathy, and age-related macular degeneration. AI-powered systems can also assist in clinical decision-making by providing personalised treatment recommendations based on patient data and medical history. Future research and development efforts should focus on expanding the range of AI applications, ensuring the robustness and reliability of AI systems, and integrating AI into clinical workflows seamlessly.

AI can transform medical ophthalmology by improving the accuracy and efficiency of care. However, ethical considerations and regulatory hurdles must be addressed to realise the benefits. The authors' demonstration of a novel AI-powered tool highlights the potential for innovative AI solutions to address medical ophthalmic challenges and improve patient outcomes.

Abstract 355

THE FUTURE OF OPHTHALMOLOGY: A REVIEW OF AI APPLICATIONS AND DEMONSTRATION OF A NOVEL AI-POWERED TOOL

El Ashry A.*

University of Bristol ~ Bristol ~ United Kingdom

To provide an overview of AI's current state and future potential in medical ophthalmology, and to showcase an AI tool developed by the author, a fourth-year medical student with an MSc in Computer Science, passionate about ophthalmology. This review will explore the various AI applications in diagnosis and management.

A comprehensive literature search was conducted to identify relevant studies and publications on AI in medical ophthalmology. The identified studies were analysed to assess the current applications of AI in areas such as disease diagnosis, patient monitoring, and clinical decision support. In addition, the author will demonstrate a novel AI-powered tool they developed as part of their MSc in Computer Science, which was completed alongside their medical school studies.

AI has demonstrated significant potential in improving the diagnosis and management of ophthalmic diseases. Current medical applications include automated image analysis for glaucoma, diabetic retinopathy, and age-related macular degeneration. AI-powered systems can also assist in clinical decision-making by providing personalised treatment recommendations based on patient data and medical history. Future research and development efforts should focus on expanding the range of AI applications, ensuring the robustness and reliability of AI systems, and integrating AI into clinical workflows seamlessly.

AI can transform medical ophthalmology by improving the accuracy and efficiency of care. However, ethical considerations and regulatory hurdles must be addressed to realise the benefits. Demonstrating a novel AI-powered tool highlights the potential for innovative AI solutions to address specific medical ophthalmic challenges and improve patient outcomes.

Abstract 450

COMPARING THE ABILITY OF LARGE LANGUAGE MODELS TO DIAGNOSE AND MANAGE COMMON MEDICAL RETINA AND VITREORETINAL PRESENTATIONS

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Advances in technology have resulted in integration of artificial intelligence (AI) in ophthalmology. As AI continues to develop, there is potential for use in diagnosis and management support. We compare the ability of ChatGPT-4o, ChatGPT o1 preview and a trained ChatGPT model to answer medical retina and vitreoretinal scenarios.

15 clinical scenarios with 10 questions each were developed by a panel of 5 independent ophthalmologists. These were presented to 3 ChatGPT models. 6 medical retina and vitreoretinal specialists rated the answers from each model based on 3 domains, accuracy and clinical application, clarity and conciseness, and humanity.

The models were able to provide an answer to all questions. Our results show that ChatGPT o1 preview provides the most clear and concise answers to clinical questions. However, the retina trained ChatGPT model provided more clinically accurate and 'human-like' responses, without hallucination.

We show that AI models are becoming increasingly able to answer complex clinical questions in an accurate manner. This has the potential to be used as a diagnostic and management aid in the future.

Abstract 184

PERFORMANCE OF ARTIFICIAL INTELLIGENCE PLATFORMS ON AGE-RELATED MACULAR DEGENERATION EVALUATION

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This study aims to compare the performance of three different artificial intelligence (AI) platforms (ChatGPT, Google Gemini, and Microsoft Copilot) in answering 25 questions on age-related macular degeneration (AMD) based on metrics of comprehensiveness, accuracy, and readability.

The three AI platforms were tasked with answering 25 questions about AMD. Their responses were evaluated by two independent retina specialists using a comprehensiveness scale (0-5) and an accuracy scale (-2 to 2). The questions were derived from the American Academy of Ophthalmology's website.

Comprehensiveness and accuracy scores were 4.7±0.3 and 1.7±0.3 for ChatGPT, 4.6±0.4 and 1.6±0.4 for Gemini, 4.1±0.6 and 1.3±0.5 for Copilot ($p<0.001$, $p<0.001$). Flesch-Kincaid-Grade Level and Flesch-Reading-Ease Score were 9.8±5.9 and 39.1±42.4 for ChatGPT, 8.8±6.4 and 49.4±44.9 for Gemini, 8.7±2.4 and 53.5±15.5 for Copilot. No difference in readability was found. ANOVA revealed differences in the total number of sentences ($p<0.001$) and word count ($p=0.005$). Post-hoc tests indicated differences in sentence count between ChatGPT and Copilot ($p<0.001$) and ChatGPT and Gemini ($p=0.022$) and in word count between ChatGPT and Copilot ($p=0.005$). Gemini showed the highest intraclass correlation coefficient for comprehensiveness(0.3) and accuracy(0.3).

While both ChatGPT and Gemini demonstrated similar performance in terms of comprehensiveness and accuracy, Gemini provided more content in terms of sentence and word count. These findings are critical when selecting and developing AI platforms, highlighting Gemini's superior performance in content scope and quantity, while Copilot's performance was lower.

Abstract 31

IMMUNE RESPONSE OF MULLER CELLS UNDER DIABETIC CONDITIONS: THE JAK-STAT SIGNALING PATHWAY AS A POTENTIAL NEW TARGET

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Evaluation of the immunological response and cytokine pathways that occur in Müller cells in diabetic retinopathy.

Normalized total RNA readings obtained from next-generation sequencing data were accessed using the GEO database (https://www.ncbi.nlm.nih.gov/geo). Metadata (and normalized count data files were prepared and transferred to the R studio environment.After editing the data in R studio, the expression levels were determined compared to the control group using the DESeq2 package. The AnnotationDbi and org.Hs.eg.db packages were used to interpret the expressed genes. Once the expressed gene names were determined, the data was filtered using the pathview, gage, and gageData packages. These genes were assessed using the KEGG database to determine their functions in the pathways.

Analysis revealed that, compared to non-diabetic healthy, control Müller cells of diabetic Müller cells showed up or down regulation in the expression of 990 genes. Significant changes were observed in the JAK-STAT signaling pathway. Specifically, an increase in the expression of IL-3 family, IL-6 family, INF-I/III, cytokine-inducible SH2 proteins (CIS), and P21 proteins was noted. Conversely, a decrease in the protein expression of the IL-10 family, growth hormones (GH), BCL-2, and cyclin D (CycD) was observed.

Cytokines via JAK-STAT signaling pathway not only lead to excessive inflammatory response and cellular stress but also contribute to cell cycle arrest and promote apoptotic pathways. The JAK-STAT pathway can be therefore considered a potential treatment target to prevent Müller cell from entering the apoptotic process under diabetic conditions.

Abstract 131

AUTOMATIC IDENTIFICATION AND SEGMENTATION OF PACHYCHOROID ON OPTICAL COHERENCE TOMOGRAPHY, USING AI

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Pachychoroid is characterized by dilated pachy-vessels seen on optical coherence tomography (OCT). Age-related macular degeneration (AMD) is characterized by the presence of drusen and a variety of choroidal anatomy. Our study aimed to assess the use of an AI model to identify pachy-choroid and segment choroidal vessels on OCT images.

109,348 OCT-B-scan images were collected from eyes with AMD and pachychoroid-related diseases. OCT images were analyzed, labeled and segmented according to pachy-vessels or no-pachy-vessels by a retina-specialist.
A convolutional-neural-network(CNN) model was proposed to classify the presence of pachy-vessels based on a binary label. Four CNN architectures were compared: ConvNext-large-224, MobileNet, ResNet-50, and the EfficientNet-b0.
Moreover, four types of models were analyzed, three single-slab models: Central, peripheral, random, and a multiple slab prediction.
The Yolo-v8-large model was used to segment the choroidal vessels from B-scan OCT scans. The Intersection-over-Union(IOU) and the DICE-coefficient were used to evaluate segmentations similarity.

68,556 AMD and 40,792 Pachychoroid-related disease OCT B-scan images were included in the analysis.
The central-slab model achieved an AUC of 0.95(sensitivity:81%, Specificity:94%), the peripheral-slab model achieved an AUC of 0.92 (sensitivity:90%, Specificity:89%), the random-slab model achieved an AUC of 0.94 (sensitivity:89%, Specificity:93%), and the multi-slab model achieved an AUC of 0.96(sensitivity:76% Specificity:96%). The YOLO-v8-large model achieved an accuracy of 97% choroidal vessel segmentation in SD-OCT and for choroidal vessel segmentation in EDI 91% vs labeler-1 and 95% compared to labeler-2 for EDI-OCT.

We examined the performance of an AI-models to identify pachychoroid on OCT. The central-slab exhibited similar performance as the multi-slab and can be applied on both SD-OCT and EDI-OCT. This insight may enhance our capability to differentiate the two entities, minimizing misdiagnosis and leading to more efficient and tailored treatment.

Abstract 128

FARICIMAB FOR POLYPOIDAL CHOROIDAL VASCULOPATHY: WEEK 16 RESULTS FROM THE PHASE 3B/4 SALWEEN TRIAL

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SALWEEN (ISRCTN69073386) is a phase 3b/4, multicentre, open-label trial evaluating effectiveness, safety and durability of the dual angiopoietin-2 (Ang-2)/vascular endothelial growth factor-A (VEGF-A) inhibitor, faricimab, in patients with polypoidal choroidal vasculopathy (PCV) from Asian countries. Here, we present interim, week 16 results.

Patients with symptomatic macular PCV (N=135) received 4 initial every-4-week (Q4W) doses of faricimab 6.0 mg, followed by faricimab Q8W, Q12W or Q16W based on disease activity assessments at weeks 20/24. At weeks 44/48 through 104, patients will follow a treat-and-extend–based regimen with treatment intervals ranging from Q8W–Q20W. Primary endpoint: change from baseline best-corrected visual acuity (BCVA) averaged over weeks 40–48. Week 16 analyses: change from baseline BCVA and central subfield thickness (CST), proportion of patients with no intra- and subretinal fluid (IRF and SRF), resolution of polypoidal lesions as assessed by indocyanine green angiography, and safety.

Mean (95% confidence interval) BCVA and CST changes from baseline at week 16 were +7.8 letters (+6.4, +9.3) and -144.6 □m (-167.0, -122.2), respectively. The proportion of patients with no IRF/SRF at week 16 was 80.3%. Among patients with baseline polypoidal lesions as confirmed by the central reading centre and who attended week 16 visits (n=100), 51.0% had complete regression of polypoidal lesions. Faricimab was well tolerated; no new safety concerns were identified.

Dual Ang-2/VEGF-A inhibition with faricimab resulted in robust improvements in vision and anatomy, and regression of polypoidal lesions, after the loading period in patients with PCV from Asian countries.

Abstract 435

IMPACT OF POSTERIOR LOCULATION OF FLUID ON CLINICAL CHARACTERISTICS AND TREATMENT OUTCOMES IN PATIENTS OF CENTRAL SEROUS CHORIORETINOPATHY

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To investigate the clinical characteristics and treatment outcomes of central serous chorioretinopathy (CSCR) patients with and without posterior loculation of fluid (LOF) and assess its impact on the disease course.

This retrospective cross-sectional study at a single center analyzed 70 CSCR patients, dividing them into LOF (n=44) and non-LOF (n=26) groups based on swept-source optical coherence tomography (SS-OCT). We compared demographic characteristics, clinical presentation, imaging findings, and treatment outcomes between the groups.

The LOF group had a longer mean duration of symptoms (30 months vs. 17months, p=0.003) and more cases with established CSCR risk factors. FFA revealed significantly more window-defects and gravitational tracks in the LOF group (36.1% vs. 9%, p=0.009). SS-OCT showed that the non-LOF group had more acute disease features, while the LOF group exhibited signs of chronicity. The LOF group had a higher rate of BCVA worsening at resolution and a greater mean SFCT (435.3µm vs. 392µm, p=0.026). The LOF group also had a higher incidence of fibrin presence (33.3% vs. 68.2%, p=0.014) and RPE atrophy (22.2% vs. 9%, p=0.022).

The presence of LOF in CSCR patients is associated with a more chronic disease course, faster progression, and poorer outcomes, as indicated by longer symptom duration, higher SFCT, and worse BCVA at resolution. These findings suggest that LOF is a significant prognostic factor in CSCR management.

Abstract 321

FLAT IRREGULAR PIGMENT EPITHELIUM DETACHMENTS IN CENTRAL SEROUS CHORIORETINOPATHY: A CHOROID INSIGHT.

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To investigate the choroidal features associated with the presence of flat irregular pigment epithelium detachments (FIPEDs) in previous diagnosis of central serous chorioretinopathy (CSC).

Medical records and imaging from patients with acute or chronic CSC were reviewed. Diagnosis was confirmed using multimodal imaging. Eyes with macular FIPEDs on OCT B-scans were included. A FIPED was defined as an irregular RPE elevation with visible Bruch's membrane. Dilated Haller vessels ("pachyvessels") compressing the choriocapillaris and Sattler layer beneath the FIPED were noted. CNV presence was assessed using ICGA or OCT angiography. FIPEDs were classified as vascular (vFIPED) if CNV was present beneath the FIPED; otherwise, they were termed avascular FIPED (aFIPED).

The study included 217 eyes from 199 patients with acute or chronic CSC and macular FIPED on OCT B-scans. The mean age was 57.92 ± 13.78 years, with 79.3% male. Of the eyes, 195 (89.9%) had a single FIPED, 20 (9.2%) had two, and 2 (0.9%) had three, totaling 243 FIPEDs (mean 1.11 ± 0.34 per eye). A "pushing" pachyvessel was present in 77% of FIPEDs, and CNV was identified in 64 (26.74%). The prevalence of "pushing" vessels was higher in aFIPEDs than in vFIPEDs (68.8% vs. 31.1%; P = 0.380), with no treatment influence (P = 0.414).

Our research emphasized a propensity for the presence of pachyvessels that were "pushing" the choriocapillaris beneath the FIPED. However, this finding was not associated with vascularized FIPED. Further longitudinal studies would be required to assess the clinical significance of these findings.

Abstract 390

IMPACT OF CLINICAL SIGNS AND IMAGING FINDINGS IN DEVELOPMENT OF BILATERAL CENTRAL SEROUS CHORIORETINOPATHY AND IDENTIFICATION OF RISK FACTORS

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To evaluate optical coherence tomography (OCT), optical coherence tomography angiography (OCTA) and fundus fluorescein angiography (FFA) parameters, clinical and demographic findings in development of bilateral central serous chorioretinopathy (CSCR).

This retrospective study included 32 patients followed from 2015 to 2023 who developed CSCR in one eye and subsequently in the contralateral eye; and a control group of 32 patients who did not develop bilateral CSCR during follow-up.Demographic data such as age,sex,smoking status,total follow-up time and time to development of contralateral CSCR were recorded.In addition, OCT findings(central choroidal thickness[CCT], presence of pigment epithelial detachment),OCTA parameters (vascular density at the level of the choriocapillaris,presence of choroidal neovascular membrane) and FFA characteristics(pattern of leakage and lesions) were documented.Logistic regression analysis was performed to identify factors associated with the development of bilateral CSCR.

The mean age of patients was 47.35±8.60 years in the study group and 52.13±9.08 years in the control group(p=0.085).The interval between the onset of CSCR in the first and second eyes in study group was 21.29±18.46 months.At the time of initial diagnosis,the CCT of the affected eye was 293±67 μm in the study group,compared to 356±64 μm in the control group (p<0.001).Multivariate regression analysis identified smoking,the presence of CSCR findings in the contralateral eye on initial FFA,and thin choroid in the first affected eye as significant predictors of bilateral CSCR development(OR 0.170,95% CI 0.520-0.584,p=0.003;OR 0.24, 95%CI 0.004-0.130,p<0.001;OR 0.985, 95%CI 0.976-0.994,p=0.002,respectively).

Study suggests that smoking,CSCR-related findings in contralateral eye on initial FFA,thinner choroid in first affected eye are risk factors for bilateral CSCR.Development of CSCR in fellow eye shows importance of long-term follow-up.Patients with thin choroid in affected eye should be examined by using FFA to detect early signs of CSCR.

Abstract 434

CHOROIDAL REMODELING AFTER SUBTHRESHOLD MICROPULSE LASER IN CHRONIC CENTRAL SEROUS CHORIORETINOPATHY: MIDTERM OUTCOMES

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Purpose: To evaluate the effects of subthreshold micropulse laser treatment (SMLT) on choroidal architecture in chronic central serous chorioretinopathy (CSC) and its correlation with functional outcomes.

This retrospective study included 48 eyes with chronic CSC treated with 577-nm SMLT. Choroidal thickness (CT), Sattler's layer and choriocapillaris complex thickness (SLCCT), Haller's layer thickness (HLT), subretinal fluid (SRF), and best-corrected visual acuity (BCVA) were assessed at baseline and 2 months post-treatment.

At 2 months, SLCCT increased from 185.92 ± 80.89 µm to 214.17 ± 83.36 µm ($p = 0.023$), and total CT increased from 444.46 ± 80.43 µm to 484.33 ± 93.19 µm ($p = 0.002$). SRF height decreased from 140.38 ± 95.89 µm to 57.58 ± 63.54 µm ($p < 0.001$), with complete resolution in 79.2% of cases. BCVA improved from 0.41 ± 0.48 to 0.22 ± 0.30 logMAR ($p <0.001$). Changes in SLCCT correlated negatively with BCVA changes ($r = -0.48$, $p = 0.025$) and positively with total CT changes ($r = 0.687$, $p < 0.001$).

SMLT induces significant choroidal remodeling in chronic CSC, particularly affecting the Sattler-Bruch layer complex. The increase in SLCCT correlates with visual improvement, challenging conventional understanding of choroidal thinning in CSC treatment.

Abstract 90

INTRAVITREAL FARICIMAB IN A PROSPECTIVE TREAT-AND-EXTEND REGIMEN STUDY IN DIABETIC MACULAR EDEMA WITH LIMITED RESPONSE TO AFLIBERCEPT

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We investigated whether an extension of treatment interval length can be achieved through intravitreal injections of faricimab in cases of diabetic macular edema with limited response to aflibercept in a treat and extend regimen (TER) and results in improved functional and morphological outcomes.

In this ongoing prospective monocenter cohort study with a 12-month follow-up, we included 30 patients treated with aflibercept in a TER without successful extension beyond four weeks. We performed baseline assessments and the initial faricimab injection four weeks post aflibercept cessation. We followed a TER starting at the minimum four-week interval until the fourth injection (loading dose) and possible two-week extensions/shortenings thereafter. Thus far, we've evaluated mean maximum interval, best corrected visual acuity (BCVA), contrast sensitivity function (CSF) acuity, area underneath the logarithmic CSF (AULCSF), central subfield thickness (CST) and further morphological features in spectral-domain optical coherence tomography (SD-OCT).

To date, 17/28 patients have completed the 12-month follow-up for efficacy analysis. The mean treatment interval increased significantly from 4.00±0.00 weeks to 6.35±3.02 weeks (p=0.01) with a recurrence-free interval of 5.53±2.07 weeks (p=0.01). BCVA was significantly higher with 81.89±6.24 letters compared to 78.70±8.10 letters at baseline (p=0.02). An improvement in CSF acuity has not yet reached significance (p=0.15). Similarly, a non-significant trend towards an increase in AULCSF (logarithmic contrast sensitivity [logCS]) can be observed (0.77±0.28 logCS at baseline versus 0.88±0.27 logCS, p=0.08). CST decreased significantly from 332.48±60.63 µm at baseline to 311.22±49.39 µm (p=0.03). No severe adverse events have occurred.

Our interim findings suggest that in cases of diabetic macular edema with limited treatment response to intravitreal aflibercept a switch to faricimab results in both functional and morphological improvements as well as an increase in treatment interval length in a TER.

Abstract 230

FIRST RESULTS OF INTRAVITREAL THERAPY IN PATIENTS WITH DIABETIC MACULAR EDEMA IN A REAL-WORLD STUDY

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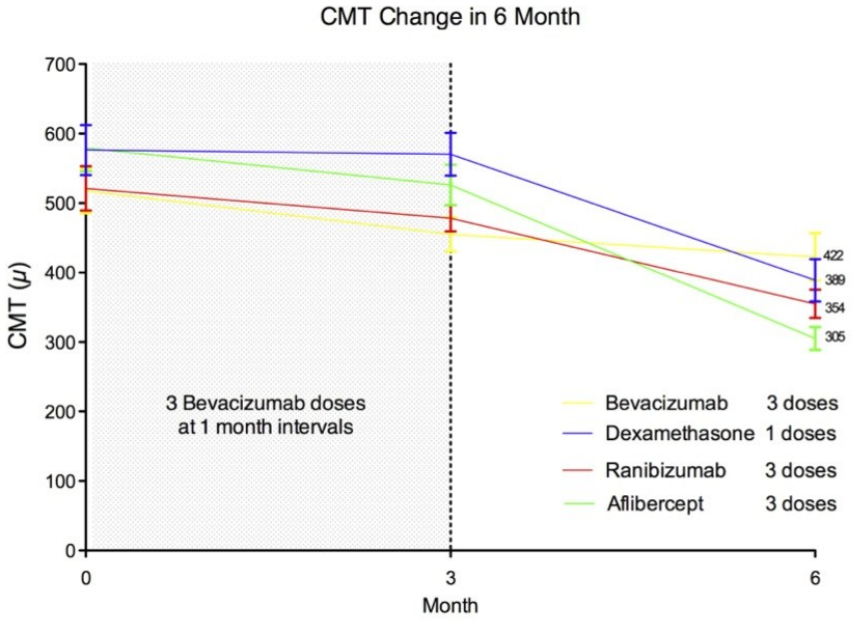
In our clinic, naive DME patients are treated with intravitreal injections in the short term to compare their responses with those of their drugs.

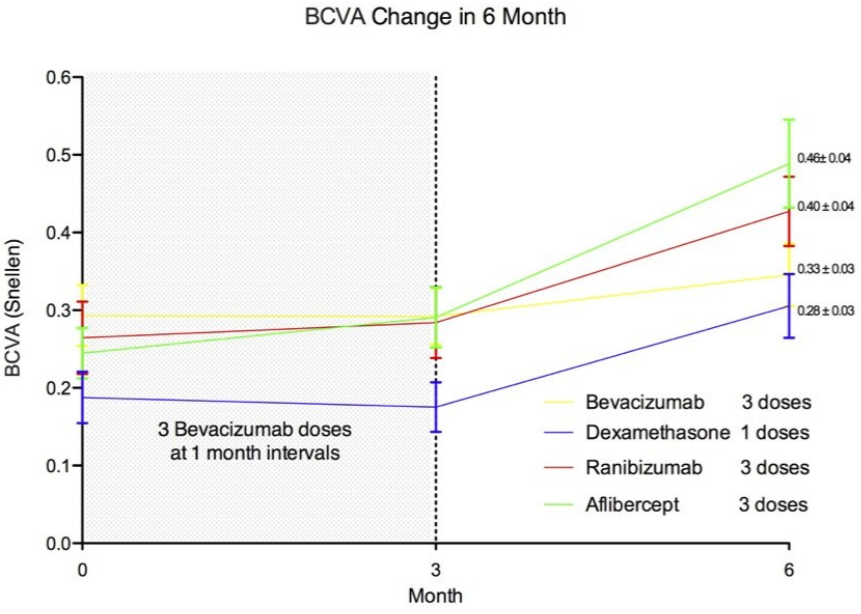
The 6-month outcomes of patients with DME in our clinic in 01.23-06.24 were retrospectively studied.Patients with DME and receiving treatment for the first time were included in the study.BCVA and MMT were assessed at pre-treatment, 3, 6-month follow-up. Included 86 eyes of 71 patients in the PNR protocol.Groups:bevacizumab, ranibuzumab, aflibercept dexamethasone. Each group received 3x bevacizumab 1 month apart, which is mandatory in Turkey, followed 3x bevacizumab for bevacizumab group, 3x ranibizumab for the ranibuzumab group, 3x aflibercept for the aflibercept group and 1x dexamethasone for the dexamethasone group.55% were male and age was 63±1.75 years.

Mean initial ocular BCVA and CMT were 57±10letters, 512±27.73μm in bevacizumab group; 55±15letters, 534±22.40μm in ranibizumab group; 50±15letters, 607±25.78μm in aflibercept group; and 45±10letters, 605±30.59μm in dexamethasone group.Mean BCVA and MMT after 3x bevacizumab were 58±10letters, 465.3±17.54μm in the bevacizumab; 62±10letters, 451.5±14.17μm in the ranibizumab; 60±10letters, 470.2±16.30μm in the aflibercept; and 53±10letters and 512.0±19.35μm in the dexamethasone.Mean BCVA and MMT after 3x intravitreal injection after the first 3 doses of bevacizumab were 59±10letters, 417.8±27.73μm in the bevacizumab; 66±15letters, 368.3±22.40μm in the ranibizumab; 368.3±22.40μm in the aflibercept.In 1x dexamethasone, 68±15letters, 333.2±25.78μm and 53±10 letters, 418.2±30.59 μm were observed.

In this study using short-term real-world data, the aflibercept group was the best group in terms of both visual improvement and CMT reduction, and the bevacizumab group was the worst group. In addition, dexamethasone was found to be the most effective agent after aflibercept for high MMT levels.



Change in Central Macular Thickness (CMT) at baseline, 3rd and 6th months



Change in best-corrected visual acuity (BCVA) at baseline, 3rd and 6th months

Abstract 111

ANATOMIC BIOMARKERS AS POTENTIAL ENDPOINTS IN DIABETIC MACULAR EDEMA: SYSTEMATIC LITERATURE REVIEW WITH IDENTIFICATION OF MACULAR VOLUME AS A KEY SURROGATE FOR VISUAL ACUITY

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Patients treated for diabetic macular edema (DME) commonly experience variability in treatment responses. OCT parameters are emerging as a potential surrogate to individualize treatment earlier in the patient pathway. We conducted a systematic literature review to identify anatomic biomarkers that could be surrogate endpoints for visual acuity (VA) in DME.

Clinical experts (N = 5) were consulted to identify optical coherence tomography (OCT) biomarkers that could be used and explored as surrogate endpoints for the clinical outcome of VA. A systematic literature review was performed per the Preferred Reporting Items for Systematic Reviews and Meta-Analyses checklist. Searches of EMBASE and MEDLINE were performed to identify potentially relevant studies reporting on four priority biomarkers: hyperreflective foci, intraretinal cyst, macular volume (MV), and subretinal fluid. Subsequently, endpoint (arm level) and treatment (trial level) effect correlation analyses were performed to establish correlation coefficients between MV and VA using Pearson's correlation.

A total of 105 studies reported data for change from baseline for VA, and at least one biomarker, with MV, investigated most often (n = 70 studies) and selected for multi-correlation analysis. Data extracted from 55 studies focusing on the 6 mm zone for MV were used in the statistical analyses. A moderate and statistically significant correlation was observed between MV and VA at the endpoint level (0.58; $P < 0.01$). However, a corresponding treatment effect was not established, with a low and non-statistically significant correlation reported at the trial level (0.32; $P = 0.19$).

Macular volume may be a reasonable surrogate OCT parameter for VA. Further evidence and improvements in reporting methods for collecting biomarker data are needed. In future studies, analyzing outliers and sub-analysis by other OCT measures may help understand at which MV values the correlation with VA is most meaningful.

Abstract 118

REAL WORLD OUTCOMES FROM A SINGLE-CENTRE EXPERIENCE COMPARING DE NOVO USE OR SWITCH TO FARICIMAB FOR TREATMENT REFRACTORY DIABETIC MACULAR OEDEMA

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The treatment paradigm of diabetic macular oedema (DMO) has rapidly progressed in order to improve the unmet needs for capacity and sustainability. Faricimab is a monoclonal antidody designed to block VEGF-A and ANG2, which has demonstrated significant visual improvements. We evaluated its use in the real-world treatment-naïve and refractory DMO.

We undertook a retrospective analysis of patients treated with Faricimab. Thirty seven eyes of 25 patients were included for analysis, [n=18 male (78%), median age 66 (range 55-88 years)]. Of this cohort n=30 (81%) eyes were phakic. The average duration of DMO was 57.05 months. 25 eyes had prior Ranibizumab, Aflibercept, Ozurdex, Triamcinalone, macular laser, switched to Faricimab. 12 eyes received Faricimab as first-line. We evaluated changes in visual acuity and central retinal thickness (CMT) to determine treatment response.

Of the patients switching to Faricimab, n=10 (40%) eyes received Ranibizumab as first-line therapy and n=20 (80%) received Afilbercept, of which 7/20 (35%) switched from Ranibizumab. Seven eyes (28%) were treated with Ozurdex/Triamcinalone, where 5/7 (71%) of these previously received Ranibizumab, Afilbercept or both agents. All patients received between 4-13 Faricimab injections. The treatment-naïve group had 6-8 injections. Evaluating responses in the whole cohort in treatment-naïve and switched groups, pre and during Faricimab we noted sustained visual acuity (p=0.75) with significant improvements in CMT (median CMT pre Faricimab vs. post; 466vs.323, p=<0.0001).

In this real-world cohort we recorded visual gains and anatomical improvement in patients receiving Faricimab, as first-line therapy and more importantly switching to Faricimab after limited response from other agents. Further work is being undertaken to extend this dataset and determine patient factors to treatment response developing personalized treatment intervals.

Abstract 179

FARICAMAB THERAPY IN PDME IN A 3RY CARE CENTRE JEDDAH , SAUDI ARABIA

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To assess the anatomical , functional outcomes and side effects in eyes with persistent diabetic macular oedema (pDME) on chronic anti-vascular endothelial growth factor therapy (Eylea) switched to intravitreal faricimab.

Patients with pDME on chronic anti-VEGF therapy that were switched to faricimab and received at least three injections at our 3ry care institution between April 2023 and May 2024 were included in this study. We also included Patients if they had complete response to previous treatment but were switched to extend treatment intervals . Patients were excluded if they had steroid or laser treatment for DME within 6 months prior to switch. Clinical and imaging data were extracted from the medical record. Central foveal thickness (CFT) and Snellen visual acuity (VA) were obtained before and after three intravitreal faricimab injections.

We performed a retrospective, observational, consecutive-case study of patients who had DME that was refractory to treatment with aflibercept and were treated with faricimab between April 2023 and May 2024 under a pro re nata regimen. All the participants were followed for ≥ 3 months after the initiation of faricimab. The primary outcomes were the changes in best-corrected visual acuity (BCVA) and central macular thickness (CMT).

Intravitreal faricimab can improve anatomic outcomes while maintaining visual acuity in eyes with pDME previously treated with anti-VEGF therapy.No serious side effects reported .

Abstract 437

CURCUMIN AND BROMELAIN: AN EFFECTIVE HELP TO SUBTHRESHOLD MICROPULSE LASER IN PATIENT WITH DIABETIC MACULAR EDEMA

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The aim of this study was to explore the effectiveness of curcumin-based drugs oral admin- istration followed by SMLP in diabetic patients with clinical significative DME.

we enrolled 24 eyes both naïve or not naïve, patients older than 50 years old, with clinically significant DME and a central macular thickness (CMT) of 350 um or more measured by optical coherence tomography with a minimum follow up of 6 months. 15 patients were assigned to subthreshold micropulse laser photocoagulation (SMLP), the other 9 patients instead were assigned to subthreshold micropulse laser photocoagulation associated to oral administration of a curcumin-based drug.

at the 4-month follow-up, the group of patients treated with subthreshold micropulse laser associated with curcumin-based drug showed a lower mean CMT at OCT, compared to the group treated with laser alone. We found the same at the 6-month follow-up, with statistical significance

In our study we found that no retreatment was necessary for patients who undergone SMLP and oral curcumin-based therapy, in fact these patients experi- enced a significant decrease of CMT, confirmed at the OCT fovea B-scan at 4 and 6 months.

Characteristic	**ctrl**, N = 9[†]	**ivt**, N = 15[†]
eye		
od	400 (400, 400)	353 (300, 394)
os	390 (373, 415)	334 (279, 359)
Unknown	0	1

[†] month6.imp: Median (IQR)

Abstract 408

INFLAMMATORY BIOMARKERS AS PREDICTORS OF POSITIVE RESPONSE TO ILUVIEN® IN EYES WITH DME

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This study evaluates the role of inflammatory biomarkers identified via OCT as predictors of response to long-acting intravitreal corticosteroid therapy (FAc, ILUVIEN®) in DME. Biomarkers like hyperreflective foci (HRF), subretinal fluid (SRF), Disorganization of Retinal Inner Layers (DRIL) and photoreceptor layer integrity were assessed for their predictive value.

Four eyes with DME and signs of inflammation on OCT (SRF, HRF, DRIL) were analyzed. Initially, three eyes received dexamethasone implant (DEX) with no prior anti-vegf injections and one eye received five aflibercept monthly injections before switching to DEX implant because of insufficiently response. Of the 3 cases that had DEX implant with no prior anti-vegf injections, one was vitrectomized and the other two had cardiaovascular complications. Macular edema recurrence led to a switch to FAc implant. Baseline data included demographic information, BCVA, CRT, MV and baseline IOP measurements were assessed at months 1, 3, and quarterly thereafter.

The study evaluated four eyes with an average age of 70 years. Following the switch to DEX and FAc implant, all eyes exhibited reductions in HRF, SRF, and DRIL extension. Improvements in BCVA, CRT and MV were observed throughout the follow-up. Mean improvement in BCVA was 13 letters at month 12. The mean reduction in CRT was 240 µm at month 12. Two eyes developed elevated IOP during the follow-up, necessitating IOP-lowering medication. The mean time from baseline to anatomic and functional recurrence of DEX implant was 4.5 months. Fac implant allowed a more durable and stable DME response.

These findings suggest that the presence of inflammatory biomarkers on OCT, such as HRF, DRIL, and SRF, may predict a favorable response to ILUVIEN® in eyes with DME. The presence of these biomarkers could support initial treatment or early switching to corticosteroid therapy for more personalized and effective DME management.

Abstract 192

OPTICAL COHERENCE TOMOGRAPHY BIOMARKERS INDICATING VISUAL ENHANCEMENT IN DIABETIC MACULAR EDEMA RESOLVED THROUGH ANTI-VEGF THERAPY OCT BIOMARKERS IN RESOLVED DME

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The purpose is to investigate the structural features and extended visual results in eyes affected by diabetic retinopathy
(DR) and diabetic macular edema (DME) that have been successfully treated with anti-vascular endothelial
growth factor (VEGF) therapy.

Individuals (39 eyes of 39 patients) who had undergone long-term follow-up and demonstrated evidence
of resolved DME after at least 2 years of follow-up following the initiation of anti-VEGF therapy were included. During the “study visit”, structural OCT scans were examined to assess qualitative features indicative
of neuroretina or retinal pigment epithelium distress. Additionally, a quantitative assessment of the inner and
outer retinal thicknesses was conducted for topographical analysis.

The most robust qualitative association observed with BCVA at the “study visit” was linked to the presence of DRIL ($p = 0.043$) and the appearance of the ELM. ($p = 0.045$). Regarding quantitative parameters, a
strong correlation was noted between the visual acuity during the “study visit” and the foveal and parafoveal
thicknesses of both the inner and outer retina ($p < 0.001$).

Changes in the status of ELM, the presence of DRIL, and the thicknesses of the foveal and parafoveal
regions can act as OCT biomarkers, signifying prolonged visual improvements in eyes that have experienced
resolved DME after undergoing anti-VEGF therapy.

Abstract 170

DIABETIC MACULAR EDEMA: EPIDEMIOLOGY AND RISK FACTORS IN A LARGE COHORT

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To evaluate the epidemiology, prevalence, risk factors, and burden of Diabetic Macular Edema (DME) in a large, unselected population

This cross-sectional study assessed prevalence of DME in 2020, and a retrospective cohort study on de-identified data evaluated the annual incidence of DME per year from 2015-2020, using data from 2.6 million Maccabi Health Services (MHS) patients. Collected demographic data included sex, mean age at index date, age groups, socioeconomic status (SES), body mass index (BMI), baseline chronic diseases, diabetic control, smoking status, and a modified Deyo-Charlson Comorbidity Index (CCI).

Out of 1.5 million adult members in the MHS database, 2305 patients were diagnosed with DME between 2005-2020, 1920 DME patients were included in the study. The crude prevalence in the diabetic population was 1.3%. 62.9% were males with a mean age of 68 years at DME presentation. 43% had a BMI >30 and 63.6% had a CCI of 4 or higher, indicating a high comorbidity rate. 66.8% of patients had HbA1c > 7%. 68.8% of patients were treated for their DME, predominantly with intravitreal anti-VEGF injections. The most common ocular comorbidities were cataracts (63%), Pseudophakia (39%) and glaucoma (20%).

Majority of DME patients in the study presented with multiple systemic comorbidities and relatively uncontrolled diabetes as well as other ocular comorbidities.

Abstract 34

MICROPULSE YELLOW LASER IN DIABETIC MACULAR EDEMA: COMPARISON OF TWO DIFFERENT LASER DELIVERY METHODS WITH FIXED PARAMETERS

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Subthreshold Micropulse Yellow Laser (SMYL) is a useful and safe approach in the treatment of DME. However, there is wide variability in the settings (laser power, fixed or titrated regimen, spot dimensions). The aim of this study is to compare two different fixed regimen in the treatment of DME.

DME patients with controlled diabetic disease who did not receive any other treatment within 6 months were included. All eyes were treated using the IRIDEX IQ 577. Some eyes received a fixed regimen with 400 mW power and spot diameter of 200 µm (MPL-1 group), while MPL-2 group received 250 mW power with 100 µm spot. Pulse duration and duty cycle were the same in both groups, 200 ms and 5%. We registered time of execution during laser delivery. Best Corrected Visual Acuity (BCVA) and Central Macular Thickness (CMT) were measured at baseline, one month and three months after treatment.

30 eyes were included, 15 eyes MPL-1 and 15 eyes MPL-2. For the MPL-1, BCVA was 39.50±10.39 ETDRS letters at baseline and 41.00±11.91 at the end of follow-up (improvement +1.50 letters ,p 0.133). CMT 423.83±71.27µm at baseline and 382.25±68.96µm at M3 (reduction -41.58 µm ,p=0.039). For the MPL-2 group, BCVA passed from 40.13±10.85 at M0 to 41.50± 12.05 at M3 (+1.38 letters , p=0.333) while CMT passed from 458.25±78.26 µm at baseline to 431.13± 53.10µm at M3 (reduction -27,13µm, p=0.297). MPL-1 technique showed a reduced time of execution with a mean of 3.07+/-0.19 min against 5.19+/-0.27min of MPL-2 technique

Both SMYL treatment regimens have been effective in improving BCVA and reducing CMT in DME patients. MPL-1 regimen with both higher power and spot dimensions resulted more effective in reducing CMT in each timepoint of the follow-up and showed a shorter execution time compared to MPL-2 technique improving patient's compliance.

Abstract 193

DATA-INDEPENDENT ACQUISITION PROTEOMICS REVEALS TEAR PROTEIN ALTERATIONS ASSOCIATED WITH ANTI-VEGF THERAPY RESPONSE IN DIABETIC MACULAR EDEMA

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To examine the association of tear fluid proteome with response to anti-vascular-endothelial-growth-factor (VEGF) therapy for diabetic macular edema (DME)

This is a prospectively case-control study of treatment-naive patients with DME. We employed data-independent acquisition proteomics to comprehensively profile the tear fluid proteome of healthy controls, as well as 26 patients with treatment-naive centre-involved DME before and after intravitreal anti-VEGF therapy. Through this proteomic analysis, we identified a signature of dysregulated proteins associated with DME. We then utilised network-based analysis to elucidate how these proteomic perturbations might contribute to the clinical and metabolomic changes observed in DME.

We identified 8 proteins that exhibited significant alterations in the DME cohort, suggesting that ocular surface changes might an under appreciated factor influencing disease manifestation. By exploring the temporal dynamics of protein expression during anti-VEGF treatment, we identified a panel of candidate biomarkers, including FLG, JUP, PSMC5, EIF2B4, CD59, and MUC4, that could serve as predictive indicators of therapeutic efficacy.

Our comprehensive proteomic analysis of the tear fluid in DME elucidated the complex molecular perturbations associated with this debilitating condition. The dysregulated proteins identified not only highlighted the key pathways driving DME development but also demonstrated potential as candidate biomarker for treatment response.

Abstract 316

EARLY EFFICACY OF DEXAMETHASONE IMPLANT ON THE BIOMARKERS IN PATIENTS WITH DIABETIC MACULAR EDEMA

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To analyze the early response to single-dose intravitreal dexamethasone (IDI) treatment in naive and non-naive eyes with diabetic macular edema (DME) according to OCT features and visual acuity.

In this comparative study which included 28 male (50.9%) and 27 female (49.1%) participants. The mean age was 61.29±8.87years.All patients had a comprehensive ophthalmic examination. OCT was evaluated blindly by two different retinal specialists on the same B-scan sections passing through the fovea at baseline and 1st day and 1st month after IDI. For statistical analysis, Snellen BCVA values were converted to LogMAR.

While the mean central macular thickness was 523.18±151.14 µm before IDI, the mean CMT at 24 hours after injection was 464.67±141.43 µm, and it was 328.13±79.25µm at 1st month (for each $p<0.05$). Additionally, there was a significant correlation between the change in CMT on the first day and the value in the first month($r=0.886, p<0.001$) While the CMT reduction in eyes with DME accompanied by ERM was similar to that in eyes without ERM, eyes without ERM were statistically better regarding visual gain. There was no statistically significant difference in both CMT and visual gain between eyes with and without DRIL.

The morphological and functional recovery was observed after an intravitreal dexamethasone implant in DME regarding SD-OCT biomarkers on 1st day and 1st month. However, this effect was weaker in eyes with ERM.

Abstract 411

SYSTEMIC PREDICTORS ASSOCIATED WITH NON-RESPONSE TO BEVACIZUMAB IN DME PATIENTS

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Diabetic macular edema(DME) is a leading cause of vision impairment among diabetic patients, with bevacizumab frequently used as a therapeutic option. However, response to treatment varies significantly across individuals, posing a challenge in clinical management.
This study aims to identify systemic predictors associated with non-response to bevacizumab in DME patients.

In a retrospective study, we analyzed data from 154 eyes of 154 DME patients treated with bevacizumab. Patients were categorized as responders (n=54) or non-responders (n=100) based on changes in central macular thickness and visual acuity. Collected variables included diabetes characteristics (type, duration, insulin dependence, and degenerative complications), cardiovascular risk factors (hypertension, dyslipidemia, coronary artery disease, smoking, and sleep apnea syndrome), and ophthalmological history. Biological factors assessed included initial HbA1c, HbA1c variability, fasting glucose, urea, creatinine, creatinine clearance, microalbuminuria, hemoglobin, hematocrit, and lipid profile.

Univariate analysis revealed that non-responders had a higher body mass index (29.7±3.3 kg/m² vs. 27.2±4.2 kg/m², p<0.001), longer diabetes duration (17.9±8.5 years vs. 14.2±7.4 years, p=0.012), and a higher prevalence of hypertension (87% vs. 72%, p=0.023).
Baseline HbA1c levels were also elevated in non-responders (9.4±2.1% vs. 8.7±1.6%, p=0.034). Additionally, non-responders presented with poorer initial visual acuity (0.60±0.36 logMAR vs. 0.45±0.2 logMAR, p=0.005), higher incidence of proliferative diabetic retinopathy (87% vs. 72.2%, p=0.023), and elevated blood pressure, including systolic (150.6±16.8mmHg vs. 133±15.6 mmHg, p<0.001), diastolic (82.4 ±9.6mmHg vs. 76.3 ±8.3mmHg, p<0.001), and mean arterial pressures (105.1 ±10.1 mmHg vs. 95.1±9.3mmHg, p<0.001).

Systemic factors, such as diabetes history, cardiovascular risk profile, and specific biological markers, serve as significant predictors of non-response to bevacizumab in DME patients. Addressing these factors through targeted management may enhance therapeutic efficacy in this population.

Abstract 341

EFFECTS OF FARICIMAB LOADING PHASE ON DIABETIC MACULAR EDEMA IN REAL WORLD SETTING: AN OCT ANGIOGRAPHY STUDY

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To explore the functional and anatomic outcomes of eyes with diabetic macular edema (DME) resistant to ranibizumab and aflibercept undergoing a loading phase of 4 IVF in a real-world setting

This prospective monocentric interventional research was conducted at Ospedale Isola Tiberina-Gemelli-Isola, Rome, Italy between January 2024 and August 2024. Forty-six eyes of 36 patients with DME involving the foveal center as a result of diabetic retinopathy (DR), central macular thickness (CMT) ≥ 280 µm and documented previous treatments with either intravitreal aflibercept or ranibizumab were involved. Each patient received a loading dose of 4 IVF and was followed for 16 weeks. Visual acuity, OCT and OCTA parameters were detected each month during the loading dose.

Mean baseline BCVA (0.55 ± 0.42 logMAR) significantly improved at V3 (0.37 ± 0.29 logMAR; p=0.02) and V4 (0.36 ± 0.30 logMAR; p=0.03). CMT progressively reduced during follow-up up to V4 with a mean reduction of 108.4 µm. HRFs progressively reduced their prevalence up to 24 eyes (52%) at V4 (p=0.0005). SRF at baseline resolved in all cases after the first IVF. The presence of DRIL was resolved in 7 eyes (39%). DCP's VD in the parafoveal area showed a significant increase when comparing V0 and V4 (from 46.9±3.6 to 49.3±3.8%, p=0.04).The FAZ area and RPCP remained stable.

In conclusion, faricimab treatment showed good influence on anatomical and functional results, with good efficacy on structural biomarkers such as fluid and HRF. The effect on microvascular architecture instead remains, to date, controversial.

Abstract 273

AUDIT OF EIGHT-YEAR OUTCOMES OF ILUVIEN TREATED DIABETIC MACULAR EDEMA (DME) PATIENTS: AN EXPERIENCE FROM THE UNITED KINGDOM (UK)

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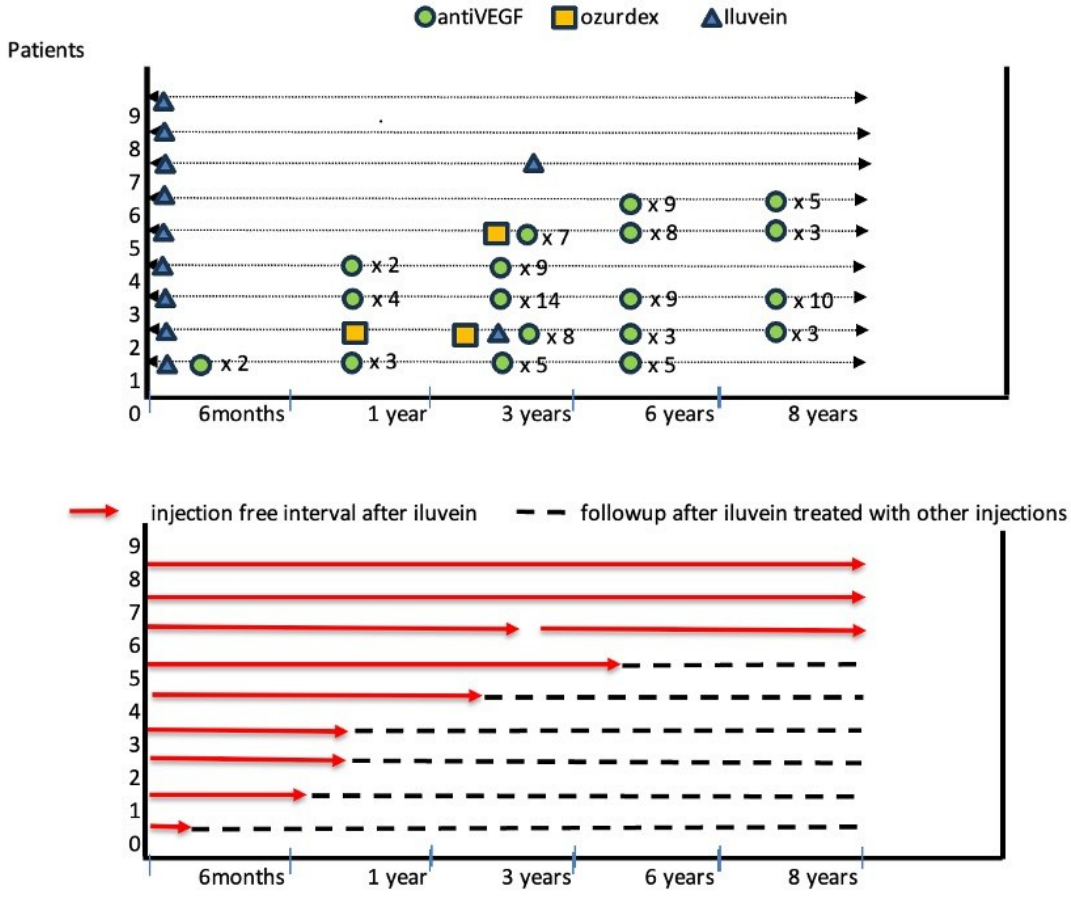
Iluvien (Fluocinolone acetonide 0.19mg) is a treatment for DME. Iluvien's outcomes were evaluated after 8 years as there is limited data beyond 7 years follow up.

Retrospective review of electronic patient records (EPR) from 2014-2024

Nine eyes of 9 patients (ages 44 -85, mean age 72, 5 men, 4 women) with DME received Iluvien & had over 8-years follow-up. Of the 9 eyes, 2 eyes had a 2nd Iluvien. Mean BCVA improved from 56 ETDRS letters to 59 ETDRS letters. Mean CMT improved from 498 microns to 355 microns. Three patients didn't require any other injections with 1 eye receiving a repeat Iluvien. Incidence of ocular hypertension (OHT) was highest (55.5%, n=5) at 6 months with 11.1% (n=1) requiring topical glaucoma drugs at year 9. Glaucoma filtration surgery was indicated in 2 eyes (22%)

Iluvien may have an effect on DME past 3 years. Eight years after their 1st Iluvien, 33% of patients (n=3) needed minimal DME treatment (ie. needing one or less injections), 22% of patients (n=2) stayed injection free at year 8. No patients were registered as sight impaired at year 9.


antiVEGF
ozurdex
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Patients
9
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x 3
6months
1 year
3 years
6 years
8 years

injection free interval after iluvein
followup after iluvein treated with other injections
9
8
7
6
5
4
3
2
1
0
6months
1 year
3 years
6 years
8 years

Abstract 120

LONG-TERM IMPACT OF DIABETIC RETINOPATHY ON RESPONSE TO ANTI-VEGF TREATMENT IN NEOVASCULAR AMD

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To explore the long-term effect of diabetic retinopathy on response to anti-vascular endothelial growth factor (VEGF) treatment in age-related macular degeneration–associated type 1 macular neovascularization (MNV) using optical coherence tomography angiography (OCTA).

A total of 45 eyes with exudative neovascular age-related macular degeneration (nAMD) with type 1 MNV were included. 24 eyes of 24 patients had no diabetes mellitus (DM) representing the Non Diabetic group; 21 eyes of 21 patients had mild diabetic retinopathy, representing the Diabetic group. We considered these outcome measures: (1) best-corrected visual acuity changes; (2) central macular thickness; (3) MNV lesion area; and (4) MNV flow area. The OCTA acquisitions were performed at: (1) baseline visit, the day before the first injection; (2) post-loading phase (LP), 1 month after the last LP injection; and (3) 12-month follow-up visit.

All parameters showed a significant improvement after the LP and at the 12-month follow-up visit. Specifically, both groups displayed a significant reduction of MNV lesion areas at both the post-LP assessment and the 12-month follow-up. Similarly, the MNV flow area was significantly decreased in both groups at the post-LP assessment and at the 12-month follow-up compared to baseline. A smaller reduction in the MNV lesion area was observed in the Diabetic group at both the post-LP evaluation ($P = 0.015$) and the 12-month follow-up ($P = 0.032$). No other significant differences were found between the groups for the other parameters.

Our results indicated that the Diabetic group exhibited a smaller reduction in MNV lesion area after 12 months of anti-VEGF treatment. This highlights the importance of considering diabetic retinopathy as a potential modifier of treatment outcomes in nAMD management, with DM serving as a crucial risk factor during anti-angiogenic treatment.

Abstract 139

BROLUCIZUMAB FOR THE TREATMENT OF PROLIFERATIVE DIABETIC RETINOPATHY: 54-WEEK RESULTS FROM THE CONDOR STUDY

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To evaluate the 54-week efficacy and safety of brolucizumab (BRO) versus panretinal photocoagulation (PRP) in proliferative diabetic retinopathy (PDR). CONDOR (NCT04278417) was conducted across 124 sites in the following 15 countries: Argentina, Australia, Brazil, Canada, Chile, China, India, Japan, Mexico, Philippines, Republic of Korea, Russian Federation, Taiwan, Turkey, and USA.

CONDOR is an ongoing 96-week, 2-arm, randomized, single-masked, active controlled phase 3 study in subjects with PDR receiving BRO 6 mg and PRP. Patients were randomized 1:1 to BRO 6 mg or PRP. The BRO arm received 3 loading doses every 6 weeks (q6w), followed by every 12 weeks (q12w), with the option from Week 48 onward to extend the treatment interval by 6 weeks at a time up to 24 weeks based on disease activity. Initial treatment of PRP was administered in 1 to 4 sessions up to Week 12, followed by additional PRP treatment as needed.

The primary objective was met, confirming the non-inferiority of BRO 6 mg versus PRP for the primary endpoint with a least square mean (standard error) of 0.2 versus −4.2 letters; difference 4.4 (95% confidence interval [CI]: 2.4, 6.4; P<0.001). Superiority of BRO 6 mg versus PRP for the primary endpoint was also confirmed (P<0.001). Ocular adverse events and adverse events of special interest were reported in 34.3% and 5.5% of patients in the BRO 6 mg arm, respectively, and in 49.1% and 0.9% of patients in the PRP arm, respectively.

The 54-week results from the CONDOR study confirm the superiority of BRO versus PRP in terms preserving visual acuity. The incidence rate of adverse events was consistent with the established safety profile of BRO, and no new safety findings were noted in the PDR population.

Abstract 45

EFFECTS OF DIABETIC RETINOPATHY ON MÜLLER CELLS: A BIOINFORMATICS APPROACH FOR METABOLIC AND FUNCTIONAL EVALUATION

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To explain the metabolic activity and functional changes eventuating in Müller cells during the process of diabetic retinopathy.

Normalized total RNA readings obtained from next-generation sequencing data were accessed using the GEO database (https://www.ncbi.nlm.nih.gov/geo). Metadata (and normalized count data files were prepared and transferred to the R studio environment.After editing the data in R studio, the expression levels were determined compared to the control group using the DESeq2 package. The AnnotationDbi and org.Hs.eg.db packages were used to interpret the expressed genes. Once the expressed gene names were determined, the data was filtered using the pathview, gage, and gageData packages. These genes were assessed using the KEGG database to determine their functions in the pathways.

As a result of the analysis, it was observed that there was up or down regulation in the expression of 990 genes in diabetic Müller cells. Significant up and down regulation was observed in linoleic acid metabolism pathway genes. While CYP2J protein expression was significantly downregulated, the most prominent protein expression was CYP3A4, and CYP2E1, CYP2C, CYP1A2 proteins were also upregulated, respectively. Due to the changes in the expression of CYP3A4 and other proteins, it was observed that the linoleic pathway in Müller cells progressed significantly to the 12(13) EpOME and 9(10)EpOME pathway.

The increased synthesis of epoxygenase products in Müller cells during the diabetic process may cause damage to mitochondria, endoplasmic reticulum and cell membrane, leading to deterioration of Müller cell integrity and functions. Treatments that can be developed against bioactive lipids may be effective in preventing diabetes-related Müller cell dysfunction.

Abstract 278

DEVELOPMENT AND PROGRESSION OF DIABETIC RETINOPATHY DURING PREGNANCY IN IRELAND AND NORTHERN IRELAND

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Pregnancy increases the risk of diabetic retinopathy (DR) in women with diabetes. In Ireland and Northern Ireland, pregnant women with diabetes are invited for retinal screenings at various stages. This study aims to compare health systems on the island and identify factors associated with the worsening of DR during pregnancy.

Data was collected on women referred for retinal screening from maternity hospitals in Dublin and Northern Ireland from 2013 to 2023. Data included patient age, trimester of screening, duration of diabetes, diabetes type, HbA1c levels at referral, treatment, and DR grade.

A total of 1,232 pregnancies were recorded, 434 were women included after excluding those with missing HbA1c data or fewer than two screenings. Women in Northern Ireland were younger (31.1 vs. 34.7 years, $p < 0.001$) and had more type 1 diabetes (77.7% vs. 62.9%, $p = 0.03$). Similar proportions had no retinopathy (38% NI vs. 40% Ireland). NI women had more background retinopathy (48.2% vs. 34.3%), while Ireland had higher rates of pre-proliferative and proliferative retinopathy (13.8% vs. 25.7%). Elevated early pregnancy HbA1c increased DR progression risk (odds ratio: 1.02, $p = 0.04$.

Our findings show significant differences in pregnant women with diabetes attending retinal screenings in Ireland and Northern Ireland. Women in Northern Ireland were younger and more likely to have type 1 diabetes. Early elevated HbA1c levels increased the risk of diabetic retinopathy, highlighting the need for regular monitoring during pregnancy

Abstract 325

GLOBAL HEALTH DISPARITIES IN DIABETIC RETINOPATHY: A MEDICAL EDUCATION PERSPECTIVE

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Accessibility to screening and treatment is fundamental in the management of diabetic retinopathy, one of the leading causes of preventable blindness. Numerous factors hinder equitable access to care. Our aim is to analyze the role of medical education to mitigate these disparities.

A simple literature search was conducted to identify current barriers and approaches implemented towards achieving global health equity in diabetic retinopathy. A total of 23 studies were included in our review, 82% of them being from the US, with the main setting being the outpatient clinic. A subsequential analysis of the results was carried out to determine the role that medical schools and students can play in this context.

The factors identified to be associated with poor receipt of screening and adequate care were: living in rural areas, house and food insecurities, low household income, minorities, poor education, poor mental health. Lack of knowledge and awareness was a major barrier in access to screening. Our research found that the main role that medical students may have would be promoting eye health literacy and patient education. Medical schools' implementation of a global health approach to eye care training can help sensitize students on the topic and increase their participation in tackling the problem.

To achieve health equity in retinal care it is of paramount importance that future medical professionals are trained to understand and identify health disparities, by integrating both the medical curriculum and specialty training. More studies and attention on eye health literacy should be brought in Europe.

Abstract 9

THE RELATIONSHIP BETWEEN BLOOD VITAMIN A LEVELS AND DIABETIC RETINOPATHY: A POPULATION-BASED STUDY

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We assessed the relationship between blood vitamin A levels and the risk of diabetic retinopathy by conducting the large epidemiological study. Vitamin A may take an important role in the process of angiogenesis, inflammation, and fibrosis, the cause and mechanism of diabetic retinopathy.

The study was a population-based epidemiological study for 11,727 participants aged 40 or older who participated in the Korean National Health and Nutrition Examination Survey, which is a data survey using statistical, multi-level, and clustered sampling methods representing Korea.. Vitamin A in the blood was classified into quartiles. Diabetic retinopathy was diagnosed by the Early Treatment for Diabetic Retinopathy Study. We have adjusted confounding variables including age, sex, smoking status, cholesterol, diabetes prevalence period, glaciated hemoglobin levels, and high blood pressure.

The odd ratio (OR) of vitamin A at quartile level 4 for diabetic retinopathy was 0.32 (95% confidence interval [CI], 0.14-0.72, P for trend < 0.001). In male, the OR of quartile 3 level vitamin A for diabetic retinopathy was 0.11 (95% CI, 0.01-0.69, P for trend = 0.010). In adults under the age of 60, the OR of vitamin A at quartile level 3 for diabetic retinopathy was 0.10. (95% CI, 0.03-0.29, P for trend < 0.001).

Serum vitamin A high levels are associated with lower risk of diabetic retinopathy. Particularly, there is a more effective relationship in male and adults under the age of 60. Therefore, it is necessary to create a good environment for consuming vitamin A or synthesizing it on its own.

Adjusted odds ratio of diabetic retinopathy stratified according to quartile levels of blood vitamin A in representative Korean adults aged 40 years or older. Value is described as odd ratio (95% confidence intervals). Model 1: adjusted for age and sex. Model 2: adjusted for age, sex, smoking, cholesterol, diabetes duration, glycated hemoglobin, and hypertension.

Quartile blood vitamin A level (mg/L)	Crude	Model 1	Model 2
Quartile level 1 (< 0.41)	1.0 (reference)	1.0 (reference)	1.0 (reference)
Quartile level 2 (0.41–0.51)	0.65 (0.26–1.60)	0.55 (0.20–1.51)	0.50 (0.20–1.24)
Quartile level 3 (0.51–0.64)	0.32 (0.14–0.74)	0.28 (0.11–0.68)	0.17 (0.08–0.42)
Quartile level 4 (≥ 0.64)	0.62 (0.26–1.42)	0.46 (0.18–1.17)	0.32 (0.14–0.72)
P for trend	0.014	0.016	0.001

Abstract 364

COMPARISON OF THE RESULTS OF DIFFERENT PATTERN LASER COAGULATION SYSTEMS APPLIED TO PATIENTS WITH PROLIFERATIVE DIABETIC RETINOPATHY IN TERMS OF COMFORT, DURATION AND INFLAMMATION

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To present the differences between different laser photocoagulation (LPC) systems for patients with Proliferative Diabetic Retinopathy (PDRP) in terms of patient comfort, application time and inflammation.

170 patients with PDRP underwent LPC with Navigated Retina Laser Therapy (NAVILAS) 577s Pro in one eye and Pattern Scanning Laser (PASCAL) in consecutive eyes. In 14 patients, flaremeter measurements were made before and 10 minutes after laser. Immediately after the laser procedures, the degree of pain score between 1-10 was questioned. Total applied energy, laser power, number of shots and retinal quadrant were standardized in all patients.

100 were male and 70 were female with a mean age of 68.2+8.5 years.The pain score of the patients who underwent LPC with Navilas was 2.04+1.3,while the pain score was 4.1+1.9 with PASCAL and there was a significant statistical difference betwen the groups (p 0.001).In both devices, flare measurements increased significantly after laser compared to before(p=0.008/p=0.043),but there was no significant statistical difference between the two groups.The application time to reach an equal number of shots was 286.0+113.8 s in the Navilas group and 250.69+60.42 in the Pascal group.There was a significant statistical diference between the groups in terms of duration(p=0.038).

New generation pattern laser photocoagulation devices may find a place in the treatment of patients with PDRP, offering a more comfortable process. As the use of devices increases, the application time may shorten.

Abstract 463

DEVELOPMENT OF VISION-THREATENING COMPLICATIONS IN DIABETIC RETINOPATHY: ONE-YEAR ANALYSIS OF CHART STUDY

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Diabetic retinopathy (DR) is one of the leading causes of vision loss among working-age individuals. This study aims to evaluate the one-year development of vision-threatening complications, namely clinically significant macular edema (CSME) and proliferative diabetic retinopathy (PDR).

This multinational, observational, prospective and longitudinal study (CHART study (NCT04636307) followed 202 eyes with mild to severe nonproliferative diabetic retinopathy (NPDR) over one-year period or until the development of endpoints, CSME and/or PDR. Eyes were classified according to the Early Treatment Diabetic Retinopathy Study (ETDRS) using seven-field color fundus photographs: 81 eyes as ETDRS grade 35 (mild NPDR), 63 eyes as ETDRS grade 43 (moderate NPDR), 46 eyes as ETDRS grade 47 (moderately severe NPDR) and 12 eyes as ETDRS grade 53 (severe NPDR). Microaneurysm turnover, microaneurysm formation and disappearance rates were automatically determined using RetMarkerDR software (Meteda Group, Italy).

At the end of the one-year follow-up, 9 eyes (4.5%) developed vision-threatening complications, with 4 eyes (2.0%) progressing to CSME and 5 eyes (4.5%) to PDR. The 4 eyes with CSME were classified at baseline as levels 43 and 47, while the 5 eyes with PDR were classified at baseline as levels 47 and 53. Microaneurysm turnover calculated at 6-month showed significant differences between the groups that developed CSME and PDR compared with those that did not ($p<0.001$).

Microaneurysm turnover is a predictor for the development of CSME and/or PDR in patients with moderate to severe retinopathy.

Abstract 365

ACUTE-ONSET OPTIC DISC NEOVASCULARIZATION IN ACUTE ANTERIOR UVEITIS

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To report a clinical case of rapidly retinal neovascularization in an anterior uveitis even in the absence of retinal ischemia and inflammation in a patient with mild diabetic retinopathy.

A 22-year-old female, with a history of diabetic retinopathy, developed an acute non-granulomatous inflammation in the anterior chamber with normal intraocular pressure. After seven days of topical steroids the inflammation in the anterior chamber was well controlled, whereas an asymmetric upgrade of diabetic retinopathy with optic disc neovascularization, without any evidence of retinal ischemia at the fluorescein angiography (FA), was observed in the same eye.

The patient underwent intravitreal dexamethasone implant with partial regression of neo-vessels, which almost disappeared after three intravitreal injections of anti- vascular endothelial growth factor (anti-VEGF).

Retinal neovascularization may develop in an inflamed eye even in the absence of retinal ischemia. Combination therapy with both intravitreal steroids and anti-VEGFs can represent a good therapeutic approach.

Abstract 432

FROSTED BRANCH ANGIITIS: AN UNCOMMON OCULAR MANIFESTATION OF BARTONELLOSIS

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Our objective is to report a case of frosted branch angiitis revealing a bartonellosis

A case report of frosted branch angiitis revealing a bartonellosis

A 32-year-old woman,presented with acute visual loss in her left eye. She had a history of working with animals.Ophthalmologic examination revealed VA of 10/10 in the RE and count fingers at 5 meters in the LE. Fundus showed, papillitis, macular edema with temporal hemorrhages, and a frosted branch angiitis appearance.OCT confirmed macular edema.FA showed delayed arterial and venous filling with vascular leakage.The patient was started on doxycycline while awaiting serology results for toxoplasmosis, syphilis,and cat scratch disease.
She responded well to a course of doxycycline. Vision improved,with a decrease in vascular sheathing, and resolution of subretinal fluid.Bartonella serology was positive.

While neuroretinitis is the most common retinal manifestation of cat scratch disease, frosted branch angiitis should be considered in the differential diagnosis. Empirical treatment with doxycycline can be initiated before definitive laboratory results and can lead to favorable visual outcomes

Abstract 106

FROSTED BRANCH ANGIITIS WITH VITREOUS HEMORRHAGE ASSOCIATED TO CHRONIC COCAINE ABUSE

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To report a case of bilateral frosted branch angiitis (FBA) in a 48-year-old man with rapid visual loss, affected by chronic kindey disease stage IV requiring dyalisis, with a history of cocaine abuse for 5 years.

Best corrected visual acuity (BCVA) was light perception bilaterally, anterior segment and intraocular pressure were normal. Fundus examination in both eyes revealed vitreous hemorrhage (VH), greater in left eye, pale optic disc with normal excavation, vasculitis like FBA, diffuse retinal ischemia. Assuming diagnosis of FBA, taking into account latest scientific literature, blood laboratory tests were required, OCTA, B-Scan ultrasound were performed. Due to serious kindey disease, fluorangiography was not performed.

25G-Pars Plana Vitrectomy (PPV), tap and vitreous sample collection were performed in left eye in order to treat VH and to conduct further laboratory tests. By paracentesis, with a sterile insulin needle, a sample of 0.2 ml of undiluted aqueous humor was taken from the anterior chamber. After placing trocars, through vitreous cutter and sterile syringe, 0.5 mL of undiluted vitreous humor were collected. Samples were sent to microbiology, virology and parassitology departments. Vitrectomy was completed, removing blood and tractional membranes. Patient was examined 1 day, 1 week and 1 month after surgery with regular course and no complication.

Final BCVA was 0.03 Snellen decimal (1.5 LogMar). Laboratory tests on blood, aqueous and vitreous humor were negative for infectious, autoimmune or neoplastic etiology. We concluded the most likely pathogenesis was cocaine abuse. To our knowledge, this is the first case of frosted branch angiitis temporally associated with cocaine abuse.

Abstract 312

ALL THAT GLITTERS IS NOT GOLD

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To investigate a case of bilateral vision loss with initial suspicion of Horton's arteritis.

A patient with progressive vision loss in one eye, followed by bilateralization, was initially suspected of having Horton's arteritis due to elevated ESR and CRP levels. The patient started corticosteroid therapy, but despite that, there was no change in vision, and a rash developed on his hands. Following referral to Rheumatologist and Ophthalmology, a thorough visual examination, including fundus and OCT macula imaging, was carried out to further examine the etiology.

Examining the optic papillae, no notable changes were seen, and diffuse changes in the ellipsoid layer and retinal pigment epithelium (RPE) were highlighted through OCT macula imaging; these were compatible with a placoid-like condition.

This case illustrates a diagnostic challenge. Even with increased inflammatory markers, the lack of specific fundus findings and the OCT results pointed to a condition different from Horton's arteritis, including placoid abnormalities in the RPE and ellipsoid layer, compatible with a diagnosis of syphilis.

Abstract 447

BILATERAL PANUVEITIS: A CHALLENGING CASE

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To describe the challenging case of a patients referred to us for a suspected Behcet Disease-related bilateral Panuveitis.

A caucasian male 58 years-old complained severe oral and genital ulcers, associated to a subacute visual impairment in the right eye. So he underwent full ophthalmic evaluation along with multimodal imaging examination and complete laboratory work-up.

Ophthalmic evaluation disclosed mild non-granulomatous bilateral anterior uveitis associated to vitritis, optic disc edema and macular capillary changes more evident in the right eye, presenting moreover fluorescein angiography signs consistent with a Behcet Uveitis. Laboratory work-up disclosed low levels of C4 and ANA positivity and surprisingly positive VDRL/TPHA tests.

Syphilis should be always considered in a patient with subacute bilateral uveitis associated to systemic unspecific signs since its prevalence is on the rise in the last decades.The diagnosis of neurosyphilis may be challenging due to the variety of clinical signs so miming even autoimmune diseases like in our patient.

Abstract 100

FERN-LIKE RETINAL VASCULOPATHY IN INTERMEDIATE UVEITIS: PATHOGENESIS, NATURAL HISTORY, AND CLINICAL IMPLICATIONS

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To investigate peripheral vascular changes and their progression in intermediate uveitis characterized by a fern-like leakage pattern and examine their relationship with macular vascular changes to elucidate their pathogenesis, natural history, and clinical implications.

Retrospective, longitudinal, observational study involving 43 eyes with intermediate uveitis (mean age 31±16 years), followed for 18 months, and compared with 41 healthy control eyes. Ultra-widefield fluorescein angiography (UWF-FA) images were analyzed. Vessel Length Density (VLD), Fractal Dimension (FD), and Branchpoints Density (BPD) were compared across different leakage extents (posterior pole/diffuse[Zone 1], mid-periphery[Zone 2], and far periphery[Zone 3]) and control eyes using linear mixed-effects models. The foveal avascular zone (FAZ) was manually traced. The main outcome measures were the qualitative retinal changes and the quantitative differences in VLD, FD, and BPD across the three concentric temporal retina sectors.

Early-phase UWF-FA revealed significant alterations, including dilated capillary channels, reduced capillary branching, delayed venous filling, and telangiectatic dilations, primarily in non-perfused regions. Eyes with intermediate uveitis showed significantly lower VLD, FD, and BPD, particularly in the far peripheral retina, with the most pronounced reductions in eyes with diffuse leakage [Zone 1](interaction p-values: 0.04 for VLD, 0.007 for FD, and 0.045 for BPD). Negative correlations were observed between these vascular metrics and enlarged FAZ areas, indicating an association between peripheral and macular perfusion (all $p < 0.05$). Fern-like leakage persisted with reduced intensity despite immunosuppression.

We propose "Fern-Like Retinal Vasculopathy" as a descriptor for the vascular changes in intermediate uveitis, hypothesizing that these changes are driven by increased venous pressure and local stagnation at the retinal periphery rather than by inflammation. Recognizing this condition is crucial to optimize treatment and to avoid excessive long-term immunosuppression.

Abstract 370

OCULAR MANIFESTATIONS ASSOCIATED WITH COVID-19: A CASE SERIES

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To describe ocular manifestations possibly associated with COVID-19 infection or vaccination and to discuss their underlying physiopathological mechanisms, clinical characteristics and course through a literature review.

This is a single-center descriptive study of a series of patients presenting with ocular manifestations within 30 days of either COVID-19 infection or vaccination, with a negative workup for other possible etiologies, seen at the department of ophthalmology of Fattouma Bourguiba University Hospital in Monastir over a 2-year period from January 1, 2021 to December 31,2022.

Thirteen patients (16 eyes) exhibited ocular manifestations related to COVID-19, primarily mild to moderate, occurring on average 11 days post-symptom onset. The mean age was 47.5 years (M/F ratio 0.63). Neuro-ophthalmological manifestations predominated, including optic neuropathy (n=3) and oculomotor palsies (n=3). Eleven patients (13 eyes) had ocular symptoms potentially associated with COVID-19 vaccination, with a mean age of 47.4 years (M/F ratio 1.75). Symptoms appeared on average 9 days post-vaccination, predominantly after the first dose. Inflammatory conditions, such as uveitis, were most common, alongside ischemic optic neuropathy and central retinal vein occlusion.

An array of ocular manifestations may be associated with COVID-19 infection or vaccination. Ophthalmologists and generalists should be aware of these possible, albeit rare, manifestations after COVID-19 infection or vaccination.

Abstract 443

SERPIGINOUS-LIKE CHOROIDITIS REVEALING A PULMONARY CHOROIDITIS

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To describe clinical and imaging features of a long standing serpiginous-like choroiditis that revealed a pulmonary tuberculosis

We report the case of a patient who presented with serpiginous-like choroiditis

A 56-year old man presented with a 2-year history of blurry vision in his left eye. His right eye examination was unremarkable. He was counting fingers in his left eye, slit lamp examination showed a quiet anterior segment and a clear lens. Fundus examination showed a serpiginous-like choroitis with extensive subretinal fibrosis. Systemic work-up showed a positive quantiferon test. Chest CT scan showed pulmonary lesions in line with pulmonary tuberculosis. Anti tubercular therapy was initiated along with systemic corticosteroids.

Tuberculosis can affect various tissues and organs. Ocular involvement may be the initial manifestation and can be even isolated. Appropriate diagnostic and therapeutic management are essential to preserve visual and, in some cases, vital prognosis.

Abstract 68

REACTIVATION OF OCULAR TOXOPLASMOSIS IN IMMUNOSUPPRESSED NEUROSARCOIDOSIS: A CASE REPORT

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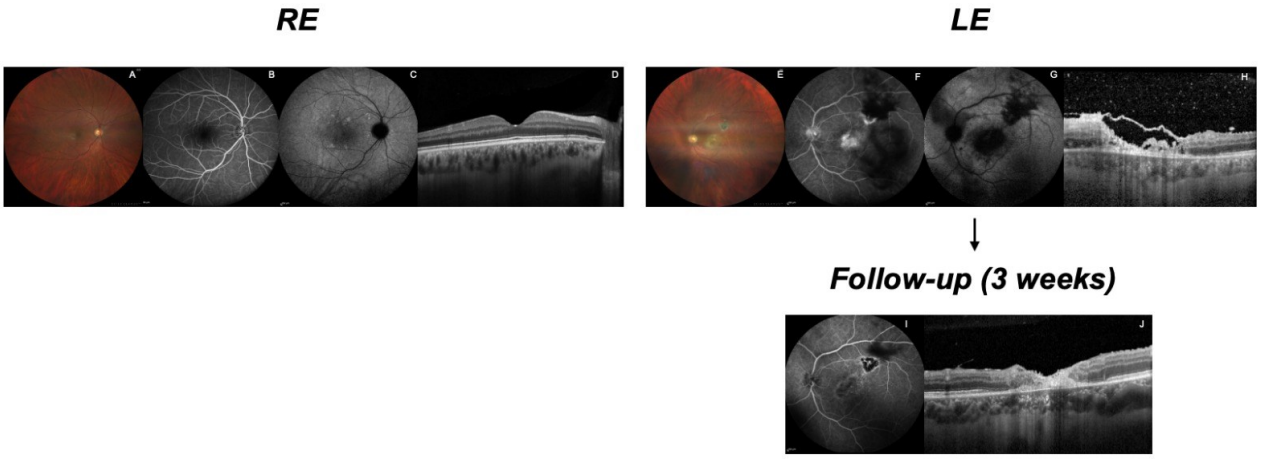
To report a case of ocular toxoplasmosis reactivation in a patient with neurosarcoidosis undergoing immunosuppressive therapy.

Case report and literature review.

A 34-year-old male with neurosarcoidosis, treated with Infliximab and Mycophenolate Mofetil, presented with sudden visual decline in his left eye. Multimodal imaging revealed active chorioretinitis. Serological tests showed elevated Toxoplasma IgG with normal IgM levels. Treatment with oral corticosteroids and antibiotics led to significant improvement in vitreous turbidity and lesion inactivity at follow-up, despite unchanged visual acuity.

This case highlights the risk of toxoplasmosis reactivation in immunosuppressed sarcoidosis patients. It emphasizes the importance of considering ocular toxoplasmosis even with normal IgM levels and demonstrates the value of multimodal imaging in diagnosis and follow-up.



Abstract 64

CLINICAL CASE OF BACTERIAL KERATITIS CAUSED BY PSEUDOMONAS AERUGINOSA

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Bacterial keratitis is one of the most common blindness causes. The increasing frequency of contact lens usage has raised the proportion of Gram-negative bacteria in cases of keratitis, particularly P. aeruginosa. This study presents a clinical case of keratitis associated with P. aeruginosa, induced by contact lens usage.

In the Republican Clinical Ophthalmology Hospital of the Republic of Tatarstan (Kazan, Russia), there were two confirmed cases of Pseudomonas keratitis during the fall of 2023, both involving young patients (19 and 35 years old). This disease had a significant impact on their quality of life—one patient underwent evisceration (removal of the contents of the eyeball), while the other is awaiting a corneal transplant in the future. We present one of these cases.

Patient N presented to the emergency department with complaints of photophobia, tearing, redness, and decreased vision in the right eye. Biomicroscopy revealed a stromal white infiltrate with indistinct borders. Empirical antibiotic therapy was initiated using broad-spectrum agents (including tobramycin instilled four times a day and bromfenac three times a day), and a corneal swab was taken for antibiotic sensitivity testing. The swab results showed the growth of Pseudomonas aeruginosa. Empirical treatment was adjusted based on the laboratory data, with ciprofloxacin instilled six times a day. Despite adequate targeted antibiotic therapy, the treatment lasted for seven weeks with variable success.

The high resistance of Pseudomonas aeruginosa to modern antibacterial drugs highlights the need for the development of new medications with greater antibacterial activity against this pathogen.

Abstract 363

A RARE OCULAR MANIFESTATION OF SYSTEMIC SCLEROSIS.

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To report a clinical case of an ocular manifestation of systemic sclerosis.

A 61-year-old female, with a history of systemic sclerosis, psoriatic arthritis and fibromyalgia, arrived at our center for visual acuity drop and floaters. The fundus examination revealed the presence of cotton wool spots and retinal hemorrhages, while fluorescein angiography (FA) showed retinal vascular inflammation, with small areas of capillary non-perfusion and macular ischemia.

The patient was started with low-dose oral prednisone after rheumatologic consultation, to avoid the risk of scleroderma renal crisis, with progressive clinical improvement and reduction of retinal inflammation imaged by FA.

Retinal vasculitis is a very rare and sight-threating manifestation of Systemic Sclerosis; infectious diseases should always be ruled out and prompt treatment is required due to posterior pole and macular involvement.

Abstract 338

THE ROLE OF ADDING INTRAVITREAL DEXAMETHASONE IMPLANT TO STANDARD MANAGEMENT OF SERPIGINOUS CHOROIDITIS FOR ACHIEVING RAPID REMISSION: A CASE REPORT

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This case study evaluated the efficacy of intravitreal dexamethasone (DEX) implant as a standard treatment for acute Serpiginous Choroiditis (SC) in order to achieve a quick remission.

A lady in her forties with steadily-declining vision in her right-eye for the previous four-months was brought into the emergency department. On the Snellen-chart, the best-corrected visual acuity was 20/28 in the left-eye and 20/100 in the right-eye. The right and left eyes' intraocular-pressure (IOP) were 15 and 16 mmHg, respectively. Examinations of the anterior-segment showed normal results. A fundus examination of the right-eye revealed a grey finger-like lesion showing underlying blood vessels in the macula extending around the disc involving the fovea with an active-border. The left-eye showed a small yellowish finger-like lesion involving nasal macula, threatening the fovea.

Disruption in ellipsoid zone was demonstrated using optical-coherence-tomography(OCT). Fundus-Autofluorescence (FAF) shows hypo-autofluorescence lesions with hyper-autofluorescence edges indicating activities. Both eyes were diagnosed with active serpiginous-choroiditis. because the patient would be traveling in three weeks, it was decided to began reduced dose oral prednisolone tapering augmented with an intravitreal-dexamethasone 0.7mg implant in each eye. After nine-days, there was a noticeable improvement, in the right-eye visual acuity on the snellen-chart reach 20/30 and the left-eye 20/25, with a normal intraocular-pressure. OCT showed resolved inflammatory material in both eyes. After starting azathioprine the disease activities were suppressed for six-months without relapsing.

Because of the patient visual demands, limitation of time and foveal involvement, we elected to use an aggressive combined treatment of local, reduced systemic steroids and immunosuppressive treatment. Astonishingly she became free of the disease activity as fast as 9-days and remission maintained along the 6-months period of follow-up.

Abstract 124

36-MONTH DATA FROM THE CALM REGISTRY: A REAL-WORLD ANALYSIS OF CHRONIC NON-INFECTIOUS UVEITIS AFFECTING THE POSTERIOR SEGMENT TREATED WITH THE 0.18 MG FLUOCINOLONE ACETONIDE INTRAVITREAL IMPLANT

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To present 36-month data from CALM: a registry study assessing effectiveness and safety of the 0.18 mg fluocinolone acetonide intravitreal implant (FAi) for the treatment of chronic non-infectious uveitis affecting the posterior segment (NIU-PS).

Eligible patients were ≥18 years of age, diagnosed with chronic NIU-PS, and did not have contraindications to the 0.18 mg FAi. Effectiveness outcomes included recurrence of uveitis, changes in visual acuity, and optical coherence tomography (OCT) parameters (central subfield thickness [CST], cube average thickness [CAT], and cube volume [CV]). Snellen acuities were converted to Early Treatment Diabetic Retinopathy Study (ETDRS) letter scores. Safety assessments included intraocular pressure (IOP) elevations, IOP-lowering interventions, and cataract surgeries.

Two hundred patients (267 eyes) received the FAi. In the 12 months pre-implantation, 84.1% of eyes had ≥1 recurrence of uveitis, which decreased to 16.5% at 36 months post-FAi. CST, CAT, and CV decreased significantly from baseline to month 36 (-9.7% [P=0.008], -6.9% [P<0.001], and -6.2% [P=0.003], respectively). Nineteen percent of patients had an increase of ≥15 ETDRS letters versus baseline (95% CI: 12%, 29%). Median IOP (14 mmHg) remained stable. Rates of IOP-related interventions were low (laser trabeculoplasty: 1.1%; MIGS: 1.1%; incisional surgery: 4.5% [trabeculectomy: 1.5%; tube implantation: 3.0%]). Of the 28 phakic eyes, 4 eyes required cataract surgery.

These data expand upon controlled clinical trial results, demonstrating that, in the real world, the 0.18 mg FAi provides long-term reduction in uveitis recurrence, significant improvements in retinal anatomy, stable vision, and a low incidence of IOP-related events.

Abstract 239

VZV AND COVID-19 SHINING TOGETHER IN THE MACULA

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To report a case of neuroretinitis in a 15-year-old male as the presenting manifestation of COVID19 infection alongside VZV reactivation, in the absence of other systemic symptoms.

Case report and literature review. Ultra-widefield fundus photography, fundus autofluorescence, macular spectral domain optical coherence tomography, fluorescein angiography, and indocyanine green angiography were performed.

A previously healthy 15-year-old male presented with an acute unilateral visual loss. Fundus examination revealed optic disc edema, hard exudates within the macula in a stellate pattern, perivascular sheathing and intraretinal hemorrhages along the vein in the inferior temporal arcade extending to the midperiphery. Diagnostic work-up revealed a positive PCR for COVID-19 and serology showed the presence of IgM and IgG antibodies to VZV. Following a comprehensive treatment regimen of intravenous acyclovir, intravenous steroids and oral doxycycline, rapid and remarkable improvements were observed. The macular star and optic disc swelling regressed and visual acuity improved from 20/200 to 20/20.

This case offers valuable insights into the previously unreported neuroretinitis associated with COVID-19 infection and VZV reactivation.

Abstract 257

ISOLATED COTTON WOOL SPOTS REVEALING HORTON'S DISEASE.

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raise awareness about atypical presentation of Horton's disease

case report of a patient with Horton's disease revealed by an isolated dysoric retinopathy.

A 68-year-old patient with history of diabetes, hypertensive and macular scar in the RE was referred to us for a fundus exam which showed bilateral multiple cotton wool spots around the ONH with no papillary edema.
BCVA was 1/10 in the RE and 8/10 in the LE.
The OCT of the ONH was normal. The automated visual field showed central scotoma in the RE and peripheral alteration in the LE. FAF revealed a delay in choroidal filling. BP was normal and ESR and CRP was elevated.
pathology showed temporal arteritis (GCA), confirming the diagnosis of Horton's disease (APION) and systemic corticosteroids were initiated.

The discovery of isolated cotton wool spots in an elderly person should raise suspicion of Horton's disease and lead to a thorough interrogation and a directed etiological assessment allow for an early diagnosis and the urgent initiation of systemic treatment to preserve not only visual prognosis but also life.

Abstract 185

PEDIATRIC ENDOPHTHALMITIS: A COMPREHENSIVE ANALYSIS OF CLINICAL FEATURES, TREATMENT, VISUAL AND ANATOMICAL OUTCOMES

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To evaluate the clinical characteristics, visual and anatomical outcomes of pediatric patients undergoing pars plana vitrectomy (PPV) for endophthalmitis.

This retrospective study included pediatric patients who underwent PPV due to endophthalmitis between 2016 and 2023 with at least 1 year follow-up. Demographic characteristics (age, sex), cause of endophthalmitis, time from diagnosis to PPV, total follow-up time, best corrected visual acuity (BCVA - LogMAR) at initial visit, 1 month after PPV and at the last visit, type of tamponade used in PPV, pathogens grown in culture, postoperative complications and anatomical success rates were analyzed.

Thirty-two eyes of 32patients(8female,24male)were included in the study.Mean age was 11.65±4.60 years.Mean BCVA was 2.44±0.38 at first presentation,2.18±0.57 at 1 month after PPV and 1.92±0.94 at last follow-up(p=0.03).Mean time from symptoms onset to PPV was 4.00±2.82 days and total follow-up time was 45.15±27.74 months.Cause of endophthalmitis was trauma(perforating in 10patients(52.6%)and penetrating in 9patients(47.3%)in 19patients(59.4%),4(12.5%)infectious(3 exogenous,1 endogenous)and idiopathic in 9 patients(28.1%)Pathogens isolated were S.epidermidis in 10cases(31.2%),S.aureus in 4cases(12.5%),P.acnes in 2cases(6.2%),P.aeruginosa in 1case(3.1%)and C.albicans in 2 cases(6.2%).No growth was observed in 13patients(40%).At the last follow-up phthisis developed in 1patient(3.1%)chronic detachment was present in 10 patients(31.3%)and anatomical success was achieved in 21patients(65%)

Trauma is one of the major etiological factor of endophthalmitis in pediatric population.In this study it was observed that surgical intervention in pediatric endophthalmitis cases didn't lead to significant improvement in visual function,but could prevent development of phthisis bulbi.Globe preservation has a significant impact on patients'life quality,psychological and social functioning.

Abstract 251

A CASE REPORT OF TYPICAL PRESENTATION IN WEST NILE VIRUS CHORIORETINITIS

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We aim to describe the visual outcome, fundus appearance, autofluorescence aspects, and fluorescein angiographic findings in a patient with a typical presentation suggestive of a West Nile Virus infection diagnosis in a scattered phase, following bilateral visual loss of unknown etiology.

We conducted a comprehensive eye examination, including visual acuity testing, slit-lamp and fundus examinations, autofluorescence photography, and fluorescein angiography at the initial visit.

A 64-year-old woman with no medical history presented with rapidly progressive bilateral vision loss, accompanied by headaches for 5 years. Her best-corrected visual acuity was 3/10 in the right eye and 2/10 in the left. Biomicroscopic examination revealed normal anterior segments. Funduscopic examination showed mild vitreous debris with bilateral multifocal chorioretinitis. Atrophic chorioretinal lesions were observed in the mid-peripheral fundus and posterior pole, radiating from the optic nerve in a linear pattern. Fluorescein angiography (FA) revealed a target-like appearance of these lesions with central hypofluorescence and peripheral hyperfluorescence. The funduscopic and FA findings suggest chorioretinitis related to West Nile virus.

Linear chorioretinitis may indicate a diagnosis of West Nile Virus infection and should be considered, particularly when accompanied by systemic signs. While most cases resolve without visual impairment, some patients are at risk of permanent vision loss, highlighting the critical need for ongoing research into specific treatments.

Abstract 132

OUTCOMES OF DIFFERENT TREATMENT APPROACHES IN POST-SURGICAL MACULAR EDEMA

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There are no uniform guidelines for the treatment of post-surgical macular edema, and only little is known about putative risk factors and outcome predicting parameters. The aim of this study was to evaluate outcome differences depending on which treatment was administered and risk factors leading to susceptibility in patients.

All patients available in our electronic database with diagnosis of post-surgical macular edema following cataract surgery were included. Systemic medical and ocular history as well as the following data were evaluated for baseline/follow-ups: best corrected visual acuity (BCVA), intraocular pressure (IOP), central retinal thickness (CRT) as measured by SD-Optical-Coherence-Tomography, interval from start of therapy to resolution of macular edema (no exsudative sub- or intraretinal fluid). For analysis we compared patients with exclusively local treatment (LT) versus patients with (additional or exclusively) systemic treatment (ST) and patients with history of cardiovascular diseases (CV) versus patients without these (NCV).

N=136, mean follow-up 9.7±15.2 months. Mean CRT significantly decreased for the LT (n=75) and ST (n=61) group from baseline to 12 months (458.3±96.5µm to 320±39.5µm ($p<0.01$); 519.3±121.6µm to 337.2±70.6µm ($p<0.01$)), respectively, with no significant difference in CRT decrease or these groups ($p=0.45$). Mean BCVA significantly increased for both groups from baseline to 12 months (LT: 69.1±11.9 to 80.4±6.6 letters ($p<0.01$); ST: 65.1±11.8 to 78.5±6.8 letters ($p<0.01$)). Mean interval to resolution of edema was significantly shorter for the LT group ($p<0.05$). There were no significant differences regarding CRT decrease, BCVA gain and interval to edema resolution in CV and NCV patients.

There were no significant differences of outcomes in exclusively local and systemic treatment in post-surgical macular edema as well as no impact of preexisting cardiovascular diseases on outcomes. Since the local therapy was not inferior, the use of systemic treatment must be critically evaluated with regard to possible side effects.

Abstract 162

LONG-TERM FUNCTIONAL OUTCOMES FOLLOWING PARS PLANA VITRECTOMY FOR RETINAL DETACHMENT DUE TO ACUTE RETINAL NECROSIS (ARN): A CASE SERIES.

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To evaluate the long-term anatomical and functional prognosis of patients affected with retinal detachment (RD) secondary to Acute Retinal Necrosis (ARN).

This retrospective interventional case series included 21 eyes from 21 patients with RD secondary to ARN. Results of vitreous or aqueous biopsy, the effect of antiviral therapeutics, time to retinal detachment, the course of Visual Acuity (VA), and anatomic and surgical outcomes were investigated. In all cases, a 23-gauge pars plana vitrectomy (PPV) with silicone-oil tamponade was performed and in eleven cases an episcleral encircling band was added.

The average follow-up was 39.5±36.8 months (range 4-132). PCR analysis revealed presence of VZV in 10 eyes. All patients had undergone systemic antiviral therapy at the diagnosis time. Average time elapsed between ARN diagnosis, and RD onset was 33.3±27.5 days. Statistical analysis showed differences in terms of visual prognosis between RD macula-off and macula-on (p=0.048). Final VA was negatively correlated to an initial inflammatory involvement of the optic nerve head (p=0.010). During follow-up period anatomic success with retinal reattachment, was achieved in 91% of cases. No difference was observed between preoperative VA and VA at the end of follow-up (p=0.665).

VZV was the primary virus responsible for ARN-associated RD. Macular and optic nerve involvement in the initial stages of retinitis has a negative influence on the final visual prognosis. Anatomical reattachment of the retina after PPV does not appear to be related to better VA.

Abstract 204

EYES CAN BE THE WINDOW OF THE SOUL (AND OPHTHALMOLOGISTS CAN SAVE LIVES): LATE-PRESENTING AIDS DIAGNOSED AFTER DETECTION OF A CHOROIDAL GRANULOMA IN A PATIENT WITH DISSEMINATED, MULTIFOCAL INVOLVEMENT

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Recently, there has been an increase of late-presenters with HIV, partly explained by the reduced access to diagnostic services during COVID-19 pandemic. These patients represent a diagnostic and therapeutic challenge, as opportunistic manifestations frequently are the first contact with healthcare system. Here the case of a patient with multifocal involvement.

Since May 2021, a 37-year-old heterosexual male developed skin lesions on limbs and, since December 2022, experienced flu-like symptoms with a partial negative scotoma in his right eye (RE). Ophthalmic examination revealed a granulomatous choroidal lesion in RE and bilateral cotton wool spots, indicative of HIV-induced retinitis. Following a positive HIV diagnosis, he was hospitalized. Ultrasonography showed calcific lesions in liver and kidneys bilaterally and multiple centrally hypoechoic lesions in the spleen. CT scan revealed interstitial pneumonia. HIV RNA was 574,000 copies/mL, CD4 count 22 cells/mm^3, CMV DNA 97,692 copies/mL. BAL was negative for mycobacteria, but positive for P. jirovecii.

Hence, treatment with trimethoprim/sulfamethoxazole, ganciclovir and HAART (bictegravir/emtricitabine/tenofovir alafenamide) was begun. A liver biopsy was also negative for mycobacteria. Due to worsening choroidal lesion with increased visual loss, the patient was empirically treated with antimycobacterial therapy (rifampicin, ethambutol, azithromycin, isoniazid) replacing HAART with dolutegravir/tenofovir alafenamide/emtricitabine due to drug interactions. The patient was discharged after a course of intravenous trimethoprim/sulfamethoxazole. Regression of the RE granulomatous lesion was observed and CD4 count improved (240 cells/mm^3 in July 2023). At 18 months of treatment the patient underwent radiologic follow-up and therapy was suspended because of the adequate duration of treatment and clinical improvement.

This case represents a growing trend in the HAART era. Diagnostic delays are attributed to decreased perception of infection risk and limited awareness of opportunistic manifestations among non-specialist healthcare providers and population. The need to involve multiple specialists for management also presents a challenge: a good teamwork could be crucial.

Abstract 324

UVEITIC MACULAR EDEMA: OCT CLASSIFICATION AND RESPONSE TO TREATMENT

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To assess the results of treatment in uveitic macular edema according to optical coherence tomografic (OCT) classification

This retrospective study involved 40 patients (56 eyes) with non-infectious uveitic macular edema (UME), categorized into cystoid, diffuse, and cystoid+diffuse groups. Data were collected from patient records on the etiology and anatomical localization of uveitis, best-corrected visual acuity (BCVA) using the Snellen chart, OCT imaging findings (Heidelberg Engineering Inc., USA) especially central macular thickness (CMT), and treatments administered at each visit. Treatment strategies included systemic therapies such as azathioprine, adalimumab, corticosteroids, and biologics, as well as local treatments like periocular steroids, Ozurdex implants, and topical NSAIDs.

Of the 56 eyes, 30 had cystoid, 10 had diffuse, and 16 had cystoid+diffuse edema. The mean follow-up period was 64 months (min:5- max:144 months). CMT decreased significantly post-treatment across all groups (p=0.02). Visual acuity improved, with BCVA increasing from 0.3±0.2 to 0.5±0.3 in cystoid edema, 0.25±0.2 to 0.5±0.3 in diffuse edema, and 0.4±0.3 to 0.7±0.3 in cystoid+diffuse edema (p=0.04). Panuveitis showed the best response to systemic treatment (77.5%). Recurrence was observed in 18 eyes, especially in those with systemic diseases and bilateral involvement.

Uveitic macular edema shows varied responses to treatment, with panuveitic eyes responding best to systemic therapy. Recurrence is more common in patients with bilateral involvement and systemic diseases, underscoring the need for personalized, long-term management.

Abstract 138

RETINAL REMODELING IN EARLY-ONSET INHERITED RETINAL DYSTROPHIES

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In inherited retinal dystrophies (IRDs), retinal remodeling (RR) involves inner retina from early stages of photoreceptor loss. The aim of the present retrospective, observational study is to evaluate inner retina structure in a cohort of pediatric and young patients suffering from early onset IRDs related to different gene mutations.

Retinal multimodal imaging was performed in 32 patients (32 right eyes, M/F ratio 0.65, age range 7-41, mean age 24.8, SD 8.5) suffering from early-onset severe IRDs related to mutations in ABCA4, RPE65, CACNA1F, CNGA3, GUCY2D, KCNV2, PDE6C, PROM1. Their disease duration (i.e. years from onset to the time of examination) and visual acuity ranged 1-15 years and 20/100-20/40. Twenty age-matched normal subjects served as controls. All patients and controls underwent complete general and ophthalmic examination. SD-OCT (Cirrus Zeiss) segmentation protocol was used to estimate the main outcome: the thinning of GCL-IPL layer as an indicator of ongoing RR.

GCL-IPL layer thickness and volume revealed significant thinning as a function of age, with a log-linear negative relationship (r=-0.51, p=0.03). This trend appeared to be independent of genotype and initial phenotype severity. It was possible to estimate that, already in the second decade of life, the thinning of GCL-IPL declined to 30-50% of the normal age-matched value.

This retrospective study indicates that, in early onset IRDs, thinning of GCL-IPL layer may occur early in the disease process, suggesting a limited temporal window preceding severe loss of GCL-IPL Layer. The findings may have important implications for therapeutic approaches aimed at rescuing/restoring photoreceptor structure and function in IRDs.

Abstract 235

SHWACHMAN-DIAMOND SYNDROME AND CONCURRENT ROD-CONE DYSTROPHY: REPORT OF TWO CASES AND LITERATURE REVIEW

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To present ocular findings in two sibling patients (age 14 and 15) with Shwachman-Diamond syndrome and concurrent rod-cone dystrophy.

Two siblings patients underwent comprehensive ophthalmic examination and multimodal imaging.

One boy and her sister affected by Shwachman-Diamond syndrome, with pathogenic variants in the gene DNAJC21, were referred to our clinic for retinal dystrophy suspect. They were found to have poor visual acuity and fundus examination showed vascular thinning and atrophy sing in the peripheral retina. Optical coherence tomography revealed complete disruption of the external layers of the retina in the older patient, while some preservation of ellipsoid zone in macular area in her sister.
Fundus autofluorescence revealed a circular area of increased autofluorescence which starts as a perimacular ring and extends temporally.
The fERG was compatible with a severe rod-cone dystrophy.

Data about the Shwachman-Diamond associated retinal dystrophy are poor in literature.
Our two cases both present a severe early-onset rod-cone dystrophy, thus suggesting the need of an early referral to a retina specialized center for correct management of affected patients, including visual aids prescription for school.

Abstract 348

DEFINING A NOVEL RPGR PHENOTYPE OF SECTOR RETINITIS PIGMENTOSA WITH CONE DYSTROPHY.

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Recent data demonstrates that distal mutations in the RPGRorf15 result in a cone-dominant phenotype whereas mutations in the majority of the gene result in a rod-dominant phenotype. We hypothesize that there may be an intermediate zone where patients may have sectoral rod-cone dystrophy and cone dystrophy.

This was a multi-national, multi-centre observational, cross-sectional case series involving patients with confirmed RPGR-related retinal dystrophy. Databases of RPGR clinical trial referral centres worldwide were accessed. Patients with RPGR-related cone dystrophy or RPGR-related cone-rod dystrophy were studied.

11 patients were identified. All were male. All eyes showed bilateral and symmetrical areas of outer retinal atrophy distributed along the inferior vascular arcades and extending temporally and/or nasally in a crescent-shaped pattern. In addition, seven patients presented with bilateral and symmetrical patches of hypo-autofluorescence along the inferior peripheral retina. Visual field testing in two patients revealed superior visual field defects closely correlated with the fundus findings.

An intermediate phenotype of cone dystrophy with sectoral retinitis pigmentosa development was defined. These patients have terminal RPGRorf15 truncating mutations and will likely benefit from future gene therapy involving the full-length RPGRORF15 protein. This phenotype mirrors a loss of function TTLL5-related cone dystrophy with sectoral cone-rod dystrophy.

Abstract 159

OCT ANALYSIS AND MACULAR PIGMENT OPTICAL DENSITY ASSESSMENT IN PATIENTS AFFECTED BY RETINITIS PIGMENTOSA

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This study aimed to analyze Optical Coherence Tomography (OCT) parameters and Macular Pigment Optical Density (MPOD) changes in patients affected by Retinitis pigmentosa (RP).

Eighteen eyes of 18 patients suffering from early-stage RP were enrolled in our observational study. 18 eyes of 18 patients age and gender matched were enrolled as controls. Patients were analyzed at baseline by undergoing complete baseline ophthalmologic examination, Spectral-domain Optical Coherence Tomography (OCT), Electroretinogram (ERG) and Heterochromatic Flicker Photometry (HFP). Main outcome measures were Macular Pigment Optical Density (MPOD), Central macular thickness (CMT), Central Choroidal Thickness (CCT) and Choroidal Vascularity Index (CVI).

Lower CCT ($p=0.006$), CVI ($p< 0.001$) and MPOD levels ($p=0.038$) were found in affected patients, whereas higher CMT was detected in cases compared to healthy controls. Correlation analysis revealed the presence of a negative correlation between BCVA and Age and CMT and BCVA and a positive correlation between CCT and MPOD and CVI and CCT.

Retinal and choroidal variations occur in patients affected by early-stage RP regarding functional and anatomical changes.

Abstract 343

METHYLENTETRAHYDROFOLATE REDUCTASE C677T MUTATION AND THE RETINAL AND OPTIC NERVE HEAD STRUCTURE AND FUNCTION: AN OCT-A STUDY

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The aim of the study is to investigate the retinal and optic nerve head (ONH) structural and vascular phenomena in patients with MTHFR C677T mutation.

Full ophthalmic examination was performed, including visual acuity, tonometry, biomiscropscopy, ophthalmoscopy, perimetry (50), structural OCT and OCT-A of the macula and ONH, laboratory tests: full blood count with differential count, homocysteine, Vit B9, Vit B12 and genetics testing for MTHFR and other mutations.
The cohort is composed of 12 patients.
All data was statistically analyzed (SPSS).

The results showed interesting tendencies for microvascular retinal and ONH non perfusion, leading to RNFL thinning, visual field defects. A strong relation between the serum levels of homocysteine, Vit B9, Vit B12 and the gravity of the defect was established

MTHFR locus is mapped in chromosome 1 and this enzyme has crucial role in the folate metabolism. MTHFR ensures the proper cell metabolism in DNA, RNA and methylation.
The effect of this mutation in eyes is poorly studied and this communication gives perspectives for future research topics in the area.

Abstract 147

GENETICS SOLVING CLINICAL DILEMMAS

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To study how genetic diagnosis helps identify the proper clinical diagnosis & the systemic associations in mysterious cases of inherited retinal degenerations

Patients with IRDs recruited for genetic testing at St John of Jerusalem Eye hospital group go through clinical examination, which includes slit lamp examination, best corrected Logmar visual acuity ,OCT using Topcon triton plus or Heidelberg spectralis ,wide field fundus imaging & fundus autoflouresence using Zeiss Clarus system. Patient also had ERG using Metrovision system according to the ISCEV standards. Blood withdrawn from patients for DNA extraction & genetic testing after signing an informed consent that was approved by the IRB.DNA sample were sent to Whole exome sequencing or genetic testing panels.

Six patients with OCT picture of retinoschesis were genetically tested & found to have mutations in the NR2E3 gene that causes enhanced S cone syndrome, three patients with myopia, myopic fundus picture & posterior pole atrophy according to the OCT were found to have mutations in COL18A1 gene that is known to cause Knobloch syndrome. Six patients from Gaza presented with clinical picture compatible with cone rod dystrophy & has teeth abnormalities were found to have mutations in CNNM4 gene that causes the previously reported Galili syndrome.

Patient with IRDs & atypical clinical presentation need to go through genetic testing for the causative gene, which usually helps, complete the clinical picture & look for the systemic associated signs. Genetic diagnosis is very important for the sake of disease prevention as well as future involvement in gene therapy.

Abstract 322

LONG-TERM OUTCOMES OF ANTI-VEGF THERAPY FOR MACULAR NEOVASCULARIZATION IN PRPH2-ASSOCIATED RETINOPATHY

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To determine the long-term functional and structural outcomes of intravitreal anti-VEGF therapy for macular neovascularization (MNV) in PRPH2-associated retinopathy

Multicenter retrospective case series including patients with molecularly confirmed PRPH2-associated retinopathy complicated by unilateral MNV. Best- corrected visual acuity (BCVA) and central subfield thickness (CST) were selected as outcome measures and compared between eyes with MNV undergoing anti-VEGF therapy and fellow eyes.

Six patients affected by PRPH2-associated retinopathy had MNV at a median age of 55 years. Two novel PRPH2 variants were found [c.499del p.(Cys150Phefs*3), c.660dup p.(Pro221Alafs*80)]. In all patients the phenotype was characterized by a pattern dystrophy with multifocal flecks. At baseline, eyes with MNV had a median BCVA of 0.2 logMAR, while the median CST was 320 µm. After an average follow-up of 5.4 years and 5.3 injections per patient, 5 (83%) eyes retained a BCVA of at least 0.2 logMAR, corresponding to 20/32 Snellen, while CST decreased by a median of -69 µm.

A favorable long-term outcome can be obtained in PRPH2-associated retinopathy complicated by MNV when timely intravitreal anti-VEGF treatment is administered. Further research is needed to understand the significance of sub-RPE neovascular networks.

Abstract 67

SORSBY'S MACULAR DYSTROPHY: A CASE REPORT

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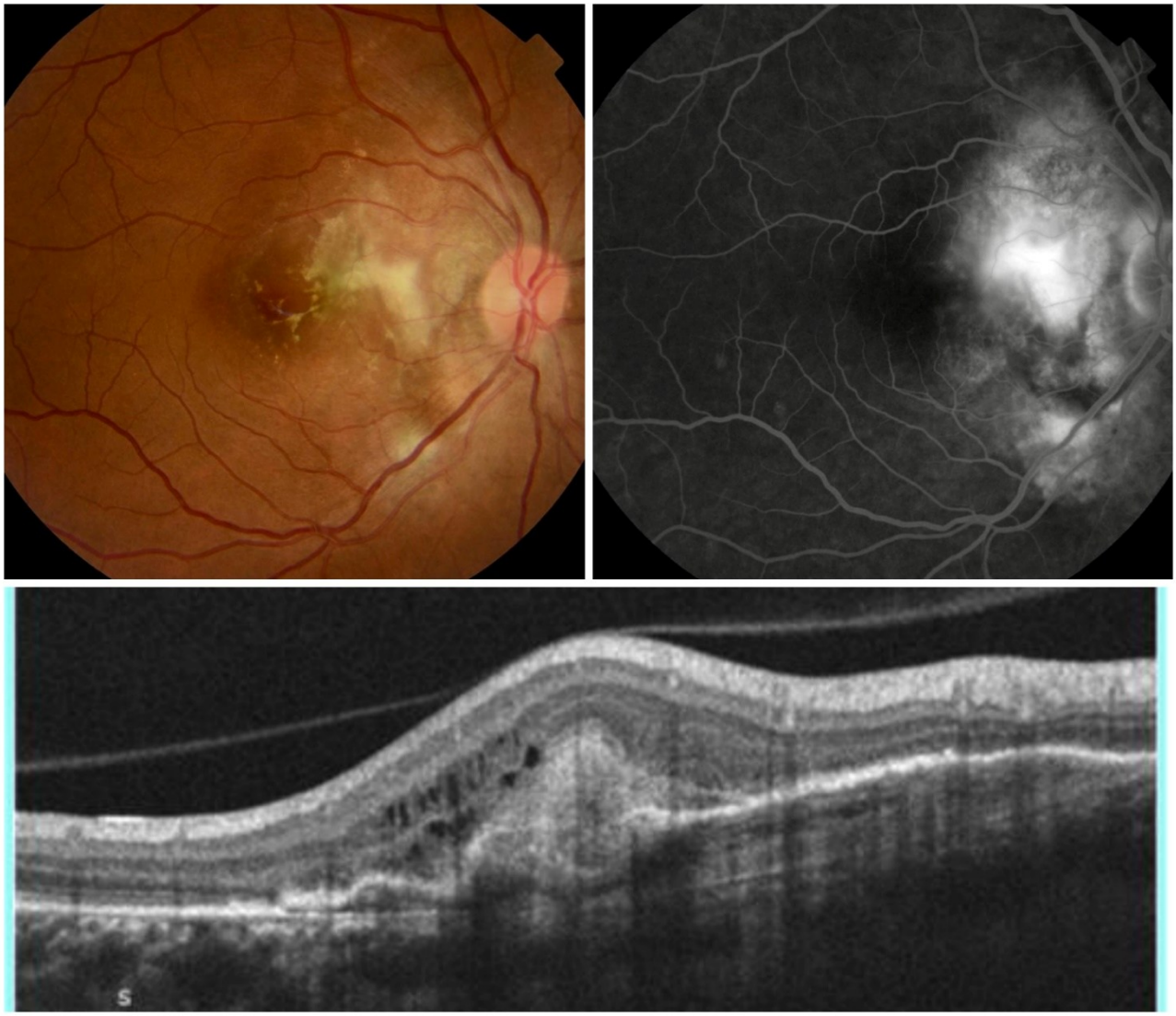
Sorsby's macular dystrophy is a rare inherited condition caused by heterozygous mutations in the TIMP3 gene. It manifests around the age of 40 with sudden onset. This case report focuses on a 43-year-old woman with unilateral vision loss initially misdiagnosed as infectious or inflammatory disease.

A 43-year-old woman consulted for decreased right eye vision over 6 months. Ophthalmological examination showed visual acuity of 1/10 in the right eye and 9/10 in the left. Funduscopy revealed a gray lesion in the right eye and drusen in the left. Fluorescein angiography confirmed choroidal neovascularization, and macular OCT showed fibrosis with macular edema. Biological tests ruled out infectious and inflammatory causes.

The patient was diagnosed with Sorsby's macular dystrophy due to the presence of characteristic retinal lesions and genetic predisposition. The choroidal neovascularization was controlled using anti-VEGF injections, although no treatment fully halts disease progression. The left eye showed early signs of dystrophy with drusen deposits.

Sorsby's macular dystrophy is an autosomal dominant disease secondary to TIMP3 mutations. Early diagnosis and genetic testing are essential for managing this rare condition, and anti-VEGF injections have shown efficacy in controlling neovascularization. Regular monitoring for vision changes is critical.



Abstract 70

MEMBRANE-TYPE FRIZZLED RELATED PROTEIN: A COMPREHENSIVE ANALYSIS OF GENETIC CHARACTERISTICS, PHENOTYPIC MANIFESTATIONS AND IMPACT ON RETINAL MICROVASCULATURE

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To evaluate the genotype-phenotype relationship in patients with membrane-type frizzled related protein (MFRP)-associated nanophthalmos and to compare ocular manifestations with non-MFRP nanophthalmos patients and ophthalmologically healthy group.

In this cross-sectional study conducted in a single-center, tertiary referral hospital, all nanopthalmos patients confirmed by clinical exome sequencing test were included. Optical coherence tomography (OCT) was used to measure central macular thickness (CMT), subfoveal choroidal thickness (SFCT), and retinal nerve fiber layer (RNFL) thickness. To evaluate the vascular density (VD) and foveal avascular zone (FAZ) in superficial capillary plexus (SCP), deep capillary plexus (DCP), choriocapillaris (CC), OCT-angiography were used.

Twenty-two eyes of 11 patients with MFRP gene mutation, twenty eyes of 10 patients had nanophthalmos and pigmentary retinopathy without MFRP gene mutation and, twenty-two eyes of 11 cases as control group were included.Mean AL was 16.45±1.16 mm in MFRP group; 19.24±1.40 mm in non-MFRP group($p<0.001$).In MFRP group, retinoschisis were present in 9(40.9%) eyes, in non-MFRP group, retinoschisis were present in 2(10%) eyes($p=0.01$).In OCT parameters, CMT, SFCT, and RNFL thickness were significantly higher in the MFRP group compared with the non-MFRP group($p<0.001$,$p<0.001$,$p=0.005$ respectively) and in OCT-angiography, SCP FAZ and DCP FAZ were significantly lower($p=0.002$, $p=0.04$ respectively) than in non-MFRP group.

MFRP gene mutation should be considered in patients with nanophthalmos accompanied by pigmentary retinopathy, optic disc drusen and retinoschisis. Different genetic variants may present with various phenotypes and have a wide clinical spectrum.

Table 2. Clinical characteristics of enrolled patients with MFRP gene mutation

	Sex	Eye	Age (Years)	BCVA (LogMAR)	SE(D)	AL (mm)	Nanopthalmus (+/-)	Pigmentary Retinopathy (+/-)	Optic Disc Drusen (+/-) Clinical	B-FAF	B-USG	Foveoschisis (+/-)
Case-1	M	OD	22	1.30	14.00	17.46	+	+	-	-	+	-
		OS		1.30	13.63	17.40	+	+	-	-	+	-
Case-2	F	OD	23	0.10	13.00	16.29	+	+	-	-	+	-
		OS		0.52	13.13	16.37	+	+	-	-	+	-
Case-3	M	OD	57	0.69	2.63	16.28	+	+	-	-	-	-
		OS		1.30	2.38	16.20	+	+	-	-	-	+
Case-4	M	OD	41	0.69	14.50	14.88	+	+	-	-	+	-
		OS		1.30	14.25	15.07	+	+	_	-	+	+
Case-5	F	OD	18	0.30	16.00	16.72	+	+	-	-	+	-
		OS		0.15	16.00	16.63	+	+	-	-	+	-
Case-6	M	OD	22	1.00	11.75	17.65	+	+	+	+	+	+
		OS		1.00	11.75	17.50	+	+	+	+	+	+
Case-7	F	OD	28	0.15	15.13	17.73	+	+	-	-	+	-
		OS		0.40	14.13	18.02	+	+	-	+	+	+
Case-8	M	OD	51	0.69	12.50	15.82	+	+	-	-	-	-
		OS		0.69	13.63	15.86	+	+	-	-	-	-
Case-9	M	OD	25	1.30	11.25	18.19	+	+	+	+	+	-
		OS		1.00	11.38	18.05	+	+	+	+	+	-
Case-10	M	OD	44	1.00	14.00	15.43	+	+	-	-	-	+
		OS		1.30	13.63	15.28	+	+	-	-	-	+
Case-11	M	OD	38	1.30	19.00	14.76	+	+	-	-	-	+
		OS		1.30	21.00	14.52	+	+	-	-	-	+

OD Right eye, OS Left eye, M Male, F Female, BCVA Best corrected visual acuity, SE Spherical equivalent, AL Axial length, B-FAF Blue-light fundus autofluorescence, B-USG B-scan ocular ultrasonography

Abstract 165

INTRA-FAMILIAR VARIABILITY IN INHERITED RETINAL DYSTROPHY ASSOCIATED WITH P.ARG41TRP (C.121C>T) MUTATION IN CRX GENE.

Del Giudice A.*, Luigi S., Gallo B.M., Testa F., Melillo P., Simonelli F.

Università della Campania Luigi Vanvitelli ~ Napoli ~ Italy

To describe the phenotypic variability in a family affected by inherited retinal dystrophy (IRD) associated with the p.Arg41Trp (c.121C>T) mutation in the CRX gene and to explore diagnostic implications.

A retrospective case series was conducted involving five family members, all carrying the Arg41Trp (c.121C>T) mutation in the CRX gene. The ophthalmic examination included best-corrected visual acuity (BCVA), slit-lamp biomicroscopy, kinetic visual field examination (VF), color fundus photography (CFP), fundus autofluorescence (FAF), spectral-domain optical coherence tomography (SD-OCT), full-field electroretinography (ffERG).

Significant phenotypic variability was observed across five patients. Patient 1 (74 years old) had photophobia since adolescence, with 20/800 visual acuity and advanced retinal degeneration, while Patient 2 (71 years old) had no visual symptoms, 20/25 visual acuity, and subtle macular changes. Patient 3 (35 years old) had 20/20 visual acuity, normal retinal morphology, but an electronegative ffERG. Patient 4 (41 years old) had 20/20 visual acuity, disorganized outer retinal layers on SD-OCT, and electronegative rod-cone ffERG. Patient 5 (81 years old) had 20/400 visual acuity, diffuse retinal thinning, and a cone-rod ffERG pattern.

This case series highlights the clinical heterogeneity of the p.Arg41Trp (c.121C>T) mutation in the CRX gene, with manifestations ranging from normal retinal morphology to advanced dystrophy. Comprehensive morphological, functional, and genetic evaluations are crucial for diagnosis. The observed phenotypic variability aligns with previous reports of intrafamilial variability in CRX-related dystrophies.

Abstract 267

PHENOTYPIC AND GENOTYPIC LANDSCAPE OF RP1L1-ASSOCIATED RETINOPATHY

Antropoli A.*[1], Bianco L.[1], Zanlonghi X.[2], Benadji A.[3], Condroyer C.[1], Antonio A.[1], Navarro J.[1], Dhaenens C.[4], Sahel J.[1], Zeitz C.[1], Audo I.[1]

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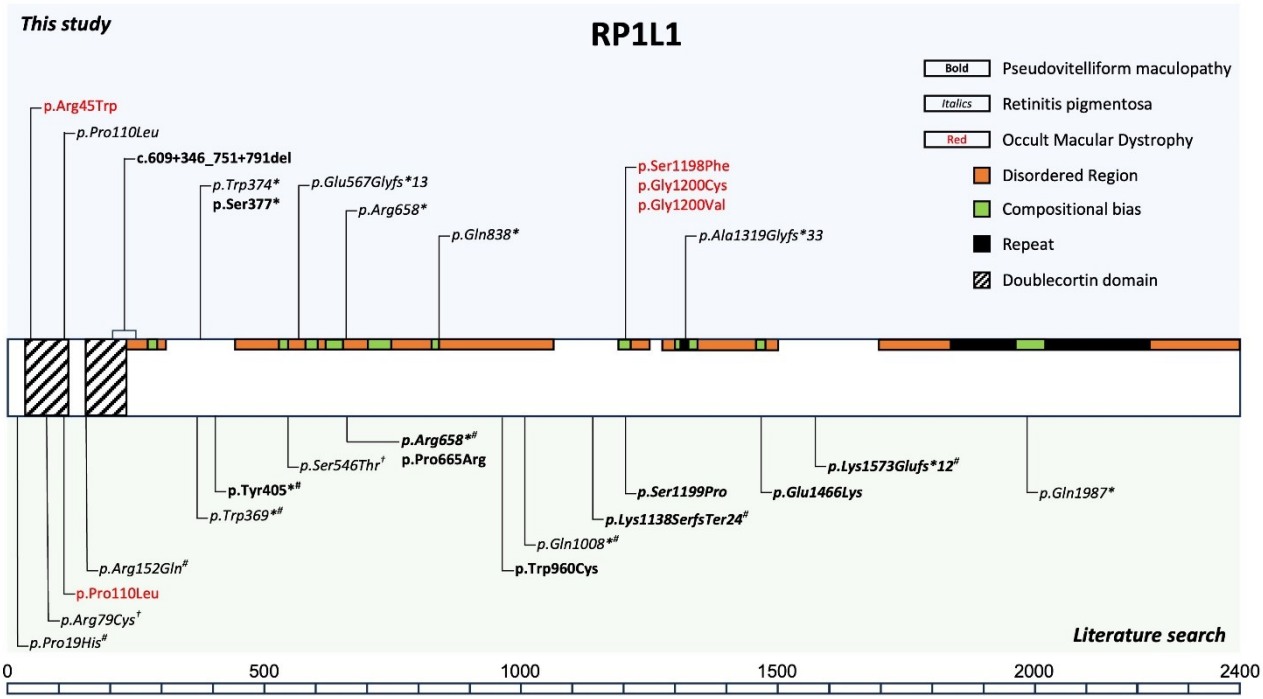
Pathogenic variants in RP1L1 are associated with autosomal dominant occult macular dystrophy (OMD) and autosomal recessive retinitis pigmentosa (RP). Recently, additional phenotypes have been associated with RP1L1, with variable inheritance patterns. In this study, we investigated the phenotypic and genotypic landscape of RP1L1-associated retinopathy in an ethnically heterogeneous cohort.

This multicenter cohort study retrospectively collected the following data: best-corrected visual acuity (BCVA), color fundus photograph (CFP), optical coherence tomography (OCT), short-wavelength fundus autofluorescence (SW-AF), and full-field electroretinography (ffERG). Patients were classified based on their clinical phenotype in OMD or RP. Atypical cases were analyzed separately and reclassified according to their clinical, electrophysiological and genetic findings.

Twenty patients (40 eyes) from 19 families were included in the study. Twelve (60%) patients were classified as OMD, 4 (20%) as RP, and 4 (20%) as atypical cases. Autosomal dominant OMD was the most common phenotype associated with RP1L1, although we identified one case of autosomal recessive OMD. Patients with autosomal recessive RP presented with the latest onset, best visual acuity, and highest refractive error among the three groups.

Mutations in RP1L1 can result in a spectrum of diseases with different inheritance patterns and functional findings. These include autosomal dominant OMD, autosomal recessive OMD and autosomal recessive rod-cone dystrophies, all of which may occasionally present with pseudovitelliform maculopathy


This study
RP1L1
Bold
Pseudovitelliform maculopathy
Italics
Retinitis pigmentosa
Red
Occult Macular Dystrophy
Disordered Region
Compositional bias
Repeat
Doublecortin domain
p.Arg45Trp
p.Pro110Leu
c.609+346_751+791del
p.Trp374*
p.Ser377*
p.Glu567Glyfs*13
p.Arg658*
p.Gln838*
p.Ser1198Phe
p.Gly1200Cys
p.Gly1200Val
p.Ala1319Glyfs*33
p.Arg658*#
p.Pro665Arg
p.Ser546Thr†
p.Tyr405*#
p.Trp369*#
p.Arg152Gln#
p.Pro110Leu
p.Arg79Cys†
p.Pro19His#
p.Ser1199Pro
p.Lys1138SerfsTer24#
p.Gln1008*#
p.Trp960Cys
p.Lys1573Glufs*12#
p.Glu1466Lys
p.Gln1987*
Literature search
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Abstract 265

RETINAL AND SYSTEMIC MANIFESTATIONS IN AUTOSOMAL DOMINANT KIF-11 RETINOPATHY: REPORT OF TWO CASES AND LITERATURE REVIEW

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Università degli Studi di Milano ~ Milan ~ Italy

To present the retinal and systemic findings in two patients with KIF-11 gene mutations that were found to have peculiar chorioretinal manifestations and systemic features.

Two patients underwent comprehensive ophthalmic examination, including ophthalmoscopy, fundus photography, optical coherence tomography (OCT), and genetic testing by whole exome sequencing. We also conducted a review of the most recent literature regarding KIF-11 retinopathy reports.

Two patients presented with decreased vision in both eyes. Ophthalmologic examination showed peculiar areas of chorioretinal atrophy (pseudocolobomas). OCT of the macula demonstrated diffuse atrophy of the outer retina and ffERG showed a diffuse retinal dystrophy with a rod-cone pattern.
One patient showed mild microcephaly and the other one presented cognitive impairment with an important congenital microcephaly.
They both underwent ocular gene panel tests, that were nondiagnostic, so we decided to perform a whole-exome sequencing analysis, which gave a positive result for a mutation on KIF-11 gene, that causes a disease called “microcephaly with or without chorioretinopathy, lymphoedema or mental retardation”.

KIF11-related retinopathy should be suspected in cases of retinal dystrophies with pseudocoloboma lesions even in absence of other systemic signs. For this reason, KIF11 should be always included in the panel for retinal dystrophies.

Abstract 441

GENOTYPE-PHENOTYPE CORRELATIONS IN A COHORT OF GENETICALLY DETERMINED RETINITIS PIGMENTOSA ITALIAN PATIENTS WITH RHO GENE MUTATIONS

Luchetti L.*, Mercuri S., Murro V., Mucciolo D., Sodi A., Passerini I., Giorgio D., Virgili G., Giansanti F.

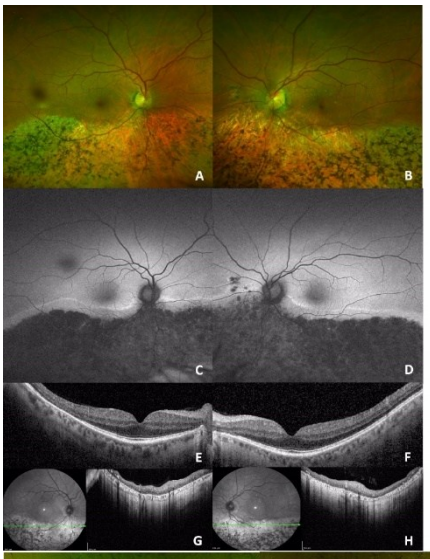
AOU-Careggi ~ Florence ~ Italy

To review clinical and genetic picture of an Italian cohort of patients with retinitis pigmentosa (RP) associated with RHO mutations and identify possible genotype-phenotype correlations.

Cross sectional study performed at Reference Centre for Hereditary Retinal Degeneration of the Eye Clinic of the Careggi Hospital in Florence. Patients' clinical data were gathered, and a comprehensive ophthalmic examination was performed including visual acuity (VA) measurement, colour and autofluorescence retinography, Goldmann and Humphrey visual field 120-point, standard electroretinogram and spectral domain-optical coherence tomography (SD-OCT). Genetic analysis was performed with targeted next-generation sequencing (NGS). Patients' clinical and genetic profile was reviewed and compared. Statistically significant differences were considered with $p<0.05$.

Twenty-three-patients with a clinical diagnosis of RP and the detection of a pathogenic-mutation in the RHO-gene in heterozygosis were recruited.Fifteen-of-these patients were classified as classic-RP,while 8 as sector-RP.Patients with-sector-RP displayed significantly higher VA, older-age at disease diagnosis and older-age at the present follow-up($p<0.05$).
Classic-RP displayed high genotypic variability,with two-novel-mutation: c.909_912del p.(Val304Serfs*4) and c.464T>Cp.(Met155Thr).In the classic-RP-group, macular-atrophy was detected in 10/30 eyes, while 4/30 had macular-edema.In the sector-RP group 6 patients had the same mutation c.568G>A(p.Asp190Asn),while 2 patient carried the novel-mutation c.548T>C p.(Leu183Pro).In the sector-RP-group,macular atrophy was detected in 1/16eyes, 2/16eyes had a paramacular-hyper-autofluorescent-ring at FAF,3 eyes displayed peripapillary-atrophy,while none displayed macular-edema.

The spectrum of pathogenic sequence variants of RHO-gene was very different in the classical and sector RP-patients.The classical RP-group showed a clear variability of molecular alterations.In contrast,in the sector RP-group,6 out of 8 patients carried the same mutation although coming from different families,suggesting the hypothesis of a founder-effect for thismutation.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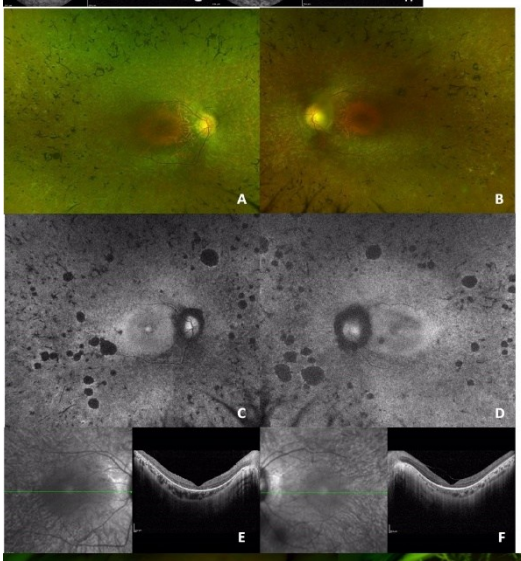
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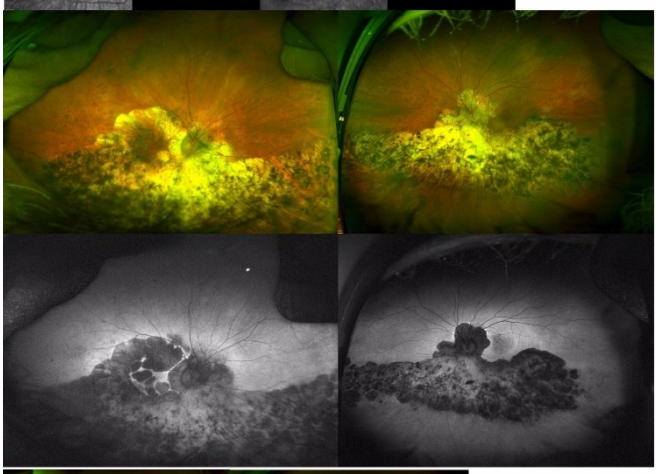

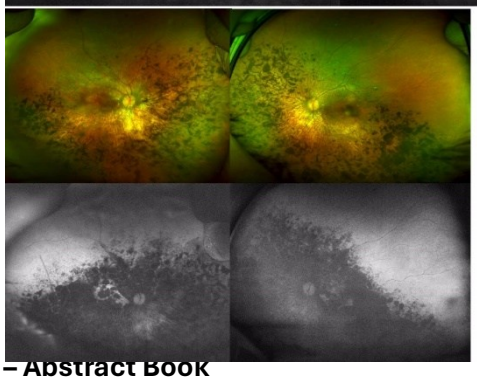

Abstract 175

PHENOTYPIC VARIABILITY AND EVOLUTION OF MFSD8-RELATED INHERITED RETINAL DISEASE

Panagiotou E.*[1], Van Haute M.[1], Van Den Broeck F.[1], Chan H.W.[1], De Bruyne M.[1], Walraedt S.[1], Zinkernagel M.[2], Sousa A.B.[3], Coutinho--Santos L.[4], Santos C.[4], Berger W.[5], Koller S.[5], Gerth--Kahlert C.[6], Hanson J.[6], Calzetti G.[7], Janeschitz--Kriegl L.[7], Scholl H.[7], Kaminska K.[7], Quinodoz M.[7], Escher P.[2], Rivolta C.[7], De Baere E.[8], Cancellieri F.[7], Bauwens M.[8], Leroy B.[1]

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To describe the phenotypic variability and progression of MFSD8-related retinal and systemic disease.

Medical charts of patients carrying biallelic pathogenic variants in the MFSD8 gene were retrospectively reviewed. Genetic testing was performed using either whole exome or genome sequencing. All patients were examined at tertiary centers in Belgium, Portugal, and Switzerland.

Ten patients from seven unrelated families were found to carry biallelic MFSD8 disease-causing variants. Age of onset varied from 5 to 48 years and the most common symptom was central vision loss. In most patients visual acuity approximated 20/200 at the last follow-up. Significant variability in age-of-onset, severity and neurological involvement was observed. Most patients showed a maculopathy progressing to generalised dystrophy according to full-field electroretinography. Foveal pigmentary changes with gradual progression to atrophy were observed upon fundoscopy. Foveal photoreceptor loss and outer retinal atrophy were observed on optical coherence tomography and also demonstrated by adaptive optics imaging (AOI).

In our fairly large case-series, MFSD8-related retinopathy manifested mostly as maculopathy of variable onset progressing to a generalised dystrophy with or without neurological involvement. Isolated maculopathy without generalised dysfunction can also be seen. The differences in evolution, clinical variability and severity of disease are remarkable, even within sibships.

Abstract 281

THE MORPHOLOGICAL AND FUNCTIONAL CHARACTERISTICS OF EYES WITH RETINITIS PIGMENTOSA CLASSIFIED ACCORDING TO FUNDUS AUTOFLUORESCENCE PATTERN

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Pomeranian Medical University ~ Szczecin ~ Poland

The fundus autofluorescence (FAF) pattern might reflect the retinitis pigmentosa (RP) stage and extent of damaged external layers of a retina. The aim of the study was to determine morphological and functional differences in eyes with RP classified according to fundus autofluorescence pattern.

140 eyes (70 patients) with a clinical diagnosis of RP were classified into 3 categories based on a FAF image (Optos Silverstone, Marlborough, MA, USA): hyperautofluorescent ring present, absent or irregular. In all patients, central and paracentral retinal morphology in 5 sectors was assessed using optical coherence tomography (OCT) of the retina, as well as eye function based on best-corrected visual acuity (BCVA), 10-2 and 30-2 static perimetry, multifocal electroretinography (mfERG) and microperimetry (MAIA, CenterVue, Padova, Italy) were performed.

In eyes with RP presenting a ring of hyperautofluorescence, significantly higher BCVA and MD parameter values were found in the 10-2 static perimetry compared to the other groups. Importantly, the value of the P1 wave amplitude in the first ring of mfERG corresponded with the size of the area of increased fluorescence in the fundus examination. In the group without a marked ring in the fundus fluorescence examination, significantly lower values of functional parameters of the eye were recorded. No significant difference in paracentral retinal thickness was detected between FAF groups.

The FAF pattern reflects the functional changes in central retina. Therefore the selection of modern diagnostic tools in RP follow-up might constitute a complex assessment in monitoring of the progression of RP.

Abstract 249

EXPANDING THE PHENOTYPICAL PRESENTATION DUE TO BMP4-S MUTATION ASSOCIATED WITH TWO NOVEL MISSENSE MUTATIONS IN EXON 4.

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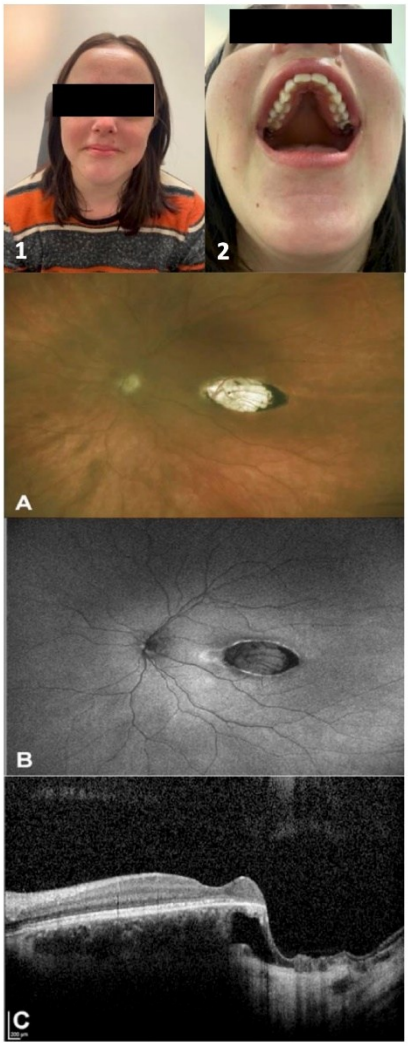
To report two novel missense mutations in BMP4 linked to the following congenital eye anomalies: microphthalmia, congenital cataract, iris and retinal coloboma, optic nerve atrophy and retinal vascular tortuosity.

We describe two adult women with ophthalmic malformations from two different kindred.

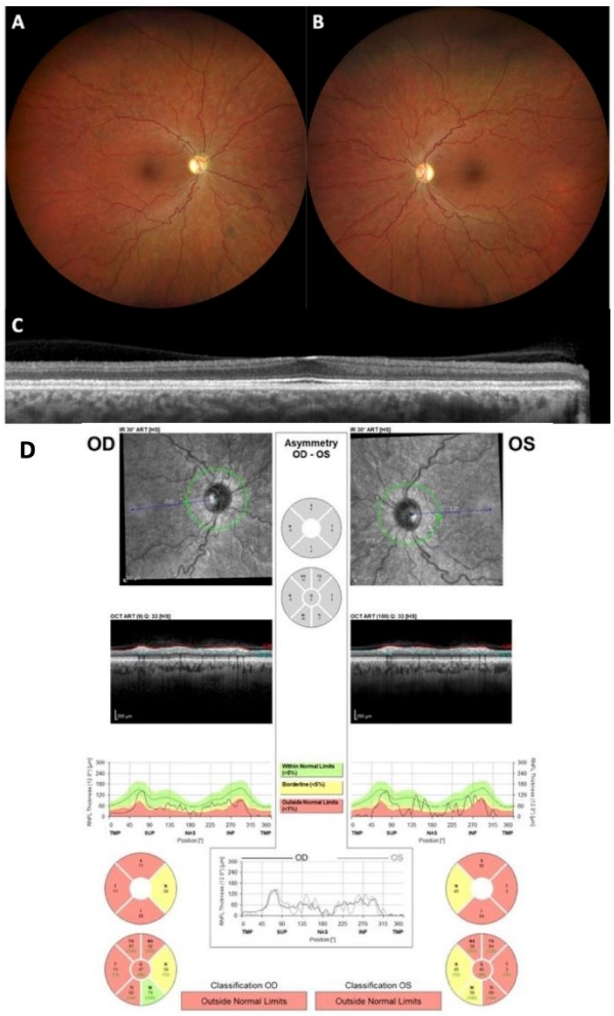
A heterozygous mutation (c.899G>C, p.Arg300Pro) in exon 4 of BMP4 was identified in a patient with unilateral microphthalmia, bilateral congenital cataracts, and bilateral iris and retinal coloboma. The mutation was also found in the mother and one sister of the proband, otherwise healthy. Second case presented a different missense mutation (c.983C>T, p.Ala328Val) associated with optic nerve atrophy and retinal vessel tortuosity.

These findings broaden the phenotypic spectrum associated with BMP4 variants, which usually typically include exophthalmia anophthalmia, microphthalmia, and sclerocornea. The study also highlights the variable expressivity and reduced penetrance observed with BMP4 mutations.

Figure 1



First Case (CHlaus0424) legend: Facial features: (1) High forehead, mild retrognathia; (2) high-arched narrow palate with a small tongue. (A) Colour fundus image, (B) Fundus autofluorescence and (C) OCT image of left eye retinal coloboma.



Second Case (HS0725) legend: Colour fundus photographs of the right (A) and left (B) eyes show the arterial and venous tortuosity. Note optic nerve head especially pale along the temporal margin. Foveal B-scan of the right eye (C) shows intact outer retinal but severe thinning of all inner retinal layers. Optical coherence tomography (D) revealed global thinning of the retinal nerve fibre layer and a complete absence of the papillomacular bundle.

Abstract 94

SUBRETINAL GENE THERAPY AGTC-501 FOR X-LINKED RETINITIS PIGMENTOSA (XLRP) PHASE 2 MULTICENTER STUDY (DAWN): PRELIMINARY RESULTS

Stanga P.*[9], Birch D.[3], Anand R.[4], Sisk R.A.[5], Fulton A.[2], Gonzalez E.[1], Grover S.[7], Rachitskaya A.[8], Jung J.[6], Simmons A.[6], Curtiss D.[6]

[1]Boston children's hospital ~ Boston ~ United States of America, [2]Harvard Childrens Hospital ~ Harvard ~ United States of America, [3]Retina Foundation ~ Dallas ~ United States of America, [4]Texas Retina Associates ~ Texas ~ United States of America, [5]Cincinnati Children's ~ Ohio ~ United States of America, [6]Beacon therapeutics ~ florida ~ United States of America, [7]UF Heath Jacksonville ~ Jacksonville ~ United States of America, [8]Cleveland Clinic Main Campus ~ Cleveland ~ United States of America, [9]The Retina Clinic London ~ London ~ United Kingdom

DAWN assesses AGTC-501 in fellow eyes of XLRP patients previously treated with an AAV vector gene therapy. Primary aim is safety, secondary goals assessing visual function.

Methods: AGTC-501 is given via a single subretinal injection in previously untreated eyes. Group 1 (high dose) & Group 2 (low dose) get a standard steroid regimen, while Group 3 (high dose) gets a modified regimen (lower dose/faster taper). Adverse events (AEs) are monitored & visual assessments are performed.

As of 7/26/24, 9 patients were enrolled (Group 1=7, Group 2=2). TEAEs reported in study eyes attributed to surgery or steroids, not AGTC-501, majority mild/moderate. One severe SAE (steroid induced IOP) related to protocol steroid regimen was reported, which resolved.
Three of 7 Group 1 patients had >3-line gain in LLVA at D30 (+18, +19, +27 letters). Three of the remaining 4 patients showed numeric LLVA increases, not seen in previously treated, contralateral eyes.

Data indicate AGTC-501 has a favorable safety profile with a promising signal of early efficacy. These data align with the previous Phase 2 trial, supporting ongoing development in XLRP patients.

Abstract 329

PROTEIN MEDIATORS IN AQUEOUS HUMOR SAMPLES OF RETINITIS PIGMENTOSA PATIENTS: IDENTIFICATION OF POTENTIAL BIOMARKERS.

Martella S.*

ASSt Santi Paolo e Carlo, University of Milan ~ Milan ~ Italy

This study aims to characterize the profile of key protein mediators in aqueous humor samples from retinitis pigmentosa (RP) patients and compare them with healthy subjects. Moreover, we propose to determine whether the presence of these mediators in the aqueous humor could serve as potential biomarkers of the disease.

36 patients with indication for cataract surgery were recruited at the Eye Clinic of ASST Santi Paolo e Carlo Hospital, Milan and divided in three groups: the first group was composed by 12 RP patients with an age between 18 and 45 years old, the second group by 12 RP patients older than 45 years old, the third group by 12 healthy patients as control.
0.05 -0.15 ml of aqueous humor was collected as first step of the surgery and concentration of the following molecules was assessed: 4 cytokines (TNFalpha, IL-6, IL-8, IL-10) and 2 growth factors (VEGF, GM-CSF).

In the overall cohort of RP patients, several mediators showed statistically significant differences compared to the control group. The mean concentration of IL-6 was 4.18 pg/ml in the RP group versus 2.03 pg/ml in controls ($p<0.001$). IL-8 levels were 5.65 pg/ml in RP patients and 3.70 pg/ml in controls ($p<0.05$). TNF-alpha concentrations were 0.79 pg/ml in RP patients and 0.45 pg/ml in controls ($p<0.05$). VEGF levels were 19.49 pg/ml in the RP group compared to 60.08 pg/ml in controls ($p<0.0001$). When analyzing by age, IL-6, VEGF, and GM-CSF were significantly different between the two RP groups.

Evidence suggests that chronic inflammation plays a key role in the pathogenesis and progression of RP. Our data confirm that RP eyes exhibit higher concentrations of pro-inflammatory proteins compared to healthy eyes. Additionally, we demonstrate differences in protein levels between younger and older RP patients.

Abstract 97

WDR19-ASSOCIATED RETINOPATHY PRESENTING WITH ADULT-ONSET STARGARDT-LIKE PHENOTYPE

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Ophthalmology Department, IRCCS San Raffaele Scientific Institute ~ Milan ~ Italy

To describe the multimodal imaging findings of a patient with an adult-onset Stargardt-like phenotype associated with biallelic WDR19 variants.

The patient underwent a comprehensive ophthalmologic evaluation, including slit-lamp examination, optical coherence tomography (OCT), fundus autofluorescence (FAF), and OCT-angiography (OCTA). Genetic testing was conducted using next-generation sequencing (NGS).

The patient carried the WDR19 c.1430G>T missense variant (class 3) in trans with the c.1777+1 splice variant (class 4). Multimodal imaging revealed bilateral areas of definitely decreased autofluorescence (DDAF), which progressively expanded over time. Additionally, bilateral thickening of the ellipsoid zone and intraretinal cysts in the left eye were observed.

Biallelic variants in the WDR19 gene can cause an autosomal recessive, adult-onset Stargardt-like phenotype. Ophthalmologists should consider this possibility when encountering atypical features on multimodal imaging in cases with negative genetic testing for ABCA4.

Abstract 380

RETINAL OXYGEN METABOLIC FUNCTION IN CHOROIDEREMIA AND RETINITIS PIGMENTOSA

Prétot D.*[1], Della Volpe--Waizel M.[2], Kaminska K.[3], Valmaggia P.[4], Placidi G.[5], Falsini B.[5], Fries F.[6], Szentmary N.[6], Rivolta C.[4], Scholl H.[4], Calzetti G.[7]

[1]University Hospital Basel / Heuberger Augenklinik AG / Augenzentrum Willisau-Huttwil ~ Basel ~ Switzerland, [2]Augenpraxis Dielsdorf AG / University Hospital Basel ~ Basel ~ Switzerland, [3]IOB Basel ~ Basel ~ Switzerland, [4]University Hospital Basel / IOB Basel ~ Basel ~ Switzerland, [5]Policlinico Universitario A. Gemelli ~ Rome ~ Italy, [6]Saarland University Medical Center ~ Homburg Saar ~ Germany, [7]Vista Vision Eye Clinic / IOB Basel / University Hospital Basel ~ Brescia ~ Italy

To measure the retinal oxygen metabolic function with retinal oximetry (RO) in patients with choroideremia (CHM)
and compare these fndings with retinitis pigmentosa (RP) patients and controls.

Prospective observational study including 18 eyes of 9 molecularly confrmed CHM patients (9♂; 40.2±21.2 years
(mean±SD), 77 eyes from 39 patients with RP (15♀ 24♂; 45.6±14.7 years) and 100 eyes from 53 controls (31♀ 22♂;
40.2±13.4 years). Main outcome parameters were the mean arterial (A-SO2; %), venular (V-SO2; %) oxygen saturation, and
their diference (A-V SO2; %) recorded with the oxygen saturation tool of the Retinal Vessel Analyzer (IMEDOS Systems
UG, Germany). Statistical analyses were performed with linear mixed-efects models.

Eyes sufering from CHM difered signifcantly from both RP and control eyes, when the retinal oxygen metabolic
parameters were taken into account. While RP showed signifcantly higher A-SO2 and V-SO2 values when compared to
controls, CHM showed opposite fndings with signifcantly lower values when compared to both RP and controls (P<0.001).
The A-V SO2, which represents the retinal oxygen metabolic consumption, showed signifcantly lower values in CHM
compared to controls.

The retina in CHM is a relatively hypoxic environment. Decreased oxygen levels may be due to choroidal degeneration, leading to decreased oxygen flux to the retina. RO measurements may help understand the pathogenesis of CHM and RP. These findings may provide details to plan clinical trials for therapies for CHM

Abstract 445

DIFFERENT INTRAFAMILIAL PHENOTYPES OF CDHR-1 RELATED RETINAL DYSTROPHY.

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Our purpose is to present 2 cases of inherited retinal dystrophy within the same family (siblings) who had a different phenotype of the same disease-causing gene.

A 41 year old male with a known history of retinitis pigmentosa diagnosed 8 years ago was examined on routine eye examination. His sister was examined 2 years later due to low vision in her left eye and referred maculopathy. In both patients a complete work up was performed including optical coherence tomography (OCT), OCT angiography, fundus photography, fundus autofluorescence (FAF) and electroretinography (ERG). Whole exome sequencing (WES) was done in both patients.

The phenotype of the male sibling was typical of retinitis pigmentosa with pigment accumulation in retinal midperiphery, nyctalopia and tunnel vision. Genetic testing confirmed the presence of an homozygous mutation in the CDHR1 gene transmitted in an autosomal recessive pattern. His sister presented with bilateral and asymmetrical maculopathy. The disease was advanced in the left eye causing geographic atrophy in absence of peripheral retinal lesions. Whole exome sequencing revealed the same homozygous mutation in CDHR1 gene, plus an additional heterozygous mutation in the CFI gene which is related to complement inhibition and predisposes to age related macular degeneration.

Genetic testing is mandatory in all inherited retinal dystrophies with the aim of setting a diagnosis and provide genetic counselling. Among family members, the phenotype of a common mutated gene might be different. The interactions between genes that ultimately lead to a disease is yet to be investigated.

Abstract 413

IRIS AND CHORIORETINAL COLOBOMA: A CASE REPORT

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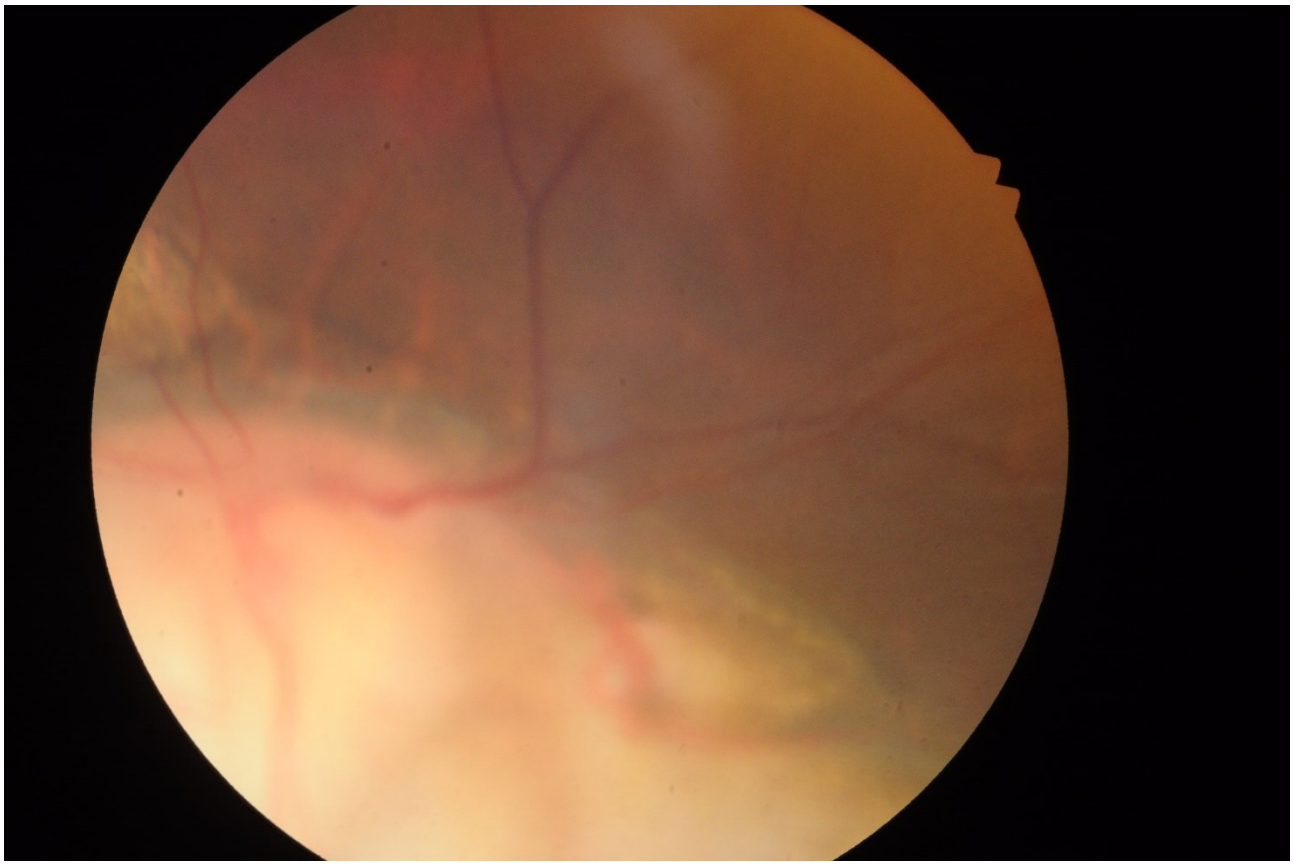
Regional Hospital of Kasserine ~ Kasserine ~ Tunisia

Case Illustration of Iris and Chorioretinal Coloboma

Case report

A 17-year-old female with no significant medical history complains of vision problems in the right eye. The visual acuity in this eye is limited to counting fingers, while the left eye measures 10/10. The examination of the anterior segment reveals an iris coloboma in the left eye, which is normal for the right eye. The fundus examination shows a chorioretinal coloboma in the right eye involving the optic disc and the adjacent retina, extending inferiorly. In the left eye, the retina exhibits a chorioretinal coloboma below the inferior temporal retinal arteries. The general examination is unremarkable, including the neurological evaluation.

Ocular coloboma is a developmental anomaly of the lens, iris, choroid, or retina that occurs around the sixth week of embryonic life. It can be assessed in isolation or as part of a number of multisystemic syndromes, such as CHARGE syndrome.



Abstract 18 – Main Program

BRIDGE: AN ACROSS INDUSTRY AND ACADEMIA WORKSTREAM ON CLINICAL ENDPOINTS IN OPHTHALMOLOGY

Baschiera F.*[1], Sivaprasad S.[2], Bandello F.[3], Carneiro A.[4], Carrasco J.[1], Cunha--Vaz J.[5], Eter N.[6], Finger R.[7], Gale R.[8], Joussen A.[9], Korobelnik J.[10], Lambrou G.[1], Lanzetta P.[11], Leal S.[1], Midena E.[12], Munk M.[13], Pauleikhoff D.[14], Specker S.[1], Sylvanowicz M.[1], Terheyden J.[15], Zarranz--Ventura J.[16], Loewenstein A.[17]

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Recent examples show an increasing divergence between regulatory decisions by FDA and EMA, generating a gap in treatment options between US and EU, to the detriment of European patients. No guideline is available in the EU that provides direction on clinical endpoints in the development of ophthalmological medicinal products.

In 2011, EMA conducted multi-stakeholder workshop with representatives from Health Authorities, Academia and Industry on ophthalmologic clinical development and methodological issues, which was considered helpful to foster the multistakeholder dialogue.
Long-term strategic goal is to ask EMA/CNS WP to support the dialogue with the conduct of a multi-stakeholder workshop, incl. Health Authorities, Academia, Industry, HTA Bodies and Patient Associations, to construct the final guidelines on clinical investigation of medicinal products for the treatment of retinopathies.

The group, after discussing indications with priority and the need for improving patients care, grouped indications by physio-pathological macro-areas, allowing cross-use of endpoints:
1. Atrophic/degenerative retinopathies
2. Ischemic retinopathies
3. Others (eg: glaucoma)
Such work cannot avoid considering the changes in the health-technology landscape, introducing new ways to measure variables, to:
• Select suitable surrogate endpoints that are predictive of patient outcomes, with the support of a plausible medical causal relationship
• Selection of biomarkers correlated with functional loss
• Enforce principles for endpoint extrapolation from one disease to another (by macro-area)
Embed patient's voice as key element of benefit-risks tolerance

Key question marks: a) how to generate data to support approvable endpoints? b) what is the acceptable level of evidence (correlation factor, magnitude of effect) required for regulatory purposes?

Abstract 5 – Main Program

VISION REHABILITATION: CAN TECHNOLOGY OVERCOME GEOGRAPHICAL BARRIERS AND DELIVER IN THE CONTEXT OF 2030 HEALTH AGENDA

Mariotti S.P.*

World Health Organization ~ Geneva ~ Switzerland

to discuss how technology can help reaching the SDg number 3. Universal health coverage for vision rehabilitation

revisiting the current distribution of health staff and service coverage, analyze how technology and IT can overcome geographical barrier and bring care where there isn't. Data available are scarce but using proxy indicators for coverage several scenarios can be drawn. While IT and technology allow for substantial advances in service coverage, fundamental work remains to be done in education, equity, quality and acceptance. The main risk is the reduction of opportunities for training and investment in posts and facilities.

technology promises solutions for hard to reach places and isolated persons. yet there is the need for robust and consistent monitoring of quality of services and accessibility throughout the service delivery pathway.

Technology and IT promise to be the winning hand to overcome distances in the provision of care. Research in service delivery, equity and quality shall demonstrate how realistic this promise is.

Abstract 277

STANDARDIZED MULTIDRUG TREAT AND EXTEND PROTOCOL FOR NEOVASCULAR AGE-RELATED MACULAR DEGENERATION: A PHARMACOECONOMIC PERSPECTIVE

Papayannis A.*, Zuliani A., Perrota A., Bertoli F., Vinciguerra A., Porta M., Iuri L., Gemito A., Fantini F., Loprete A., Papagno C., Bova A., Antonuccio M., Interlandi R., Verzegnassi E.M., Makuc M., Della Rupe P., Vita S.

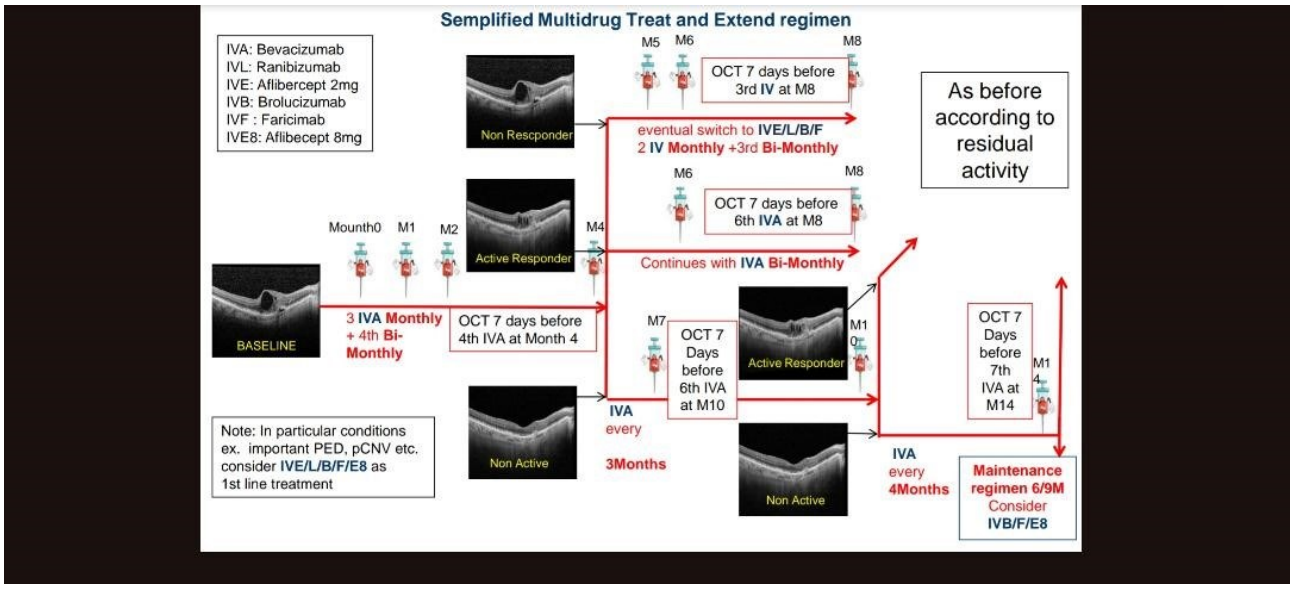
SC di Oculistica Ospedali di Monfalcone e Gorizia Azienda Sanitaria Universitaria Giuliano Isontina ~ Monfalcone-Gorizia ~ Italy

To standardize the use of anti-VEGF agents for neovascular age-related macular degeneration (AMD) in a cost-effective manner, optimizing treatment regimens and healthcare resources.

We performed a retrospective analysis of 314 eyes from 240 patients treated with a standardized treat and extend (T&E) protocol. Initially, lower-cost anti-VEGF agents were administered monthly, followed by tailored extension intervals based on individual responses. Transition to higher-cost therapies was based on non-response, with outcomes evaluated over an 18-month follow-up period.

Significant improvements in visual acuity and OCT retinal anatomy outcomes were observed. The standardized multidrug T&E protocol enabled effective transitions between therapies, achieving a maximum extension interval of 9 months. This approach enhanced clinical outcomes while demonstrating potential cost savings through prioritization of lower-cost medications. No adverse events were recorded.

This standardized multidrug T&E protocol effectively manages neovascular AMD, improving patient outcomes and aligning with pharmacoeconomic principles. This strategy optimizes treatment pathways and resource allocation, supporting sustainable healthcare systems. Future prospective studies are needed to validate these findings.



Abstract 307

HOME MONITORING OF INTRAOCULAR PRESSURE FOLLOWING INTRAVITREAL DEXAMETHASONE IMPLANT

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To evaluate the effect of Dexamethasone Implant (DEX-I) on Intra Ocular Pressure (IOP) using a portable self-monitoring iCare Home2 device.

Prospective study of patients with cystoid macular ede3 patients had peak IOP elevation to a maximum of 29 mmHg and were started on topical glaucoma treatment.ma secondary to vein occlusion, diabetic macular edema, or uveitis treated with DEX-I. IOP measurements were performed on a weekly basis for 12 weeks using iCare Home2 device. Gold standard Goldman Applanation Tonometry (GAT) was performed on a monthly basis and results were compared.

A total of 6 patients were included in the study, 3 patients were naïve. 3 patients had peak IOP elevation to a maximum of 29 mmHg. 2 of them peaked at week 6, and one peaked at week 11. Only 2 had received topical glaucoma treatment.
2 patients recorded transient IOP elevation of > 10 mmHg from baseline at weeks 2 and 5 following DEX-I, 1 lasted for 1 week and 1 was sustained for 8 weeks, accordingly. The mean IOP of the patients before DEX-I was 16.33 mmHg, while at week 16 following the injection it was 21 on average.

DEX-I showed a good pressure tolerance. The additional use of a self-monitoring ICARE-home2 revealed transient IOP elevation in all patients that would otherwise be missed on a regular regimen. Patients reported an intuitive and user-friendly device. We believe IOP home monitoring can be incorporated as part of our routine follow-up.

Abstract 339

OCT-A GUIDED PROTOCOL FOR PERSONALIZED TREATMENT OF NEOVASCULAR AGE-RELATED MACULAR DEGENERATION: A PROPOSAL

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The aim of the study is to propose a new fully OCT-A based treatment protocol for patients with neovascular age-related macular degeneration.

119 patients with newly diagnosed, treatment naïve neovascular AMD were included in the study.
All of them underwent full ophthalmic examination, including OCT-A.
Based on the OCT-A images, a signs of disease activity and progression were defined: intraretinal/subretinal fluid, perilesional dark halo, ramifications and angiographic bond with the normal choroidal circulation.
All of the patients received intravitreal treatment with three “loading” doses of anti-VEGF (Eylea, Bayer) with interval of 1 month between the injections and control OCT-A on the 25th day.
The following injections were defined according to the response of the treatment on the signs of progression/activity.
The data was statistically analyzed (SPSS).

Strong positive relations were found and significant statistically and scientifically based conclusions were made. A schematic proposal of new, fully OCT-A guided protocol for neovascular AMD was made.

The proposed OCT-A guided protocol ensures secure methodology to control the disease with minimal number of intravitreal injections, keeping the anatomical and functional result.

Abstract 199

WHEN FUN TURNS HARMFUL: RETINAL DAMAGE CAUSED BY A LASER TOY

Ayedi W.*, Belguith M., Yousfi Y., Cheour M.

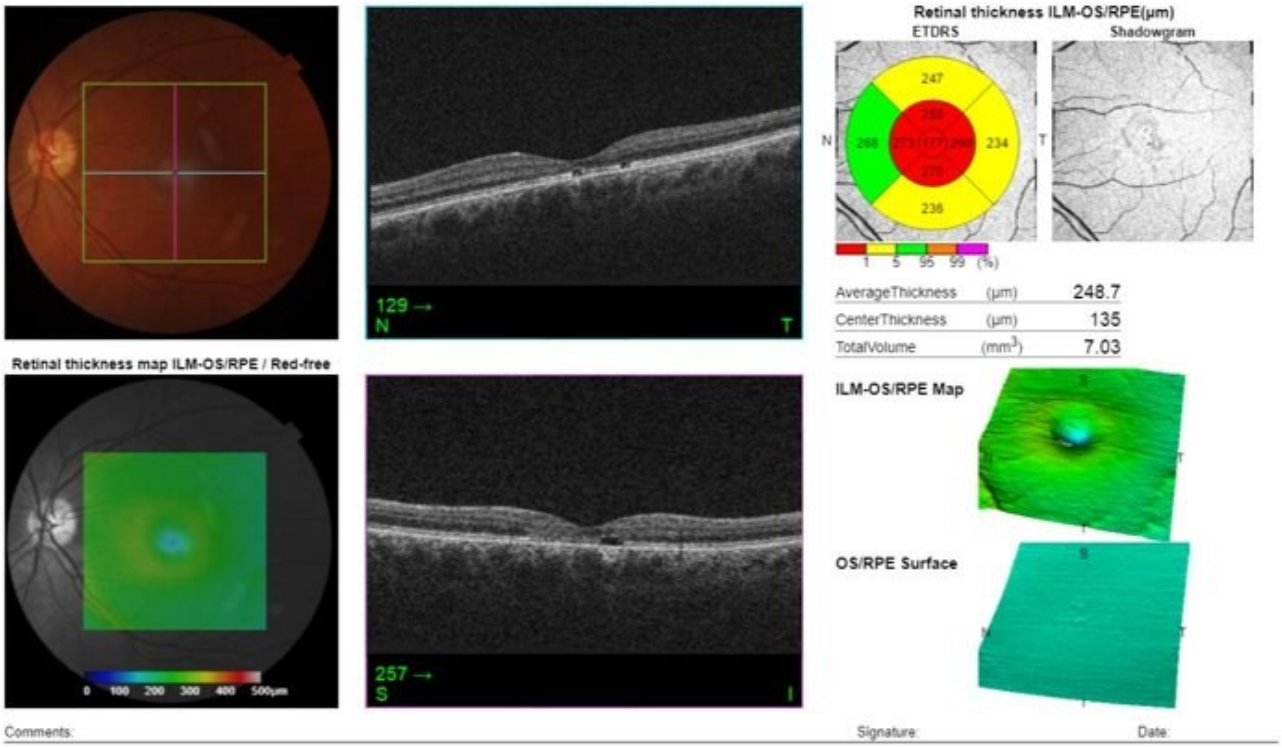
habib thameur hospital ~ Tunis ~ Tunisia

We aim to assess Optical Coherence Tomography (OCT) changes in a case of photic maculopathy induced by a laser Pointer highliting the importance of awarness of this dangerous condition among children and teenagers.

we conducted a complete ophthalmological exam and an optical coherence tomography to a 14 year old patient who consulted the emmergency department for an acute unilateral visual loss after she played several days with a laser pointer.

the patient is a 16 year-old teenager with no previous medical history who presented with an acute visual loss of the left eye. The interrogatory revealed that the patient self inflicted handheld laser exposure for a week, Best Corrected Visual Acuity was 4/10 in her left eye. Fundus exam revealed yellow macular lesions that were caracterised by a dicreased auto-fluorescence images. the SS-OCT showed a disruption of the Ellipsoid Zone formally Known as the inner segment/outer segment [IS/OS] junction. The OCT-A didn't show obvious abnormalities in the superficial and deep plexi

photic maculopathy is a serious ophthalmological condition that can lead to definitive visual loss, affecting patients' quality of life. Macular OCT helps not only confirm the diagnosis but helps monitoring the recovery. Raising awareness of this condition among parents can help reduce easy access to laser pointers for children.



Abstract 436

TWELVE-MONTHS OUTCOMES AND OCT BIOMARKERS OF INTRAVITREAL DEXAMETHASONE IMPLANT IN PSEUDOPHAKIC EYES WITH POST-VITRECTOMY CYSTOID MACULAR EDEMA (PCME), REFRACTORY TO MEDICAL THERAPY

Giancipoli E.*[1], Pignatelli F.[2], Niro A.[2], Addabbo G.[2], Iaculli C.[1], Clima G.[1], Barone A.[1], Boscia F.[3], Viggiano P.[3], Boscia G.[3]

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To evaluate the incidence of postsurgical cystoid macular edema (PCME) after small-gauge pars plana vitrectomy (PPV) for different retinal pathologies, and to assess the role of optical coherence tomography (OCT) biomarkers in treatment decision in patients with PCME, refractory to medical therapy.

Medical records of consecutive pseudophakic patients who underwent PPV, were retrospectively evaluated in this study. Eyes that presented with CME within the first 2 months after surgery were considered. A minimum follow-up of 12 months, history of cataract surgery more than 1 year before PPV, comprehensive clinical and OCT data at 1, 3, 6, 9 and 12 months, were required for inclusion. Mean BCVA (LogMAR) and CMT (μm) change, in response to different treatment modalities (topical therapy and dexamethasone implant) were evaluated. The impact of clinical and structural OCT biomarkers on the exposure to dexamethasone (DEX) was assessed.

Of 346 pseudophakic patients (352 eyes), 54 (54 eyes) developed CME within the first 2 months after PPV (incidence of 15.3%). Forty-eight patients were eligible for the 12-months assessment. Preoperative mean BCVA (1.44±0.99 LogMAR) and CMT (347± 123.5 μm) significantly changed to 0.32 (±0.37; P<0.001) and to 290 (± 80.4; P=0.003) at 12 months. Twenty-five eyes (52%) required one or more DEX intravitreal implants for refractory CME. Patients who required DEX were more likely to display intraretinal fluid, disorganization of inner and outer retinal layers, and hyperreflective foci at 1 month OCT. No major safety issues arose.

Topical therapy can be a valuable option for post-PPV CME in approximatively 50% of patients. Anatomical and functional results demonstrated intravitreal DEX can be a safe and effective second-line treatment in refractory cases. Specific OCT biomarkers may indicate a more severe CME that might benefit from an earlier intravitreal therapy.

Abstract 448

TREATMENT OF NEOVASCULAR AGE-RELATED MACULAR DEGENERATION AND DIABETIC MACULAR EDEMA WITH FARICIMAB: FIRST RESULTS IN SERBIA

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To present initial findings on the use of intravitreal faricimab injections in the treatment of neovascular age-related macular degeneration (nAMD) and diabetic macular edema (DME).

This retrospective study included 19 patients, with 15 diagnosed with nAMD (6 treatment-naive) and 4 with DME (1 treatment-naive) treated with faricimab according to the pro re nata treatment regime. Central foveal thickness (CFT) and best-corrected visual acuity (BCVA) were measured at three time points: before treatment, 1 month post-injection, and 3 months post-injection where available. Treatment response was assessed based on changes in CFT, BCVA, and retinal fluid levels.

For patients with Diabetic Macular Edema (DME), the mean decrease in Central Foveal Thickness (CFT) was 95.08 µm (maximum: 240 µm, minimum: -73 µm), with no significant change in Best-Corrected Visual Acuity (BCVA). In patients with Neovascular Age-Related Macular Degeneration (nAMD), the mean decrease in CFT was 60.68 µm (maximum: 292 µm, minimum: -16 µm), accompanied by a mean increase in BCVA of 0.12 (maximum: 0.60, minimum: -0.23).

Faricimab demonstrated greater efficacy in patients with Neovascular Age-Related Macular Degeneration (nAMD) compared to those with Diabetic Macular Edema (DME), showing significant improvements in both CFT and BCVA in the nAMD group. Careful patient selection is essential to enhance treatment outcomes with faricimab.

Abstract 59

ACUTE EXUDATIVE PARANEOPLASTIC POLYMORPHOUS VITELLIFORM MACULOPATHY DURING ABEMACICLIB TREATMENT FOR DUCTAL BREAST CARCINOMA.

Stathi T.*, Konidaris V.

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To present the rare case of a patient who developed acute exudative polymorphous paraneoplastic maculopathy (AEPPVM) after the onset of Abemaciclib treatment for breast cancer.

Retrospective case report documented with wide-field fundus imaging, spectral domain optical coherence tomography (SD-OCT), fundus autofluorescence imaging and fluorescein angiography.
A 70-year-old woman with left ductal breast carcinoma complained of bilateral blurred vision within four months of starting treatment with Abemaciclib (CDK4/6 inhibitor). She had had left mastectomy and axillary node clearance, radiotherapy, adjuvant chemotherapy, and was on combined Letrozole with Abemaciclib treatment.

On presentation, her visual acuity had declined to logMAR 0.32 in both eyes. Fundoscopy showed bilateral diffuse and symmetrical elevations of the fovea and the posterior pole with multifocal yellow-white, crescent-shaped subretinal deposits, giving the impression of vitelliform like lesions. On autofluorescence imaging, these lesions appeared hyper-autofluorescent. On fluorescein angiography there was blocking of the fluorescence in the affected areas of both eyes and absence of any other signs of inflammation. A modification of the chemotherapy dose was suggested. We decided to refer her for skin review, to exclude skin melanoma, which is the most common recognized cause for AEPPVM.

This case report suggests AEPPVM may be directly associated with the use of CDK4/6 inhibitors for the treatment for ductal breast carcinoma, or indirectly, by triggering autoimmune-paraneoplastic processes. Future identification of similar associations is required to unequivocally link Abemaciclib to AEPPVM in ductal breast carcinoma.

Abstract 66

FOVEOSCHISIS IN POSTERIOR STAPHYLOMA IN HYPEROPIC EYE: A CASE REPORT.

Boutaj T.*, Lazaar H., Moutamani S., Lezrak O., Benchekroun Belabbes S., Amazouzi A., Tachfouti S., Cherkaoui L.O.

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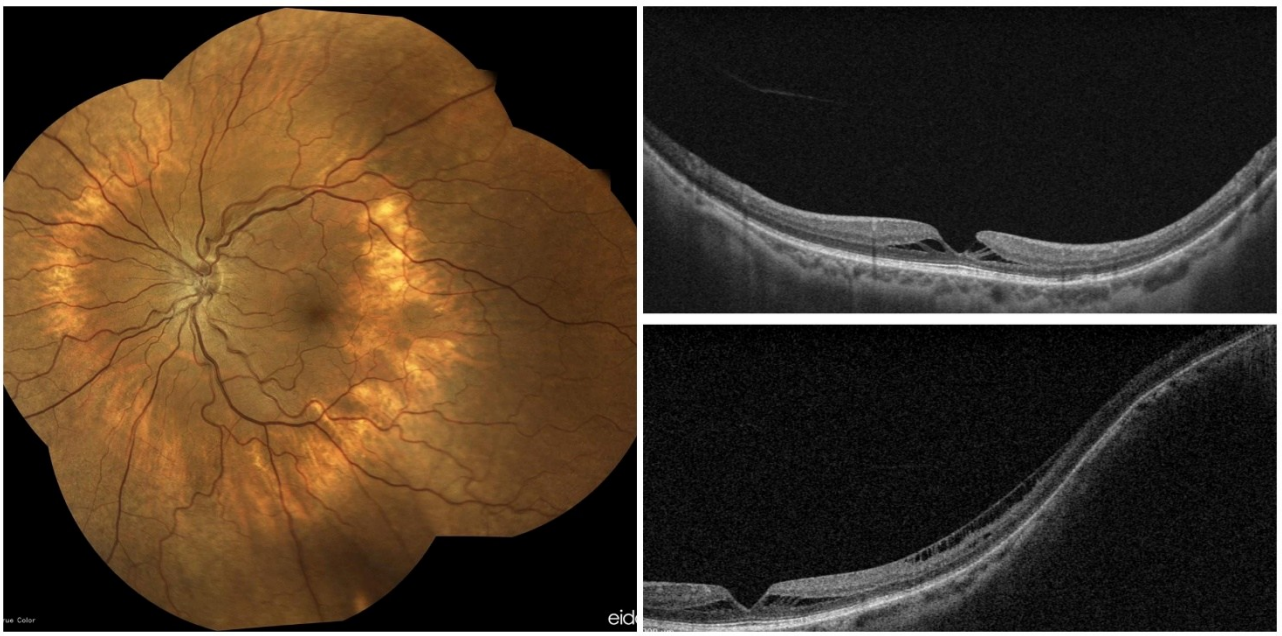
We report the case of a 40-year-old woman with a history of visual loss in her left eye since childhood, of unknown cause, who consulted for an annual update of her optical prescription. Ophthalmologic examination revealed a posterior staphyloma in the left eye, diagnosed with foveoschisis in a hypermetropic eye.

The patient presented with visual acuity of 20/20 in the right eye, corrected with a +2.25 sphere, and 20/70 in the left eye, non-improvable. Refraction of the left eye was +3.50 sphere. Anterior segment examination was normal. Fundoscopy revealed left eye chorioretinal atrophy with a posterior staphyloma (Figure 1left), confirmed by B-scan ultrasound.

OCT showed macular foveoschisis in the left eye (Figure 1right). Biometry revealed axial lengths of 22.67 mm in the left eye and 22.31 mm in the right. The diagnosis was foveoschisis secondary to a posterior staphyloma in a hypermetropic amblyopic eye. Given the amblyopia, no surgical treatment was indicated. Clinical and tomographic follow-up was advised.

Foveoschisis typically occurs in highly myopic eyes, making this case of hypermetropic foveoschisis unusual. The presence of factors such as epiretinal membrane affects the severity of the condition, with posterior vitrectomy as the surgical treatment of choice, depending on age and visual acuity.



Abstract 349

SOLAR MACULOPATHY: “EVEN WHEN THE WOUND HEALS, THE SCAR REMAINS.” A CLINICAL CASE

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Solar maculopathy is retinal damage caused by direct exposure to intense sunlight, often during solar eclipses. It results in central vision loss due to injury in the macula, particularly affecting the retinal pigment epithelium and photoreceptor layers. We report the case of a 60-year-old woman with solar maculopathy.

A complete clinical examination was performed, along with optical coherence tomography (OCT) with regular follow-up for two years.

We report the case of a 60-year-old woman with no notable history who presented with a two-year history of bilateral vision loss following a solar eclipse. Visual acuity was 4/10 in both eyes. Examination revealed a quiet anterior segment, poor foveal reflex, and a small yellowish lesion in the central fovea. OCT showed focal photoreceptor disruption and partial retinal pigment epithelium rupture in the subfoveal region. Based on her sunlight exposure and OCT results, solar maculopathy was diagnosed. No treatment was prescribed, and regular follow-up showed stable visual acuity and lesion appearance.

Solar maculopathy poses challenges due to the lack of specific treatment options, as management mainly focuses on regular monitoring and supportive care. However, emerging therapies and ongoing research into retinal damage mechanisms offer hope for future interventions.

Abstract 112

FULL-FIELD ELECTRORETINOGRAM IN EXTENSIVE MACULAR ATROPHY WITH PSEUDODRUSEN-LIKE APPEARANCE (EMAP)

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To evaluate the nature and extent of functional retinal abnormalities in Extensive Macular Atrophy with Pseudodrusen-like appearance (EMAP) using full-field electroretinography (ERG).

Cross-sectional observational study including ERGs from 104 eyes of 52 patients affected with EMAP (median age of 65.6 years). Amplitudes and peak times of ERG responses were recorded for each eye and expressed as attenuation or delay relative to the lower limit of normal (LLN) from an age-matched normative database. The mean attenuation of ERG responses was compared between eyes with early- or late-stage disease using linear mixed models. Hierarchical cluster analysis based on the amplitude of dark-adapted (DA) and light-adapted (LA) ERG responses was performed.

The mean response attenuation was 80-90% of LLN for rod-dominated DA ERGs, and subnormal (90-100% of LLN) for LA ERGs. Early stage EMAP (n = 56/104 eyes) was characterized by subnormal (90-100% of LLN) DA ERG amplitudes and normal LA ERGs amplitudes. Viceversa, for late-stage EMAP (n = 48/104 eyes) the mean attenuation was 60-70% of LLN for DA ERGs and 70-80% of LLN for LA ERGs. Based on cluster analysis, 31% (32/104) of cases had severe rod-cone dysfunction, 29% (30/104) moderate rod-cone dysfunction, 17% isolated rod dysfunction, and 23% (24/104) normal retinal function.

EMAP is characterized by a generalized dysfunction of retinal photoreceptors in the majority of cases, with a prevailing involvement of the rod system. Therefore, EMAP should be considered a panretinal disorder rather than a form of macular degeneration.

Abstract 155

COMPARISON BETWEEN FINANCIAL COSTS OF INTRAVITREAL ANTI-VEGF DRUGS INJECTIONS IN DIFFERENT SETTINGS: OPERATING ROOM VS MEDICAL OFFICE

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The aim of this study is to compare the financial costs of intravitreal anti-VEGF drugs, performed at the hospital “Molinette” in Turin, in different settings: operating room (AS-IS) vs medical office (TO-BE).

A micro-costing approach was employed to evaluate costs, based on the precise measurement of services and procedures. To explore each phase of the patient care pathway in detail, the process was broken down into its individual components, with a thorough analysis of the resources utilized at each stage. A fixed maximum number of intravitreal injections performed by the center is assumed, totaling 8,000 treatments per year, with maximum treatment capacity attained in each scenario considered.

For the Treat-and-Extend regimen, the transition from the AS-IS model to the TO-BE reveals a cost reduction of approximately 23% over a two-year period, exceeding 48% when considering only the treatment phase. Regarding the 48% reduction, a more detailed examination of the cost subcategories reveals an estimated cost reduction of approximately 56% per patient for executed procedures over a two-year period, along with a 68% reduction in staff-related costs per patient.

Performing anti-VEGF intravitreal injections in medical offices instead of operating rooms can help in reducing the cost burden for healthcare infrastructures, with comparable numbers of side effects

Abstract 169

COMPARISON BETWEEN DYNAMIC CONTOUR TONOMETRY AND GOLDMANN APPLANATION TONOMETRY CORRECTING EQUATIONS

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The purpose of this study was to investigate the reliability of correcting Goldmann applanation tonometry (GAT) formulas in comparison with dynamic contour tonometry (DCT) in intraocular pressure (IOP) measurement.

This study included 112 right eyes of 112 healthy subjects aged from 21 to 77 years, who underwent a full ophthalmologic exam. IOP was measured in each eye with DCT and then with GAT. IOP values obtained with GAT were corrected with 10 equations and compared with those provided by DCT. Student T-test was used for pair-wise comparisons of IOP obtained with DCT and GAT and with DCT and IOP obtained after applying GAT correcting formulas. This test was used for pair-wise comparison of differences between measurement obtained with and without IOP correction. A p-value <0.05 was considered statistically significant.

Participants mean age was 42.24±14.08 years; mean IOP was 17.61±2.87mmHg measured with DCT and 15.50±2.47mmHg measured with GAT. The mean discordance between DCT and GAT measurements was +2.11±2.24mmHg, +2.43±1.89mmHg in absolute values (p<0.001). All the correcting formulas, but Srodka one (p<0.001), tend to increase the difference between GAT and DCT. According to these results, only Śródka equation provides a smaller difference between the two IOP measurement methods of −0.24±0.94 mmHg, that was not confirmed in absolute values, with a difference of −0.03±0.85 mmHg (p>0.050)

IOP measurements provided by GAT without any correction are lower than those provided by DCT. Śródka equation provides a statistically significant but clinically not relevant decrease of the difference between GAT and DCT measurements. Other equations do not provide an improvement of the difference between methods ore they worsen it.

Abstract 49

RECOGNIZING POST-PARTUM RETINOPATHIES

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To highlight the retinal vascular changes that can be discovered at the post-partum period especially in young primipara

Retrospective cross sectinal study of post-partum retinopathies in females complaining of defective vision after labour. FFA, OCT and OCTA were performed and findings were analyzed

Post-partum pre-eclampsia or eclampsia can lead to severe visual impairment and ischemic vascular changes as Purtscher-like retinopathy, Takayasu arteritis, aggravation of diabetic changes and CSR

Termination of pregnancy should be followed by fundus examination and monitoring of patients as post-partum fundus changes can be serious

Abstract 323

FACTORS INFLUENCING PERSISTENCE TO TREATMENT IN PATIENTS WITH RETINAL DISEASES UNDERGOING INTRAVITREAL INJECTIONS

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To determine the most common reasons for treatment non-adherence and to identify factors influencing persistence to treatment in patients with retinal diseases undergoing intravitreal injections (IVIs).

A retrospective study was conducted with all patients who underwent IVI therapy in our Department of Ophthalmology between January 2016 and January 2024. We investigated the reasons for treatment discontinuation (non-adherence). Then, the demographic and ocular characteristics of patients who declined treatment (non-persistence) were compared with those of the remaining patients to determine the potential factors responsible for their decision.

The average age of the 2218 patients who took part in the study was 77.6±12.0 years. 1029 patients (46.4%) achieved a dry macula in both eyes at the time of the study. Treatment was discontinued (non-adherence) in 865 patients (39%) due to poor prognosis (visual acuity <1.3 logMAR) (188, 8.4%), while 174 patients (7.8%) declined IVI therapy (non-persistence). Compared to the other patients, non-persistence patients were significantly older and had significantly worse visual acuity at the last visit. They received a significantly higher number of IVIs and had a significantly higher proportion following the pro re nata treatment protocol.

The most common reason for treatment non-adherence was the poor prognosis, which related to the nature of macular diseases. Advanced age, higher number of injections, pro re nata protocol and reduced visual acuity during therapy were identified as factors that negatively affected patient persistence to treatment.

Abstract 311

TOPIRAMATE-INDUCED BILATERAL CILIOCHOROIDAL EFFUSION SYNDROME – CASE REPORT

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Institute of Medical Sciences, Medical College of Rzeszów University, Poland ~ Rzeszów ~ Poland

To report a case of ciliochoroidal effusion syndrome and myopic shift associated with topiramate use.

This is a case of a 23-year-old patient who complained of sudden blurred vision following the initiation of topiramate for epilepsy. Clinical examination, autorefractometry, B-scan ultrasound, gonioscopy, anterior chamber depth measurements, and intraocular pressure assessments were performed to diagnose and monitor the patient's clinical state.

Three days after initiating topiramate, the patient developed a bilateral decrease in visual acuity. Ophthalmologic examination confirmed ciliochoroidal effusion syndrome with an acute myopic shift. Following local treatment and gradual withdrawal of topiramate, the patient's refractive status returned to normal, and the ciliochoroidal effusion resolved within 14 days. The anterior chamber depth increased from 2.35 mm to 3.87 mm in the right eye (OD), showing a change of 1.52 mm, and from 2.23 mm to 3.73 mm in the left eye (OS), reflecting a 1.5 mm change.

Ciliochoroidal effusion with an acute myopic shift is a rare but reversible adverse effect of topiramate. Early diagnosis and discontinuation of the drug can lead to full recovery.

Abstract 232

SKIN CAROTENOIDS CANNOT PREDICT MACULAR PIGMENT OPTICAL DENSITY.

Davey P.*[1], Tantribeau E.[1], Gierhart D.[2]

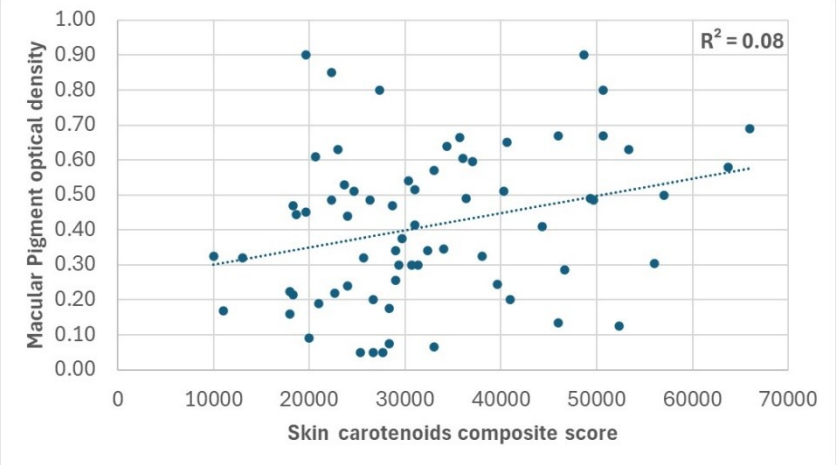
[1]Western University of Health Sciences ~ Pomona ~ United States of America, [2]EyePromise LLC ~ Chesterfield ~ United States of America

Macular pigment optical density (MPOD) is an established oculo-systemic biomarker. It is clinically measured using heterochromatic flicker photometry. This study aimed to evaluate whether the composite skin carotenoid score, which is the aggregate status of carotenoids, correlates with the macular pigment optical density measured in the eye.

Methods
We evaluated seventy ocular healthy individuals, with a mean age of 45.47 (range 18-77 SD 16.9 years). The composite score of skin carotenoids was measured in the nondominant hand palm using Raman spectroscopy three times, and an average of three readings was used for the study. The MPOD was measured twice using a portable handheld heterochromatic flicker photometer, and averaged for study purposes. The Pearson correlation coefficient analysis evaluated the relationship between the two metrics. We hypothesized that MPOD would not correlate with skin carotenoid measurements as it does not mimic the carotenoid status of the retina.

The mean MPOD was 0.41 du (SD0.21, range 0.05-0.9). The mean composite carotenoid score in the skin was 32,565 (SD 12581 and range 10,000-66,000). Scatter pots were made with various five regression models analyzed. The linear regression analysis indicated a very weak correlation (8%) between the two metrics. This is likely because carotenoids that primarily constitute the retina are lutein, zeaxanthin, and its isomer. In contrast, the primary carotenoid in the skin is lycopene and lutein and zeaxanthin form a tiny percentage of skin carotenoids.

Skin carotenoids, although an objective and quick test, do not correlate with the ocular-systemic biomarker MPOD. To assess the risk of ocular diseases, it would be preferable to utilize direct measurements in the eye using devices that measure MPOD.



Abstract 373

SOCIOECONOMIC BARRIERS TO ACCESSING ANTI-VEGF TREATMENT IN PATIENTS WITH AMD, DMO, AND RVO

Gupta A., Anastasi M.*, Ahmed S., Nazarova D., Nasr M., Mohite A., Asaria R.

Royal Free London NHS Foundation Trust ~ London ~ United Kingdom

Social determinants of health influence medical outcomes and contribute to inequalities. This study deterines the effects of socioeconomic factors on rate of deterioration of visual acuity (VA) and adherence to loading regimes in patients receiving anti-VEGF for age-related macular degeneration (AMD), diabetic macular oedema (DMO), and retinal vein occlusion (RVO).

In this retrospective London-based multi-centre observational cohort study we recorded VA, injection type and indication, and ocular comorbidity for each visit over a 14-year period. Additionally, we collected socioeconomic features including ethnicity, index of multiple deprivation, and distance of patients' home address from clinic. We used a multivariate regression analysis with SPSS software to determine association between factors.

4,424 eyes from a cohort of 4,857 eyes (49,075 injections) received anti-VEGF treatment for AMD (n=2,246), DMO (n=1,449) or RVO (n=727). Number of injections given ranged from 1 to 133. Preliminary results show that indices of deprivation including lower educational attainment, income rank and employment rank are associated with a faster reduction in VA in all disease cohorts ($p<0.05$). Distance from the clinic increases and systemic comorbidities including diabetes further increase deterioration in VA ($p<0.05$). There was no significant association between VA outcomes and ethnicity. Socioeconomic features are not significantly associated with completion of loading regimes.

Our results show increased rate of reduction in VA with distance from clinic and lower socioeconomic factors. These findings highlight the impact of accessibility barriers on treatment outcomes, and the need for interventions to improve healthcare access. Addressing these factors is important for equal healthcare opportunities and optimising visual outcomes.

Abstract 214

EVALUATION OF EFFICACY & OUTCOMES OF INTRA-VITREAL RANIBIZUMAB INJECTION IN THE TREATMENT OF AGGRESSIVE POSTERIOR RETINOPATHY OF PREMATURITY "AP-ROP"

Mansour A.*

AinSHams University ~ Cairo ~ Egypt

This study was carried out to evaluate the Efficacy of Intravitreal Ranibizumab injection in Aggressive posterior retinopathy of prematurity in Ain Shams University hospital in Cairo, Egypt. Also, to assess Outcomes after injection to show safety & efficacy of this treatment in this entity of disease.

A prospective interventional study was carried out in the Department of Ophthalmology Ain Shams university hospitals. In this study 77 eyes of 39 premature infants with APROP in the period between 1 September 2021 to 1 September 2023 were included. All premature infants with gestational age (GA) of ≤ 34 weeks or birth weight (BW) of ≤ 2000 grams were included. Infants were also included if GA > 34 weeks or BW > 2000 grams, but multiple co-morbidities existed, all premature infants were injected with intravitreal 0.25mg in 0.025 mL Ranibizumab after proper surgical preparation.

all neonates experienced regression after one week, 20.8% had a reactivation of the condition. The majority of reactivations were in the form of APROP, In terms of outcomes, 70.1% achieved full vascularization. The distribution of PAR at 72 weeks shows variability, with 56.5% of patients was ≤ 3DD.
Correlating the gender, GA, BW, NICU , or PMA at examination showed no significant difference in the final outcome of the treated eyes, moreover there was no significant correlation between the risk factors and the Final outcome of the treated eyes in this study sample.

APROP is a significant problem in premature infants in Egypt. Timely management with intravitreal injection of anti-VGEF is crucial to stop progression of disease and development of stage 4 or stage 5 ROP with high efficacy and high safety profile of Anti-VGEF treatment in such entity.

Abstract 459

DEXAMETHASONE INTRAVITREAL IMPLANT (OZURDEX®) FOR MULLER CELL SHEEN DYSTROPHY TREATMENT. A CLINICAL CASE.

Voskresenskaya A.*, Borisova D., Sadykova R., Mitrofanova Y., Mullachmetov B.

no ~ Cheboksary ~ Russian Federation

To describe the first clinical case of treatment of Muller cell sheen dystrophy (MCSD) using a dexamethasone intravitreal implant (OZURDEX®).

Best-corrected visual acuity (BCVA), biomicroscopy, ophthalmoscopy, fundus photography, autofluorescence, optical coherence tomography (OCT), and electroretinography (ERG)

A 54-year-old man showed internal limiting membrane folds at the posterior pole (OU), and cystoid macular edema (CME) in OU. During follow-up, BCVA decreased from 0.8 to 0.3 (OD) and from 0.6 to 0.15 (OS). Fundus presented fluctuant CME and subretinal fluid, and intraretinal schisis cavities. ERG was negative in OS and normal in OD. Two months after intravitreal injection of dexamethasone implant, positive dynamics of increasing BCVA to 0.6 (OU), resolve of CME and increase in the amplitude of the b-wave were noted in OU. The effect of the treatment lasted for 4 months.

MCSD is a rare pathology with no effective treatment methods. We present the first case of intravitreal dexamethasone implantation for the treatment of this pathology. The use of Ozurdex demonstrated a positive effect of BCVA increase and anatomic improvement within 4 months in patients with MCSD.

Abstract 30

CASE PRESENTATION OF BILATERAL CHOROIDAL EFFUSIONS TRIGGERED BY PROPHYLACTIC USE OF ACETAZOLAMIDE AGAINST ALTITUDE SICKNESS

Rothwell A., Hennebry J., Tsokolas G.*, Anderson O.

Ophthalmology Department, Royal Bournemouth Hospital ~ Bournemouth ~ United Kingdom

To present a case of bilateral choroidal effusions triggered by prophylactic use of acetazolamide against altitude sickness.

Retrospective review of the patient's notes.

A healthy 44-year-old lady took one single dose of oral acetazolamide 125mg to prevent altitude sickness prior to a forthcoming trip to Nepal. Unaided distance vision was
normally excellent. The next day, she woke up with markedly blurred distance vision. Slit lamp examination revealed bilateral shallow anterior chambers and bilateral choroidal detachment. Refraction showed acute myopia of approximately -5 diopters in each eye. Acetazolamide was ceased. One week later the patient's vision had returned to normal. This is the first reported case in which choroidal effusions have been demonstrated as a side effect of prophylactic acetazolamide use against altitude sickness.

Choroidal effusions have never been reported before at such a small single dose of 125mg against altitude sickness. A 'drug trial' in a safe environment is recommended to allow prompt detection and management of visual side effects given the physical and visual demands at a high altitude environment.

Abstract 65

OCULAR SIDE EFFECTS OF DABRAFENIB AND TRAMETINIB IN THE TREATMENT OF SKIN MELANOMA- CASE REPORT

Tepic Popovic M.*, Mavija M., Topic B.

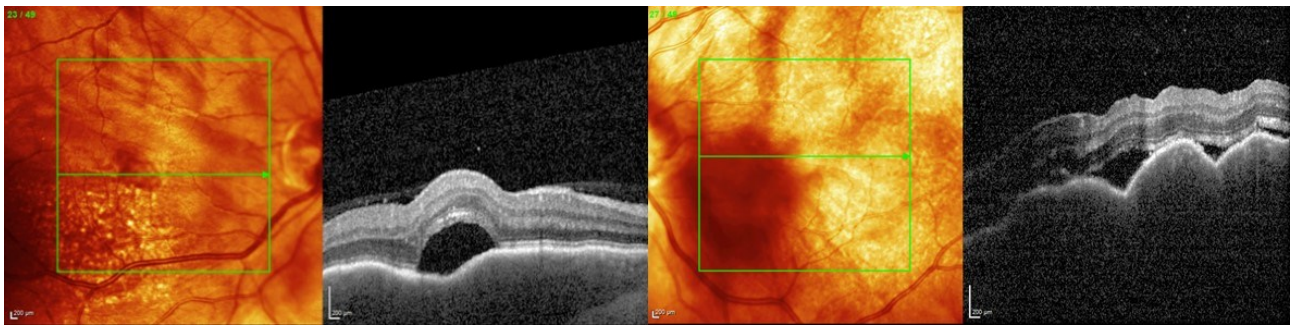
Clinic for Eye diseases, University Clinical Center of Republic od Srpska ~ Banja Luka ~ Bosnia and Herzegovina

To show the ocular side effects caused by the use of the drug combination Dabrafenib/Trametinib in the treatment of skin melanoma.

The patient was diagnosed with skin melanoma on his back in 2022, which was surgically removed in the same year. In September 2023, oncology therapy Dabrafenib in combination with Trametinib was included due to enlarged inguinal lymph nodes. After 6 months from the start of the therapy, the patient notices a gradual decline in vision in both eyes.

An ophthalmological examination revealed the presence of anterior uveitis in both eyes, with the development of posterior synechiae in the left eye. On the last segment, choroiditis was present in both eyes, with elevation of the RPE and neurosensory retinal detachment at the posterior pole. Trametinib was excluded due to ocular manifestations and continued treatment with Dabrafenib was recommended. After discontinuing Trematinib and with the local application of anti-inflammatory therapy, the inflammatory changes in the anterior segment of the eye gradually receded, and at the level of the choroid and retinal pigment epithelium only post-inflammatory RPE changes remaining.

Dabrafenib and Trametinib are drugs used in combination to treat adults and children over 6 years of age with melanoma, non-small cell lung cancer, and anaplastic thyroid cancer.
One of the less common side effects of using a combination of these two drugs is uveitis and chorioretinopathy.



Abstract 32

ABSTRACT- EFFICIENCY OF ANTI-VEGF DRUG SWITCH IN PATIENTS WHO DID NOT RESPOND TO A SERIES OF BEVACIZUMAB INJECTIONS

Gindelskhi Sagiv R.*

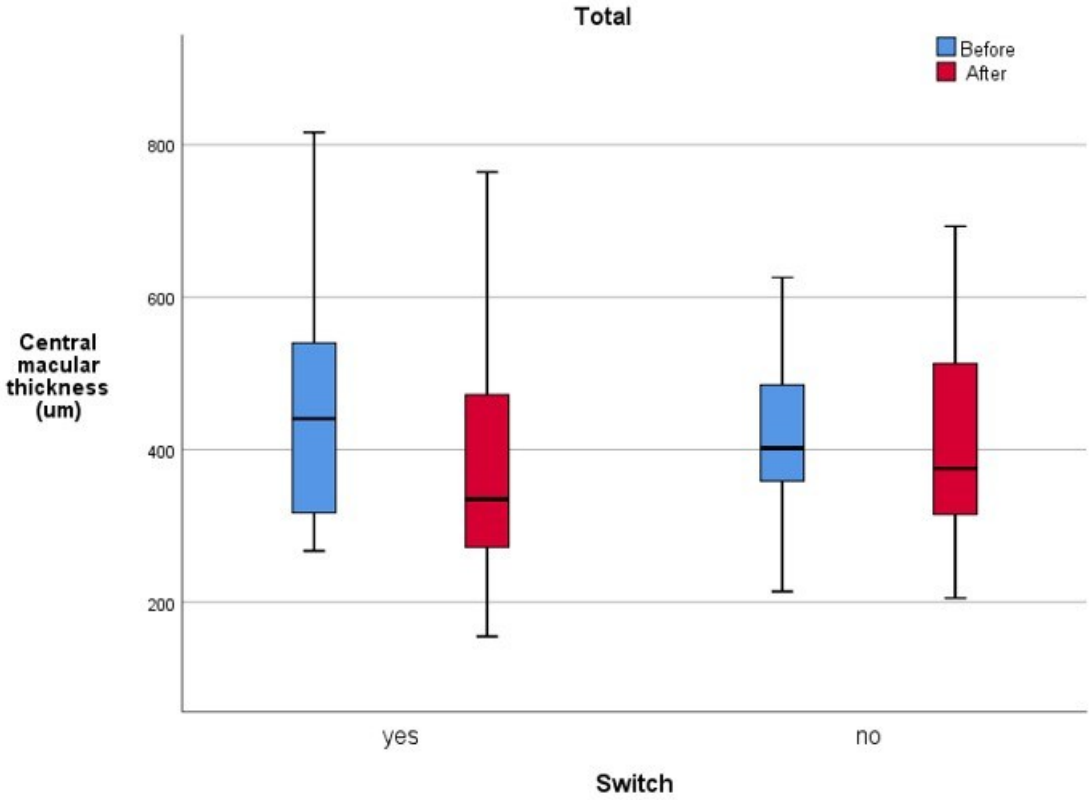
Kaplan Medical center ~ Rehovot ~ Israel

When patients with retinal pathology fail to improve after initiating anti-VEGF treatment, they are often switched to a different agent, a strategy that has not been well established. We examined the effectiveness of anti-VEGF agent switch in eyes with poor response to a course of intravitreal Bevacizumab injections.

We retrospectively compared the results of the CMT and VA between eyes with sub-optimal response to at least 3 Bevacizumab injections that either continued retreatment with Bevacizumab or switched to Aflibercept or Ranibizumab. Eyes were divided into 3 groups according to treatment indication: group A-diabetic macular edema (DME); group B - neovascular age-related macular degeneration (nAMD). Group C included groups A and B plus eyes with either retinal vein occlusion (RVO) or pseudophakic cystoid macular edema (PCME). Each group was sub-divided to either continuation of Bevacizumab (A1, B1, C1) or switch to aflibercept or Ranibizumab (A2, B2, C2).

59 eyes were included- 21 in group A (8 in A1 and 13 in A2); 28 in group B, (14 in B1 and 14 in B2) and 59 in group C (25 in C1 and 34 in C2). In all switched eyes, CMT decreasred:38.5 (SD 46.2), 92.6 (SD 106.8) and 82.1 (SD 115.6) microns in groups A2, B2, and C2 respectively. The difference in CMT was statistically significant between groups B1 versus B2 and between groups C1 versus C2 (p=0.025 and 0.004, respectively). A similar trend between groups A1 versus A2 was statistically insignificant. No difference in VA was observed.

Our results may indicate that switching between anti-VEGF agents is indeed an effective strategy to treat eyes with sub-optimal response to Bevacizumab injections.


Total
Before
After
800
600
400
200
Central macular thickness (um)
yes
no
Switch

Abstract 300

STUDY DESIGN AND RATIONALE OF POYANG: A PHASE 3 RANDOMISED TRIAL OF FARICIMAB FOR CHOROIDAL NEOVASCULARISATION SECONDARY TO PATHOLOGIC MYOPIA

Ruiz Moreno J.M.*[1], Mehta H.[2], Cheung G.[3], Kotecha A.[4], Lai T.Y.Y.[5], O"Leary O.[6], Rafijah N.[7], Shah N.[4], Liu W.[8], Patel S.[7]

[1]Hospital Puerta de Hierro ~ Mejadahonda ~ Spain, [2]Strathfield Retina Clinic ~ Strathfield ~ Australia, [3]Singapore Eye Research Institute, Singapore National Eye Centre, Duke- NUS Medical School, National University of Singapore ~ Singapore ~ Singapore, [4]Roche Products Ltd. ~ Welwyn Garden City ~ United Kingdom, [5]The Chinese University of Hong Kong ~ Hong Kong, New Territories ~ China, [6]F. Hoffmann-La Roche Ltd. ~ Basel ~ Switzerland, [7]Genentech, Inc. ~ South San Francisco, CA ~ United States of America, [8]Roche (China) Holding Ltd. ~ China ~ China

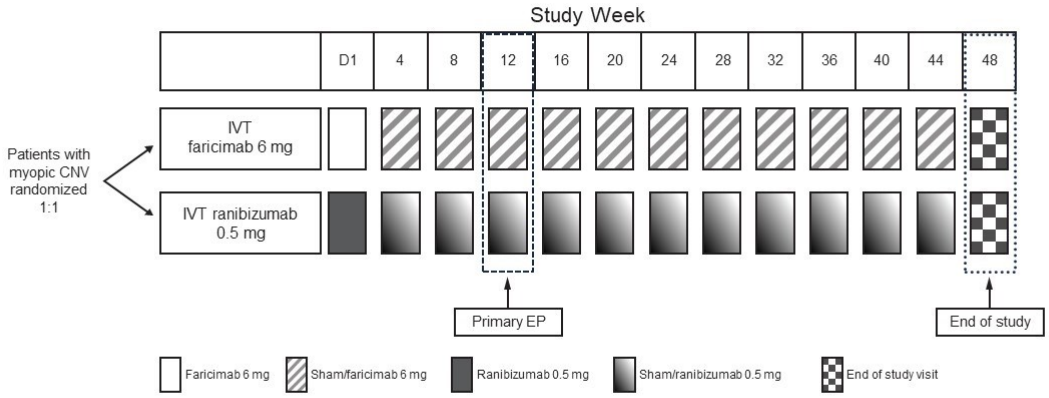
To communicate the design and rationale of the POYANG trial, which will assess the efficacy and safety of faricimab, a dual angiopoietin-2 and vascular endothelial growth factor-A inhibitor, in patients with choroidal neovascularisation secondary to pathologic myopia (otherwise referred to as myopic choroidal neovascularisation or mCNV).

POYANG (NCT06176352) is a global, randomised, double-masked, multicentre, active comparator-controlled phase 3 trial in adults with treatment-naïve mCNV. Patients will be randomised 1:1 to faricimab 6.0 mg or ranibizumab 0.5 mg, and will receive study treatment at randomisation (day 1) and then pro re nata treatment (per protocol-defined retreatment criteria) over 48 weeks with monthly monitoring (Fig.1). Retreatment criteria are based on changes in best-corrected visual acuity (BCVA) or central subfield thickness (CST) or examination findings consistent with mCNV disease activity. To maintain masking, patients will receive a sham procedure at study visits when there is no active mCNV disease.

The primary endpoint is non-inferiority of faricimab vs ranibizumab in the change from baseline in BCVA averaged over weeks 4, 8 and 12. Secondary endpoints (weeks 0–48) include the change from baseline in CST over time and the number of injections received. The incidence and severity of ocular and non-ocular adverse events will be assessed.

POYANG is an actively recruiting phase 3 registrational trial designed to evaluate the efficacy and safety of faricimab compared with ranibizumab in patients with mCNV, the most common cause of CNV in young patients.

Figure 1. POYANG Study Design



CNV, choroidal neovascularization; D, day; EP, endpoint; IVT, intravitreal.

Abstract 164

CHOROIDAL NEOVASCULARIZATION SECONDARY TO PUNCTATE INNER CHOROIDOPATHY VS MYOPIA: CLINICAL OUTCOMES AFTER 1-YEAR OF TREATMENT

Bottazzi L.*, Barlocci E., Sacconi R., Battista M., Servillo A., Beretta F., Bandello F., Querques G.

san Raffaele ~ milan ~ Italy

to assess similarities and differences in the response to anti-VEGF treatment between choroidal neovascularization (CNV) secondary to punctate inner choroidopathy (PIC) or to myopia during a one-year follow-up. Number of intravitreal injections required to control the CNV are the number of recurrences that occurred during a one-year follow-up were evaluated.

retrospective, longitudinal, case-control study. Patients diagnosed with CNV secondary to PIC or to myopia referring to San Raffaele Hospital were enrolled from January 2021 to January 2023. Choroidal thickness (ChT) and best-corrected visual acuity (BCVA) were measured at the onset of CNV, after resolution of exudation after treatment, and at 1-year follow-up. Primary outcomes included the analysis of the number of intravitreal injections needed and the incidence of recurrences. Secondary outcomes included the analysis of ChT.

thirty-seven eyes were enrolled. Sixteen eyes showed CNV secondary to PIC, and 21 eyes by CNV secondary to myopia. At baseline BCVA was 0.27±0.12 logMAR and 0.37±0.22 logMAR in PIC and myopic group, respectively, and significantly improved after the treatment in both groups ($p<0.001$). A significant difference in ChT was found in both groups. ChT significantly decreases during the follow-up in the PIC group. CNV secondary to PIC needed more anti-VEGF intravitreal injections for resolution (3.2±1.2 vs 2.1±1.1 intravitreal injections) and they were characterized by high number of relapses (44% vs 20%) in comparison to myopic group.

PIC/MFC group showed a more aggressive pattern of CNV, characterized by higher number of relapses and intravitreal injections needed with a higher ChT below the lesion in comparison to myopic group.

Abstract 125

READING PERFORMANCES IN HIGHLY MYOPIC PATIENTS AND CORRELATION WITH THE TOPOGRAPHY OF ATROPHIC MACULOPATHY

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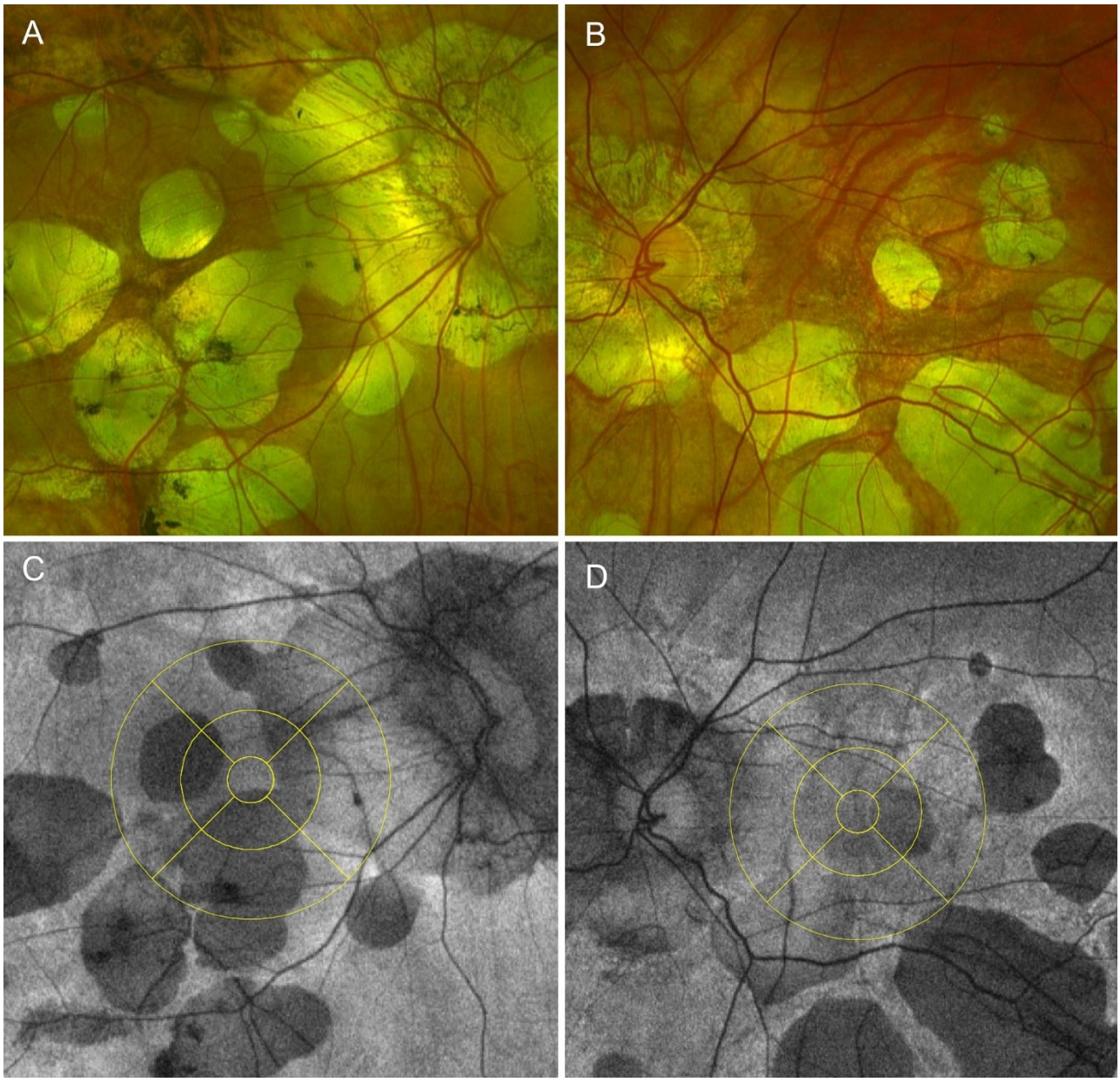
[1]Catholic University of the Sacred Heart ~ Rome ~ Italy, [2]Instituto de Microcirugia Ocular ~ Barcelona ~ Spain

The aim of this prospective research was to evaluate how the topography of atrophic patches influences monocular and binocular reading performances in eyes with pathologic myopia.

Sixty-two consecutive participants (112 eyes) with pathologic myopia underwent monocular and binocular reading evaluation using Colenbrander Reading Charts: reading acuity (LogRAD); reading speed (words per minute, wpm); percentage of errors/missed word. All eyes underwent fundus photography and autofluorescence (FAF): the presence of chorioretinal atrophy within the central, 4 inner and 4 outer Early Treatment Diabetic Retinopathy Study (ETDRS) grid subfields was reviewed. Mean AXL was 31.45±2.21 mm. Monocularly, reading acuity was 0.37±0.35 LogRAD with 8±11% of missed/wrong words, while speed was 71.5±27.8 wpm. Binocularly, mean reading acuity was 0.16±0.16 LogRAD with 5±7% of missed/wrong words, while speed was 88.2±18.0 wpm.

Reading acuity was significantly associated presence of chorioretinal atrophy in the foveal central circle in univariate and multivariate analysis (p=0.002). Conversely, reading speed was negatively associated inner right subfield involvement in multivariate analysis (p=0.008). Binocularly, reading acuity was associated with the presence of bilateral central atrophy (p=0.001), while reading speed was associated with the presence of chorioretinal atrophy in the inner subfields on the horizontal plane in both eyes: bilateral inner right (p=0.007) or inner left (p=0.014) subfields; inner left OD-inner right OS (p=0.002); inner right OD-inner left OS (p=0.004).

Studying the topography of patchy chorioretinal atrophy may be useful to predict reading performances of highly myopic eyes: central ETDRS subfield involvement may impact on reading acuity, while inner right subfield on reading speed.


A
B
C
D

Abstract 75

BILATERAL DIFFUSE UVEAL MELANOCYTIC PROLIFERATION IN A PATIENT WITH NEWLY DIAGNOSED LEUKEMIA: A RARE CASE AND REVIEW OF MANAGEMENT STRATEGIES

Vasovic D.*, Rasic D., Risimic D., Vasilijevic J., Jeremic M., Kalezic T., Risimic A.

University Clinical Centre of Serbia Eye Hospital ~ Belgrade ~ Serbia

To report a rare case of bilateral diffuse uveal melanocytic proliferation (BDUMP) in a 64-year-old man with newly diagnosed leukemia, along with a review of the literature on the association between BDUMP and systemic malignancies.

A 64-year-old male presented with progressive vision loss in both eyes and was subsequently diagnosed with BDUMP, a rare paraneoplastic syndrome. The patient had recently been diagnosed with leukemia, which was found to be associated with his ocular condition. Fundoscopic examination revealed bilateral pigmented choroidal lesions, serous retinal detachment, and diffuse thickening of the uveal tract. Further diagnostic imaging, including B-scan ultrasonography and fluorescein angiography, confirmed the characteristic findings of BDUMP. Despite treatment for leukemia, the patient's ocular symptoms progressed, leading to significant visual impairment.

BDUMP is an extremely rare paraneoplastic phenomenon, with fewer than 100 cases reported in the literature, most commonly associated with solid tumors like ovarian, lung, and pancreatic cancers. Hematological malignancies, such as leukemia, are even more rarely linked to BDUMP. While the exact pathophysiology remains unclear, tumor-derived factors are thought to stimulate melanocytic proliferation in the uveal tract. Treatments focus on managing the malignancy. Ocular therapies, such as corticosteroids and immunosuppressive agents, are generally ineffective at reversing vision loss. Photodynamic therapy or radiation may stabilize symptoms, though visual recovery remains poor, emphasizing the need for early diagnosis and multidisciplinary care.

This case underscores rare association of BDUMP with newly diagnosed leukemia. BDUMP often presents alongside systemic malignancies and can precede cancer diagnosis. Early detection is crucial for identifying malignancies. Multidisciplinary management, involving oncologists and ophthalmologists, is essential. Further research is required to understand BDUMP's pathophysiology and management in hematologic malignancies.

Abstract 304

PHOTODYNAMIC THERAPY OF VASCULAR INTRAOCULAR TUMORS: LONG TERM SINGLE CENTRE EXPERIENCE.

Oreste G.*, Sammarco M.G., Pagliara M.M., Scupola A., Caputo C.G., Savino G., Rizzo S.

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To evaluate the efficacy of photodynamic therapy to reduce retinal exudation secondary to retinal and choroidal vascular tumors.

All patients were treated with a single session of PDT with verteporfin infused at a concentration of 6 mg/m(2) and treated for 83 seconds with 689-nm Zeiss laser that was delivered with total energy level of 50 J/cm(2) with an intensity of 600 mW/cm(2).

We discuss the application of PDT for benign tumors, including circumscribed choroidal hemangioma, choroidal osteoma, retinal astrocytoma, retinal capillary hemangioma (retinal hemangioblastoma), and retinal vasoproliferative tumor.

PDT is an effective treatment option for visual deterioration from exudative retinal detachment in patients with vascular intraocular tumors.

Abstract 366

RETINAL VASCULAR TUMORS: CLINICAL AND ETIOLOGICAL INSIGHTS

Mourali M.*, Abroug N., Khairallah M.

Department of ophthalmology, Fattouma Bourguiba University Hospital, Monastir, Tunisia. ~ Monastir ~ Tunisia

To describe the clinical, etiological, and progression aspects of retinal vascular tumors, including retinal vasoproliferative tumors (RVPT), retinal capillary hemangioma, retinal cavernous hemangioma, and arteriovenous communications of the retina (AVCR).

A retrospective review of the medical records of 21 patients (25 eyes) with retinal vascular tumors, collected at the Department of Ophthalmology of Fattouma Bourguiba University Hospital in Monastir over a period of 16 years.

The study included 21 patients (13 females, 8 males) with a mean age of 38.8 years. The average time from symptom onset to diagnosis was 12 months. Diagnoses comprised RVPT in 11 patients (14 eyes), retinal capillary hemangioma in 7 patients (8 eyes), retinal cavernous hemangioma in 2 patients (2 eyes), and AVCR in 1 patient (1 eye). Vision loss was the primary complaint (66.6%). Intra/subretinal exudation was present in 84% of eyes, with macular involvement in 52%. Treatments included anti-VEGF (n=10), transpupillary thermotherapy (n=4), cryotherapy (n=5), and laser photocoagulation (n=5), with visual improvement or stabilization in 64% of eyes.

Retinal vascular tumors are rare, congenital or acquired lesions. Accurate diagnosis often requires a combination of detailed clinical examination and multimodal imaging. Clinicians should be aware of these conditions, although benign, can lead to visual loss and even to life-threatening complications due to associated systemic vascular malformations.

Abstract 181

ASSOCIATION BETWEEN RETINAL INFILTRATION OF VITREORETINAL LYMPHOMA AND VITREOUS IL-10 CONCENTRATION

Matsumiya W.*, Kusuhara S., Nakamura M.

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To evaluate the association between retinal infiltration and IL-10 concentration in the vitreous fluid of patients with vitreoretinal lymphoma (VRL).

This retrospective study included 23 eyes from 23 patients (12 females, mean age 68.1 years) diagnosed with active VRL—13 cases of primary VRL and 10 cases of secondary VRL. Retinal infiltration was identified as subretinal or intraretinal infiltrates, confirmed by fundus photography and optical coherence tomography (OCT). IL-10 concentration and the IL-10/IL-6 ratio in vitreous fluid, collected through vitreous biopsy, were compared between patients with retinal infiltration and those without.

Six VRL patients had retinal infiltration, while 17 did not. The mean IL-10 concentration was significantly higher in patients with retinal infiltration (18,021 ± 12,067 pg/ml) compared to those without (686 ± 1,275 pg/ml) ($P<0.01$). However, there was no significant difference in the mean IL-10/IL-6 ratio between the two groups (134 ± 192 vs. 78 ± 27, respectively). Among patients without retinal infiltration, there was no significant difference in IL-10 concentration (858 ± 1617 pg/ml vs. 440 ± 540 pg/ml) or IL-10/IL-6 ratio (19 ± 20 vs. 33 ± 33) between those with and without pathological sub-retinal pigment epithelium deposits.

The IL-10 concentration in the vitreous fluid was significantly higher in VRL patients with retinal infiltration, suggesting a potential link between IL-10 levels and the intraocular development of VRL localization.

Abstract 207

NEOPLASTIC MASQUERADE SYNDROMES

Mottola F.*, Sammarco M.G., Pagliara M.M., Scupola A., Caputo C.G., Savino G., Rizzo S.

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To evaluate frequency, clinical presentation, diagnostic test and therapeutic treatment for Neoplastic Masquerade Syndromes.

Clinical analysis of various case studies, including laboratory outcomes and specialized exams such as OCT, OCTA, retinography, fluorescein angiography, Indocianine green angiography and ultrasonography.

The most common among these is primary intraocular lymphoma or primary central nervous system lymphoma, occurring predominantly in the elderly population. Other conditions that can be considered masquerade syndromes are reviews as well, including both lymphomatous and non-lymphomatous conditions such as melanoma, retinoblastoma, juvenile xanthogranuloma, metastatic lesions and paraneoplastic lesions.

Neoplastic Masquerade Syndromes do not have a single specific pattern of presentation and may be misdiagnosed as unilateral glaucoma, uveitis and/or vascular abnormalities. Although they are relatively rare, timely diagnosis is necessary to avoid useless and time-wasting treatments and to establish a management plan that safeguards the patient's life.

Abstract 201

CHALLENGING TREATMENT FOR RADIATION RETINOPATHY: OUR EXPERIENCE

Sammarco M.G.*, Pagliara M., Scupola A., Caputo C.G., Savino G., Rizzo S.

Fondazione Policlinico Universitario A.Gemelli Roma- IRCCS ~ Rome ~ Italy

Radiation retinopathy is the leading cause of visual acuity reduction. Currently, there are no guidelines in this field. Our study aims to evaluate the efficacy of intravitreal anti-VEGF injections and sustained-release dexamethasone implants in the visual and anatomical recovery of patients with radiation retinopathy and optic neuropathy.

The study involves a population of oncological patients diagnosed with uveal melanoma treated with radiotherapy (brachytherapy with Ru106, Brachytherapy with I125 and radiation treatment with proton beam) and subsequently subjected to intravitreal anti-VEGF therapy (group A) and Ozurdex implant (group B). All patients underwent a careful evaluation of best correct visual acuity (BCVA), fundus examination, tomographic examination with OCT and OCTA and fluorescein angiography FAG, intravitreal injection of antiVEGF, intravitreal implant of slow-release dexamethasone (Ozurdex). Clinical-instrumental follow-up at 3, 6, 12, 24 and 36 months.

Early treatment with both anti-VEGF and Ozurdex results in greater visual recovery and preservation of macular anatomy, reduction of retinal hemorrhages and resolution of retinal exudates.

In the absence of guidelines, our study protocol could lay the foundation for a future use of anti-VEGF and Ozurdex as preventive treatment even before the onset of clinical signs of radiation retinopathy.

Abstract 222

DO WE NEED TO SCREEN FOR ASYMPTOMATIC CHOROIDAL METASTASIS?

Fouad Y.*, Ashour D.M., Ebeid W., Salman A., Elkady M.S.

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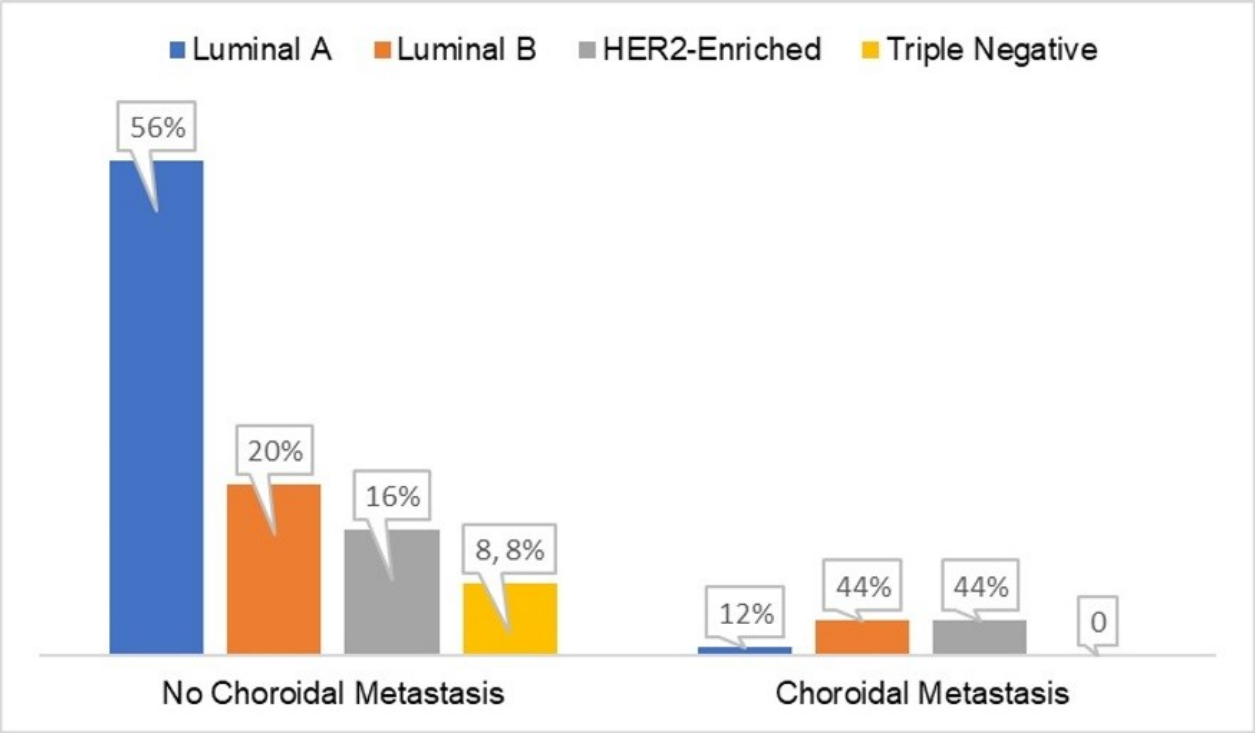
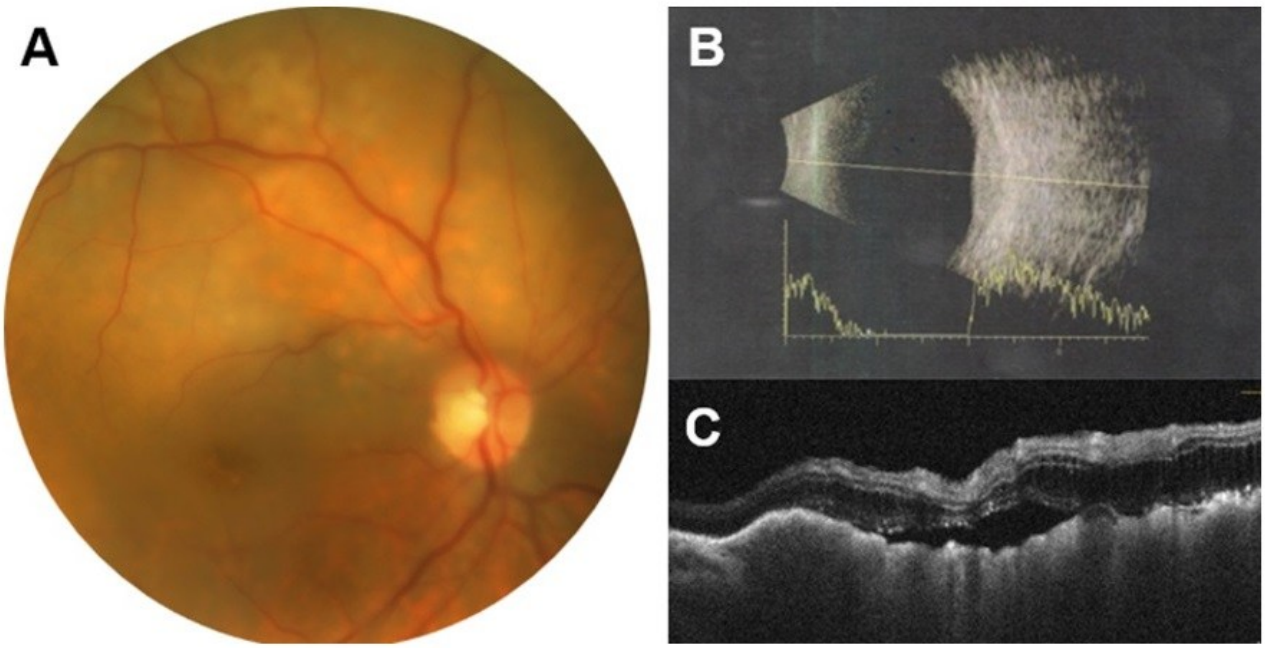
To study the prevalence and features of asymptomatic choroidal metastasis (CM) among patients with metastatic breast and lung cancer.

A prospective screening study that spanned two years and recruited 135 patients with metastatic cancer (105 patients with breast cancer and 30 patients with lung cancer) who had no visual complaints. Recruitment was done from a tertiary care center's oncology clinic. Patients underwent a full ophthalmological assessment including a detailed fundus examination. Multimodal imaging, including b-scan ultrasonography and optical coherence tomography (OCT), was utilized in cases with suspicion of unexplained visual acuity or atypical fundus features. Patients' medical records were analyzed for the clinical and tumor characteristics.

The prevalence of asymptomatic CM was 8.6% (9/105 patients) in the breast cancer group and 6.7% (2/30 patients) in the lung cancer group. Patients with CM in the breast and lung cancer groups were more likely to have multi-organ metastasis (78% and 100%, respectively) and brain metastasis (56% and 100%, respectively). Luminal B and HER2-enriched were the most common breast cancer subtypes with CM. The use of optical coherence tomography often revealed a larger extent of CM lesions than seen clinically, uncovered subclinical lesions in 23% and bacillary layer detachment in 30% of eyes with CM, .

Asymptomatic CM is not uncommon in breast and lung cancer patients with metastatic disease. Screening of high-risk patients may be warranted to preserve vision and improve quality of life. Multimodal imaging, especially optical coherence tomography, provides an essential tool for delineating CM extent and uncovering subclinical lesions.


Luminal A
Luminal B
HER2-Enriched
Triple Negative
56%
20%
16%
8, 8%
12%
44%
44%
0
No Choroidal Metastasis
Choroidal Metastasis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Abstract 292

DIAGNOSTIC DELAY IN VITREORETINAL LYMPHOMA IS A RISK FACTOR FOR CNS INVOLVEMENT

Menean M., Cicinelli M.V., Marchese A., Rivolta M.C.*, Modorati G., Bandello F., Miserocchi E.

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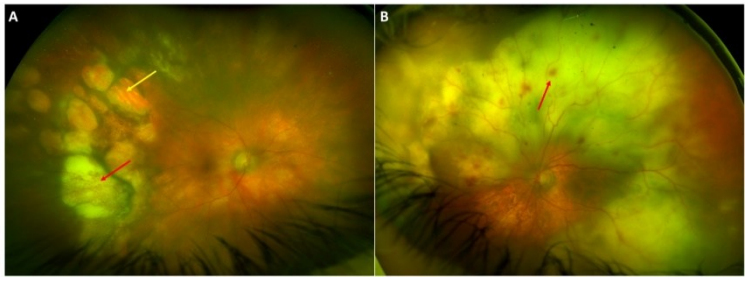
To investigate clinical and imaging characteristics of primary vitreoretinal lymphoma (PVRL) associated with an increased risk of central nervous system involvement in the form of central nervous system lymphoma (CNSL) .

Retrospective monocentric longitudinal study from 2015 to 2023 including patients with PVRL. Clinical and imaging parameters included diagnostic delay, bilateral PVRL, anterior segment and vitreous involvement, intraretinal, subretinal and sub-RPE infiltration, retinal pigment epithelium (RPE) mottling, large lymphoid pigment epithelium detachment (PED) and macular edema. The primary outcome was defined by the occurrence of CNSL. Clinical and imaging parameters were computed as independent variables in univariable COX regression to assess their association with CNSL development.

52 eyes of 29 patients with PVRL were included. 66% developed CNSL over a median time of 6-month follow-up. The mean time from the onset of neurologic symptoms to PVRL diagnosis was 10±8 months. Patients with bilateral PVRL (p=0.017) and anterior segment involvement (p=0.03) had longer diagnostic delays (p=0.015 and p=0.043, respectively). Delayed PVRL diagnosis correlated with a 6% increase in CNSL risk per month of delay (p=0.049). Large lymphoid PED and bilateral PVRL showed a higher risk of CNSL (HR: 3.17, p=0.038 and HR: 7.10, p=0.057, respectively).

Timely PVRL diagnosis is crucial for mitigating the risk of CNSL. Diagnostic delays and large lymphomatous PED correlate with increased CNSL incidence. While early treatment's effect on survival remains unproven, early detection of PVRL suggests improved patient outcomes and survival. Randomized clinical trials are needed to confirm our data.



Abstract 379

FROM CLARITY TO DARKNESS: EVOLUTION OF A CHOROIDAL MASS AND LOSS OF OCULAR FUNCTION OVER TWELVE MONTHS

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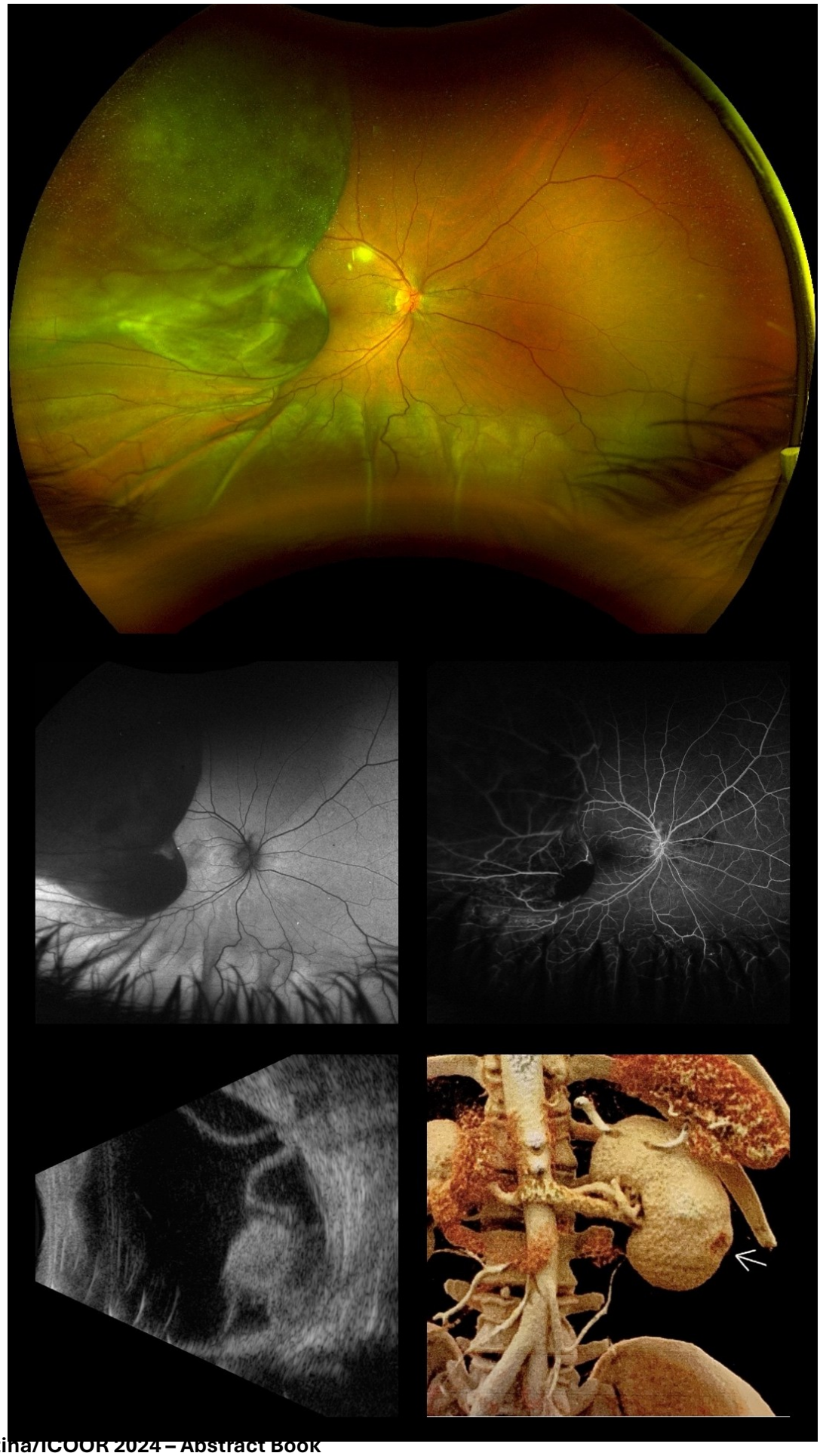
Instituto de Oftalmología Conde de Valenciana ~ Mexico City ~ Mexico

• To describe a complex clinical case involving a choroidal mass secondary to papillary renal cell carcinoma.
• To present the clinical evolution over 12 months following diagnosis, monitored through multimodal imaging.
• To analyze the interdisciplinary management and complications arising from delayed treatment initiation.

Multimodal imaging (autofluorescence, fluorescein angiography, ultrasound, ultrasound biomicroscopy) and transscleral biopsy were performed. Systemic evaluations (CT, uro-CT, PET scan) assessed disease extent. Informed consent was obtained for the presentation of this case report.
A 52-year-old male, with no significant personal or ophthalmologic history, presented with a 6-month history of peripheral visual loss in the right eye (OD), describing a “crescent” in the nasal visual field. Ophthalmological examination showed a visual acuity of 20/40 in OD, with normal anterior segment and intraocular pressure. Fundoscopy revealed a hyperpigmented mass covering 16-disc areas in the superior temporal quadrant, along with a serous retinal detachment.

Multimodal imaging revealed a bilobed hypoautofluorescent lesion in the superior temporal quadrant, hypofluorescence with pinpoint hyperfluorescence on fluorescein angiography, and a bilobed, mobile, low-reflectivity, heterogeneous mass on ultrasound. A transscleral biopsy did not yield conclusive results. Systemic imaging found a left exophytic, hypermetabolic renal mass, confirmed as grade 2 papillary renal cell carcinoma after partial nephtectomy. Due to delayed treatment, ocular tumoral progression occurred, leading to neovascular glaucoma and orbital metastasis. Low-dose radiotherapy reduced tumor activity. The patient is currently under surveillance for local complications and systemic management by oncology.

PRCC is aggressive and often presents at an advanced stage. Choroidal metastases are rare, with only 31 cases reported by january 2024. This case underscores the importance of multimodal imaging in diagnosing choroidal masses and highlights the need for a multidisciplinary approach in managing PRCC-related choroidal metastasis.



Abstract 422

BENIGN INTRAOCULAR INFLAMMATION MASQUERADING AS CHOROIDAL MELANOMA: A CASE REPORT OF A DIAGNOSTIC DILEMMA

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To report a diagnostic challenge involving a suspected choroidal melanoma, ultimately found to be benign intraocular inflammation, highlighting the importance of comprehensive imaging and multidisciplinary approach.

Medical Records and imaging of the patients were retrospectively reviewed.

A 73-year-old female with diabetes, hypertension, and inactive hepatitis B presented with gradual vision decline in her right eye. She had a history of bilateral cataract surgery with posterior chamber IOL implantation. Visual acuity was 6/120 in the right eye and 6/36 in the left. The anterior segment was normal, but posterior segment revealed elevated choroidal tissue in the superotemporal region, suggesting choroidal melanoma. B-scan and MRI were normal. Pars plana vitrectomy was performed, and scleral depression revealed a small collection of whitish material. Histopathology showed inflammatory cells, mainly lymphocytes, excluding malignancy.

This case illustrates the complexity of diagnosing choroidal melanoma when inflammatory conditions mimic its presentation. Multimodal imaging and, when necessary, surgical exploration are crucial to ensure accurate diagnosis and avoid unnecessary interventions.

Abstract 284

OPHTHALMIC MANIFESTATIONS AND NATURAL HISTORY OF PRPH2 DELETION-ASSOCIATED PATTERN DYSTROPHY: A CASE SERIES

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This study describes the ophthalmic manifestations and genotype-phenotype correlation in four patients with inherited retinal dystrophy (IRD) caused by a PRPH2 intragenic deletion, which seems to be recurrent in the Sardinian population, possibly due to a founder effect, and is associated with pattern dystrophy of the retinal pigment epithelium (RPE).

A case series of four patients from two unrelated families with PRPH2 deletion-associated pattern dystrophy of the RPE was analysed. Clinical ophthalmic examinations, imaging, and genetic testing using Whole Exome Sequencing and SNP-array analysis were conducted to establish the diagnosis and to document ophthalmic findings and disease progression over several years.

The cohort comprised four patients aged 40-76 years. Two patients were father and son, while the other two were distantly related. Genetic testing revealed the presence of a 17kb deletion on the short arm of chromosome 6, involving exons 2 and 3 of the PRPH2 gene. Common manifestations included a butterfly-shaped pattern dystrophy evolving into a flecked fundus with progressive RPE dystrophy and atrophy. The younger patients exhibited only butterfly-shaped dystrophy with no visual symptoms, while the older patients showed a flecked fundus resembling fundus flavimaculatus, progressing to macular atrophy with severe vision loss in one case.

The patients showed a consistent disease pattern, beginning in their 40s as butterfly-shaped macular dystrophy, progressing to widespread flecks, and culminating in macular atrophy by their 70s. This study provides valuable insights into clinical manifestations, natural history, prognosis, and genetic counseling for PRPH2 deletion carriers.

Abstract 385

PACHYCHOROID PIGMENT EPITHELIOPATHY IN KERATOCONIC EYES: PREVALENCE AND CORRELATIONS WITH CORNEAL, CHOROIDAL AND SCLERAL ABNORMALITIES.

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To assess the prevalence of pachychoroid pigment epitheliopathy (PPE) in eyes with keratoconus (KC), and investigate its correlation with corneal, choroidal, and scleral indices with multimodal imaging (MMI).

Data on demographic features, collagen cross-linking treatment, anamnestic records and clinical findings were collected. MMI protocol included optical coherence tomography , corneal topography, corneal pachymetry, and axial length measurement. Measurement of anterior scleral stromal thickness was obtained 6 mm posteriorly to the scleral spur. Odds ratios and corresponding 95% confidence limits were estimated through a logistic regression analysis. To accommodate for potential clustering effect dye to within-patient correlated eye data, generalized estimating equations procedure was applied to LR modelling. A Decision Tree machine learning model with the K-fold cross-validation technique was employed to predict the presence of PPE in patients.

85 patients were eligible for analysis (mean age = 34.2 years, standard deviation = 8.7). Prevalence of PPE was 10.5% (9/85 patients, 11/170 eyes, 2 bilateral cases). Significant predictors for PPE according to LRM were: choroidal thickness (OR = 4 .51, 95%CL = 1.50/13.6, for 50 µm increments, p = 0.007), age (OR = 4.61, 95%CL = 1.30/16.4 for 10-year increments, p = 0.018), and scleral stromal thickness (OR = 7.48, 95%CL = 1.69/33.1, for 25µm increments, p = 0.008). Gender, axial length, corneal curvature and astigmatism parameters did not show significant discriminant ability (p > 0.05).

Our study identifies choroidal thickening, increased age, and scleral thickening as relevant predictors of PPE in KC patients. These findings provide deeper insights into the ocular characteristics associated with KC and PPE.

Abstract 4 – Main Program

PERIPHERAL EXUDATIVE HEMORRHAGIC CHORIORETINOPATHY: DIAGNOSTIC AND THERAPEUTIC CHALLENGES

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Peripheral exudative hemorrhagic chorioretinopathy (PEHCR) is a peripheral retinal vascular pathology similar to age-related macular degeneration. The presentation will provide an overview of differential diagnoses, etiology and management of PEHCR.

A case of 74-year-old female with unclear diagnosis of peripheral retinal lesion of both eyes will be presented.

In temporal periphery of both eyes subretinal hemorrhages, exudative mass with hard exudates, clumps of subretinal pigment were observed. Additionally in the right eye parapapillary choroidal neovascularization (CNV) was diagnosed, which was treated with anti-VEGF intravitreal injections. Exudation later progressed in the fellow eye. So, treatment of with anti-VEGF's was also started. Parapapillary CNV regressed, visual acuity remained unaffected, and the retinal pigment epithelial detachment (PED) spontaneously resolved.

Pathology is usually asymptomatic, but bleeding or exudation reaching the macula may cause visual impairment. PEHR can masquerade as choroidal melanoma. Characteristic peripheral hemorrhagic PED'S are the key to diagnosis. PEHCR can be observed without treatment, though anti-VEGF's appear to be an effective, especially there is threat to vision loss.

Abstract 12 – Main Program

CLINICAL OUTCOMES OF A RETINAL STROKE CODE IN THE EMERGENCY DEPARTMENT OF A TERTIARY CARE HOSPITAL

Ruiz Bilbao S.*, Diaz Aljaro P., Romanic Bubalo N., Bouchikh El Jarrouidi R., CastaÑo C., Remollo S., Bustamante Rangel A., De La Ossa N.

OPHTHALMOLOGY ~ BARCELONA ~ Spain

The ER Retinal Stroke protocol, led by a multidisciplinary team, uses OCT, retinography, and etiopathogenic studies for diagnosis. OCT is crucial, detecting hyperreflectivity in inner retinal layers before fundus changes. Treatment includes intravenous or intraarterial thrombolysis, depending on the therapeutic window, improving visual recovery outcomes.

Over six years, 142 retinal arterial occlusion cases were identified. For statistical analysis, 120 cases were included, excluding 28 with presumed specific types of arterial occlusion with good prognosis. Of 92 CRAO cases, only 53 met the visual acuity criteria (<20 letters or <20/400), and 18 (34%) were treated within the therapeutic window (15 intravenous, 3 intraarterial).

• Significant visual improvement (≥9 lines or 65 letters) occurred in 22.2% of treated patients within a week.
• Untreated patients showed no visual improvement.
• Reperfusion therapies were safe and increased recovery rates, but variability in response to thrombolysis within the therapeutic window remains unexplained.

"Time is retina": Early diagnosis and rapid triage are critical; OCT is essential in the ER.
Public awareness and general practitioner training on retinal strokes are necessary.
Thrombolysis is safe and improves visual outcomes.
Ongoing research with AI aims to personalize treatment windows and retinal viability assessment using OCT biomarkers.

Abstract 17 – Main Program

A CURIOUS CASE OF IRIS HETEROCHROMIA

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[1]Sapienza University of Rome, Sant'Andrea Hospital ~ Rome ~ Italy, [2]Sant'Eugenio Hospital ~ Rome ~ Italy

A 45-year-old male was referred for evaluation due to suspected retinal detachment in his right eye. He presented with no light perception and iris heterochromia from 18 months.
Best-corrected visual acuity was 20/25 in his left eye with an unremarkable examination.

An exploratory vitrectomy revealed the presence of chronic vitreous hemorrhage accompanied by a pale retina with ghost vessels and neovascularization.
Fluorescein angiography showed severe retinal arterial and venous vascular occlusion, mid- and peripheral ischemia, and late leakage in the correspondence of the optic nerve and peripheral retina.The fellow eye exhibited peripheral ischemia in the nasal periphery.
Given the patient's young age and the severity of the vascular occlusion, systemic etiologies were investigated.
Hematologic evaluation identified antiphospholipid antibodies, which, in association with the ocular vascular occlusive event, led to a diagnosis of primary antiphospholipid syndrome.The patient underwent panretinal photocoagulation and systemic anticoagulation therapy.

Three months later, the patient exhibited a remarkable visual recovery to 20/30 in the affected eye, along with a complete regression of iris heterochromia.

In our case chronic vitreous hemorrhage and poor vision represented an unusual presentation of APS in a young patient.
The therapeutic management with vitrectomy,despite the poor vision, was helpful in revealing the underlying pathology, allowing a good visual recovery with a significant prognostic impact with respect to the APS-related life-threatening complications.

Abstract 140

EFFICACY AND SAFETY OUTCOMES FROM THE FIREFLEYE NEXT STUDY OF CHILDREN 3 YEARS OF AGE WITH RETINOPATHY OF PREMATURITY (ROP) TREATED WITH INTRAVITREAL AFLIBERCEPT VERSUS LASER IN THE RANDOMIZED FIREFLEYE STUDY

Lepore D.*[1], Stahl A.[2], Nakanishi H.[3], Wu W.[4], Azuma N.[5], Jacas C.[6], Athanikar A.[7], Vitti R.[7], Chu K.[7], Iveli P.[8], Zhao F.[9], Schlief S.[8], Leal S.[10], Brandau K.[8], Miller T.[11], Köfüncü E.[8], Fielder A.[12]

[1]Catholic University of the Sacred Heart ~ Milan ~ Italy, [2]University Medicine Greifswald ~ Greifswald ~ Germany, [3]Kitasato University School of Medicine ~ Sagamihara ~ Japan, [4]Linkou Chang Gung Memorial Hospital, and College of Medicine, Chang Gung University ~ Taoyuan ~ Taiwan, [5]Medical Research Institute, Tokyo Medical and Dental University ~ Tokyo ~ Japan, [6]Hospital Universitari Vall d'Hebron ~ Barcelona ~ Spain, [7]Regeneron Pharmaceuticals ~ Tarrytown ~ United States of America, [8]Bayer AG ~ Leverkusen ~ Germany, [9]Bayer Inc. ~ Mississauga ~ Canada, [10]Bayer Consumer Care AG ~ Basel ~ Switzerland, [11]Bayer Healthcare ~ Whippany ~ United States of America, [12]City University London ~ London ~ United Kingdom

FIREFLEYE next (NCT04015180), an ongoing multinational Phase 3b study, is assessing long-term ophthalmic and overall clinical and neurodevelopmental outcomes in patients through age 5 years following treatment with intravitreal aflibercept (0.4 mg/eye) versus laser (2:1 randomization) for severe acute-phase ROP in the 6-month Phase 3 FIREFLEYE study (NCT04004208).

Efficacy, including binocular best-corrected visual acuity (BCVA), and safety outcomes at 3 years of age were assessed in this preplanned FIREFLEYE next interim analysis.

The full analysis set comprised 100 children (aflibercept, 66 [128 eyes]; laser, 34 [64 eyes]). Most children had no ROP (aflibercept, 98.3%; laser, 96.7%) and no unfavorable structural outcomes (aflibercept, 93.9%; laser, 94.1%). No ROP re-activation was reported beyond 50 weeks' chronological age. Most eyes (aflibercept, 96.6%; laser, 98.3%) fixed-and-followed a 5-cm toy. Binocular BCVA was ≥20/200 in 97.8% and 100%, and ≥20/40 in 66.7% and 47.8% of children treated with aflibercept (n=45) and laser (n=23), respectively. High myopia was reported in 8.9% (aflibercept, n=112) versus 24.1% (laser, n=58) of eyes. Adverse events were as expected for the study population.

Data through 3 years of age show that, following aflibercept 0.4 mg therapy, disease control remained stable, and disease re-activation was rare. Visual function was age-appropriate, and myopia was less frequent and less severe following aflibercept than after laser. No concerns regarding ocular and systemic safety were identified.

Abstract 71

FACTORS AFFECTING VISUAL PROGNOSIS IN PATIENTS WITH NEOVASCULAR GLAUCOMA SECONDARY TO RETINAL VASCULAR DISEASES

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University of Health Science-Beyoğlu Eye Training and Research Hospital ~ Istanbul ~ Turkey

To evaluate the factors affecting visual prognosis in patients with neovascular glaucoma (NVG) secondary to retinal vascular diseases.

Patients who had NVG caused by retinal vascular diseases and followed up for at least 1 year between 2020 and 2023 were retrospectively included. Best corrected visual acuity (BCVA - LogMAR) at the onset of NVG and 1 year follow-up, IOP at the onset of NVG, maximum IOP measured during follow-up, etiology (diabetic retinopathy (DRP), central retinal vein occlusion(CRVO) and central retinal artery occlusion(CRAO)), number of quadrants with neovascularization on gonioscopic examination, post-NVG intravitreal injections were analyzed.

One-hundred-nineteen eyes of 119 patients were included.Cause of NVG was DRP in 55(46.2%),CRVO in 32(26.9%),CRAO in 32(26.9%).Mean BCVA was 1.92±0.95 at NVG-onset,2.23±0.94 at 1st year follow-up($p<0.001$).BCVA at NVG-onset and 1st year follow-up was lower in patients with CRAO compared to DRP($p=0.001$) and CRVO($p=0.04$).A positive correlation was found between BCVA at NVG-onset and 1st year follow-up($p<0.001$,$r=0.60$).At NVG-onset and maximum IOP-values were 30.16±15.35mmHg and 41.57±14.97mmHg,respectively.A positive correlation was found between BCVA at 1st year follow-up and IOP at NVG-onset,maximum IOP-value and number of quadrants with neovascularization($p=0.002$ $r=0.28$,$p<0.001$ $r=0.40$,$p<0.001$ $r=0.60$,respectively).Mean number of intravitreal injections within 1 year was 3.08±3.10.

In patients with NVG secondary to retinal vascular diseases, a history of CRAO, low initial BCVA, high initial and maximum IOP and extensive neovascularization in the iridocorneal angle were found to be associated with poor visual outcome.

Abstract 136

LONG-TERM TREAT-AND-EXTEND OUTCOMES IN CYSTOID MACULAR EDEMA DUE TO RETINAL VEIN OCCLUSION

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Vista Augenklinik Binningen, Binningen, Switzerland ~ Basel-Land ~ Switzerland

This study aims to evaluate the long-term outcome of a treat-and-extend regimen (TER) in treatment-naïve patients with cystoid macular edema (CME) secondary to branch retinal vein occlusion (BRVO) or central retinal vein occlusion (CRVO).

A retrospective analysis was conducted on a consecutive series of patients treated with either ranibizumab 0.5mg or aflibercept 2mg in a treat-and-extend regimen without a loading dose with follow-up of at least 12 months. The evaluation included best-corrected visual acuity (BCVA), central retinal thickness (CRT), other morphological parameters assessed by spectral-domain optical coherence tomography (SD-OCT) and fluorescein angiography (FA) as well as treatment frequency.

n=106 (mean age 72.2±11.2 years), 55 BRVO, 51 CRVO/Hemi-CRVO. Mean follow-up period 49.4±33.3 months. BCVA significantly increased from 57.4±24 letters at baseline to 72.6±13.9, 70.5±18.5, 72.8±16.9, and 75.0±9.6 letters (all $p<0.001$) after 1, 2, 3 and 4 years respectively. CRT significantly decreased from 506.3±194.7µm at baseline to 276±54.8µm, 288±67.9µm, 273.9±61.4µm, and 280±85.5µm (all $p<0.001$), after 1, 2, 3 and 4 years, respectively. Mean number of injections was 9.9±2.2, 8.3±2.6, 7.8±3.4, and 7.1±2.3 at years 1, 2, 3, and 4, respectively. The mean maximal recurrence-free treatment interval was 6.4±2.1, 7.9±2.7, 8.3±2.8, and 8.4±2.6 within years 1, 2, 3, and 4, respectively.

Long-term treat-and-extend regimen treatment using ranibizumab or aflibercept in treatment-naïve patients with CME due to BRVO or CRVO led to statistically significant and sustained functional and morphological improvements.

Abstract 82

12-MONTH OUTCOME OF INTRAVITREAL AFLIBERCEPT FOR THE MANAGEMENT OF CYSTOID MACULAR OEDEMA INDUCED BY CENTRAL RETINAL VEIN OCCLUSION OR BRANCH RETINAL VEIN OCCLUSION IN PATIENTS WITH EXFOLIATION SYNDROME OR EXFOLIATIVE GLAUCOMA

Giannopoulos T.*, Panagiotou E., Artzouhaltzi A., Konstas A.

First University Department of Ophthalmology, Aristotle University of Thessaloniki, AHEPA Hospital, ~ Thessaloniki ~ Greece

To evaluate the outcomes of intravitreal aflibercept (AFL) treatment in patients with macular oedema (MO) secondary to retinal vein occlusion (RVO) and exfoliation syndrome (XFS) or exfoliative glaucoma (XFG)

This is a single-centre, single cohort non interventional study, we included patients with macular oedema due to BRVO and CRVO and XFS or XFG. All patients were treated with three monthly injections of aflibercept followed by a PRN protocol. After the loading dose all patients had monthly reviews of BCVA CRT and IOP. Primary outcome measures of this study included the change in BCVA and CRT and IOP. Secondary outcome measure was the number of visits and injections.

Twenty five eyes of 25 patients were included. Fourteen patients (56%) had BRVO, and 11(44%) had CRVO. Five patients had XFG and 19 patients had XFS.
Mean BCVA at baseline and months 3 and 12 was 55.3 EDTRS letters (range: 31–73), 68.2 (range 32-83) and 65.1(range 5–83), respectively
Mean baseline CRT was 523um (range: 244–832). Mean CRT at months 3 and 12 was 333 (range: 183–524), and 321 (range: 167– 521), respectively.
Mean IOP at baseline was 17.5mmHg (range 13-23) and 17.7 (range 14-24). Two patients (9.5) converted to XFG from XFS.

In conclusion, AFL treatment in patients with MO secondary to RVO and XFS or XFG seemed to be safe and effective. Results regarding BCVA and CRT are comparable to the literature. The risk of converting from XFS to XFG requires close glaucoma monitoring.

Abstract 85

INCIDENCE AND LOCALIZATION OF TELANGIECTATIC CAPILLARIES (TELCAPS) SECONDARY TO RETINAL VEIN OCCLUSION TREATED WITH ANTI-VEGF MONOTHERAPY.

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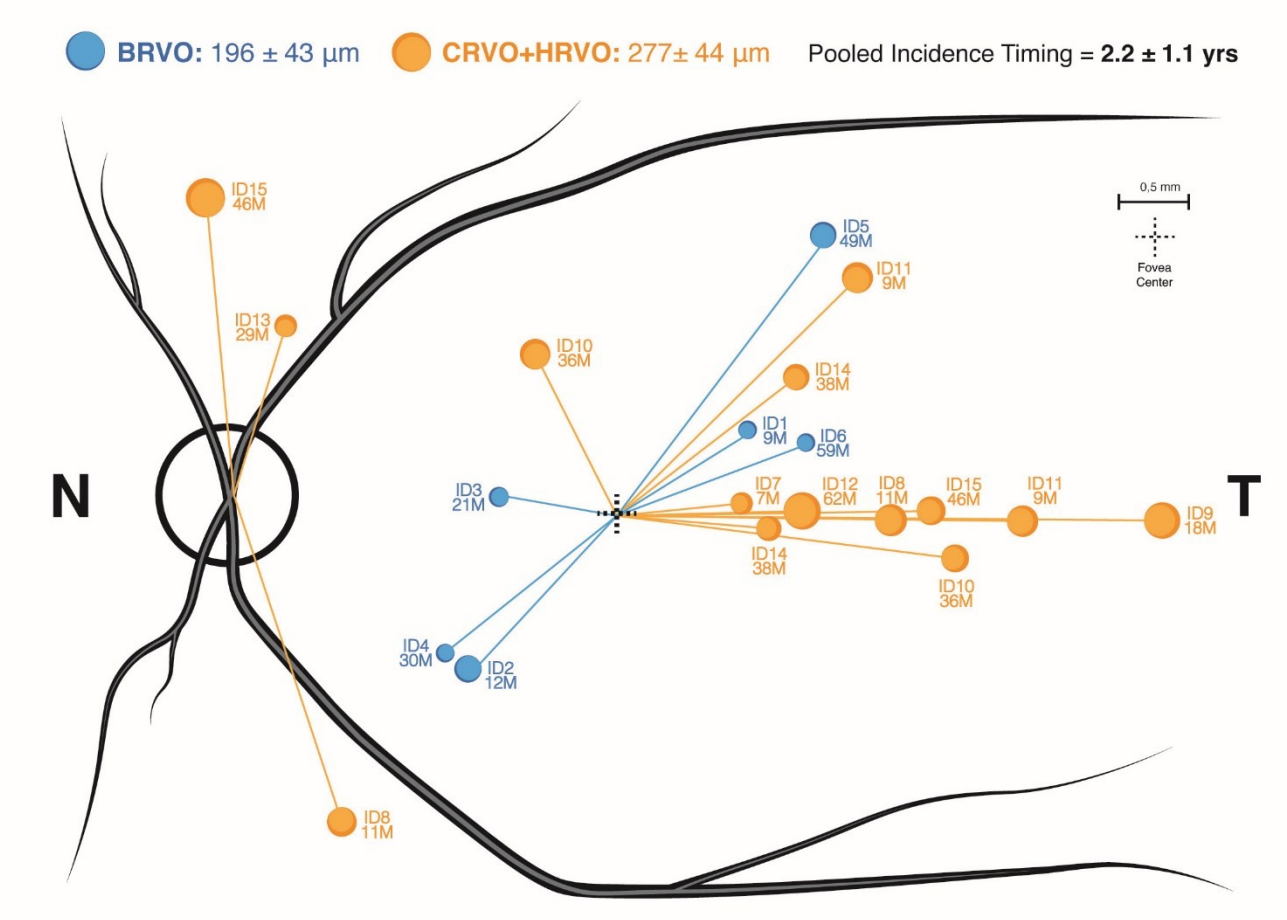
To investigate the incidence, timing, dimensional and spatial characteristics of telangiectatic capillaries (TelCaps) in retinal vein occlusion (RVO) patients treated with anti-VEGF monotherapy.

This prospective non-concurrent longitudinal cohort study included 138 eyes of 138 patients with unilateral treatment-naïve RVO treated with intravitreal anti-VEGF monotherapy for a minimum of 24 months. TelCaps were identified using multimodal imaging, including indocyanine green angiography (ICGA). Incidence timing, diameter, and spatial coordinates of TelCaps were recorded. Cox regression modeling was used to assess risk factors for TelCap development.

Mean follow-up interval was 4.4±2.6 years (range: 2-10 years). TelCaps developed in 15/138 eyes (10.9%) after a mean of 26±16 months. TelCaps in HRVO/CRVO showed larger diameters compared to BRVO (277±44µm vs 196±43µm, p=0.005) and preferential localization along the temporal horizontal raphe (Y-axis coordinates: 0.4±0.6mm vs 0.9±0.7mm, p=0.017). Cox regression revealed that the occurrence of a hemorrhagic rebound event during follow-up was significantly associated with TelCap development (HR=8.74, 95%CL=2.92-26.2, p<0.001). At 5-year follow-up, the risk of developing TelCaps was ~9% in the no-rebound group and ~55% in the rebound group.

TelCaps occur in approximately 10% of RVO cases undergoing intravitreal anti-VEGF monotherapy, with distinct characteristics based on RVO subtype. The development of TelCaps is strongly associated with hemorrhagic rebound events, suggesting a link between repeated venous occlusive episodes and the formation of these recalcitrant vascular lesions.


BRVO: 196 ± 43 µm
CRVO+HRVO: 277± 44 µm
Pooled Incidence Timing = 2.2 ± 1.1 yrs
0,5 mm
Fovea Center
N
T
ID15 46M
ID13 29M
ID8 11M
ID5 49M
ID11 9M
ID10 36M
ID14 38M
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ID15 46M
ID11 9M
ID9 18M
ID14 38M
ID10 36M
ID4 30M
ID2 12M

Abstract 457

WIDE-FIELD OCULAR COHERENCE TOMOGRAPHY ANGIOGRAPHY FINDINGS IN POST-TRAUMATIC RUPTURE OF THE CHOROID AND BRUCH'S MEMBRANE

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To describe wide-field ocular coherence tomography angiography (OCT-A) contribution in choroidal and Bruch's membrane (BM) rupture

We report wide field swept source OCT-A (SS-OCT-A) findings in a case of post-traumatic rupture of the choroid and BM.

A 26-year-old man presented with post-traumatic vision loss. Fundus examination revealed an extensive BM rupture. SS-OCT revealed two different types of ruptures. We noted areas of isolated retinal pigment epithelium (RPE) and BM rupture, and areas of loss of the RPE-BM-choroid block. Wide-field OCT-A showed no choriocapillaris flow all-along the extensive rupture with an abnormal visualization of choroidal vessels flow through RPE-BM defect at the level of the first type of lesions, while there was absolutely no flow at the level of the second type of lesions indicating a rupture of both choroid and choriocapillaris.

OCT-A provides an interesting contribution to the imaging of post traumatic choroidal and BM ruptures, allowing a precise analysis of the microvascular changes within the choriocapillaris and the choroid.

Abstract 423

USING ANGIO OCT - AS A PREDICTOR AND A MARKER OF CARDIAC DISEASES. CLINICAL CASE.
ALGORITHM OF INVESTIGATIONS AND TREATMENT FOR RETINAL VEIN OCCLUSION (RVO).

Kornilova I.*

VCA ~ RIGA ~ Latvia

Retinal vein occlusion (RVO) is the most common retinal vascular disease after diabetic retinopathy. Owing to its multifactorial nature, however, management of this condition remains a challenge. Nowadays we have enough diagnostic methods to predict cardiac diseases and to prevent complications for both eye stroke and circulatory disorders in body.

For this study we used Cohort retrospective cross-sectional method, based on RVO clinics and multidisciplinary examination.
For this patients in our clinic we use ophthalmological methods all or some of them: clinical examinations, visual field, OCT, USG, ANGIO OCT, Fundus foto, FAG with/no contrast.
Having clinical presentation, without other symptoms of cardiac diseases, we start full examination : Full blood test, biochemistry, cardiac markers, thrombophilic disorders, infectious markers, systemic risk factors including medication and other diseases e t.c.
Dopplerography of the vessels(head and neck)
ECG, EhoCG, Transesophageal EhoCG, Holter monitoring
MRI (with/without contrast) or CT
Cardiologist, arrhythmologist, neurologist, angio surgeon and radiologist consultation.

10 cases (age 45-62) in 6 month of RVO in healthy patients with no diagnoses, in all cases undiagnosed circulatory and thrombophilic disorders were detected.
In two of them it was late complications after COVID 19, in one- undiagnosed atrial fibrillation (Clinical case).
Microthrombosis was detected using ANGIO OCT, patients were examined in the early stages and the underlying disease was identified. As a result, treatment was started earlier and more serious local and general complications were avoided. In close interdisciplinary contact, vascular diseases are identified faster and ANGIO OCT can be one of the screening diagnostic methods .

RVO is a complex retinal vascular disorder that commonly leads to severe visual impairment. The majority of patients with RVO have a history of cardiovascular disease. Despite this, there is a group of cardiac undiagnosed patients. Our purpose is work out algorithm of investigations and treatment using angio OCT.

Abstract 429

IDENTIFICATION OF RISK FACTORS IN THE EMERGENCY ROOM THROUGH A RETINAL STROKE-CODE PROTOCOL FOR ACUTE RETINAL ARTERY OCCLUSION: IMPACT ON COMORBIDITY DIAGNOSIS

Romanic Bubalo N.*, Ruiz Bilbao S., Díaz Aljaro P., Bouchikh El Jarroudi R., Bustamante Rangel A., Pérez De La Ossa N., Ruiz Matas J., Rubén F.T.

Hospital Universitari Germans Trias i Pujol ~ Barcelona ~ Spain

To evaluate the clinical impact of implementing a retinal stroke-code protocol for the management of central retinal artery occlusion (CRAO) in a comprehensive stroke center, with a focus on underlying etiologies.

A multidisciplinary protocol was developed by the Neurology, Ophthalmology, Radiology, and Emergency departments to facilitate rapid assessment and treatment of CRAO. Patients presenting with CRAO and baseline visual acuity ≤ 20/400 were considered for intravenous thrombolysis (IVT) within 4.5 hours or intra-arterial thrombolysis (IAT) within 6 hours. A total of 79 CRAO and branch retinal artery occlusion (BRAO) patients were enrolled over five years. Baseline and follow-up visual acuity, intraocular pressure, retinal perfusion, and complications were monitored, with etiological workup based on ischemic stroke protocol.

Of the enrolled patients, 30.6% received reperfusion therapies. Visual acuity improved in 33.3% of those treated, with 26.7% achieving notable recovery (≥15 ETDRS letters). Hypertension (69.4%) and dyslipidemia (59.2%) were common risk factors. Large-vessel atherosclerosis and cardiac embolism were primary etiologies, with approximately 40% of cases remaining undetermined. The protocol facilitated the diagnosis of 10 new atrial fibrillation cases and led to five carotid revascularization procedures

The retinal stroke-code protocol demonstrated potential in enhancing visual outcomes and identifying vascular risk factors associated with CRAO. Structured, rapid intervention strategies are crucial for improving visual recovery and addressing comorbid stroke risks in CRAO patients

Abstract 29

MULTIMODAL TREATMENT OF TWO CASES WITH IDIOPATHIC RETINAL VASCULITIS, ANEURISMS AND NEURORETINITIS

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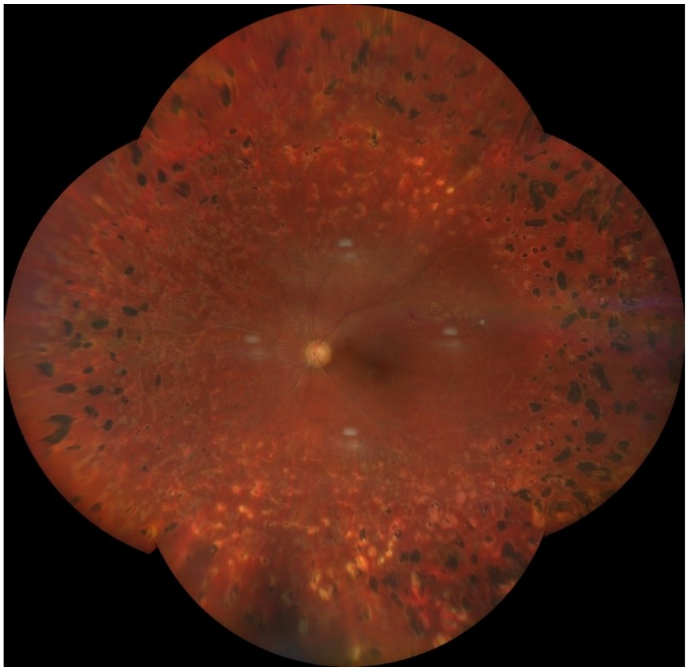
University Clinical Center of the Republic of Srpska; Ophthalmology Department Faculty of Medicine, University of Banja Luka ~ Banja Luka ~ Bosnia and Herzegovina

Idiopathic Retinal Vasculitis, Aneurisms, and Neuroretinitis (IRVAN syndrome) is a rare retinal disorder that requires multimodal approach in treatment of this challenging clinical entity.

Here we present two clinical cases (four eyes) of young patients with IRVAN syndrome who were treated in our clinic during current year. The first patient was 39 years old man with IRVAN syndrome stage 2 for right eye (RE) and stage 3 for left eye (LE). The second patient was 26 years old woman with stage 3 for RE and stage 4 for LE. Treatment approach was based on IRVAN syndrome staging.

All eyes were treated with extensive pan retinal laser photocoagulation. Three eyes received intravitreal bevacizumab injection for peripheral retinal neovascularisation and optic disc neovascularisation. Two eyes received intravitreal dexamethason implant for macular oedema. One eye required vitrectomy due to perisistant intravitreal hemorrhage. The visual outcomes varied. The male patient maintained good visual outcomes (Snellen: right eye 6/6; left eye 6/9,5). The female patient had poorer visual outcomes due to ischemic maculopathy (Snellen: right eye 6/12; left eye 6/24) while pertaining stabile peripheral retinal findings.

Treatment of IRVAN syndrome is challenging. It requires individualized approach and multimodal treatment based on retinal findings and disease staging in order to maintain good visual outcomes.



Abstract 61

BRANCH RETINAL ARTERY OCCLUSION ASSOCIATED WITH PEMBROLIZUMAB. A PROBABLE SUSAC'S SYNDROME- CASE REPORT

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To raise awareness about a possible association of an immune check-point inhibitor (ICI), pembrolizumab, with branch retinal artery occlusion (BRAO) in a patient treated for metastatic pulmonary cancer.

the description of a case report, supported by imaging data, such as color fundus photography (CPF), optical coherence tomography (OCT), fundus autofluorescence (FAF) and optical coherence tomography-angiography (OCTA) images.

A 87-year-old woman came to the Ophthalmology Clinic in September 2023, complaining about blurry vision in the RE for 14 days. Two months before presentation, she reported a sudden onset of hearing loss. At the time, she was undergoing treatment with i.v. pembrolizumab (200 mg) for stage T4N3M1 left bronchopulmonary adenocarcinoma. BCVA 20/20 BE. Color fundus RE revealed an area of perifoveal whitening in the inferior retina.
OCT RE demonstrated a band-like increased hyperreflectivity at the level of the INL nasal to the fovea, a feature suggestive for a PAMM-like lesion. OCTA depicted fern like pattern of capillary ischemia.

Given the presentation of a sudden onset blurry vision and BRAO, associated with a hearing loss, in a patient treated with pembrolizumab, Susac Syndrome was considered. Pembrolizumab was reported to be associated with Susac syndrome, responsible for endothelial cell injury, accumulation of thrombotic material and narrowing of the vessel lumen.

Abstract 446

JEDDAH RETINOPATHY OF PREMATURITY (JED-ROP) SCREENING ALGORITHM

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Given the differences in neonatal care quality and disease characteristics in developing countries,we aimed to establish a new algorithm better suited to developing countries and to Saudi Arabia specifically to decrease the number of infants undergoing screening for ROP;to be used as a complementary tool along with national screening guidelines.

This retrospective cohort study included preterm infants who had been admitted to the neonatal intensive care units (NICU) of 2 tertiary hospitals in Jeddah [King Abdulaziz Medical City, National Guard Hospital (NGH) and King Abdulaziz University Hospital (KAUH)]. The data reviewed were birth weight (BW), gestational age (GA), weekly postnatal weight gain (PWG), and relevant perinatal risk factors. The sensitivities and specificities for detecting type 1 ROP were calculated.

Of the 502 infants included in the study, 148 developed ROP. The JED-ROP algorithm demonstrated 100% sensitivity and 38.9% specificity for recommending the screening of infants with GA ≤ 30 weeks and BW <1501 g and blood transfused <6 weeks and/or 3-week PWG <100 g in the type 1 ROP group.

The JED-ROP algorithm can reduce the number of infants requiring ROP screening by 35.7% without missing type 1 ROP. The algorithm can be an adjunct to current national screening guidelines.

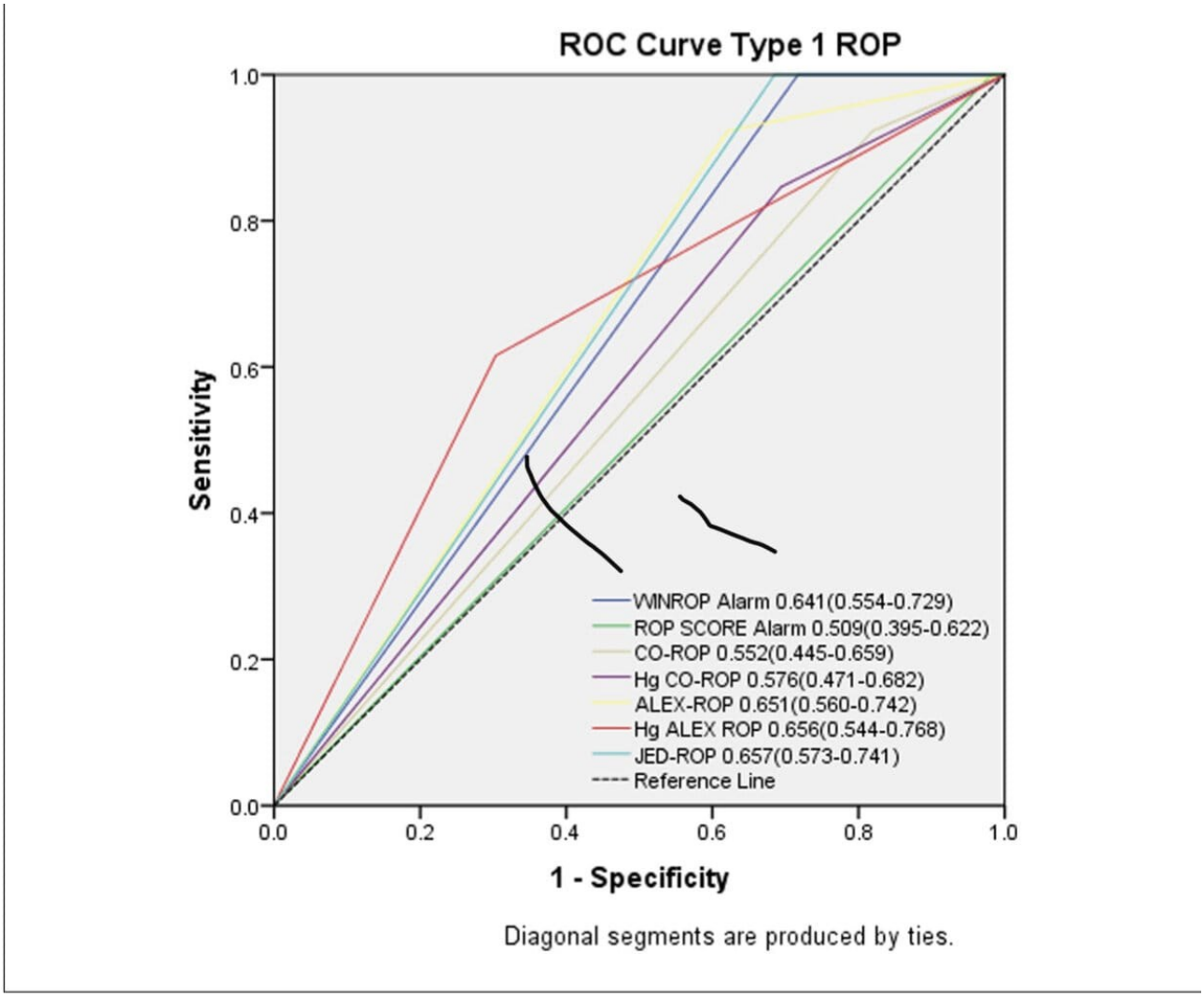

Figure 1. ROC curve for type 1 ROP plotting sensitivity against the specificity of different algorithms to compare and evaluate their performance.
Abbreviations: ROC, receiver operating characteristic; ROP: retinopathy of prematurity.

Abstract 414

WHITE-CENTERED RETINAL HEMORRHAGE REVEALING ACUTE LEUKEMIA : CASE REPORT

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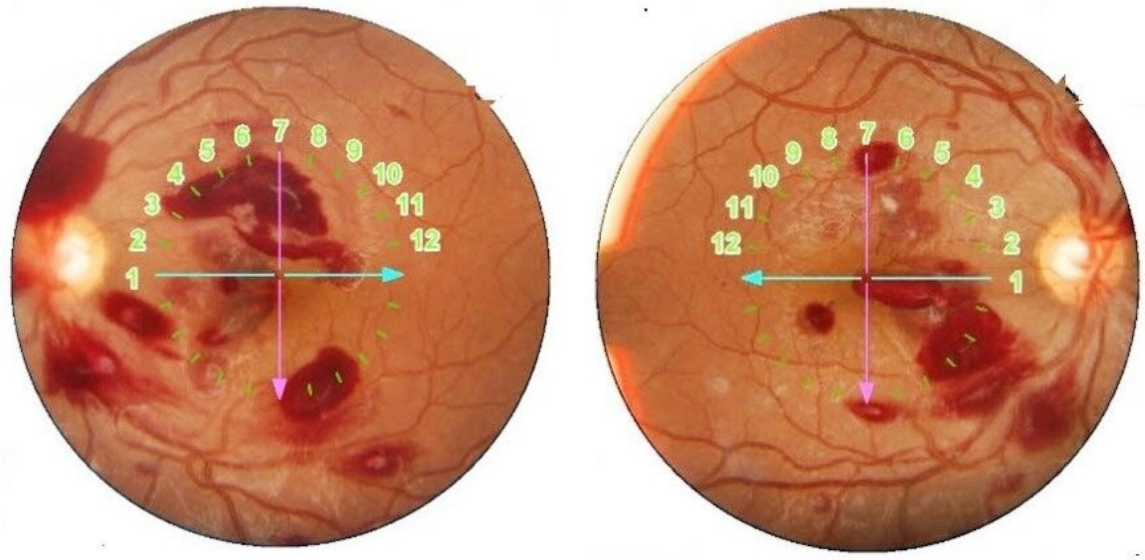
a report of a 17-year-old child case with acute leukemia revealed by white-centered retinal hemorrhages.

case report

We report the case of a 17-year-old child who was hospitalized in the internal medicine department for general impairment with fever, weight loss, and pulmonary infection and who subsequently had a sudden bilateral visual acuity decrease evolving since 24 hours.The examination of the anterior segment is without anomalies, the examination of the fundus finds bilateral white-centered retinal hemorrhages associated with multiple diffuse superficial and deep macular and peripapillary haemorrhages. The biological examinations show a leukocytosis at 32 200 elts / mm3 with anemia and thrombocytopenia. The myelogram confirms the diagnosis of acute leukemia by highlighting the presence of leukoblastosis.

A complete ophthalmological examination and a serious and wide etiological investigation are needed to help the discovery of white-centred retinal hemorrhage. Acute leukemia is one of the most serious etiologies



Abstract 14

GRADE IV HYPERTENSIVE RETINOPATHY AND INCREASED INTRACRANIAL PRESSURE IN AN ADULT WITH AN EXTRA-ADRENAL PARAGANGLIOMA

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A 28-year-old man was presented to our emergency department for evaluation because of a painless, bilateral progressive decrease in vision for the last month. He had a history of headache and dizziness for the last month.
No past health problems or surgeries are reffered ,no systemic diseases , no medications.

On examination, Best-Corrected Visual Acuity (BCVA) was Counting Fingers at four metres(CF at 4m) in the right eye and No Light Perception(NLP) in the left eye. Relative Afferent Pupillary Defect (RAPD) was positive in the left eye. Intaocular Pressure(IOP) was 22mmHg bilateral. The fundus examination in both eyes revealed features of Grade IV hypertensive retinopathy with Macular star bilateral and papilloedema.

Systemic examination revealed the raised Blood Pressure of 200/125 mm Hg. Diagnosis of extra-adrenal paraganglioma was made on the basis of increased urinary norepinephrine (112 mg/dL), increased urinary VMA(30,3mg/dL) , raised serus renin (362μU/mL), raised serus aldosterone(49ng/dL) and a mass next to the left adrenal gland (measuring 25×18 mm) at contrast-enhanced CT.

Medical management to control hypertension was done and surgical removal of the tumour.

Abstract 407

BIOMARKERS MONITORING BY OPTICAL COHERENCE TOMOGRAPHY IN PATIENTS DIAGNOSED WITH RETINAL VEIN OCCLUSIONS: 10 YEARS OF EXPERIENCE.

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To evaluate the anatomical changes and the presence or absence of optical coherence tomography (OCT) biomarkers in patients diagnosed with retinal vein occlusions (RVO).

This study analyzed epidemiological, clinical, and OCT data in RVO patients over 18 months, with assessments at diagnosis, 3, 6, 12, and 18 months. Epidemiological data included gender, age, affected eye, and RVO type. Clinical data captured BCVA, edema, ischemia, and conditions like neovascular glaucoma or retinal detachment. OCT biomarkers examined included IS/OS alterations, vitreomacular traction (VMT), fibrosis, neurosensorial detachment (NSD), DRIL, and hyperreflective foci (HRF), indicators of inflammation. Tracking these variables over time allowed a comprehensive assessment of RVO progression and inflammation, emphasizing the importance of regular follow-up for optimal visual outcomes in affected patients.

Mean age:65.4±13.3years. 47.1% women/52.9% men. 42.9%right eye/57.1%left. 35.3% central RVO/7.6% hemi retinal/57.1% branch RVO. 52.9% ischemic/47.1 non ischemic.
Men BCVA baseline 48.5±22.8 letters, 52.0±232 3months, 53.1±23.5 6months, 52.6±24.7 12months and 51,9±25.7 18months.
IS/OS disruption was present at 80.6% baseline, 65.3% 3months, 48.8% 6months, 55.3% 12months and 51.2% 18months.
VMT present 12.4% baseline, 14.1% 3 months, 14.2% 6 months, 14.7% 12 months and 15.3% 18months.
Fibrosis present 4.7% baseline, 10% 3months, 8.8% in 6 months, 11.8%12months and 15.3%i18months.
NSD present 47.1% baseline, 15.9% 3months, 17.6% 6months, 15.3%12months and 4.7%18months.
DRIL present 82.4% baseline, 80.2% 3months, 75.7%6months, 80.6%12months and 77.6%18months.
HRF present 67.1% baseline, 58.9% 3months, 65.7%6months, 63.5%12months and55.0%18months

The study suggests that slight VMT increases are linked to intravitreal treatments, while fibrosis rises slightly due to chronic OVR. Inflammatory biomarkers like DRIL, PHF, and DNS decrease in the first 18 months, though inflammation remains. Thus, long-term OCT monitoring is crucial for managing OVR and improving outcomes.

Abstract 198

BILATERAL ACUTE VISION LOSS DUE TO TERSON SYNDROME IN A PATIENT WITH EVANS SYNDROME: A CASE REPORT

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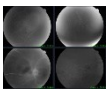
We aim to discuss the clinical presentation, diagnostic challenges, and management of acute bilateral vision loss due to Terson syndrome in the context of Evans syndrome, highlighting the importance of interdisciplinary care in managing complex cases with both systemic and ocular involvement

Data was collected from the patient's medical records, including ophthalmologic exams (visual acuity testing, slit-lamp exam, intraocular pressure measurement) and imaging studies (OCT, fundus examination and Fluorescein angiography)

Patient aged 37, followed in our department for acute visual loss in both eyes.
Medical history : Evans syndrome (on systemic corticosteroid therapy), Cortico-induced diabetes and Severe head trauma resulting in several subdural haematomas and a subarachnoid haemorrhage requiring a stay in intensive care.
Ophtalmologic exam in both eyes : VA: Counting fingers at 2 meters, Clear cornea, Quiet anterior segment, IOP: 13 mmHg, the fundus examination : intravitreal haemorrhage in both eyes. Fluorescein angiography : Delayed arterial filling phase, accompanied by attenuation and sclerosis of the arterioles

This case highlights the relationship between Evans syndrome and Terson syndrome, leading to acute bilateral vision loss. Timely diagnosis and interdisciplinary collaboration are essential for effective management. Ongoing monitoring and appropriate intervention for intraocular hemorrhage can significantly improve visual outcomes in patients with complex systemic and ocular conditions.



Abstract 202

LONG-TERM VISUAL OUTCOMES AND OPTICAL COHERENCE TOMOGRAPHY BIOMARKERS IN EYES WITH MACULAR EDEMA SECONDARY TO RETINAL VEIN OCCLUSION FOLLOWING ANTI-VASCULAR ENDOTHELIAL GROWTH FACTOR THERAPY

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To evaluate the anatomical characteristics and long-term functional outcomes in eyes affected by macular edema as a consequence of retinal vein occlusion that has undergone treatment with anti-vascular endothelial growth factor therapy.

Inclusion criteria comprised 42 eyes of 41 patients, subjected to long-term follow-up, displaying resolved macular edema after a minimum of 5 years since the commencement of anti-vascular endothelial growth factor therapy. During the final visit, two experienced observers evaluated several qualitative parameters using spectral-domain optical coherence tomography, such as the integrity of the external limiting membrane, the state of the ellipsoid zone and retinal pigment epithelium, and the presence of disorganization of the retinal inner layers. In addition, a quantitative evaluation of the inner and outer retinal thicknesses was conducted for the purpose of topographical analysis.

The most prominent qualitative correlation identified with best-corrected visual acuity during the final visit was connected to the presence of disorganization of the retinal inner layers (P = 0.004) and the integrity of the external limiting membrane (P = 0.015). In relation to quantitative aspects, a noteworthy correlation was noted between the visual acuity during the last visit and the parafoveal thickness in both the inner (P = 0.003) and outer retina (P = 0.018).

In eyes where macular edema resulting from retinal vein occlusion has been successfully resolved with anti-vascular endothelial growth factor therapy, changes in the status of the external limiting membrane and the presence of disorganization of the retinal inner layers serve as valuable optical coherence tomography biomarkers, indicating prolonged visual outcomes

Abstract 206

BILATERAL OCCLUSION OF THE CENTRAL RETINAL VEIN CAUSED BY THE INTRAVENOUS ADMINISTRATION OF IMMUNOGLOBULIN IN A PATIENT WITH TYPE I DIABETES AND CHRONIC INFLAMMATORY DEMYELINATING POLYNEUROPATHY (CIDP) - CASE REPORT.

Topic B.*[1], Mavija M.[2], Tepic Popovic M.[1]

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Chronic inflammatory demyelinating polyneuropathy manifests as progressive or relapsing symmetrical tetraparesis with areflexia and peripheral sensory loss. Treatment includes the use of corticosteroids, intravenous administration of immunoglobulin or plasma exchange.
Purpose: we present a case of bilateral central retinal vein occlusion, as an unwanted thromboembolic event after intravenous administration of immunoglobulins.

Method: patient M.K., 36 years old, suffering from diabetes mellitus type I since the age of 7, who was urgently hospitalized in the neurological clinic in March of the current year, due to instability when walking and progressive weakness in the lower extremities. After a neurological examination and diagnostics (nuclear magnetic resonance, electromyography), the existence of chronic inflammatory demyelinating polyneuropathy was established, and intravenous therapy with human immunoglobulins (IVIG) was started. After administering the 9th dose of IVIG, he complains of vision loss, dizziness and headache.

On clinical ophthalmological examination, best corrected visual acuity (BCVA) 0.1, biomicroscopic examination of both eyes is unremarkable, while fundus examination reveals papilloedema, bilateral retinal vein occlusion followed by macular edema and diabetic retinopathy. Discontinuation and/or replacement of immunoglobulin therapy is recommended, and anti-VEGF therapy with acetazolamide inhibitors is prescribed. At the control examination, after 2 months, there are morphological improvements, in the form of a significant reduction of optic nerve edema and recovery of visual acuity BCVA 0.4 for both eyes.

Conclusion: neuro-ophthalmological complications as part of chronic inflammatory demyelinating polyneuropathy occur due to increased intracranial pressure, but also due to unwanted thromboembolic events after intravenous administration of immunoglobulin with accompanying patient comorbidities.
Key words: chronic inflammatory demyelinating polyneuropathy, immunoglobulins, retinal vein occlusion.

Abstract 208

EFFICACY AND SAFETY OF PROPHYLACTIC AGENTS IN PREVENTION OF RETINOPATHY OF PREMATURITY: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

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Retinopathy of prematurity (ROP) is a leading cause of preventable childhood blindness in preterm infants with low birth weight. The efficacy and safety of prophylactic agents like vitamin A, propranolol, and lipids in reducing ROP remain unclear. This systematic review and meta-analysis evaluated their effectiveness and safety in preventing ROP.

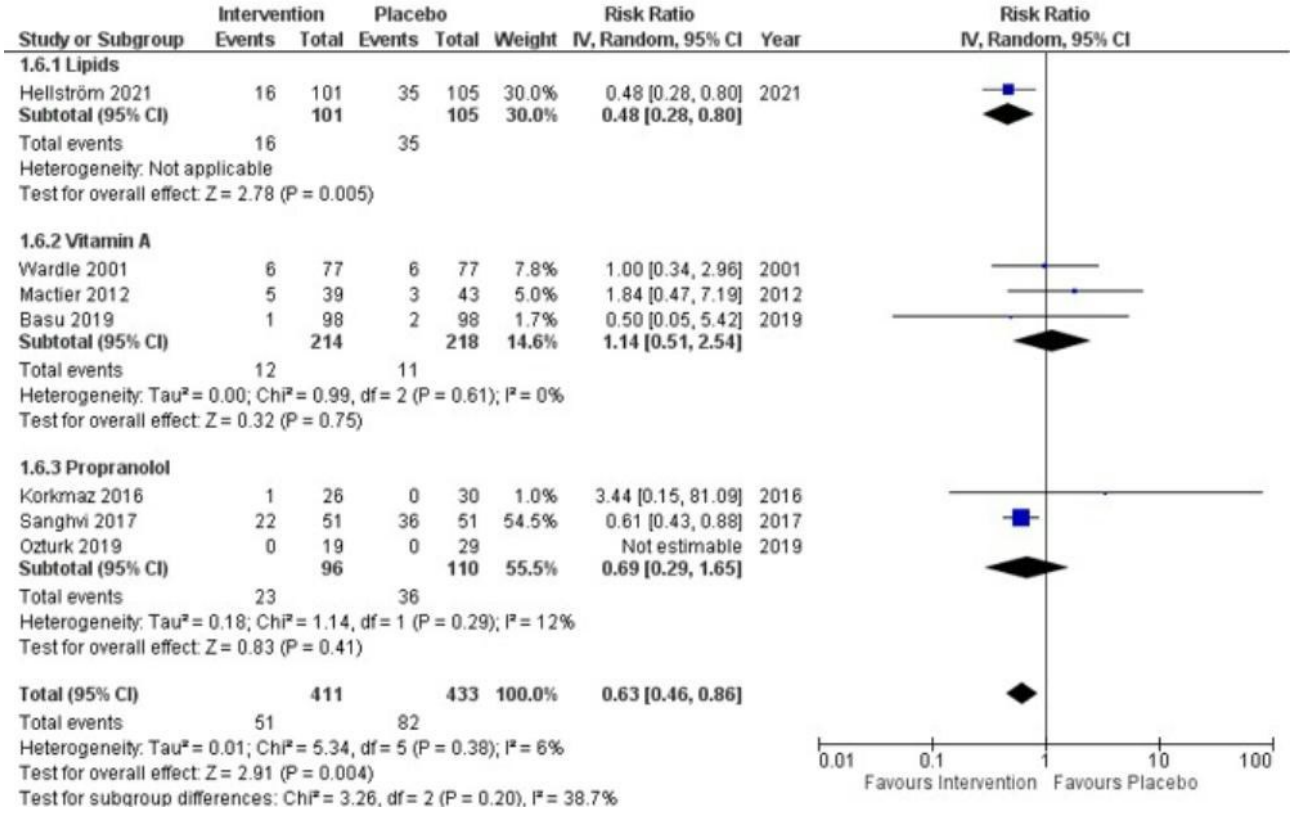
A systematic search was conducted in Embase, MEDLINE, and CENTRAL databases. Eight randomized controlled trials (RCTs) involving 1101 preterm infants were included. We assessed the incidence of ROP at any stage, severe ROP, adverse events, and mortality. Subgroup analyses were performed for each prophylactic agent. Data were pooled using the inverse variance weighting method and reported as risk ratios (RR) with 95% confidence intervals (CI).

Four RCTs had a low risk of bias, three raised bias concerns, and one had a high risk of bias. No significant reduction in ROP incidence at any stage was found in the intervention groups compared to placebo (RR=0.83; 95% CI=[0.69, 1.00]; P=0.05; I^2=0%). Lipids significantly reduced severe ROP incidence (RR=0.48; 95% CI=[0.28, 0.80]; P=0.005), while vitamin A (RR=1.14; 95% CI=[0.51, 2.54]; P=0.75) and propranolol (RR=0.69; 95% CI=[0.29, 1.65]; P=0.41) did not. No significant differences were found in adverse events (RR=0.83; 95% CI=[0.59, 1.17]; P=0.28) or mortality (RR=0.93; 95% CI=[0.67, 1.30]; P=0.68) across all groups.

Lipids show promise in reducing severe ROP in preterm infants, while vitamin A and propranolol were not effective. Further research is needed to confirm these findings and explore the potential role of lipids in clinical practice.

	Effect size	95% CI	P-value	I^2	GRADE
Outcomes reported as **Relative risk**					
Severe ROP	0.63	0.46-0.86	**0.004**	6%	Low
ROP of any stage	0.83	0.69-1.00	0.05	0%	Moderate
ROP stage 1	1.13	0.72-1.79	0.25	27%	Low
ROP stage 2	1.04	0.54-2.02	0.9	6%	Low
Adverse events	0.83	0.59-1.17	0.37	0%	Moderate
Mortality	0.93	0.67-1.30	0.38	6%	Moderate

	Effect size	95% CI	P-value	I^2
Outcomes reported as **Relative risk**				
Severe ROP (Subgroups)				
Lipids	0.48	0.28-0.80	**0.005**	NA
Vitamin A	1.14	0.51-2.54	0.75	0%
Propranolol	0.69	0.29-1.65	0.41	12%



Abstract 400

LET'S GO WITH THE FLOW? OCULAR CHANGES IN HIGH RISK PREGNANCIES

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During pregnancy, there are many changes that occur in the body including the eyes. Some symptoms appear physiologically and some reflect pregnancy-related pathologies. The aim of this study was to compare the ocular changes and hemodynamic changes in the retrobulbar vessels in pregnant women during physiological pregnancy with non-pregnant women.

This was a prospective study. 71 patients were examined all together - 30 pregnant women with PIH, 21 healthy pregnant women. The control group consisted of 21 healthy non-pregnant women. The plan of the visit included a full ophthalmological examination, with an examination of the fundus and an additional ophthalmic coherent tomography (OCT) examination of the retina. Then, a Doppler ultrasound examination of the main retrobulbar arteries of the both eyes was performed. Data on the obstetric status of the patient and the fetus were then analyzed.

Blood flows in the extraocular vessels significantly increase in pregnant patients compared to non-pregnant patients. In pregnant women, changes in the eye assessed in OCT shows a significant thickening of the retina. Doppler analysis shows a significant increase in blood flow in all extraocular vessels in pregnancy complicated by PIH compared to normal pregnancy. A significant increase in retrobulbar vessels Doppler parameters correlates with the severity of PIH and its consequences, i.e., IUGR (FGR), which may be an important supporting factor in the obstetric management. Determining the optimal cutoff values requires further research on a larger study group.

The conducted research has shown statistically significant changes in Power Doppler parametres of the ocular arteries, giving medically important indicators for obstetricians and ophthalmologists. In addition, they confirm the legitimacy of performing such tests in diagnosing and controlling pregnant patients with PIH and in the risk group of developing PE.

Abstract 220

ADJUNCTIVE INTRAVITREAL THERAPY FOR COATS' DISEASE

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Exact treatment for Coats' disease has not been established yet. Recently intravitreal agents are employed in addition to cryotherapy and/or laser photocoagulation. In this study results of adjunctive intravitreal therapy are assessed.

Retrospective multicentric study. Stages of the cases according to Shields classification, applied treatments, duration of follow-up and results are evaluated.

Data from 98 eyes of 95 patients were included. Macular fibrosis was observed in 31 eyes before intravitreal injections. Shields stage 2A was present in 6; 2B in 28; 3A in 30; 3B in 20, 4 in 2; and 5 in 1 eye. Previous interventions included laser photocoagulation, cryotherapy, vitrectomy and external drainage. Adjunctive treatment was antiVEGF injections for 75 and/or intravitreal corticosteroids for 29 eyes.
At final exam, after a mean of 51.68 ±45.5 months, vision was ≤0.1 in 72,15%; 11 patients had glaucoma, 13 cataract. 11 were aphakic or pseudophakic. A subretinal nodule was observed in 46 eyes.

Adjunctive intravitreal therapy may help to prevent unfavourable visual prognosis in Coats' disease. Randomized controlled studies are necessary to ascertain the place of intravitreal pharmacotheray.

Abstract 231

FARICIMAB IN DME: RESULTS FROM THE RHONE-X LONG-TERM EXTENSION TRIAL

Pearce I.*[1], Abreu F.[2], Gibson K.[3], Khanani A.[4], Kotak A.[3], Lai T.Y.Y.[5], Schlottmann P.[6], Sim D.[2], Tang Y.[2], Kotecha A.[3]

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To present findings from the 2-year, phase 3, multicentre, open-label extension RHONE-X trial (NCT04432831), which evaluated the long-term safety (primary objective) and efficacy (exploratory) of faricimab in patients with diabetic macular edema (DME) who completed either of the 2-year randomised phase 3 clinical trials (YOSEMITE [NCT03622580]/RHINE [NCT03622593]).

RHONE-X enrolled patients with DME who completed either the YOSEMITE or RHINE (hereafter referred to as the parent trials) clinical trials without study treatment discontinuation. Patients in the parent trials who received either faricimab 6mg every 8 weeks (Q8W), faricimab 6mg per personalised treat-and-extend (T&E) dosing, or aflibercept 2mg Q8W, received faricimab 6mg up to Q16W T&E (based on pre-specified vision and anatomical criteria as per parent trials) for a further 2 years in RHONE-X. The first 16 weeks had masked monthly visits, followed by an open-label period where patients only attended study visits per their T&E interval.

The analysis included 1474 patients; 81.7% (1204/1474) completed the trial. Faricimab was well tolerated through 2 years; rates of intraocular inflammation were low (1.3%), and the nature of adverse events was consistent with the known safety profile of faricimab. Robust vision gains and improved central subfield thickness (CST) achieved during the parent trials were maintained at 1 and 2 years in RHONE-X. At the end of RHONE-X, faricimab led to DME absence (CST <325 microns) in >90% of individuals regardless of original parent trial treatment assignment. At the end of RHONE-X, ~80% of patients were on extended (≥Q12W) dosing.

RHONE-X is the largest DME extension study to date and had excellent patient retention. Faricimab was well tolerated with a safety profile consistent with the parent trials. The efficacy and durability achieved with faricimab during the parent trials were maintained through this 2-year extension trial.

Abstract 234

REAL-WORLD EFFECTIVENESS AND SAFETY OF AFLIBERCEPT 8 MG IN THE TREATMENT OF NEOVASCULAR AGE-RELATED MACULAR DEGENERATION AND DIABETIC MACULAR EDEMA: DESIGN OF THE SPECTRUM STUDY

Bailey C.*[1], Lange C.[2], Lanzetta P.[3], Munk M.[4], Oubraham H.[5], Machewitz T.[6], Allmeier H.[7], Zhang X.[7], Hasanbasic Z.[7], Chaudhary V.[8]

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PULSAR (Phase 3) and PHOTON (Phase 2/3) were pivotal trials of the new aflibercept 8 mg formulation for the treatment of neovascular age-related macular degeneration (nAMD) and diabetic macular edema (DME). The SPECTRUM Phase 4 study aims to generate real-world evidence on aflibercept 8 mg effectiveness, safety, and treatment patterns.

SPECTRUM (NCT06075147) is a 24-month, prospective observational study being conducted at clinics in North America, Europe, the Middle East, and Asia Pacific. Treatment-naïve and previously treated patients with nAMD aged ≥50 years or with DME aged ≥18 years, who have been prescribed aflibercept 8 mg by their attending physician, are eligible for enrollment. All decisions regarding retreatment, monitoring, and treatment schedules will be determined by the attending physician in accordance with local clinical practice. Data will be collected from medical records and patient interviews over a period of ≤24 months per patient between February 2024 and September 2027.

The planned sample size is ~2500 patients based on study feasibility, with each participating country/country cluster contributing ~100 patients per ≥1 cohort (nAMD naïve, nAMD pretreated, DME naïve, DME pretreated). The study design facilitates global and regional analyses and allows rolling interim analyses of endpoints in each country/region a year after enrollment is complete. The primary endpoint is change in visual acuity from baseline to Month 12; secondary endpoints include the number of injections, number of visits, and change in central retinal thickness from baseline to Months 12 and 24. Safety will be monitored throughout. Data will be analyzed descriptively.

SPECTRUM will generate a wealth of long-term data on real-world treatment patterns and clinical outcomes with aflibercept 8 mg across heterogenous patient populations in multiple countries. To date, 668 patients have been enrolled across 6 countries, and the first set of data evaluations are scheduled for Q1 of 2025.

Abstract 403

COMBINED CENTRAL RETINAL VEIN OCCLUSION AND CILIORETINAL ARTERY OCCLUSION AS THE INITIAL PRESENTATION OF FROSTED BRANCH ANGIITIS

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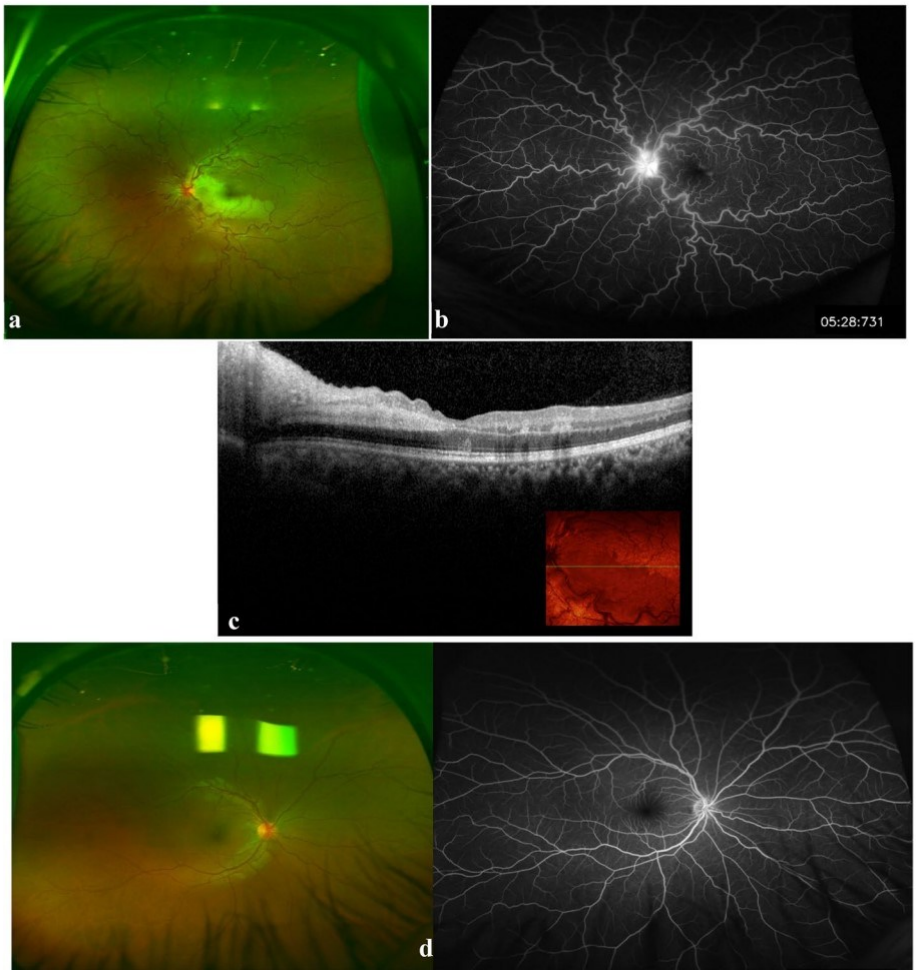
KKESH ~ Riaydh ~ Saudi Arabia

To report a case of combined central retinal vein occlusion (CRVO) with cilioretinal artery occlusion (CLRAO) that heralded the development of frosted branch angiitis (FBA).

this is a case report which involves a retrospective data collection from a patient's medical records including demographics, clinical data, imaging and treatment outcome

25-year-old healthy male presented with sudden painless visual loss in his left eye with a visual acuity (VA) of 20/300. Fundus exam and fluorescein angiography showed signs of combined CRVO and CLRAO. Without treatment, his vision gradually improved until it reached 20/30 within four months. Five months after initial presentation, he returned with severe visual loss (20/400) in the same eye and a clinical picture of severe occlusive periphlebitis resembling a frosted branch angiitis pattern associated with severe macular edema. This was promptly and successfully treated with systemic steroids and immunosuppressive medications.

CRVO in young population can have an unusual course and one should carefully rule out underlying uveitic etiologies in each visit. Clinical suspicion and close follow-up are required for early detection and timely management of FBA.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Abstract 262

OCULAR MANIFESTATIONS IN ATYPICAL HEMOLYTIC UREMIC SYNDROME : A CASE REPORT

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Hemolytic Uremic Syndrome (HUS) is a thrombotic microangiopathy, causing hemolytic anemia, thrombocytopenia and acute kidney injury with an incidence of 1-2/1,000,000 people. This case report aims to describe the ocular manifestations in a patient with atypical HUS and highlight the need for early detection of complications to avoid future risks.

A 27-year-old male patient with a long-standing history of atypical HUS, presenting with a respiratory infection and hypertensive crisis, was referred by the Nephrology Department for a complete eye examination, despite having no visual complaints. The examination revealed bilateral retinal hemorrhages, soft exudates, and optic nerve swelling. Optical coherence tomography (OCT) was performed, confirming the presence of optic nerve head swelling and serous retinal detachment in one eye.

The patient underwent systemic treatment, including antihypertensive medication and dialysis, leading to stabilization of his blood pressure. Follow-up examination showed a gradual resolution of retinal hemorrhages, serous retinal detachment, and optic nerve swelling. No specialized ocular treatment was required, but regular monitoring was maintained to ensure ongoing recovery.

Ocular manifestations in atypical HUS can occur without ocular symptoms, underlining the importance of thorough eye examination in these cases. Early identification and ongoing monitoring can prevent long-term complications, making interdisciplinary care essential in managing these patients.

Abstract 260

TREATMENT PATTERNS, VISUAL OUTCOMES AND SAFETY IN EYES WITH NEOVASCULAR AGE-RELATED MACULAR DEGENERATION (NAMD) AND DIABETIC MACULAR EDEMA (DME) TREATED WITH FARICIMAB IN THE UK: 1-YEAR RESULTS FROM THE FARICIMAB REAL-WORLD EVIDENCE (FARWIDE) STUDY

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Faricimab was approved in Great Britain in May 2022 for the treatment of nAMD and DME. This analysis describes patient characteristics, treatment patterns, visual outcomes and safety of faricimab in eyes with DME or nAMD and ≥12 months of follow-up in the FARWIDE study.

Data from 35 UK National Health Service sites that use Medisoft's electronic medical record system were included. Patients initiated faricimab after June 2022, had nAMD or DME, and ≥12 months of follow-up as of July 2024. Previously treated (PT) eyes were those that received anti-VEGF or, for DME eyes, steroid implant treatment prior to faricimab. Otherwise, eyes were considered treatment-naïve (TN). Baseline characteristics, Visual Acuity (VA, measured in ETDRS letters), and injection frequency were assessed in the 12-month cohort. Rates of Intraocular Inflammation (IOI) and endophthalmitis were evaluated in the overall study population with any follow-up duration. Analyses were descriptive.

5851 nAMD patients (6991 eyes, 73.5% PT) and 1556 DME patients (2147 eyes, 67.9% PT) were included. Mean VA improved from 56.4 to 60.1 letters at 12 months in TN nAMD eyes, and from 63.9 to 68.4 letters in TN DME eyes. PT eyes had stable VA. Mean injection numbers declined in the last 6 months vs the first 6 months (Table). IOI and endophthalmitis events per 100 injections were 0.14 (0.11-0.17) and 0.03 (0.02-0.05) in TN eyes (57,641 injections, 11,139 eyes), respectively, and 0.14 (0.11-0.16) and 0.04 (0.03-0.06) in PT eyes (100,741 injections, 15,013 eyes), respectively.

The FARWIDE study demonstrates the effectiveness and safety of faricimab over 1 year, with VA gains in TN eyes. Lower injection count in the second half of the year suggests treatment interval extensions, supporting the durability of faricimab. IOI and endophthalmitis rates were in line with faricimab phase 3 studies.

Table. Injection frequency in months 1–6 and 7–12 of faricimab treatment

	nAMD		DME	
	Treatment-naïve (n = 1856)	**Previously treated (n = 5135)**	**Treatment-naïve (n = 690)**	**Previously treated (n = 1457)**
Mean number of injections in months 1–6 (SD)	4.7 (0.7)	4.5 (1.0)	4.5 (1.0)	4.5 (1.2)
Mean number of injections in months 7–12 (SD)	2.2 (1.1)	3.0 (1.2)	1.9 (1.2)	2.4 (1.3)

DME, diabetic macular edema; nAMD, neovascular age-related macular degeneration; SD, standard deviation.

Abstract 386

PARACENTRAL ACUTE MIDDLE MACULOPATHY: REVERSE ENGINEERING OF A CASE

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This work aims to offer new insights into the etiopathogenesis of paracentral acute middle maculopathy (PAMM) through the description of a clinical case.

A 45-year-old Hispanic woman diagnosed with idiopathic bilateral optic neuritis underwent a comprehensive systemic and ophthalmologic evaluation. The assessment included blood exams for inflammatory and infectious diseases, brain and orbit magnetic resonance imaging (MRI), standardized best corrected visual acuity (BCVA) measurement, color retinography, fundus autofluorescence, fluorescein angiography (FA), indocyanine green angiography (ICGA), optical coherence tomography (OCT), OCT angiography (OCTA), standard automated perimetry, and microperimetry. These tests were repeated over an 8-year follow-up period.

At baseline, MRI showed bilateral enhancement of optic nerves. BCVA was hand motion in the right eye (RE) and light perception in the left eye (LE). Fundus examination showed a swollen optic disc in both eyes. OCT showed PAMM lesions in LE. The patient received steroid therapy. Three months later, the visual acuity improved up to 0.1 LogMAR in both eyes. After one year, OCT showed retinal ischemic perivascular lesions with an irregular “sawtooth” profile. Over the years, LE showed progressive retinal thinning. Microperimetry still shows a good correspondence between the lesions and the areas of sensitivity loss.

We describe the clinical findings in a case of PAMM associated with bilateral idiopathic optic neuritis. This report describes the multimodal imaging of the lesions, discusses clinical correlations, and presents a pathophysiologic hypothesis supported by long-term morphologic and functional assessment.

Abstract 282

INDIRECT COMPARISON OF THE RELATIVE EFFECTIVENESS OF FARICIMAB VS AFLIBERCEPT 8 MG IN DIABETIC MACULAR EDEMA (DME) AND NEOVASCULAR AGE-RELATED MACULAR DEGENERATION (NAMD)

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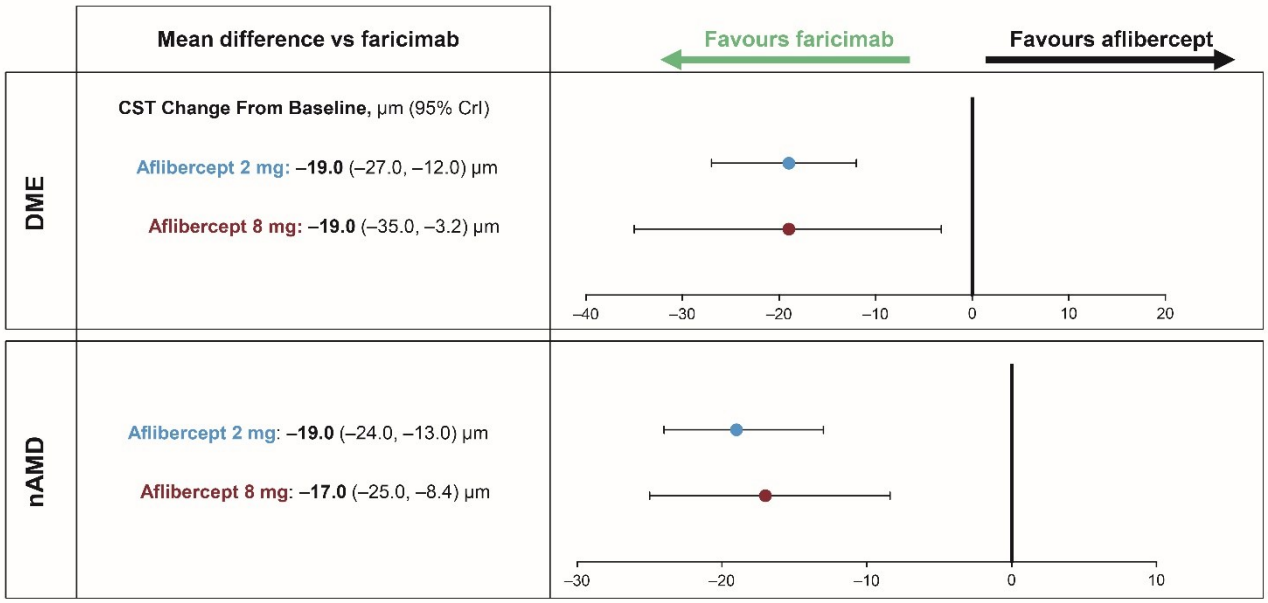
To perform a matching-adjusted network meta-analysis (NMA) of the efficacy of faricimab vs aflibercept 8 mg at week 12 (after 3 loading doses) by matching patient populations in phase 3 trials for DME (YOSEMITE/RHINE and PHOTON) and nAMD (TENAYA/LUCERNE and PULSAR).

Weighting was applied to match patients from YOSEMITE/RHINE (NCT03622580/NCT03622593) and TENAYA/LUCERNE (NCT03823287/NCT03823300) based on their baseline characteristics to published aggregated baseline characteristics for PHOTON (NCT04429503) and PULSAR (NCT04423718), respectively. The matched population was used to recalculate outcomes from faricimab trials and an NMA anchored to the common comparator aflibercept 2mg was conducted. The analysis focused on change in best-corrected visual acuity (BCVA) in ETDRS letters and central subfield thickness (CST) in µm during the first 12 weeks of treatment when dosing was matched. Results are expressed as mean difference in change in BCVA or CST for each aflibercept dose.

For DME, BCVA change from baseline at 12 weeks was similar between faricimab and aflibercept 2mg (-0.2 letters, 95% credible interval [CrI] -0.9,0.5), and 8mg (-0.8 letters, 95% CrI -2.2,0.7); CST reduction was greater for faricimab vs aflibercept 2mg (-19.0µm, 95% CrI -27.0,-12.0) and 8mg (-19.0µm, 95% CrI -35.0,-3.2) (Figure). For nAMD, BCVA change was similar between faricimab and aflibercept 2mg (-0.4 letters, 95% CrI -1.4,0.6) and 8mg (-1.3 letters, 95% CrI -2.8,0.3); CST reduction was greater for faricimab vs aflibercept 2mg (-19.0µm, 95% CrI -24.0,-13.0) and 8mg (-17.0µm, 95% CrI -25.0,-8.4) (Figure).

In a matching-adjusted NMA, faricimab showed greater CST improvements vs aflibercept 8mg in DME and nAMD 4 weeks after third loading dose. Early dual pathway inhibition may improve outcomes beyond anti-VEGF monotherapy. Limitations include potential variations in characteristics not observed/reported, and that PHOTON/PULSAR data are only available as aggregated means.

Figure. Matching-Adjusted NMA Shows Greater Reduction in CST With Faricimab vs Aflibercept 8 mg at Week 12 for both DME and nAMD patients.



Patient populations matched for mean and SD of the following baseline characteristics: Age, BCVA, CST, proportion of patients with prior anti-VEGF treatment, proportion of patients with DRSS score: absent, mild or moderate, proportion of patients with DRSS score: moderately severe, severe. Weighted outcomes compared using Bayesian network meta-analysis using fixed effects. BCVA, best-corrected visual acuity; CST, central subfield thickness; CrI, credible interval; DME, diabetic macular edema; DRSS, Diabetic Retinopathy Severity Scale; ETDRS, Early Treatment Diabetic Retinopathy Study; NMA, network meta-analysis.

Abstract 297

GLOBAL REAL-WORLD CLINICAL AND ANATOMICAL OUTCOMES WITH FARICIMAB IN TREATMENT-NAÏVE PATIENTS WITH NEOVASCULAR AGE-RELATED MACULAR DEGENERATION OR DIABETIC MACULAR EDEMA FROM A MULTI-COUNTRY PROSPECTIVE NON-INTERVENTIONAL STUDY: THE VOYAGER STUDY

Parravano M.*[1], Bailey C.[2], Chaikitmongkol V.[3], Chaudhary V.[4], Chi G.C.[5], Downey A.[6], Finger R.P.[7], Gallego--Pinazo R.[8], Koh A.H.C.[9], Ishida S.[10], Lövestam--Adrian M.[11], Luna Pinto J.D.[12], Schmitz--Valckenberg S.[13], Sheth V.[14], Shi B.[15], Souied E.[16], Uschner D.[15], Guymer R.[17]

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Faricimab is the first bispecific antibody that neutralises angiopoietin-2/vascular endothelial growth factor-A. The global, prospective, non-interventional, 5-year VOYAGER (NCT05476926) study aims to provide insights on clinical and anatomical outcomes in approximately 5000 patients initiating faricimab for neovascular age-related macular degeneration (nAMD) or diabetic macular edema (DME) in routine clinical practice.

Data analysed from November 2022 to August 2024 included treatment-naïve patients (nAMD: 120 eyes from 119 patients; DME: 67 eyes from 51 patients) from 21 countries across North America, Asia-Pacific, Europe and the Middle East. Management was as per usual care, with no mandated scheduled visits or imaging protocol requirements. Visual acuity (VA; measured using Early Treatment Diabetic Retinopathy Study letters), central subfield thickness (CST) and the percentage of eyes with sub-retinal fluid (SRF) and intra-retinal fluid (IRF) were evaluated at baseline and 6 months. Descriptive analyses were performed.

Mean VA (standard deviation [SD]) change from baseline to month 6 was +3.5 (14.3) letters in nAMD eyes and +7.2 (12.2) letters in DME eyes. Mean CST (SD) change from baseline to month 6 was -85.1 (105.6) µm in nAMD eyes and -150.4 (138.7) µm in DME eyes. At baseline and month 6, 69.8% and 25.9% of nAMD eyes had SRF, and 62.7% and 15.8% had IRF, respectively. At baseline and month 6, 29.8% and 3.7% of DME eyes had SRF, and 98.2% and 72.7% had IRF, respectively.

This interim analysis of the VOYAGER study showed early clinical and anatomical improvements supporting the real-world effectiveness and safety of faricimab in a heterogeneous and multinational patient population.

Abstract 301

PHASE 2A/PROOF OF CONCEPT STUDY WITH ANXV (RECOMBINANT HUMAN ANNEXIN A5) IN PATIENTS WITH RETINAL VEIN OCCLUSION

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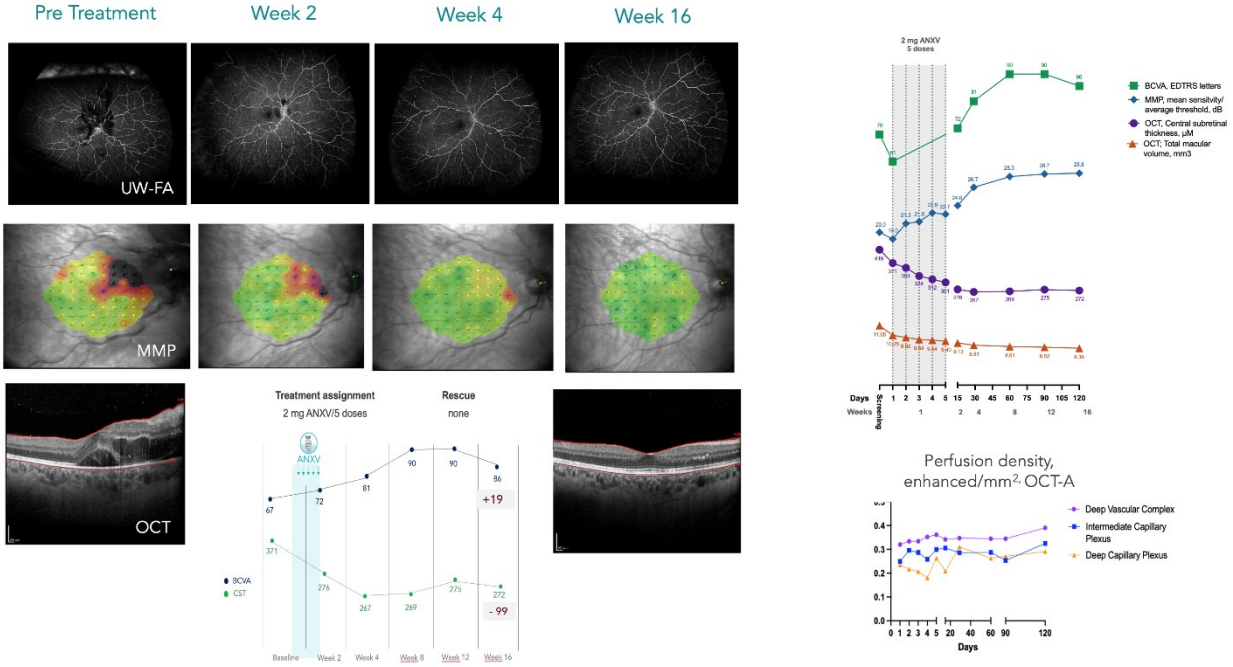
Phosphatidylserine PS) is a membrane lipid implicated in RVO, DMR and AMD. In RVO, PS is exposed on circulating RBC and contributes to their adherence to endothelium, a feature implied as causative. Phase 2a study with ANXV, PS inhibitor, in RVO has concluded in the US. Early findings are reported.

All treatment-naive early onset RVO patients were eligible (see Study Details; NCT05532735; ClinicalTrials.gov). Following a protocol amendment, it is an open-label dose-escalation study with ANXV (a recombinant human Annexin A5 protein) administered as flat doses of 2 mg, 4 mg or 6 mg by 30 min intravenous infusions for 5 days. In total, 16 patients were enrolled, out of which 15 received active treatment and the follow up of 4 months was completed in 14 patients. Patients were followed fo AEs, safety labs, PK, ADA, ophthalmic assessments, and requirement of anti-VEGF.

ANXV inhibits PS and acts as an anti-inflammatory, protective and anti-adhesive agent.No safety or tolerability events associated with the ANXV treatment have been reported. The key endpoint of the study has thus been met. Based on the visual acuity and retinal swelling, 12 of the 14 patients improved or had stable disease. Of these patients, 7 received none and 5 received a single anti-VEGF injection into the eye during the 4 months. Final analysis and interpretation of the complete dataset is pending database lock.

Based on preliminary data, the investigational new drug ANXV demonstrated a favorable safety profile and shows priomising signals of effect.The data supports further clinical development of ANXV in RVO.

Figure 1. Sample Subject 2, CRVO, functional and anatomical assessments post ANXV treatment



Abstract 374

CENTRAL RETINAL VEIN OCCLUSION ASSOCIATED WITH CILIORETINAL ARTERY OCCLUSION SECONDARY TO IRON DEFICIENCY ANEMIA IN A YOUNG PATIENT: A CASE REPORT.

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to describe a rare case central retinal vein occlusion (CRVO) associated with cilioretinal artery occlusion (CLRAO) due to iron deficiency anemia in a young patient

A single case report.

A 20-year-old woman with no significant medical history presented with sudden onset of a unilateral scotoma in her left eye. Best corrected visual acuity was 20/20 in both eyes. Fundus examination revealed venous tortuosity, papilledema, peripapillary flame-shaped hemorrhages, and retinal whitening in the inter-papillomacular space. Fluorescein angiography indicated prolonged arteriovenous transit time, and macular OCT showed thickening and hyperreflectivity of the inner retinal layers. The diagnosis was central retinal vein occlusion (CRVO) with cilioretinal artery occlusion (CLRAO). An extensive workup revealed severe iron deficiency anemia. Spontaneous reperfusion occurred during follow-up.

Retinal vascular occlusions are relatively rare in young individuals and require a thorough workup to diagnose the underlying cause and prevent recurrences. The pathological mechanism of the CRVO/CLRAO association is not well understood. The most accepted hypothesis is hemodynamic blockage due to increased postcapillary pressure.

Abstract 320

PARACENTRAL ACUTE MIDDLE MACULOPATHY IN SEVEN PATIENTS. A CASE SERIES WITH 6-MONTH FOLLOW-UP

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The aim of this study is to discuss the association between the pathogenetic mechanism of Paracentral Acute Middle Maculopathy (PAMM) and its prognosis. We report six-month follow-up results of seven patients with PAMM.

During the period 2022-2024, seven patients were referred in our emergency department complaining of unilateral visual field defects and/or acute vision loss. Optical Coherence Tomography (OCT) revealed a hyperreflective band-like lesion in the inner nuclear layer suggestive of PAMM in all seven cases. A thorough medical history and a systemic work-up were used in order to elucidate the underlying cause. All patients were followed every three months using best corrected visual acuity, dilated fungus examination, visual fields examination, OCT and OCT-angiography. We compare the progression of the disease between different pathogenetic mechanisms using the aforementioned modalities.

Two otherwise healthy patients suffered a central retinal vein occlusion, which in one of them led to a cilioretinal artery occlusion. Two patients reported multiple risk factors for PAMM, such as arterial hypertension and cardiovascular disease and suffered a central and branch retinal artery occlusion, respectively. Past medical history of another patient revealed only a recent COVID-19 infection, with a few recent studies supporting the association between the two entities. One patient reported only a recent use of amantadine due to Parkinson's disease with no other risk factor for PAMM and the other patient reported an incident of anaphylactic shock.

PAMM is a recently reported OCT finding, that suggests a microvascular ischemia at the middle retinal layers. Our results demonstrate different prognostic features for different etiologies of the disease, highlighting the importance of PAMM's early detection and its pathogenesis. Depending on PAMM's etiology patients show variable prognosis in visual acuity.

Abstract 371

UNMASKING RHEUMATOID ARTHRITIS: COMBINED BRANCH RETINAL VEIN AND CILIORETINAL ARTERY OCCLUSION AS THE FIRST PRESENTATION

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To report a case of combined branch retinal vein occlusion (BRVO) and cilioretinal artery occlusion (CLRAO), which preceded the diagnosis of rheumatoid arthritis (RA), with thrombotic risk potentially exacerbated by herbal supplement use.

Case report.

A 77-year-old female with a history of hypertension and dyslipidemia presented with progressive vision loss in the right eye (RE) and sudden vision loss in the left eye (LE). Visual acuity was 1/10 in RE and 2/10 in LE. Fundoscopy and fluorescein angiography confirmed superior branch retinal vein occlusion in RE and cilioretinal artery occlusion in LE. Optical coherence tomography revealed macular edema in RE and paracentral acute middle maculopathy in LE. Elevated anti-CCP and rheumatoid factor antibodies indicated undiagnosed rheumatoid arthritis. The use of a thrombotic herbal supplement was identified as a likely contributing factor to these vascular events.

This case emphasizes the importance of thorough systemic evaluation in patients with retinal vascular occlusions, especially when autoimmune diseases like rheumatoid arthritis are suspected. The potential thrombotic effects of herbal supplements should be carefully considered in patient management.

Abstract 369

COMPARISON OF SYSTEMIC RISK FACTORS FOR HRVO WITH BRVO AND CRVO

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Little is known about systemic risk factors for hemiretinal vein occlusion (HRVO). The aim of this study is to identify differences in ocular, systemic and biochemical risk factors for patients presenting with HRVO compared with central retinal vein occlusion (CRVO) and branch retinal vein occlusion (BRVO).

In this retrospective, London-based, multi-centre observational case-control study we identified patients with HRVO over a 4-year period. Risk factors based on previous studies, common ocular and systemic comorbidities were collected, alongside vital observations and blood test results. These values were compared to randomised CRVO and BRVO control groups using Chi Squared or Fischer's Exact Test for discrete data and ANOVA for continuous data. Data for 78 patients with HRVO were collected from a database of 3,380 patients reviewed for intravitreal injections.

Preliminary results show glaucoma is the only ocular comorbidity significantly associated with increased risk of HRVO compared to BRVO and CRVO ($p<0.05$). Patients with HRVO had a significantly lower white cell count than CRVO and BRVO ($p<0.05$). HRVO patients were twice as likely to take an anticoagulant or antiplatelet than those with CRVO or BRVO.
There was a non-statistically significant difference in incidence of hypertension, diabetes, and hypercholesterolaemia in the HRVO cohort compared to CRVO and BRVO ($p=0.254$, $p=0.560$, $p=0.344$). Mean HbA1c in the HRVO cohort was comparable to that of CRVO and BRVO at 42.5mmol/mol.

These results suggest that glaucoma and certain haematological factors may influence the risk of HRVO compared to CRVO and BRVO. Understanding the associated risk factors is important to understand pathophysiology. Future prospective studies with larger cohorts are required to consolidate this work.

Abstract 340

A RARE CASE OF NAION COMPLICATED BY CRVO AND MACULAR EDEMA: A DIAGNOSTIC CHALLENGE

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To present a rare case of non-arteritic anterior ischemic optic neuropathy (NAION) complicated by central retinal vein occlusion (CRVO) and macular edema. It highlights the significance of recognizing overlapping retinal conditions and underscores the importance of prompt diagnosis to optimize visual outcomes.

A 65-year-old male presented with blurred vision in his right eye for three days. One month earlier, he was evaluated at another clinic for flashes and pain in the right eye where his best corrected visual acuity (BCVA) was 1.0 in both eyes, and an epiretinal membrane (ERM) was identified. He was treated for mild arterial hypertension and hyperlipidemia. At our examination, his BCVA was 0.15/0.8 and fundus examination revealed papilledema with peripapillary hemorrhages, raising suspicion for NAION. The following day, the patient returned to the previous institution, where NAION diagnosis was confirmed.

He was then referred to another clinical center, where despite previous check-ups only CRVO was noted, and Ozurdex treatment was recommended. Laboratory test results were within normal limits. At follow-up in our clinic, BCVA was 0.3/0.9. Fundus examination revealed optic disc edema, flame-shaped hemorrhages, diffuse blot hemorrhages around veins, and macular edema with ERM. OCT confirmed macular edema and ERM with a central foveal thickness of 396 µm in the right eye. Based on the patient's history and clinical findings, we concluded that the NAION was complicated by CRVO and macular edema. Aspirin and Aflibercept treatment were further initiated.

This case illustrates a rare combination of NAION complicated by CRVO and macular edema. The complexity of overlapping retinal conditions highlights the necessity for comprehensive evaluation to ensure effective management and preservation of visual function.

Abstract 250

VALSALVA RELATED SUBRETINAL HAEMORRHAGE IN A PATIENT WITH UNDIAGNOSED POLYPOIDAL CHOROIDAL VASCULOPATHY

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To describe a rare case of subretinal hemorrhage due to Valsalva retinopathy, complicated by undiagnosed Polypoidal Choroidal Vasculopathy (PCV), and to underline the challenges in its management and the importance of a tailored therapeutic approach.

A 45-year-old man presented with sudden visual impairment in the left eye after a Valsalva maneuver during defecation. Ophthalmological assessment identified a subretinal hemorrhage. Further evaluation through Optical Coherence Tomography, Fluorescein Angiography, and Indocyanine Green Angiography confirmed PCV. The patient was initially treated with anti-VEGF injections (aflibercept), but subsequent complications, including an intravitreal hemorrhage, necessitated a vitrectomy followed by micropulse laser therapy for polypoidal lesions.

The patient developed persistent intravitreal hemorrhage after the initial anti-VEGF treatment, requiring vitrectomy. Laser therapy was administered to treat the polypoidal lesions. While the hemorrhage resolved, the patient's visual acuity remained reduced, with a final best-corrected visual acuity of 3/10, primarily due to residual macular atrophy. Although vision could not be fully restored, further deterioration was avoided.

Subretinal hemorrhage in Valsalva retinopathy is rare, especially in the context of undiagnosed PCV. An individualized treatment plan, including anti-VEGF therapy, surgical intervention, and laser treatment, can prevent further vision loss, although full recovery may be limited by underlying macular damage.

Abstract 182

SAFETY AND EFFICACY OF COMBINATION THERAPY WITH ANTI–VASCULAR ENDOTHELIAL GROWTH FACTOR AND LASER FOR RETINOPATHY OF PREMATURITY: A SYSTEMATIC REVIEW AND META-ANALYSIS

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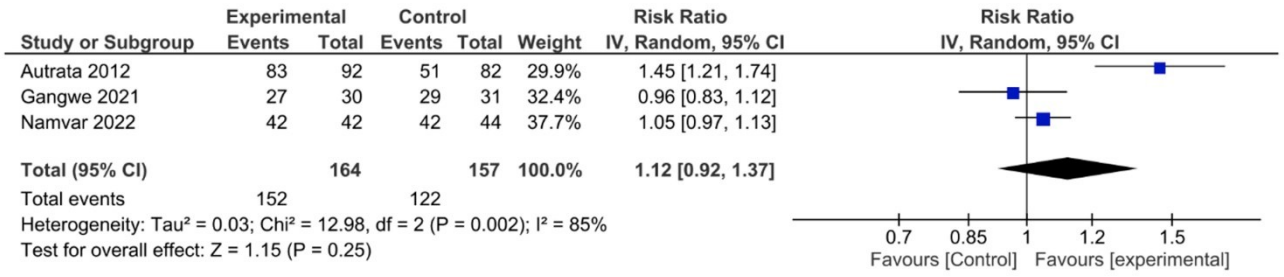
To evaluate the safety and efficacy of combined laser and anti-VEGF therapy for Retinopathy Of Prematurity (ROP), focusing on both structural and functional outcomes.

A comprehensive search was conducted in multiple databases to identify randomized controlled trials (RCTs) that investigated combination therapy for ROP. The PRISMA guidelines were followed. Data were extracted and analyzed using risk ratios and 95% confidence intervals (CIs). The Cochrane Risk of Bias tool was used to assess the risk of bias, and the GRADE criteria were employed to evaluate the quality of evidence.

Three RCTs involving a total of 162 premature infants were included in the meta-analysis. Combination therapy of anti-VEGF and laser photocoagulation was compared with other interventions. The pooled analysis of favorable structural outcomes did not show a statistically significant difference between combination therapy with anti-VEGFs and laser therapy compared to the interventions in the control groups (P=0.25). However, the risk ratio for achieving a favorable outcome slightly favored the patients in the combination therapy group, with a value of 1.12 (95% CI: 0.92 – 1.37). The incidence of adverse events was comparable between the combination therapy and other intervention groups.

This systematic review and meta-analysis suggest that risk ratio of combination therapy with anti-VEGF and laser for ROP is associated with favorable outcomes, albeit insignificant. The safety profile of combination therapy appears to be similar to other interventions. However, due to the limited number of included studies, further research is needed.



Abstract 409

MANAGEMENT OF ISCHAEMIC RETINAL DISEASES AND NEOVASCULAR GLAUCOMA: OVERVIEW OF PRACTICE FROM TWO TERTIARY CENTRES IN THE UK

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retinal ischemia (RI) is a relatively common and can lead to severe sight impairment. Neovascular glaucoma (NVG) is a notorious complication of RI. We aim to review outcomes from patients undergoing treatment for RI complicated by NVG in our centres to better understand the impact of our care.

Review of the electronic medical record from March 2014 to February 2024 for patients with diagnosis of RI and NVG who underwent glaucoma procedures. Data was collected on aetiology of RI, best corrected visual acuity (BCVA), intraocular pressure (IOP), hypotensive medications, procedures, including intravitreal injections, laser treatment and glaucoma surgery. Clinical outcomes (i.e. BCVA, IOP and hypotensive medications) were recorded at month 1, month 6, year 1 and most recent time periods.

434 eyes with RI were included. The most common aetiology was PDR (46.3%), followed by iCRVO (43.3%). NVG was diagnosed in 52.7%. Mean time from diagnosis of RI to laser treatment or anti-VEGF intravitreal injection was 2.6±1.4 weeks. Presenting BCVA was poor, with a mean of count fingers vision and a final BCVA of hand movements overall. Mean IOP at presentation was 42.3±12.7 mmHg on 3.5±1.3 medications, improving to 26.0±16.9 mmHg at 1 year on 1.8±1.5 medications and 20.1±12.8 mmHg on 1.7±1.3 medications at most recent follow-up. 86% of eyes underwent cyclodiode; 15% glaucoma drainage devicese (GDD); and 5% trabeculectomy.

The likelihood NVG in eyes with RI is relatively high. Despite early treatment, NVG is challenging, typically presenting with high IOP and poor BCVA. Multiple procedures are often required. We reported good IOP reduction from cyclodiode, trabeculectomy and GDD, though unfortunately, the majority of patients still progressed to lose vision.

Abstract 406

NOVEL OPTICAL COHERENCE TOMOGRAPHY BIOMARKERS AND VISUAL PROGNOSIS IN RETINAL VEIN OCCLUSION

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To evaluate the prognostic implication of different biomarkers detected by optical coherence tomography (OCT) in patients diagnosed with retinal vein obstruction.

A prospective study including 170 eyes diagnosed with RVO in a tertiary University Hospital in Spain, since January 1 -2013 through July 1- 2021.
Clinical variables included BCVA ETDRS protocol, visual gain (VG) (comparing baseline BCVA), and retinal structural data obtained by OCT Triton, including macular volume and thickness, presence or absence of inner segment/outer segment border (IS/OS) alteration, disorganization retinal inner layers (DRIL), hiperefractive points (HRP), neurosensorial detachment (NSD), vitreomacular traction (VMT), and fibrosis. These biomarkers were recorded baseline, at 3, 6, 12 and 18 months after diagnosis.

No IS/OS alteration vs IS/OS alteration (BCVA): baseline 60.0±22.1 vs 45.6±22.1; 3months 62.8±21.4vs49.4±23.0; 6months 64.6±21.9vs50.4±23.1; 12months 61.3±23.7vs50.6±24.5; 18months: 61.1±26.1vs49.6±25.2 (p <0.05 in all subgroups)
VMT: baseline 49.3±22.4vs42.6±25.5, 3 months 52.7±23.4vs47.0±21.5; 6 months 53.6±24.1vs50.1±19.3; 12 months 53.0±25.0vs49.8 ± 22.6; 18 months 53.1±25.7vs43.2±24.6
Fibrosis: baseline 49.5±22.3vs20.7±20.6; 3months 53.0±22.8vs24.8±18.5; 6months 53.9±23.3vs32.3±20.1; 12months 53.4±24.6vs31.2±16.8; 18months 52.7±25.4vs28.2±24.5 (p <0.05 in all subgroups)
NSD: baseline 49.2±24.2vs47.7±21.0; 3months 53.9±25.4vs49.9±20.5; 6months 54.1±26.5vs52.0±19.7; 12months 55.7±25.3vs49.2±23.6; 18months 54,5±26.8vs48.8±24.1
DRIL: baseline 64.3±19.2vs45.1±22.1; 3months68.1±18.2vs48.6±22.8; 6months 69.4±18.8vs49.6±23.0; 12months 69.0±17.0vs49.1±24.7; 18months 69.7±18.0vs48.0±25.5
(p <0.05 in all subgroups)
HRPP: baseline 57.1±22.4vs44.2±21.9; 3months 58.4±23.6vs48.9±22.5; 6months 58.8±24.7vs50.4±22.5; 12months 58.4±25.0vs49.8±24.1; 18months 60.1±24.9vs47.8±25.2 (p<0.05 in all subgroups)

The study found that IS/OS alterations, fibrosis, DRIL, and HRP at diagnosis correlated with worse visual acuity at diagnosis and follow-ups. However, visual improvement over time was similar across all patients, despite biomarker presence. Patients with these alterations had poorer visual outcomes both initially and at follow-up.

Abstract 2

THE UGLY STRAND

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I report a case series of 2 eyes of 2 diabetic patients with abnormal focal retinal traction that has underlying retinal break .

First patient was one eyed and had pars plana vitrectomy for vitreous hemorrhage, the other eye had previously failed surgery. Break was identified at one end of a strand connecting the disc to a focal point in the retina adjacent to a laser scar.
Second patient had a faulty management of the strand leading to break widening through pulling and dissection, the other eye later developed the same local traction yet it was managed conservatively, panretinal photo coagulation was performed around the traction at least 2 disc diameters away from it. Retinal traction diminished greatly with time.

Surgeons should carefully manage any solitary strands that connect the disc to a part of the retina that is adjacent to a laser scar as focal traction points to or predicts the occurrence of a retinal break.

Dissection of such strands should start from the end at the disc not the other end at the retina, causing minimal traction and no pull, shaving till close to the retinal end .

Abstract 46

GLYCEMIC CONTROL (HBA1C) LEVEL AMONG PATIENTS UNDERGOING SURGICAL TREATMENT FOR ADVANCED DIABETIC RETINOPATHY AT TERTIARY REFERRAL CENTER

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Diabetic retinopathy is a leading cause of visual impairment among diabetic patients which has a significant effect on patients' quality of life. This study aims to determine level and the impact of (HbA1c) in preoperative tests and how will it affect the outcome of surgical treatment for advanced diabetic retinopathy.

A retrospective case series study was employed at King Abdullah Medical City, Makkah (tertiary referral center). Analyzing 167 patients who underwent surgical treatment for advanced diabetic retinopathy from January 1, 2021, to 31 December, 2021. Data were collected using the Electronic patient records system, studying preoperative level of glycemic control (HbA1c) and categorizing controlled status.data includes demographics data and indication and duration of symptoms, systemic and ocular diseases ,and previous interventions . The final best corrected at minimum 6 months follow were collected . Date was entered and analyzed via IBM SPSS Statistics, various tests including descriptive statistics, chi-square.

The final outcome determined that preoperative vision was worse than 20/200) in 18 patients with controlled HbA1c (≤7) and 52 patients with uncontrolled HbA1c (>7) and was better than 20/200 in 6 patients with controlled HbA1c and 15 patients with uncontrolled HbA1c. 63% of our patient had chronic duration >3months .Compared to postoperative vision, glycemic control did not show statistical significant (p value 0.317).

The average level of Poorly controlled HbA1c in preoperative test reach to 8.13 in our referred patients which may have an impact on patient health and increase perioperative risks for diabetic patient.
The study show importance of improving care for our diabetic population at community level .

Abstract 227

MANAGEMENT OF MACULAR FOLD AFTER DIABETIC MEMBRANES REMOVAL

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To demonstrate management of macular fold after diabetic fibrovascular membranes removal

After removal of longstanding diabetic fibrovascular membranes, a fold is detected. Balanced salt solution is injected to detach the macular area. Perflorocarbon liquid is used to flatten the macular area. Internal limiting membrane is removed in such a way as to aid in unfold the foveal area.

The macular fold is almost flattened by the end of the surgery.

Managing macular folds after removal of diabetic fibrovascular proliferations could be achieved by detaching the macular area and removing the internal limiting membrane.

Abstract 156

PREOPERATIVE CO-APPLICATION OF BEVACIZUMAB AND TISSUE PLASMINOGEN ACTIVATOR IN VITRECTOMY FOR PROLIFERATIVE DIABETIC RETINOPATHY

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To investigate the clinical benefits of co-application of bevacizumab and tissue plasminogen activator(t-PA) as adjuncts in the surgical treatment of proliferative diabetic retinopathy (PDR).

Twenty-two eyes of 22 patients who had vitrectomy and preoperative intravitreal bevacizumab and t-PA injection(group 1) were compared to 22 eyes of 19 patients(group 2) who had vitrectomy and preoperative intravitreal only-bevacizumab injection for the treatment of complications of PDR. The primary outcome measures were duration of surgery and the number of intraoperative iatrogenic retinal breaks. Secondary outcome measures were the change in best-corrected visual acuity (BCVA) and postoperative complications.

The mean surgery time in group 1 (52.95±5.90 minutes) was significantly shorter than to be in group 2(79.86±12.38 minutes) ($p<0.001$). The mean number of iatrogenic retinal breaks was 0.50±0.59(0 to 2) in group 1, and 2.00±0.81(0 to 3) in group 2 ($p<0.001$). Visual acuity improved significantly in both groups ($p<0.001$). Epiretinal membrane in 2 eyes, macular hole in 1 eye developed in group 2. One eye in each group developed retinal detachment.

Preoperative co-application of bevacizumab with t-PA as adjuncts in the surgical treatment of PDR, shortens the surgery time and lessens the number of intraoperative iatrogenic retinal breaks.

Abstract 216

MODIFIED IN OUT APPROACH IN DIABETIC TRACTIONAL RETINAL DETACHMENT

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to show safety , efficacy and reproducibility of modified technique of In-Out Attack strategy in diabetic cases

A prospective interventional study was carried in the Department of Ophthalmology Ain Shams university hospitals. In this study 19 eyes of 15 Patients in the period between January 2023 to January 2024.

all patients show 1ry success and retinal attachment with serial Fundus imaging and OCT scans , recurrence was not detected in any of above cases , SRF was observed in 6 of patients which improved over period up to 6 month

Modified In-Out strategy in cases of diabetic Fibrovascular proliferations shows safe , reproducible and effective strategy specially in cases with combined tractional rhegmatogenous RD

Abstract 157

SIX-MONTH OUTCOMES OF REMOVING SUBFOVEAL MASSIVE HARD EXUDATES THROUGH AN INTENTIONAL HOLE CREATED TEMPORAL TO THE FOVEA

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To evaluate the six-month outcomes of removing subfoveal massive hard exudates through an intentional hole created temporal to the fovea (HE removal).

A retrospective analysis was performed on 15 consecutive eyes treated with HE removal and followed for at least six months. Outcome measures included changes in logMAR best-corrected visual acuity (logMAR BCVA), central retinal thickness (CRT), and macular volume (MV) from baseline to six months. The percentage of eyes demonstrating a 0.3 logMAR change at six months was also calculated.

The mean age was 65.9 years. The underlying diseases were diabetic macular edema (73%), branch retina vein occlusion (13%), retinal macroaneurysm (7%), and congenital cytomegalovirus retinitis (7%). The mean preoperative logMAR BCVA, CRT, and MV were 0.801, 279.1 μm, and 12.9 mm^3, respectively. Over the six months following surgery, the changes in logMAR BCVA, CRT, and MV were -0.168, -42.2 μm, and 0.29 mm^3, none of which reached statistical significance (P=0.050, 0.064, and 0.194, respectively). The percentage of eyes showing a 0.3 logMAR BCVA improvement was 33%, while none showed a 0.3 logMAR BCVA decline.

Considering relatively favorable treatment outcomes of HE removal in this study and the lack of other good alternative treatments for subfoveal massive hard exudates, HE removal may be a good option.

Abstract 203

SILICONE OIL RETROLAMINAR MIGRATION AND LAMINA CRIBROSA THICKNESS IN PATIENTS WITH PROLIFERATIVE DIABETIC RETINOPATHY AFTER VITRECTOMY

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The purpose was to analyze the relationship of the retrolaminar migration of intraocular silicone oil (SiO) with lamina cribrosa (LC) thickness in patients with proliferative diabetic retinopathy (DR) after vitrectomy with SiO tamponade.

This retrospective study included 34 patients with proliferative DR after pars plana vitrectomy with SiO tamponade who underwent unenhanced head computed tomography for various clinical indications between April 2017 and December 2023. All images were evaluated for subretinal and retrolaminar migration of intraocular SiO involving the anterior visual pathway (optic nerve (ON), optic chiasm, and optic tract) and the ventricular system. LC thickness was measured with SD OCT using LC_Thickness_programm.m and main_low_noise_filters_programm.m, based on adaptive compensation algorithm for eliminating a high-level noise in the deep layers of optic nerve and improving the visualization of the posterior border of the LC.

Average LC thickness in our patients was 687±34 μm (579 to 772 μm), that was 1,9 times higher than in healthy people ($p<0,001$). We detected subretinal and retrolaminar SiO migration in 9 of 34 patients (26,47%), noting SiO at ON head (n=3), retrolaminar ON (n=3), optic chiasm (n=2), optic tract (n=1), in lateral ventricles (n=2). Two patients had migration to 2 locations each (1–in retrolaminar ON and optic chiasm, 1–in retrolaminar ON and lateral ventricle). LC thickness in subretinal and retrolaminar SiO migration was significantly less (559 to 658 μm) than in patients without SiO migration (679 to 772 μm).

A direct correlation between scleral lamina cribrosa thickness and retrolaminar migration of intraocular SiO in patients with proliferative diabetic retinopathy after vitrectomy with SiO tamponade was revealed. So, we suggest that LC remodelling in diabetes, namely its thickening, may be one of the protective mechanisms for retrolaminar SiO oil migration.

Abstract 13

WENDING PATH

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a case of single eyed patient with extesive TRD who under went combined phaco,PPV and peeling. His vision improved then 4 months post operative deteroited due to development of premacular fibrosis. Second PPV and peeling needed.
Trying to suggest an effective approaches in preventing fibrosis or at least reduce it.

We did him combined Phaco.PPV, peeling and silicone oil tamponade in the OD proceeded by Avastin injection resulting in stable retina and BCVA of 0.1. 5 months post operative the vision deteriorate to close to face while the anterior segment examination was unremarkable. The fundus showed PRP marks and extensive premacular fibrotic tissue causing significant macular thickening and wrinkling.
We removed the silicone oil and peeling the tabletop fibrovascular membrane. Post operative the BCVA was 0.05 and the retina was stable.

Post the second surgery after peeling the extensive fibrovascular membranes the BCVA was improved to 0.05 and the retina was stable.

Still macular proliferations a dilemma post PPV causes metamorphopsia and deterioration of visual acuity. Although Peeling of the premacular fibrosis might restore the vision, avoid excessive manipulation, applying gas tamponade and ILM peeling in TRD repair can be an effective approach in advanced cases to prevent new fibrosis.

Abstract 226

EVALUATION OF THE IMPACT OF EARLY POSTOPERATIVE SUBTHRESHOLD MICROPULSE LASER THERAPY IN PATIENTS WITH PERSISTENT MACULAR OEDEMA AFTER SURGICAL REMOVAL OF EPIRETINAL MEMBRANE.

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To evaluate the impact of subthreshold micropulse laser therapy (SMLT) performed in the early postoperative period on the resolution of intraretinal oedema and postoperative retinal parameters. Additionally, we analyzed the relationship between the baseline severity of retinal structural changes assessed via Optical Coherence Tomography and examined postoperative characteristics.

The study included 47 patients with epiretinal membrane (ERM) who underwent pars plana vitrectomy with ERM and additional ILM peeling. Patients were classified according to the Govetto stages and randomly assigned in a 1:1 ratio to a laser group and a non-laser control group. Subthreshold micropulse laser therapy (SMLT) was performed one month post-surgery. Best corrected visual acuity (BCVA), morphometric retinal and vascular parameters, including central ETDRS retinal thickness and total retinal volume, were evaluated. Functional retinal parameters were assessed using multifocal electroretinography (mfERG) and microperimetry. All examinations were conducted before vitrectomy as well as one and four months post-surgery.

Four months post-surgery, the total retinal volume decreased significantly in the laser group compared to the control group (p=0.027). Consequently, central ETDRS retinal thickness was statistically significantly lower in the SMLT group than in the non-laser group (p=0.04). Interestingly, the Govetto stages 3-4 group demonstrated a significantly greater improvement in BCVA four months post-surgery than the stages 1-2 group (p=0.047). Additionally, four months post-surgery, the total retinal volume showed a significantly greater reduction in patients with stage 4 ERM compared to those with stage 1 (p=0.013) or stage 2 (p=0.04).

Patients with more severe initial retinal structural abnormalities show a greater improvement in BCVA and total retinal volume. SMLT used in the early postoperative period significantly accelerates the resolution of intraretinal oedema and may serve as a foundation for developing a new treatment approach following ERM removal surgery.

Abstract 17

DOES 3D VOLUMETRIC ANALYSIS OUTPERFORM 2D LINEAR MEASUREMENTS IN PREDICTING VISION AFTER SURGERY FOR EPIRETINAL MEMBRANES? EXPLORATORY MACHINE LEARNING STUDY.

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To analyse pre-operative biomarkers, incorporating and comparing two - and three dimensional (2D/3D) measurements with high multicollinearity, to predict functional outcomes after surgery in eyes affected by epiretinal membranes (ERMs).

Retrospective, single-centre, interventional case series. Eyes diagnosed with idiopathic ERMs that underwent vitrectomy and ERM peel at Manchester Royal Eye Hospital, UK, over a 3.5-year period between 1st January 2019 and 31st August 2022. Through the application of machine learning (XGBoost), proficient in handling feature selection and managing multicollinearity, a predictive model for post-surgical best corrected visual acuity (BCVA) was developed using clinical and anatomical pre-operative parameters including both 2D (linear) and 3D (volumetric) measurements of the retina.

Eighty-six eyes were included in the study. In the model, foveal retinal volume resulted as the strongest predictor of post-operative BCVA (SHAP 0.0623). Further, volumes of the outer and inner retinal layers (SHAP 0.0342 and 0.0221) demonstrated greater predictive value for final vision than 2D measurements, as well as pre-operative BCVA and presence of ectopic inner foveal layers. Features dependence plots were drawn for the most important features, highlighting the non-linear relationships.

Using machine learning algorithms, we demonstrate 3D models have greater utility than traditional 2D parameters, when predicting visual outcome following ERM surgery and we question previous assumptions about the influence of certain linear parameters on visual outcomes post ERM surgery.

Abstract 96

REFRACTIVE ERROR AFTER COMBINED PHACO-VITRECTOMY:

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To study the post-operative refractive error of patients undergoing combined phaco-vitrectomy and to find out which intraocular lens (IOL)-power formula had the best refractive outcomes.

we compared the preoperative expected target with the postoperative RE of patients undergoing combined phaco-vitrectomy due to vitreomacular traction, macular pucker, full thickness macular hole or lamellar macular hole.

Twenty-five eyes with a mean axial length of 23.56±0.93 were included. Eleven (44%), 10(40%) and 4(16%) patients were implanted with an IOL that was calculated respectively with SRK-T, Holladay's and Barrett's formula. The mean preoperative expected- and post-operative RE were -0.14±0.20 and -0.29±0.17, respectively (p=0.08). The difference between expected and postoperative-RE was statistically significant only for Holladay's formula (p<0.001).

Among the analyzed IOL-power formulas, the SRK-T seems to be the more precise one at achieving the predicted RE.

Abstract 176

EXPLORING THE ROLE OF MACULAR PIGMENT OPTICAL DENSITY IN EPIRETINAL MEMBRANE RECOVERY

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To investigate the macular pigment optical density (MPOD) in Stage 2 and Stage 3 epiretinal membranes (ERMs) and to compare its modification before and after surgery. Additionally, we explored the potential role of MPOD as a prognostic factor in ERMs.

Stage 2 and Stage 3 ERMs were matched for age and gender. Clinical parameters were assessed at baseline and follow-up. Within groups, the correlation between MPOD and optical coherence tomography (OCT) measures was analyzed.

The difference in MPOD between the two ERM stages at follow-up was statistically significant ($p=0.027$). The overtime changes in MPOD (ΔMPOD) were significantly greater in Stage 3 participants than in Stage 2 participants ($p = 0.018$). Correlation analyses showed that in Stage 2, ΔMPOD was correlated with change in best-corrected visual acuity (ΔBCVA) ($r=0.398$, $p=0.074$) and significantly correlated with change in outer nuclear layer thickness (ΔONLthickness) ($r=0.672$, $p<0.001$). In Stage 3, ΔMPOD showed a significant negative correlation with ΔCFT ($r=-0.547$, $p=0.013$) and a positive correlation with ΔBCVA ($r=0.510$, $p = 0.022$).

MPOD shows significant stage-specific differences and post-surgery changes in ERMs, pointing to its potential as a prognostic factor. Higher baseline MPOD levels are linked to better structural and functional outcomes, particularly in Stage 2.

Abstract 417

RELATIVE VISUAL IMPROVEMENT AFTER ERM SURGERY; RETROSPECTIVE PROGNOSTIC ANALYSIS

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To analyse pre-operative factors for best prognostic markers of relative visual improvement after vitrectomy for epiretinal membrane (ERM).

Retrospective cohort study. Pre-operative data included baseline demographics, visual acuity, lens status, duration of symptoms. optical coherence tomography parameters and visual acuity (VA) data were collected pre-operatively, at 6 months and 12 months post-operatively. Patient were divided into 2 groups, with group 1 including patients with less than 2 lines logMAR BCVA improvement and group 2 including those with 2 or more lines logMAR BCVA improvement. Statistical analysis was performed using SPSS.

Males were more likely to improve 2 or more lines (75.8%) versus females (24.2%) ($p<0.001$) as well as patients with shorter duration of symptoms ($p=0.026$) with a cut off value of 12 months or less. Patients with secondary ERM were more likely to gain 2 or more lines (12 of 15 (80%)) versus patients with primary ERM (47%)($p=0.03$).
Patients with higher preoperative CRT with cut off value of 478 □m were more likely to improve 2 or more line ($p=0.03$) as well as those with MME sign on preoperative OCT (69%) ($p=0.047$)

Clinical and OCT parameters more likely to be associated with significant visual acuity improvement after ERM surgery were male gender, shorter duration of symptoms (<12 months), secondary ERM etiology, higher preoperative CRT (>478 □m), and presence of MME preoperatively. These may be regarded as basis for patient counseling and prioritization.

Abstract 264

DECREASING OUTER RETINA TRAUMATISM OF ILM PEELING IN DIABETIC EYES WITH FOVEAL SPARING TECHNIQUE

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To evaluate the effect on outer retina integrity of foveal sparing internal limiting membrane (ILM) peeling compared to standard ILM peeling on proliferative diabetic retinopathy (PDR) eyes affected by diabetic macular edema (DME) and epiretinal membrane (ERM).

Eyes diagnosed with PDR, DME and ERM eligible for vitrectomy were prospectively recruited and randomly assigned to either foveal sparing (FS) group and no foveal sparing (nFS) group. Ellipsoid zone (EZ) lesion size, EZ reflectivity and external limiting membrane (ELM) integrity and angular sign of Henle Fiber Layer Hyperreflectivity (ASHH) were assessed preoperatively and 1 year postoperatively.

Twelve (12) eyes and fifteen (15) eyes were included in FS and nFS group respectively. The two groups showed no differences in terms of EZ lesion size (p=0.549), EZ reflectivity (p=0.657) and ELM integrity (0.999) at preoperative examination. A significant increase in EZ lesion size was noted in nFS group between preoperative and postoperative examination (p=0.040) which was not present in FS group (p=0.862). Moreover, nFS group showed a higher prevalence of ASHH and a lower EZ reflectivity at follow up compared to FS group (respectively p=0.047 and p=0.041).

Vitrectomy with FS ILM peeling may result in a better preservation of the Muller-photoreceptors complex in PDR complicated with DME and ERM.

Abstract 57

IS DISTANCE ACUITY ENOUGH TO ASSESS EPIRETINAL MEMBRANE IMPACT? INVESTIGATING VISUAL PERFORMANCE AND OCT BIOMARKERS IN A PROSPECTIVE STUDY

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This study aimed to comprehensively assess visual performance, including distance visual acuity, near visual acuity, and reading speed, in eyes with idiopathic epiretinal membrane (iERM). Additionally, it sought to explore the associations between OCT imaging biomarkers and visual performance in patients with iERM.

Prospective, non-interventional study. 57 participants with treatment-naïve iERM from the University of Turin, between September 2023 and March 2024. Visual performance was measured using distance and near best-corrected visual acuity (BCVA) and Radner reading speed (MaxRS). Structural retinal imaging biomarkers were obtained from OCT, focusing on retinal layer thicknesses and epiretinal membrane characteristics. Statistical analyses, including linear regression and multivariate analysis, were used to determine relationships between visual function and imaging metrics.

: Distance BCVA (0.37 ± 0.23 LogMAR), near BCVA (0.59 ± 0.18 LogMAR), and MaxRS (108.88 wpm) were significantly reduced compared to reference values. Near visual performance exhibited a greater percentage reduction than distance acuity. Phakic patients showed worse visual acuity than pseudophakic patients, although their reading performance was similar. Imaging biomarkers, including increased outer plexiform layers thickness and inner retinal thickness, were significantly associated with decreased distance and near visual acuity and reduced reading speed.

iERM predominantly impacts near visual performance, with near visual acuity and reading speed being more sensitive measures than distance acuity. Structural OCT biomarkers correlate with these functional impairments. This highlights the importance of near vision assessments and imaging biomarkers for a comprehensive evaluation of visual impairment in iERM patients.

Abstract 79

CLINICAL CHARACTERISTICS AND SURGICAL OUTCOMES OF FULL-THICKNESS MACULAR HOLE WITHOUT FOCAL VITREOMACULAR TRACTION

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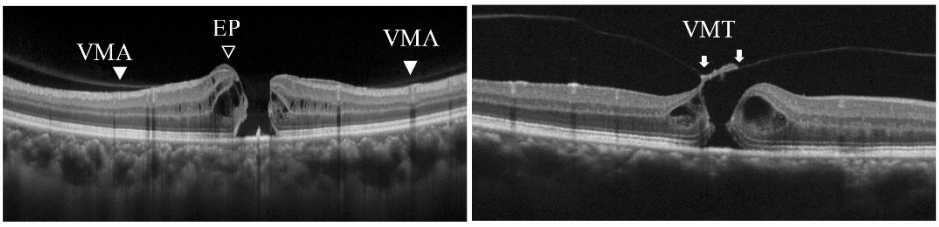
This study investigated the clinical features and surgical outcomes of full-thickness macular holes (FTMHs) without focal vitreomacular traction (VMT) and discusses possible underlying mechanisms.

This was a retrospective observational study that included patients aged 18 years or older with stage 2 FTMHs who underwent pars plana vitrectomy at three hospitals between December 2016 and March 2024. Patients diagnosed without focal VMT in the macula were classified as VMT– and those with focal VMT were classified as VMT+. Medical records and comprehensive ophthalmologic examinations, including best-corrected visual acuity (BCVA) and optical coherence tomography (OCT) assessments, were reviewed.

This study analyzed 94 eyes that underwent surgery for stage 2 MHs. Patients in the VMT– group were younger (VMT– vs VMT+: 64 vs 69 years, P = 0.008), had a longer axial length (AL) (25.2 vs 24 mm, P = 0.004), and had better preoperative BCVA (0.41 vs 0.66 logMAR, P = 0.002) compared with the VMT+ group. The VMT– group had a higher prevalence of epiretinal proliferation (EP) compared with the VMT+ group (76 vs 5 %, P<0.001). Postoperatively, the VMT– group showed significantly thicker central retinal thickness at 1 month (244 vs 201 μm, P = 0.021).

FTMHs without focal VMT were associated with younger age, longer AL, better baseline visual acuity, and a higher incidence of EP compared with macular holes with VMT.



VMT(-) VMT(+)

Abstract 42

SAFETY AND EFFICACY OF INTRAOPERATIVE STEROID USE IN ERM SURGERY: A SYSTEMATIC REVIEW

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To report on the effects of intraoperative adjuvant use of steroids during ERM surgery in aiding functional recovery and associated side effects

Only studies reporting on intraoperative steroids use was selected covering period 2003-2024 (searched on at least 3 databases Pubmed,Embase,Cochrane).Primary outcomes related to visual function (BCVA-visual acuity,CMT- central macular thickness) together with steroid related ocular side effects (secondary outcomes: IOP,infection, etc) were searched in all reported studies

16 studies were identified on idiopathic ERMs in patients above 60 treated with MIVS system. 8 studies included phacovitrectomies and 7 studies included combined peels (ILM/ERM) . Dexamethasone implants (0.7mg) were used in 9 studies and Triamcinolone acetonide (4mg) in 7 studies. The BCVA gain and CMT reduction in the Dexamethasone group (n=197) were 0.34 ±0.1 LogMar and 141.5 microns ±40 respectively , with a mean follow up of 4.3 ± 1.5 months.In the triamcinolone cohort (n=230), BCVA improvement was 0.24 ±0.1 LogMar with CMT reduction of 140.6 microns ±42, with a mean follow up of 6.7 ± 5.5 months.

Intravitreal steroids is associated with an improvement in BCVA and CMT in first few months after ERM surgery.Functional outcomes are better with dexamethasone implant compared to the Triamcinolone depot.Anatomical outcomes are however similar.Longer acting steroids like fluocinolone acetatonide use have not been reported in ERM surgery.

Abstract 241

SUBRETINAL DELIVERY OF INVESTIGATIONAL ABBV-RGX-314 FOR NEOVASCULAR AGE-RELATED MACULAR DEGENERATION (NAMD): A PHASE II PHARMACODYNAMIC STUDY

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ABBV-RGX-314 is an investigational, single administration gene therapy designed to deliver a transgene for a soluble anti-VEGF Fab. This Phase II bridging study in patients with nAMD evaluated the clinical performance between subretinally delivered ABBV-RGX-314 produced with REGENXBIO's NAVXpress™ bioreactor platform process and the initial adherent cell culture process.

This study is a multi-center, open-label pharmacodynamic bridging study to evaluate subretinal delivery of ABBV-RGX-314 produced by either the NAVXpress platform process (Bioreactor, BRX) or the adherent cell culture manufacturing process (Hyperstack®, HS), which was used in the Phase I/IIa trial of ABBV-RGX-314 for nAMD. Sixty patients with previously treated nAMD are assigned to one of two dose levels (6.4x1010 GC/eye or 1.3x1011 GC/eye) with half of the patients receiving BRX and half receiving HS at each dose level (n=15 for each of the four cohorts). ABBV-RGX-314 protein concentration in the eye at Month 6 is the primary endpoint.

All cohorts have fully enrolled. As of November 20, 2023, ABBV-RGX-314 was well tolerated in all cohorts. Six serious adverse events (AEs) were reported; none were considered related to ABBV-RGX-314. Common AEs in the study eye through 6 months included post-operative inflammation (30%), post-operative conjunctival hemorrhage (28%), and retinal pigmentary changes (17%). At six months, ABBV-RGX-314 protein concentrations in the study eye were similar. These cohorts demonstrated stable-to-improved BCVA and CRT and meaningful reductions in anti-VEGF injection burden, with many injection-free patients (range: 60% to 80%).

ABBV-RGX-314 produced by the NAVXpress platform process has been well-tolerated and demonstrated a similar clinical profile to the adherent cell culture process. Interim results support the dose levels and cGMP commercial-ready material evaluated in the ongoing ATMOSPHERE® and ASCENT™ pivotal trials. This is a preliminary analysis of an ongoing trial.

Abstract 299

AMNIOTIC MEMBRANE TRANSPLANT IN A PATIENT WITH ATROPHIC MACULAR HOLE

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To report a case of a chronic full-thickness macular hole (FTMH) and retinal pigment epithelium (RPE) changes in a patient treated with the induction of macular detachment technique at the posterior pole and human Amniotic Membrane (hAM) plug transplant.

Patient with a persistent chronic FTMH was surgically treated with a 23 gauge PPV, execution of multiple retinotomies at the posterior pole was carried out to induce a macular detachment and detach the edges of the MH, and a hAM plug widely exceeding the MH diameter was then implanted under the edges of the MH. A complete ophthalmic examination and an Optical Coherence Tomography (OCT) were performed at every visit.

During surgery we found that the induction of macular detachment technique made it easier to lift the margins of the hole and feasible to place a larger hAM plug through the MH under its margins. Postoperative OCT showed the closure of MH over a distended and centered hAM plug.

Surgery proved to be a feasible technique to close a chronic FTMH and to place a wide hAM plug to ideally exploit its regenerative effects on the RPE and photoreceptors layer. The long-term visual prognosis is guarded and related to recovery of photoreceptors and integrity of hAM and RPE.

Abstract 53

"REFLECTIONS" FROM AN APPARENT DIAGNOSIS OF MACULAR HOLE IN AN EYE PARTIALLY FILLED WITH GAS AFTER RETINAL DETACHMENT REPAIR

Michael C.*

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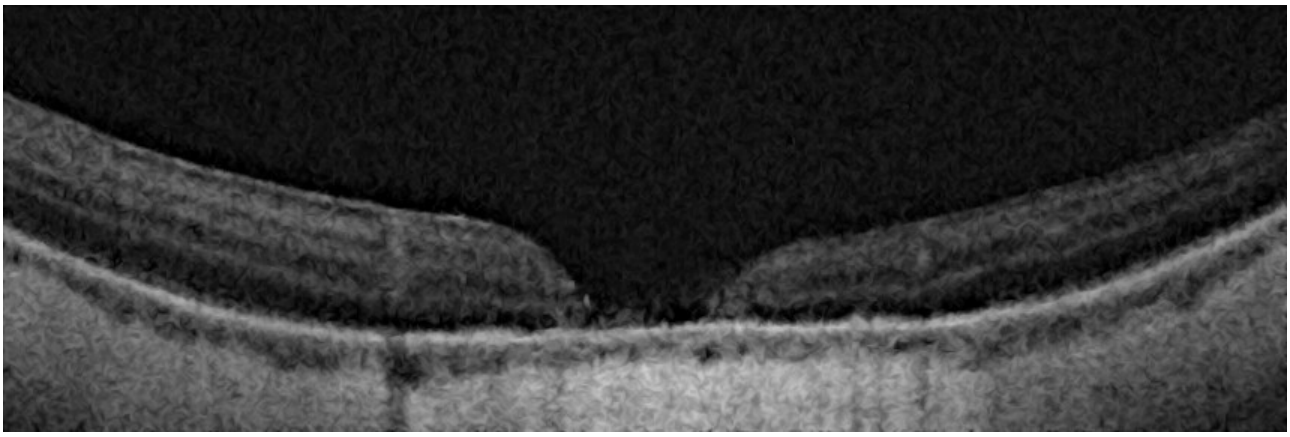
: To describe the image acquisition and tomographic appearance of an apparent post-operative full-thickness macular hole, later proven to be eccentric, in a partially gas-filled eye.

Retrospective case report. Color and near-infrared fundus photographs and spectral domain optical coherence tomography were performed.

A 67 year-old myopic female required pars plana vitrectomy, membrane delamination, laserpexy and fluid-gas exchange in her left eye to repair a recurrent rhegmatogenous retinal detachment associated with proliferative vitreoretinopathy. On her week-two post-operative visit, spectral domain optical coherence tomography appeared to demonstrate a macular hole with a type two closure pattern. Follow-up examinations demonstrated that, in retrospect, the hole that was imaged was actually a reflection off the vitreous gas bubble of the sealed eccentric macular hole which had been associated with the recurrent retinal detachment.

In a partially gas-filled eye, in attempting optical coherence tomography, reflections off the gas bubble can lead to misleading results, potentially leading to erroneous interpretations. This issue could cause the retina specialist to counsel the patient incorrectly and consider interventions that would be unnecessary and inappropriate.



Abstract 109

FULL-THICKNESS MACULAR HOLE WITH AN UNDERLYING NON-NEOVASCULAR PIGMENT EPITHELIAL DETACHMENT: MANAGEMENT APPROACH AND PROGNOSIS.

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To report an uncommon case of a patient presenting with a full-thickness macular hole (FTMH) positioned over a retinal pigment epithelial detachment (PED). Surgical management involved the application of an inverted internal limiting membrane (ILM) flap technique during pars plana vitrectomy (PPV) to successfully close the macular hole.

A 65-year-old female was referred to our Vitreoretinal department for a FTMH in her left eye. Complete ophthalmic examination showed a best corrected visual acuity of 0.8 in the right eye and 0.4 in the left. Both eyes had mild grade 1 nuclear cataracts, with an intraocular pressure of 14 mmHg. Fundoscopy and OCT revealed soft drusen, pigment abnormalities, and drusenoid RPE detachments. A full-thickness macular hole was observed above a large PED in the left eye. OCT-angiography ruled out choroidal neovascularization. The patient underwent 25-gauge PPV, with extended ILM peeling, using an inverted ILM flap and C3F8 gas injection.

At the one-month follow-up, the macular hole had closed with a type A closure, and the patient's best-corrected visual acuity (BCVA) improved to 0.6, though the vitreous cavity remained half-filled with C3F8 gas. We present a 6-month and 1-year follow-up showing a closed macular hole, restoration of the Ellipsoid Zone, and no complaints of metamorphopsia. Additionally, the patient's visual acuity improved to 0.8 following successful phacoemulsification cataract surgery.

Full-thickness macular hole closure rates exceed 90% with PPV, ILM peeling, and gas tamponade. However, in cases complicated by dry AMD and RPED, rates drop to 79-89%. Based on the literature the inverted ILM flap technique with C3F8 gas was preferred, marking the first application for RPED-related FTMH treatment.

Abstract 291

INCOMPLETE/FAILED MACULAR HOLE (MH) CLOSURE AFTER INDUCTION OF MACULAR DETACHMENT TECHNIQUE FOR THE TREATMENT OF PERSISTENT IDIOPATHIC MHS: RESCUE THERAPY WITH A PLUG OF HUMAN AMNIOTIC MEMBRANE(HAM).

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Università degli studi di Perugia ~ Perugia ~ Italy

To report a case of a patient with a persistent Full-Thickness Macular Hole (FTMH) unsuccessfully managed with the induction of macular detachment technique and finally treated with the positioning of a human Amniotic Membrane (hAM) plug.

Patient with a persistent FTMH was surgically treated with 25 gauge PPV and execution multiple retinotomies at the posterior pole to induce a macular detachment. During follow-up a second 23 gauge PPV was performed, a hAM plug implanted under the edges of the MH and SF6 (sulfur hexafluoride) used as endotamponade. A complete ophthalmic examination and an Optical Coherence Tomography (OCT) were performed at every visit.

After PPV with the induction of macular detachment technique, OCT showed that MH was still open and the edges thickened and elevated, due to the presence of a persistent intraretinal oedema. A new surgery was carried out and the implantation of a hAM plug under the edges of the MH promoted the MH closure, although OCT showed an incomplete neurosensory retina migration over the hAM plug.

hAM transplant is a valuable option for MH surgery and can be considered a valuable surgical option in all those cases with persistent FTMH unsuccessfully treated with other techniques.

Abstract 308

CONCOMITANT INDUCTION OF MACULAR DETACHMENT AND AMNIOTIC MEMBRANE TRANSPLANT TO TREAT CHRONIC FULL-THICKNESS MACULAR HOLE

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To report a surgery combining the induction of a macular detachment technique at the posterior pole and the implantation a human Amniotic Membrane (hAM) plug to treat two cases of chronic full-thickness macular hole (FTMH) associated to retinal pigment epithelium (RPE) changes related to age-related macular degeneration (AMD) and myopia.

The two patients were surgically treated with a 23 gauge PPV, execution of multiple retinotomies at the posterior pole was carried out to induce a macular detachment and lift the edges of the MH, and a hAM plug widely exceeding the MH diameter was then implanted under the edges of the MH. A complete ophthalmic examination and an Optical Coherence Tomography (OCT) were performed at every visit.

During surgery we found in both cases that the induction of macular detachment technique made it easier to lift the margins of the hole and feasible to place a larger hAM plug through the MH under its margins. Postoperative OCT showed the closure of MH over a distended, wide and centered hAM plug.

The combined surgery proved to be a feasible technique to close a chronic FTMH and to place a wide hAM plug to ideally exploit its regenerative effects on the RPE and photoreceptors.

Abstract 258

TEMPORAL ARCUATE RELAXING RETINOTOMY FOR PERSISTENT FULL-THICKNESS MACULAR HOLES: OUR EXPERIENCE

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To evaluate the anatomical and functional outcomes associated with temporal arcuate relaxing retinotomy technique for persistent full-thickness macular hole (FTMH) repair

a retrospective, single-center, interventional study of temporal relaxing retinotomy in eyes with persistent FTMHs following one or more standard repair procedures with pars plana vitrectomy and ILM peeling. Patients received an additional pars plana vitrectomy and temporal arcuate relaxing retinotomy, followed by fluid-air and air-gas exchange. Key postoperative outcomes included the achievement of FTMH closure and changes in visual acuity from baseline.

nine patients with persistent FTMHs were included, with a median age of 70 years (range, 58-76 years). Vitrectomy and temporal relaxing retinotomy were performed in all 9 eyes. Successful FTMH closure was achieved in 7 of 9 eyes (closure rate, 78%), with an average postoperative follow up of 10,4 months (range: 2 to 20 months). 8 of 9 eyes (89%) achieved BCVA improvement during postoperative follow-up, including the long-standing FTMHs. Overall, mean BCVA (± SD) improved significantly from 1.26 ± 0.51 logMAR at baseline to 0.73 ± 0.25 logMAR during postoperative follow-up (P = 0.01).

Temporal arcuate relaxing retinotomy may be an effective method to promote anatomical closure and to improve vision outcomes in patients with persistent FTMHs.

Abstract 99

THE IMPACT OF INTERNAL LIMITING MEMBRANE PEELING SIZE ON IDIOPATHIC MACULAR HOLE REPAIR

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Magrabi eye hospital ~ Jeddah ~ Saudi Arabia

This study aims to investigate the correlation between the size of internal limiting membrane (ILM) peeling and the anatomical and functional outcomes of idiopathic macular hole repair surgeries

This prospective study was involved 20 patients diagnosed with idiopathic macular holes who undergo PPV with classic ILM peeling .
Patients were categorized into three groups based on the size of macular hole pre-op (group A :< 400 mic - group B : 400-600 mic-group C : >600 mic) . Preoperative assessments included (BCVA) and OCT. Surgeries were performed using classic techniques, with the size of ILM peeling determined intraoperatively (more than 2 DD). Postoperative evaluations included BCVA measurements and OCT .Statistical analyses were conducted to assess the impact of ILM peeling size on closure rates and visual Outcomes

Preliminary findings suggest a significant correlation between the size of ILM peeled and macular hole closure rates. Larger extents of ILM peeling are associated with higher closure rates. Best results were found in group B (MHs diameter :400-600 microns) However, further analysis is needed to determine the impact on visual acuity outcomes and to optimize the ideal size of ILM peeling

Our study highlights the significant role of ILM peeling.Larger extents of ILM peeling correlate with improved closure rates, emphasizing the importance of thorough membrane removal during surgery. While promising, further investigation is needed to assess visual acuity outcomes and determine the ideal ILM peeling size for optimal macular hole repair.

Abstract 180

DELAYED CLOSURE OF A FULL-THICKNESS MACULAR HOLE FOLLOWING PARS PLANA VITRECTOMY

Waheeb S.*

KfSH&RC ~ Jeddah ~ Saudi Arabia

Describe a patient with delayed (within 2 week) closure of a stage 3 full thickness macular hole after pars plana vitrectomy.

A retrospective case report. Details of the case were obtained from the electronic patient record system.

A 65-year-old female was referred with a left stage 3 full thickness macular hole measuring 700 microns associated with macula-off RD, and visual acuity of CF .she underwent vitrectomy, limited ILM peel with silicone oil tamponade. In the first week after surgery, the macular hole was smaller at 180 microns but remained open. The patient was considered for possible repeat surgery, however 2 weeks later the full thickness macular hole demonstrated type 2 closure without further intervention.

Delayed macular hole closure after pars plana vitrectomy is rare. In cases where there has been a substantial decrease in the size of a full thickness macular hole after surgery without full closure, a short period of observation to allow for further closure may be appropriate before reconsidering surgery.

Abstract 318

VITRECTOMY FOR MACULAR HOLE-INDUCED RETINAL DETACHMENT IN HIGH MYOPIA

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To evaluate the anatomical and functional outcome of mini invasive vitrectomy using platelet-rich autoplasma for macular hole-induced retinal detachment in patients with high myopia.

The results of surgical treatment of 10 eyes of 10 patients (1 man, 9 women) aged 63.4 + 7.8 years who were treated in the microsurgery departments of the 3rd City Clinical Hospital in Minsk from September 2018 to December 2023 were analysed. The average APA length was 29.03 + 2.07 mm. Myopic refraction ranged from - 8.0 to - 18.0 diopters. The duration of the disease varied from 2 weeks to 3 months. Patients underwenta three-port pars plana 25G vitrectomy with ILM pilling, platelet-riched autoplasma (APRP) and tamponade of the vitreous cavity with silicone oil.

As a result of the treatment, adherence of the retinal detachment was achieved in 100% of cases and closure of the macular hole in 90% of eyes. Maximum corrected visual acuity (MCVA) was 0.02 + 0.01 (0.01-0.04) preoperatively, 0.09 + 0.06 (0.02-0.2) after 1 month, and 0.1 + 0.06 (0.03-0.2) after 6 months. The increase in visual acuity after surgery was limited by myopic maculopathy.

The combined technique of treatment of retinal detachment caused by macular hole in high myopia by vitrectomy with ILM peeling, platelet-rich autoplasm and silicone oil tamponade is highly effective and allows to achieve MH closure in 90% of cases and complete anatomical adhesion of the retina.

Abstract 442

AUTOLOGOUS RETINAL TRANSPLANT FOR A REFRACTORY MACULAR HOLE

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Ospedale Vito Fazzi ~ Lecce ~ Italy

An autologous retinal transplant was performed to treat a patient affected by a full thickness extremely large macular hole refractory to other surgical treatments. A full-thickness retinal graft may provide a sturdier scaffold for retinal gliosis with better tissue integration, which may lead to better anatomical and functional outcomes.

The patient underwent a PPV and a full-thickness autologous retinal transplant and silicone oil tamponade. A full-thickness autologous retinal graft was harvested from the XII meridian, with 1 to 2 disk diameters taken from the nasal superior arcade. The size of the graft was approximately 1.2 to 1.5 times the diameter of the MH. Before the graft's mechanical dissection with vertical scissors, the surgeon applied endodiathermy of the borders. The graft was placed completely into the MH (edge to edge). Additional encircling photocoagulation to the retinal donor site was then applied. Finally, silicon oil (1000 centistokes) was used as tamponade.

The patient underwent pre and post-surgery, a best-corrected visual acuity (BCVA), slit lamp examination, fundus examination and optical coherence tomography. At the 6-month follow-up visit, the patient had a closed MH; the retinal autologous graft showed excellent tissue integration, recovery of the external retinal layers, and the. There was not a significantly increased BCVA.

An autologous full-thickness retinal transplant may improve the anatomical and structural outcome of patients with refractory macular holes. The full safety profile of this new technique is still unknown. More studies are needed in order to assess functional changes through time.

Abstract 26

MANAGEMENT OF RECURRENT MACULAR HOLES WITH HUMAN AMNIOTİC MEMBRANE

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Istanbul Beyoglu Eye Training and Research Hospital ~ Istanbul ~ Turkey

To report early anatomical and functional results of human amniotic membrane (hAM) implantation for persistent macular holes

Clinical charts of all patients who underwent recurrent macular hole surgery with hAM were included. Patients' charts and operative notes were reviewed. Demographical data, pre-operative and post-operative visual acuity and optical coherence tomography findings recorded. Eyes were excluded who carried a diagnosis of other retinal detachment.

15 eyes of 15 patients were included in this study. Mean age 58.3±3 years and 8 were female. Mean BCVA at baseline was 20/100 and remained at 20/100 at 3 months. Preferred tamponade was C3F8 for 10 patients, and silicone was used in 5 patients. At 3 months follow-up, OCT findings showed that all full thickness macular holes closed.

The use of human amniotic membrane grafts appears to be a feasible and effective option for treating recurrent macular holes. Nonetheless, larger prospective controlled studies with long term follow-up period are required to validate our results.

Abstract 221

MACULAR HOLE FORMATION SECONDARY TO PARS PLANA VITRECTOMY: MULTIVARIATE ANALYSIS OF RISK FACTORS, CLINICAL FEATURES AND VISUAL PROGNOSIS

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Beyoglu Eye Training And Research Hospital ~ Istanbul ~ Turkey

We aimed to present the clinical features, risk factors and treatment outcomes of macular hole (MH) secondary to pars plana vitrectomy (PPV).

Patients who underwent PPV for indications other than MH and eventually developed secondary MH at postoperative second week or later, between 01.2015 and 01.2024, were retrospectively analyzed. Optical coherence tomography (OCT) revealed the absence of preoperative MH. Best corrected visual acuity (BCVA-logMAR), minimum diameter of initial MH, base diameter and height were recorded before PPV, after MH formation and at the last follow-up. Primary cause of PPV and surgical technique used for MH repair were evaluated.

Thirty-one eyes were evaluated.Period between primary PPV and MH diagnosis was 9.74±12.59 months.Mean minimum MH diameter was 600±328µm,base diameter 1004±663µm, height 330±146µm.19 patients underwent PPV for MH repair,12 patients were followed up without surgery.For MH surgery group,mean time from MH detection to surgery was 27±10 days.BCVA was 1.76±0.60 before primary PPV,1.65±0.55 before MH surgery and 1.20±0.44 at last follow-up.Last follow-up BCVA was higher compared to pre-primary surgery and pre-MH surgery(p=0.004 and p=0.008,respectively).In non-surgical group,pre-PPV BCVA was 1.57±0.51,last follow-up BCVA was 1.61±0.74 and no difference was observed between two values(p=0.80).Period between MH diagnosis and treatment was positively correlated with final BCVA(p=0.01,r=0.58).

Rarely, MH formation may develop secondary to PPV surgery. For these patients, MH surgery is anatomically and functionally successful. Early MH surgery has been associated with better visual prognosis.

Abstract 101

THE IMPACT OF INTERNAL LIMITING MEMBRANE PEELING SIZE ON IDIOPATHIC MACULAR HOLE REPAIR

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Magrabi eye hospital ~ Jeddah ~ Saudi Arabia

This study aims to investigate the correlation between the size of internal limiting membrane (ILM) peeling and the anatomical and functional outcomes of idiopathic macular hole repair surgeries

This prospective study was involved 20 patients diagnosed with idiopathic MH who undergo PPV with classic ILM peeling .Patients were categorized based on the size of macular hole pre- surgery (group A :< 400 mic - group B : 400-600 mic -group C : >600 mic) . Preoperative assessments included(BCVA) and (OCT). Surgeries were performed using classic techniques, with the size of ILM peeling determined intraoperatively (more than 2 DD). Postoperative evaluations included follow-up BCVA measurements and OCT imaging. Statistical analyses were conducted to assess the impact of ILM peeling size on closure rates and visual outcomes

Preliminary findings suggest a significant correlation between the size of ILM peeled and macular hole closure rates. Larger extents of ILM peeling are associated with higher closure rates. Best results were found in group B (MHs diameter :400-600 microns) However, further analysis is needed to determine the impact on visual acuity outcomes and to optimize the ideal size of ILM peeling

Important of ILM peeling in MH . Larger extents of ILM peeling correlate with improved closure rates, emphasizing the importance of thorough membrane removal during surgery. While promising, further investigation is needed to assess VA outcomes and determine the ideal ILM peeling size for optimal macular hole repair

Abstract 424

A DOUBLE PEELING, LHEP CAREFUL PEELING AND MEBRANECTOMY COMBINED WITH ILM MULTI FLAPS INVERSION, AIR TAMPONADE AND ONE-DAY PRONE POSITIONING FOR THE TREATMENT OF LAMELLAR MACULAR HOLE

Ehnaidy A.*

Ehnaidy Eye Clinic ~ TRIPOLI ~ Libyan Arab Jamahiriya

to propose a new technique of Double peeling of lamellar hole-associated epiretinal proliferation (LHEP) by careful peeling and mambranectomy combined with ILM multi flaps inversion, air tamponade and one-day prone positioning for the treatment of lamellar macular hole (LMH),

In a prospective study, 10 patients (10 eyes) underwent vitrectomy for lamellar macular holes, symptomatic and morphologically progressive unstable LHEP cases were selected for the study, on the other hand cases of macular pseudoholes and epiretinal membrane foveoschisis were excluded from the study. After PP Vitrectomy combined with centripetal peri-hole peeling of epiretinal proliferation, followed by ILM multi flaps inversion, then ended by fluid-air exchange, postoperatively patients were instructed to keep prone positioning for only 1 day. The initial hole-closure and morpho-functional recovery rate, complications and visual outcome were evaluated.

Anatomical closure of lamellar macular holes with restoration of the foveal profile was achieved in 10 of the 10 eyes by one operation. The postoperative visual acuity has showed an improvement in 9 cases and ranged from CF to between 0.1 in 1 eye, 0.2 in 2 eyes, 0.25 in one eye. 0.5 in 2 eyes, 0.6 in 2 eyes. 0.7 in one eye, in one patient the VA have declined from 0.1 to CF 3m because of massive secondary foveal epiretinal membranous hyperproliferation. no FTMH have been reported in all cases

TA Double peeling technique, LHEP careful peeling and mebranectomy combined with ILM multi flaps inversion, air tamponade and one-day prone positioning for the treatment of lamellar macular hole is associated with better morpho-functional recovery compared to other techniques and reduces the risk of postoperative FTMH development

Abstract 5

CHANGES IN MACULAR PIGMENT OPTICAL DENSITY AFTER FULL-THICKNESS MACULAR HOLE CLOSURE USING INVERTED FLAP TECHNIQUE

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This prospective study evaluates details the successful closure of a large Full-thickness macular hole (FTMH) using the inverted flap technique, highlighting the essential role of multimodal imaging, and particularly macular pigment optical density (MPOD) assessment, in preoperative and postoperative evaluation.

Twelve patients with severe vision loss in one eye due to a large FTMH were enrolled in this prospective study. Surgery was performed by an expert vitreoretinal surgeon, resulting in significant postoperative improvements in visual acuity and retinal architecture. Multimodal imaging, including MPOD assessment, played a pivotal role in preoperative evaluation and
postoperative monitoring.

One month after surgery, all patients showed a significant improvement compared to the preoperative state, with a VA of 1/10 (1.0 LogMAR) ($P < 0.0006$). MPOD area and MPOD volume highlighted a significant improvement after surgery ($P < 0.0016$) . We found a significant correlation between mean postoperative MPOD and VA ($r = 0.749$ $P = 0.002$). Finally, the OCTimaging confirmed the complete closure of the macular hole, with regular retinal contour, and recovery of central foveal depression and anatomical continuity of the inner retinal layers in all patients. These results remained stable in 3 month follow up.

Multimodal imaging, including MPOD assessment, could played an important role in preoperative evaluation and
postoperative monitoring. The notable increase in MPOD following successful surgery suggests its potential role
as a valuable adjunctive biomarker associated with a good visual prognosis following this type of macular hole
surgical interventions

Abstract 135

MACULAR HOLE SURGERY AND RETINAL TECTONICS: THE IMPACT OF INTERNAL LIMITING MEMBRANE PEELING SIZE ON TANGENTIAL RETINAL DISPLACEMENT

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University of Ferrara ~ Ferrara ~ Italy

The aim of the study was to evaluate the tangential retinal displacement occurring following macular hole surgery, and to assess the impact of the internal limiting membrane (ILM) peeling size on the extent of the retinal movement.

This retrospective study included patients with full-thickness macular hole undergoing 25-gauge pars plana vitrectomy with ILM peeling. Patients received either
a small ILM peeling with a size of 2-disc diameters or a large peeling extended up to the vascular arcades. Near-infrared retinal imaging was performed with the Spectralis
(Heidelberg Engineering, Carlsbad, Germany) before and 6 months after surgery. The tangential retinal displacement was evaluated comparing the optical flow of near-
infrared images with a custom digital image analysis algorithm.

44 eyes of 44 patients undergoing vitrectomy with small (n = 24) or large (n = 20) ILM peeling were included. An average overall displacement of 31.3 ± 22.8 μm towards the optic disc was observed after surgery. Large ILM peeling was associated with a significantly higher overall displacement (P = 0.009), displacement in the central 4-mm circle (P < 0.001) and outer 8-mm ring (P = 0.001). Macular holes closure was achieved in 100% and 83.3% of patients in the large and small peeling group, respectively (P = 0.055).

Pars plana vitrectomy with ILM peeling for macular hole results in a tangential retinal displacement towards the optic disc. A larger extent of the ILM peeling leads to a greater tangential movement, possibly improving the macular hole closure rate.

Abstract 16

REMOVABLE AMNIOTIC MEMBRANE PATCHING (RAMP) FOR THE TREATMENT OF COMPLEX MACULAR HOLES

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To describe the role of removable amniotic membrane patching (RAMP) in the repair of complex macular holes that are refractory to conventional surgical repair.

Four patients who had previously undergone unsuccessful macular hole repair surgery were offered 23-gauge pars plana vitrectomy with placement of an epiretinal, removable amniotic membrane patch (RAMP) with silicone oil tamponade. One patch was placed epithelial side facing the retina. All subsequent patches were placed with the chorion facing the retina. Post-operative OCT, performed through the silicone oil, was used to establish hole closure and timing for subsequent silicone oil removal and amniotic membrane peeling surgery. Main outcome measures included anatomic hole closure, post-operative vision, duration of patching and adherence of the epiretinal amniotic membrane during peeling.

After silicone oil and amniotic membrane patch removal, all macular holes remained closed. Mean post-operative follow-up was 1.43 years (range: 6 months to 4 years). Average BCVA improved from 1.6 logMAR (20/800) preoperatively to 0.3 logMAR (20/40). Patch duration ranged from 3 to 8 months (median 3.6 months). The patch placed epithelial side facing the retina displaced outside of the macula by post-operative day 1. All others remained in-situ. Patches became more adherent with time. Those that were present for less than 3.5 months could be removed, however by 8 months, the amniotic membrane patch had fused to the retina.

Removable amniotic membrane patching (RAMP) is an effective technique for treating complex macular holes that are refractory to conventional surgical methods. We observed excellent visual acuity outcomes in our small series. OCT can be used to time patch removal; however complete patch removal may not be possible after 3.5 months.

Abstract 188

A NOVEL SURGICAL ALGORITHM FOR RECURRENT AND REFRACTORY MACULAR HOLES

Onder Tokuc E.*, Karabas L.

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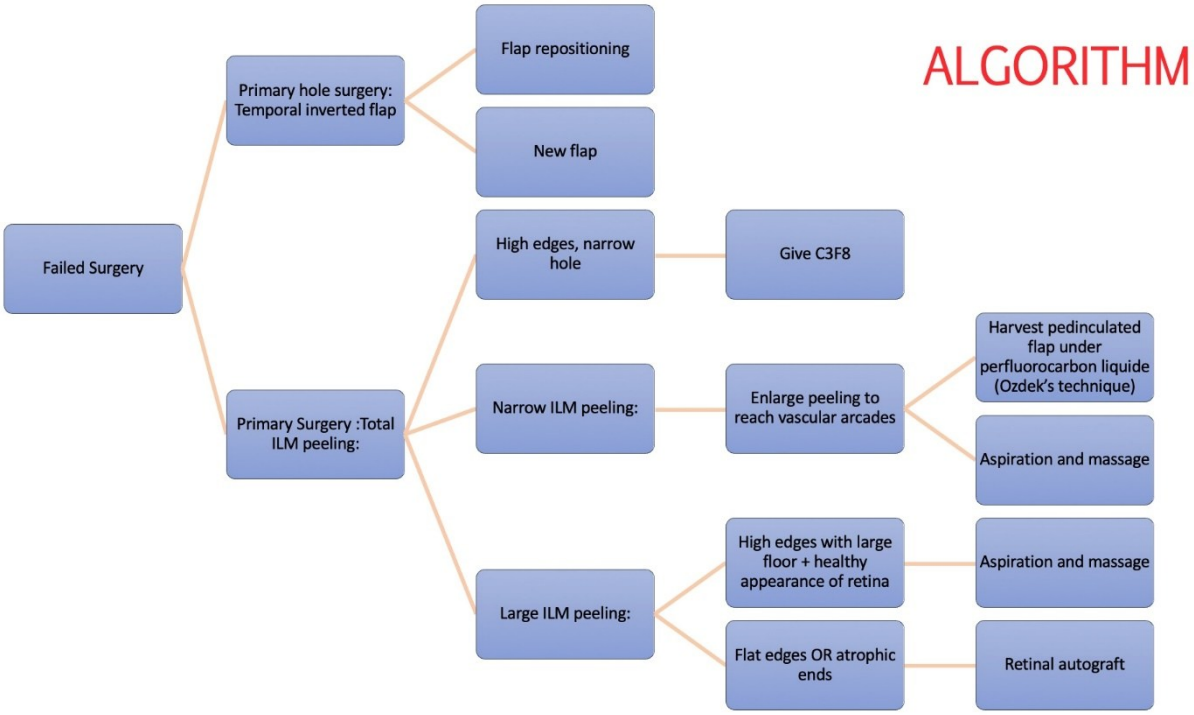
To present our surgical algorithm for treating recurrent and refractory macular holes (MHs).

A retrospective observational study.

In cases of refractory MHs, the initial surgical approach is carefully assessed. This evaluation considers the adequacy of internal limiting membrane (ILM) peeling, the edges of the hole, its size, and whether the surrounding retina is atrophic. Based on these factors, we propose a step-by-step surgical algorithm tailored to the characteristics of the MH. Following temporal inverted ILM flap surgery, the flap's position is assessed and repositioned if dislocated or torn, with a new flap created if necessary. Aspiration and massage are alternatives to promote MH closure. If atrophic retinal edges are present, autologous retinal transplantation may be recommended.

Secondary surgical interventions for recurrent and refractory MHs are generally more technically challenging than the initial surgery. The proposed algorithm is designed to address these challenges and optimize both anatomical and functional outcomes.



Abstract 354

OPTICAL COHERENCE TOMOGRAPHY ANGIOGRAPHY IN AUTOLOGOUS RETINAL TRANSPLANT FOR REFRACTOR MACULAR HOLES

Alasil T.*

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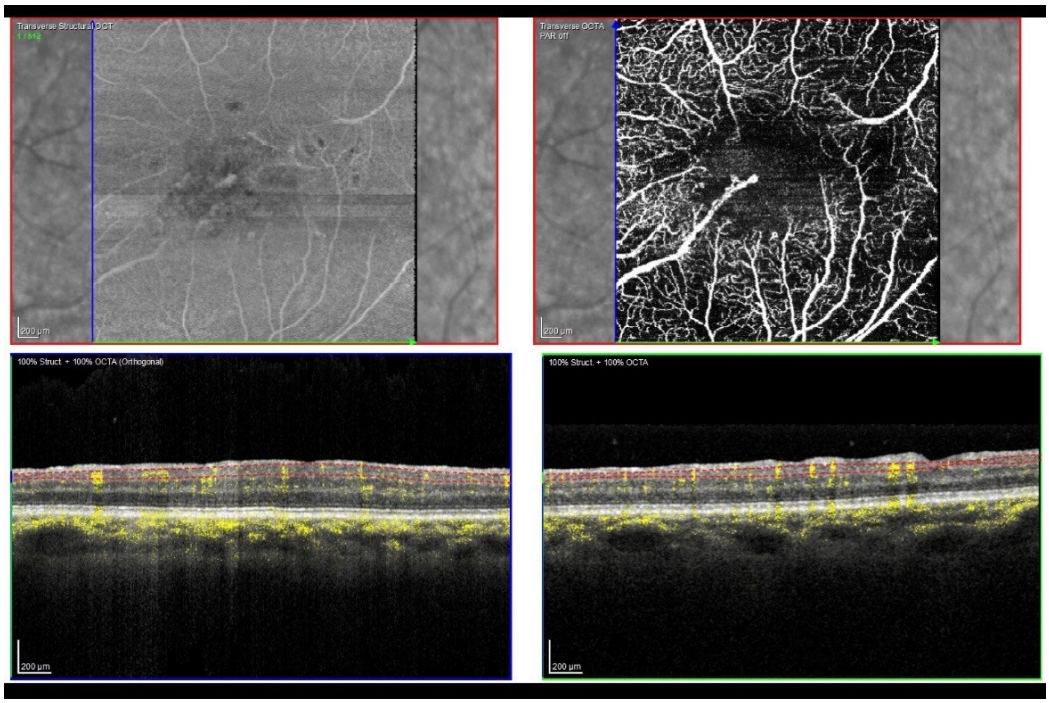
To report the optical coherence tomography angiography (OCTA) findings in patients with autologous neurosensory retinal transplant for closure of refractory macular holes (MHs)

Patients underwent pars plana vitrectomy, autologous retinal transplant (ART) with short-term perfluoro-n-octane heavy-liquid followed by gas tamponade. All patients had at least 3 months follow-up. Patients were followed for 12.7±10 months (3-32 months).

Restoration of the outer retina and integration of the neurosensory retinal flap was noted in 4 out of 6 eyes with successful ART. The VA improved by 1 logMAR unit in the 6 eyes where the hole was closed. Three grafts developed an epiretinal membrane which did not cause worsening of vision and has been observed. OCTA shoed evidence of vascularization within the graft in 3 out of 6 eyes.

OCTA provides a valuable insights into graft vascularization and can be utilized in future studies to detect vascularization within the graft at the superficial and deep vascular plexus.



Abstract 146

CAPSULE FLAP AS AN ALTERNATIVE SCAFFOLD IN REFRACTORY MACULAR HOLE CASES

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To Study the closure rate & visual improvement for patient with refractory macular hole undergoing lens capsule flap after having the 1st surgery with inverted ILM flap

Patients with macular hole whether idiopathic MH or following chronic diabetic macula edema were included in this group of patients. Patients had full ophthalmic exam including slit lamp, Fundoscopy , best corrected visual acuity before & after the macular hole surgery . OCT was performed before & 1 month after the surgery for all patients using the Angiovue optivue system.
Macular hole surgery for the patients included vitrectomy with ILM flap technique as the 1st surgery with or without cataract surgery & with SF6 gas .The second surgery included a lens capsule flap (anterior or posterior lens capsule) with C3F8 Gas.

Three cases who have macular hole non closure from the 1st surgery underwent a second surgery with capsule flap, in two of them the anterior capsule was used as a scaffold & in one of them the posterior capsule was used since the patient was already pseudophakic.In the three cases OCT done after 1 month showed that the macular hole closed after the second surgery & no complications were reported .

Crystalline lens capsule can be used in case were macular hole doesn’t close from the 1st surgery with ILM flap, the use of a long acting gas may increase the chance of closure in the second surgery.

Abstract 189

FREE ILM FLEP FOR IDIOPATHIC MACULAR HOLE ASSOCIATED WITH EPIRETINAL MEMBRANE

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To evaluate the outcomes of cases in which free ILM flap surgery was applied as a surgical method for large macular holes (MH) associated with epiretinal membrane (ERM)

The medical records of patients who underwent pars plana vitrectomy (PPV) surgery with the diagnosis of ERM and MH were studied. The patients in which ILM flap surgery was applied as a surgical method and who had at least 3 months of follow-up were included. Demographic characteristics of the cases, preoperative and postoperative best correctedvisual acuity, MH diameter, height and base diameter, intraocular tamponade, final anatomic success and central macular thickness (CMT) were recorded.

49 eyes of 49 patients were included in the study. There were 27 (55.1%) male and 22 (44.9%) female with a mean age 69.05±9.52 years. 34 (69.4%) of the cases were phakic and 19 (30.6%) were pseudophakic. The mean hole diameter was measured as 473.47±149.97 µm, hole height as 476.86±134.71 µm and base diameter as 1216.26±710.31 µm. SF6 gas and air was used as a tamponade in 53.1% and 46.9% of the cases respectively. Postoperative BCVA was significantly improved compared to the preoperative values (p=0.002). One (2%) case demonstrated no MH closure and closure was achieved after the second surgery.

In cases of large MHs associated with ERM, free ILM flap surgery may provide successful anatomical and functional results, regardless of the tamponade material used intraoperatively.

Abstract 186

VISUAL AND ANATOMICAL OUTCOMES AFTER VITRECTOMY FOR MACULAR HOLE-ASSOCIATED RETINAL DETACHMENT

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To evaluate the functional and anatomical outcomes following vitrectomy for macular hole-associated retinal detachment (MHRD).

This retrospective observational study reviewed the medical records of 18 eyes with MHRD treated between 2011 and 2024, with a minimum postoperative follow-up period of 6 months. We analyzed the surgical techniques, postoperative macular status, retinal reattachment rates, and visual acuity at 1, 6, and 12 months, as well as at the final follow-up.

The mean follow-up was 88.8±55.6 months. Trauma history was present in 4 eyes(22.2%). The temporal inverted ILM flap technique was performed in 7 eyes(38.9%), ILM peeling with aspiration in 8 eyes(44.4%), autologous retinal transplantation in 1 eye(0.05%), amniotic membrane transplantation in 1 eye (0.05%), and macular translocation in 1 eye(0.05%). Retinal reattachment was achieved in 15 eyes, while 3 eyes required re-surgery due to recurrent RD. Early postoperative hypotony was observed in 2 eyes with a history of trauma, while 1 eye developed corneal scarring. In 2 trauma-affected eyes, no improvement in visual acuity was noted at the final follow-up.

The coexistence of a MHRD is a rare occurrence. Retinal reattachment and anatomical closure of the macular hole can be achieved in most cases, although a history of trauma may limit functional recovery.

Abstract 419

STANDARIZATION OF SUBMACULAR INJECTION TECHNIQUE FOR VARIOUS INDICATIONS IN OPHTHALMOLOGY – CASE SERIES

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To investigate the possible indications of submacular injections in current ophthalmology practice while trying to standarise the surgical technique through a case series of patients operated at RFL

Full PPV with induction of PVD
ERM/ILM peel depending on indication
Mode of injection: controlled automated - VFC injection set - 0.4 ml with 41G subretinal injection cannula attached to 10 ml VFC syringe.
Site of injection: depends on the indication, usually superior / superonasal
Number of injections: depends on indication / response / single/ multiple entries
Indications/Patients:
Submacular hemorrhage
AMD-related: (7 patients)
Traumatic: (2 patients)
Reclacitrant/ Chronic FTMH: (3 patients)
Persistent foveal fold: (1 patients)
Resistant Diabetic Macular Edema: (1 patient)
Displacement of subfoveal PFCL: (1 patient)

No adverse events documented with this technique in this case series.
Surgical technique was readily reproducible between different surgeons/ indications.
Visual improvement varied between different indications, with traumatic submacular hemorrhage patients achieving maximum and resistant diabetic edema achieving minimum improvement.

Submacular injection can be a possible solution for different problems facing VR surgeons
It can be reproducible technique for various indication/ injectables
Each of these indications needs further studies to prove efficacy, reach standarization and document safety

Abstract 44

TISSUE PLASMINOGEN ACTIVATOR-ASSISTED VITRECTOMY AND GAS TAMPONADE FOR SUBMACULAR HEMORRHAGE DUE TO CHOROIDAL NEOVASCULARIZATION SECONDARY TO ANGIOID STREAKS: A CASE REPORT

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The purpose of this study is to report a case of subretinal hemorrhage due to choroidal neovascularization (CNV) secondary to angioid streaks (AS) treated with vitrectomy combined with subretinal recombinant tissue plasminogen activator (r-tPA), gas tamponade and anti-VEGF agent injection.

A 59-year-old male was referred to our ophthalmic emergency clinic due to sudden visual loss in the left eye. He was known to suffer from AS and bilateral CNV treated with multiple anti-VEGF injections in both eyes, according to a pro-re-nata (PRN) regimen. A large submacular hemorrhage (SMH) was diagnosed in his left eye. Baseline data such as initial visual acuity (VA), duration and dimension of the hemorrhage were recorded. Pre- and post-operative optical coherence tomography (OCT) images and color fundus photographs were taken.

After a 25-gauge three-port transconjunctival pars plana vitrectomy, subretinal r-tPA was injected into the subretinal space through a self-sealing retinotomy using a 41-gauge cannula. After clot liquefaction, a complete fluid-air exchange was performed. SF6 gas 20% was used for the tamponade and an anti-VEGF agent injection was performed. After surgery, the patient remained in the prone position for a minimum of 3 days. Postoperative VA, complications, dimensions, and displacement of SMH were recorded during follow-up visits.

Vitrectomy combined with subretinal r-tPA injection and gas tamponade is an effective surgical intervention to preserve VA in patients with SMH due to CNV secondary to AS.

Abstract 38

POSTERIOR POLAR CATARACTS: HOW MANY REALLY REQUIRE VITREORETINAL INTERVENTION?

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Posterior polar cataracts are often referred to the vitreoretinal services as there is a higher risk of posterior capsule rupture, if the capsule is involved.
Anterior segment optical coherence tomography (AS-OCT) can be a useful tool in determining the posterior capsule status

Retrospective review of electronic patient records (Medisoft) for cases diagnosed as PPC and cases who had lens status AS-OCT performed. From Jan 2022 to Aug 2023.
Of these how many had an AS-OCT scan to assess the integrity of the posterior capsule.
AS-OCT scans reviewed and compared to surgical outcomes, PC rupture or not.

11 cases identified as PPC diagnosis via Medisoft with 9 cases proceeding with cataract Sx.
5 cases had uneventful cataract surgery after a normal anterior segment OCT scan.
1 cases had an anterior segment OCT scan that showed interrupted or discontinous posterior capsule which resulted in a posterior capsule rupture and was management successfully by a vitreoretinal surgeon.

AS-OCT is a useful tool in helping to determine which Posterior polar cataract involve the posterior capsule
Literature shows high NPV, so we can be confident that if a PC looks intact on AS-OCT, only a small number will lead to PCR, so can be managed by non vitreoretinal surgeon.

Abstract 315

VISUAL AND SAFETY OUTCOMES OF THE CARLEVALE INTRAOCULAR LENS: INSIGHTS FROM A MULTICENTRIC STUDY

Guerreiro Dias B.[1], Bernardo Matos D.[1], Pereira Neves P.[2], Ornelas M.[2], Marques Neves C.[1], Yueh Faria M.[1], Pinto Ferreira N.*[1]

[1]Hospital de Santa Maria - ULS Santa Maria ~ Lisboa ~ Portugal, [2]Hospital de São Bernardo - ULS da Arrábida ~ Setúbal ~ Portugal

The aim of this study was to assess the refractive outcomes and safety profile with the sutureless scleral fixation Carlevale intraocular lens (IOL) for the correction of aphakia in the absence of capsular support.

Multicentric retrospective cohort study. Consecutive patients implanted with Carlevale IOL between February 2020 and May 2024 in Hospital Santa Maria, Hospital de São Bernardo and Clínica Privada de Oftalmologia, with a minimum follow-up of 3 months, were included. Exclusion criteria included use of toric IOLs. The clinical data were acquired from the patients' records. Primary outcome was the best corrected visual acuity (BCVA) and the postoperative spherical equivalent deviation (PSED) in relation to the preoperative refractive target. Secondary outcomes included intraoperative and postoperative complications.

A total of 100 eyes were implanted with the Carlevale IOL. Of these, 85 met the inclusion criteria and were included in the study. The mean follow-up time was 14.54±10.52 months, and the mean age at the time of surgery was 72.75±14.51 years. The most common surgical indications were IOL dislocation (47.10%, n=40) and aphakia after complicated cataract surgery (34.10%, n=29). The BCVA showed a statistically significant increase from 1.55 ± 0.76 preoperatively to 0.43±0.44 logMAR postoperatively ($p<0.001$). The PSED was -0.48±1.43 diopters. Regarding postoperative complications, the most common were transient ocular hypertension (10.60%, n=9) and cystoid macular edema (7.10%,n=6).

The Carlevale IOL is a valuable option for managing complex aphakic eyes without capsular support. It provides significant improvements in best corrected visual acuity and demonstrates acceptable predictability in refractive outcomes. The safety profile is favorable, with manageable postoperative complications.

Abstract 388

SUBRETINAL INJECTION OF RECOMBINANT TISSUE PLASMINOGEN ACTIVATOR AND GAS TAMPONADE TO DISPLACE ACUTE SUBMACULAR HAEMORRHAGES SECONDARY TO AGE-RELATED MACULAR DEGENERATION

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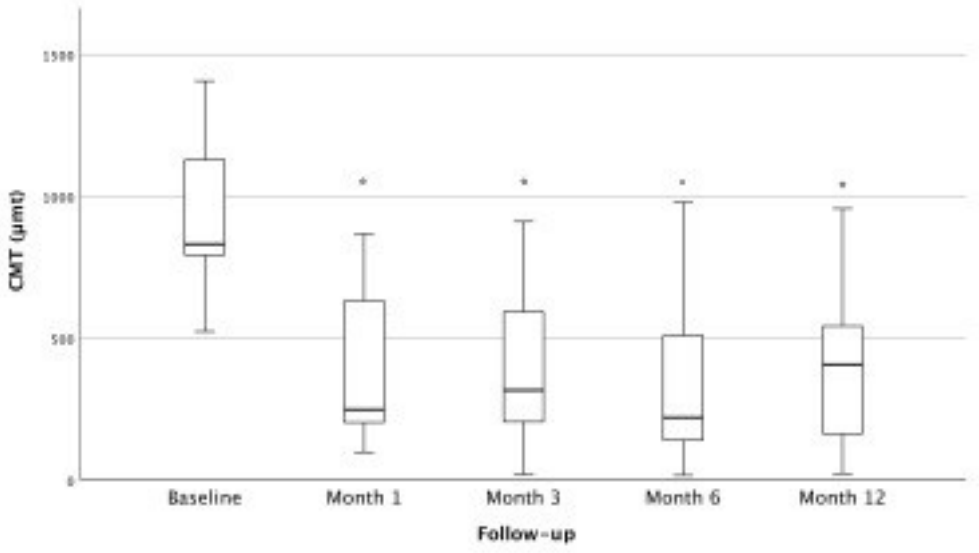
Ospedali dei Colli - Monaldi ~ Napoli ~ Italy

To analyse the efficacy of subretinal injection of recombinant tissue plasminogen activator (rtPA) and gas tamponade for the displacement of submacular haemorrhage (SMH)

Single-centre, retrospective, case series of 6 consecutive patients (6 eyes) who underwent 25g pars plana vitrectomy (PPV) with 50 mcg/0.1 ml subretinal rtPA injection and 20% sulphur hexafluoride (SF6) tamponade. Primary outcome was SMH displacement rate, secondary outcomes were final best-corrected visual acuity (BCVA), central macular thickness (CMT), recurrence probability and intra- and postoperative complications

Successful displacement was obtained in all 6 eyes (100%), BCVA significantly improved at 12 months ($p = 0.001$), CMT significantly decreased at 12 months ($p < 0.001$), SMH recurrence was observed in two (33%) patients, no intraoperative complications were recorded, only one patient developed postoperative TASS completely resolved in one week

PPV with rtPA subretinal injection and SF6 tamponade is a safe and effective technique in displacing acute SMHs secondary to neovascular AMD. It is recommended to perform within 14 days from the onset of the symptoms to achieve BCVA improvement and to plan proper future anti-VEG treatment.



Abstract 440

IS CARLEVALE LENS THE RIGHT TOOL FOR APHAKIA WITH NO CAPSULAR SUPPORT?

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[1]Mr ~ Swindon ~ United Kingdom, [2]DR ~ Swindon ~ United Kingdom

There remains ambiguity surrounding the optimal management of aphakia with absence of capsular support.1 Carlevale scleral-fixated intra-ocular lens (IOLs) is a novel self-locking suture-free lens. It offers a promising alternative to anterior chamber, iris-fixated and posterior chamber scleral fixated IOL's which are associated with a number of complications

A retrospective interventional study reviewing the use, indications and outcomes of Carlevale lens for both adult and paediatric patients with aphakia, IOL subluxation or lens dislocation performed within our ophthalmology department over the past 4 years. Carlevale lens was used in 31 patients including paediatric, rupture globe, Marfan syndrome, postoperative aphakia and aphakia with traumatic iris defect mandating iridoplasty with carlevale insertion. All the patients underwent a standard ophthalmologic examination including best correct visual acuity, measurement of intraocular pressure, anterior segment, and fundus examination. Refractive outcome was also evaluated. Minimum follow-up of 3months was requested for inclusion in the study.

Patient age ranged from 11 to 85-years-old (mean=61). There was an improvement in mean visual acuity post-operatively. Mean pinhole and best corrected visual acuity improved from 0.97 (SD 0.37) and 1.05 (SD 0.49) to 0.53 (SD 0.37) and 0.35 (SD 0.25). There was no significant change (p=0.59) in mean intraocular pressures pre-operatively (14.45, SD 4.36) and post-operatively (16, SD 8.9). No significant difference (p=0.34) was found in the mean central corneal thickness (CCT) pre-operatively (570, SD 61) and post-operatively (561,SD 61). Post-operative complications were: cystoid macular oedema (n=5), raised IOP (n=2), corneal oedema (n=2) and haptic lens prolapse (n=1).

Carlevale lens was found to be an easy and effective option in managing patients with insufficient capsular support. Satisfactory refractive outcome was achieved. Carlevale lens has shown good effectiveness, IOL stability and few intra and post-operative complications. Complications occurred in a few cases and were successfully managed.

Abstract 36

RESULTS OF IMPLANTATION OF MULTIFOCAL AND EDOF - IOLS IN EYES WITH AVITRIA.

Grishchenko M.*

Russia ~ Krasnodar ~ Russian Federation

To analyze the results of implantation of multifocal and EDOF - IOLs in patients with avitria who underwent surgery for retinal pathology

We operated on 25 patients after surgery for retinal detachment and macular pathology. The majority were patients with retinal detachment (93%). The control group consisted of 25 patients with implanted premium IOLs in posterior intact eyes.

Our experience demonstrates that favorable visual acuity results can be achieved among patients with visual acuity above 0.6 after vitrectomy, which suggests that this category of patients may be a candidate for implantation of premium IOLs (multifocal, EDOF).

In addition to improving functional results, all patients had a significant improvement in quality of life, which contributed to the psychosocial rehabilitation of patients.

Abstract 11

DMEK GRAFT DISLOCATION

Khoyratty F.*, Banerjee S., Dhillon N., Chung C.

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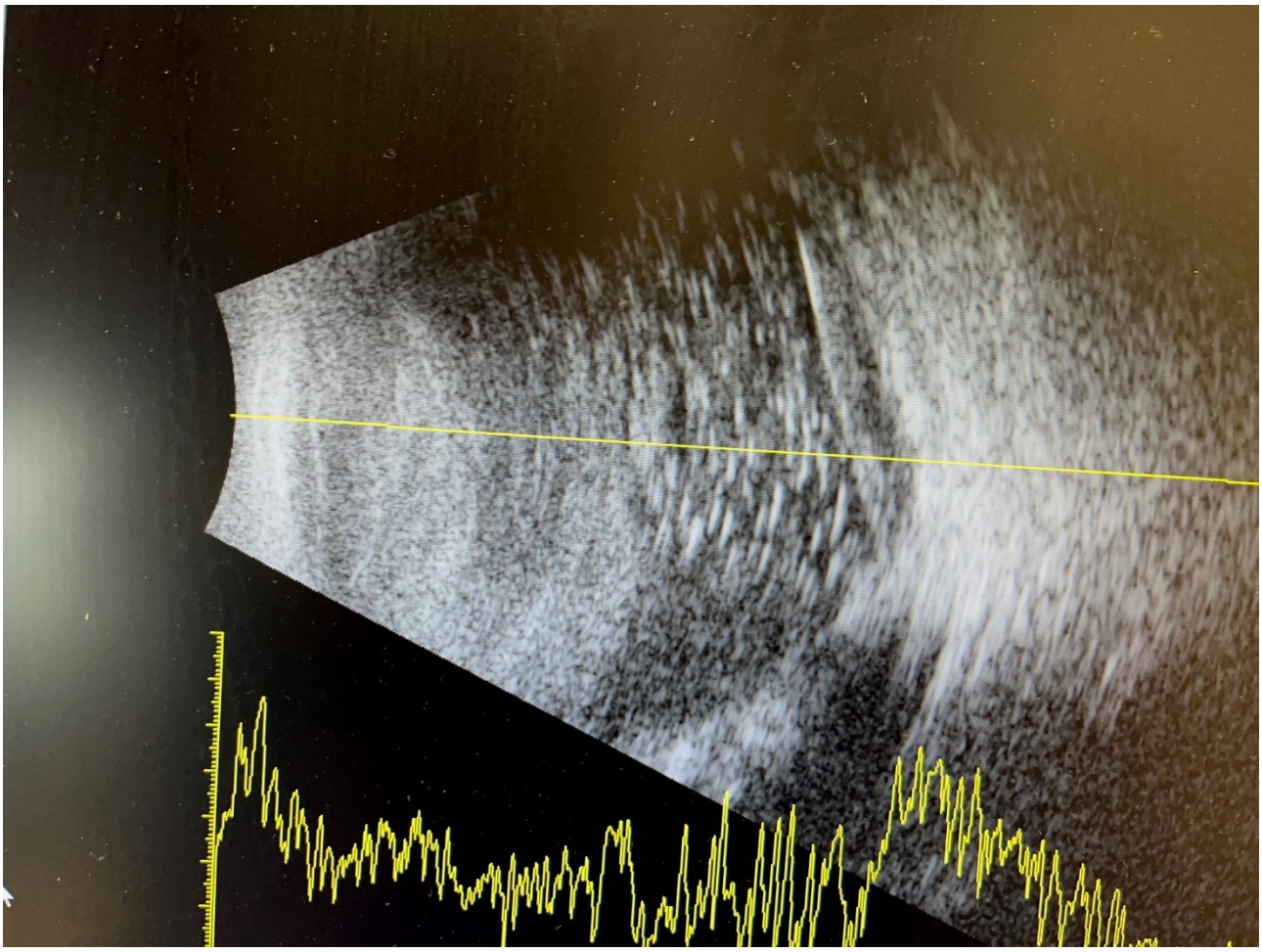
There are few published reports on DSAEK or DMEK grafts posterior dislocation in vitrectomised eyes. A rare complication of
corneal graft procedure. In this report, we describe a case of intraoperative posterior DMEK graft dislocation in a pseudophakic
patient(one piece IOL in the bag). A scenario not previously described in the literature.

Retrospective case review

A pseudophakic 64 year old gentleman following multiple retinal detachment surgeries developed bullous keratopathy with CF vision.During DMEK surgery, unfolding manoeuvres aided with vision blue proved to be challenging with posterior dislocation of the graft on air insufflation to bed the graft. B mode ultrasound confirmed posterior localisation of the graft on the macula postoperatively.A plan combined procedure with temporary keratoplasty was attempted to retrieve the graft via standard 23G pars plans vitrectomy approach. Pulsed steroid therapy was needed postoperatively to control intraocular inflammation. The full thickness graft remaining clear at recent follow up with no progressive retinal pathology (PVR,CMO).

The anterior chamber environment created by previously vitrectomised eyes with unstable lens-iris diaphragm makes unfolding manoevres needed for posterior lamellar keratoplasty challenging in eyes with compromised transcorneal view. B mode ultrasound becomes instrumental before committing to a posterior segment procedure.Postoperative intraocular inflammation mandates close follow up to ensure graft survival.



Abstract 415

IOCT-ENHANCED VITRECTOMY FOR ADVANCED PROLIFERATIVE RETINOPATHY - CASE SERIES

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To explore the potential use of iOCT during vitrectomy for a series of 3 cases of advanced proliferative retinopathy

The first case emphasizes iOCT's role in identifying the optimal plane for membrane delamination, reducing the risk of iatrogenic retinal tears and enabling for safer extensive membrane dissection.
The second case highlights the role of iOCT in confirming the potential closure of a secondary macular hole associated with a tractional retinal detachment that threatens the fovea. This was achieved by employing a gentle drying technique directly through the hole under intraoperative OCT visualization.
The third case illustrates the unplanned decision to perform an ERM/ILM peel for foveal distortion, preoperatively obscured by vitreous hemorrhage but detected by iOCT on table.

In membranes peeling/ Macular holes, iOCT may maximize surgical efficiency while minimizing unnecessary surgical manipulations
In PDR/VH, iOCT facilitates tissue dissection by identification of surgical planes, identifies obscured macular pathology

These cases demonstrate the critical impact of iOCT on surgical interventions and outcomes in complex cases of vitrectomy for advanced proliferative retinopathy.

Abstract 178

GLUED IOL AND SFT-PUPILLOPLASTY: A BEGINNER´S GUIDE

Kilian R.*

Ospedali Privati Forlì ~ Forlì ~ Italy

To describe a technique for secondary intraocular lens (IOL)-implantation and iridoplasty, sharing the intraoperative difficulties a beginner surgeon might face.

We present a surgical video on glued IOL and single-pass four-throw pupilloplasty (SFT) describing each step´s difficulties and solutions from a beginner´s perspective. The patient was a 72 years old female who was recently left aphakic following complicated cataract surgery. Preoperative best corrected visual acuity (BCVA) was 20/40, the cornea was clear, the intraocular pressure (IOP) was 16 mmHg and the retina was fully attached without any cataract remnants.

The operation described in this video was completed without any intra- or post-operative complications. After 1 week, BCVA was 20/25 and intraocular pressure was 12 mmHg.

Glued IOL represents a valid cost-effective technique for cases of surgical aphakia that need a secondary IOL implantation. Pupilloplasty following the SFT technique is an invaluable tool for any surgeon to effectively repair iatrogenic iris defects.

Abstract 383

THE SKEWER TECHNIQUE COMBINED WITH PHACOEMULSIFICATION: A SAFE AND CONVENIENT WAY TO REMOVE DISLOCATED LENSES

Wu R.*

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We have developed a way to deal with lens dislocation into the vitreous cavity. The main purpose of this method is to reduce potential retinal damage caused by auxiliary surgical instruments or consumables such as 20-gauge fragmatome device and perfluorocarbon liquid.

This new technique does not enlarge the original wound. Based on the original three-channel standard trocar, it flexibly uses the negative pressure suction function of the vitrectomy cutter to lift the crystal core block, uses the illumination probe as a rod for skewering, and uses certain skills to core block passes through the illumination probe tip and is fixed on it, forming a "skewer",then raise to the anterior chamber position for conventional phacoemulsification. We have previously performed this technique in 21 patients with lens dislocation, and detailed intraoperative and postoperative records of all patients were recorded.

In our documented patient data, the majority of causes of lens dislocation were traumatic. All 21 patients successfully achieved removal of the dislocated lens without relying on perfluorocarbon liquid and fragmatome device. The average age of the patients was 60.20 ± 10.73 (range: 41-85) years, and the average axial length was 25.40 ± 2.35 (range: 22.30-32.35) mm. Best-corrected visual acuity at 3 months postoperatively showed significant improvement compared with preoperative measurements. Most importantly, no intraoperative or postoperative retinal damage occurred in any eye treated with this new technique.

The "skewer" technique we developed is an innovative solution for addressing lens dislocation. This approach eliminates the need for perfluorocarbon liquid or extensive pars plana scleral sclerotomy. Based on postoperative outcomes from a series of patients who underwent this procedure, the technique is highly safe and convenient.

Abstract 133

BLUE DYE-ASSISTED INTRAOPERATIVE OPTICAL COHERENCE TOMOGRAPHY FOR MACULAR SURGERY

Pellegrini M.*, Mura M.

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The purpose of this study was to evaluate whether vital blue dyes could enhance the contrast of intraoperative OCT during macular surgery.

This was a prospective observational study performed at Ospedalì Privati Forlì “Villa Igea” (Forlì, Italy) and the Sant’Anna University Hospital (Ferrara, Italy). Consecutive patients undergoing elective pars plana vitrectomy for vitreomacular interface disorders were enrolled. Intraoperative OCT was performed with the the Artevo 800 microscope (Carl Zeiss Meditec AG, Jena, Germany) before and after injection of 0.2 mL of Trypan Blue and Brilliant Blue G ophthalmic solution. The OCT contrast ratio was measured with ImageJ, while the overall scan quality was subjectively classified using a 4-point scale.

Ten eyes of 10 patients were enrolled in the study. Indications for surgery were epiretinal membrane in 8 patients, vitreomacular traction syndrome in 1 patient, and lamellar macular hole in 1 patient. The OCT contrast ratio was 9.39 ± 5.35 without blue dye, and significantly improved to 14.31 ± 10.50 after blue dye injection (P = 0.027). The percentage of patients with a grade 4 scan quality also significantly improved (from 40% without blue dye to 90% with blue dye injection; P = 0.012).

The use of blue dyes during intraoperative OCT is an effective strategy for improving contrast and scan quality without affecting the surgical time and workflow.

Abstract 287

THE USE OF INTRACAMERAL TPA FOR THE RESOLUTION OF FIBRINOUS EXUDATE FOLLOWING THE TREATMENT OF POST ANTI VEGF INJECTION ENDOPHTHALMITIS

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To describe a case of intracameral use of tPA for excessive fibrinous exudate after treatment for post antiVEGF injection endophthalmitis.

An 88yo female attended our clinic complaining of pain and sudden visual reduction in her left eye, 2 days after intravitreal ranibizumab injection. On examination, visual acuity was light perception, the conjunctiva was injected and an AC hypopion 2mm was present. On B-scan examination intense vitritis was noticed. Patient was treated with intravitreal ceftazidime and vancomycin, and commenced on antibiotic drops. A 25G PPV was performed within 12 hours. Her clinical condition improved within 24 hours, hypopion was abscent but a dense fibrinous plaque was formed, abutting the pupillary border. Hence, intracameral tPA was injected, according to local protocol.

Following the tPA injection, there was resolution of the anterior chamber clot and fibrinous plaque, which facilitated fundal view and subsequent management and monitoring of the patient's condition. In the following days, patient's symptoms further improved and visual acuity increased to counting fingers.

In cases characterized by the presence of dense fibrinous exudate such as endophthalmitis, Toxic anterior segment syndrome, and pediatric cataract, the use of tPa could be considered as part of the patient's treatment plan.

Abstract 142

ACTIVE-FLUIDICS VERSUS GRAVITY-FLUIDICS IN UNCOMPLICATED CATARACT SURGERY: OCTA TO ESTIMATE EARLY CHANGES IN MACULAR AND OPTIC DISC MICROCIRCULATION

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[1]Ospedale Isola Tiberina- Gemelli Isola ~ Rome ~ Italy, [2]Fondazione Policlinico Gemelli ~ Rome ~ Italy

To compare with optical coherence tomography angiography the earliest changes and damages of macular and optic disc microcirculation after active-fluidics system (AFS) and gravity-fluidics system (GFS) in uncomplicated cataract surgery

We enrolled 42 eyes affected by uncomplicated cataract and divided in two groups, 21 eyes were randomly assigned to AFS-group and 21 eyes to GFS-group. Optical coherence tomography angiography was performed by expert examiners 30 ± 10 minutes before surgery (T0), 30 ± 8 minutes after surgery (T1), 24 ± 2 hour (T2) and 7 days after surgery (T3).

No significant difference at T1 was detected between groups. At T2, eyes in GFS-group showed a whole macula deep capillary plexus vessel density of 37.9 ± 5.8 %, which was significantly lower than the one of eyes in AFS-group (42.2 ± 5.7%) (p=0.048). At T3, eyes from GFS-group showed a significantly higher retinal nerve fiber layer thickness in the nasal (p =0.020) and inferior (p=0.045) quadrant, and a significantly lower peripapillary vessel density in the inferior quadrant of the papilla (p=0.036) compared to GFS-group.

Active-fluidics system seems to protect the macular and optic disc microcirculation during phacoemulsification, and it may represent a more prudent approach especially in cases that require specific care to preservation of residual peripapillary and macular vasculature, such as diabetic or glaucomatous eyes.

Abstract 378

POSTERIOR SYNECHIA FORMATION AFTER PHACOVITRECTOMY - PREDICTING FACTORS AND THE ROLE OF SHORT-ACTING MYDRIATICS

Dotan A.*

Rabin Medical Center ~ Petach Tikva ~ Israel

To evaluate the influence of topical short-acting mydriatics on the formation of posterior synechia after phacovitrectomy surgery of pars plana
vitrectomy and phacoemulsification with intraocular lens implantation.

A prospective randomized controlled trial. Fifty-seven adult (>18 years old) patients (57 eyes) who underwent phacovitrectomy surgery at a single tertiary
hospital, were randomly divided into two groups. The control group (29 eyes) received standard postoperative treatment (topical antibiotics and steroids).
The study group (28 eyes) received short-acting mydriatics together with standard therapy. Patients were followed until 24 months after surgery.
The primary outcome measure was the formation of posterior synechia during the follow-up period

A total of 7 patients developed posterior synechia during the follow-up period (12%), 3 in the study group (11%) and 4 in the control group (14%).
There was no statistical difference between the groups. Significant associations for the development of posterior synechia were surgery for retinal detachment,
longer surgery duration (>93 min) and the use of tamponade, in particular silicone oil.

Topical short-acting mydriatic drops after phacovitrectomy surgery, in addition to standard post-operative treatment, did not
reduce the formation of posterior synechia. However, we identified several factors that may influence or act as predictors for the development of posterior
synechia: surgery for retinal detachment, using silicone oil tamponade and a longer surgery duration.

Abstract 376

TRANSRETINAL DRAINAGE OF SUPRACHOROIDAL FLUID

Mohammad A.M.*

ophthalmology department, faculty of medicine ~ zagazig university ~ Egypt

drainage of suprachoroidal fluid in rhegmatogenous retinal detachment surgery to fulfill complete silicon fill and reduce risk of recurrence and uveitis

after total vitrectomy and drainage of subretinal fluid, end diathermy was used to create retinotomy and then applied over choroid, then high speed cutter with low aspiration was used to create small choroidectomy in detached choroid, fluid air and drainage of subretinal and suprachoroidal fluid, endolaser was applied and silicon oil injected

all cases were completely successed with 100% of total choroidal and retinal attachment. no postoperative silicon underfill, no postoperative uveitis nor recurrence of detachment.

safe, simple, easy technique in comparison to external drainage of suprachoroidal detachment fluid.

Abstract 449

VITRECTOMY FOR SUBRETINAL HEMORRHAGE IN NEOVASCULAR AMD

Kilic Muftuoglu I.*[1], Onder E.[2], Ozdemir S.N.[2], Karabas L.[2]

[1]ISTANBUL TRAINING AND RESEARCH HOSPITAL ~ ISTANBUL ~ Turkey, [2]KOCAELI UNIVERSITY SCHOOL OF MEDICINE ~ KOCAELI ~ Turkey

To report the surgical outcomes of patients who underwent pars plana vitrectomy (PPV), subretinal tpa injecton and endotamponade for subretinal macular hemorrhage (SMH) secondary to neovascular neovascular age-related macular degeneration (AMD).

Data including best-corrected visual acuity (BCVA), foveal center point (FCP) thickness, diameter of SMH, need for anti-vascular endothelial growth factor (anti-VEGF) injection, and complications were recorded.

Thirty-seven patients were followed for a mean of 23.21 months (1-2 9.16, months). BCVA was 1.80□0.69, logMAR (0.70-3.10, logMAR) before the surgery and 1.20□0.70, logMAR (0-3.10, logMAR) at last visit; BCVA showed statistically significant improvement starting from 3-month visit, and thereafter. FCP significantly decreased at all post-op visits ($p<0.001$). 94.59% of eyes (35 eyes) showed total displacement of hemorrhage to inferior quadrant. Twenty-three eyes (62.16%) required a mean of 6.15□6.14 (1-26) anti-VEGF injections following the surgery. Eleven eyes (29.72%) required further surgical intervention for complications including rhegmatogenous retinal detachment (5.4%), vitreous hemorrhage (5.4%), and 7 (18.91%) had re-hemorrhage during follow-up.

PPV+subretinal tpa injection seemed to be an effective option in selected cases with severe SMH. However, patients need to be monitorized closely for the disease activity and post-operative severe complications.

Abstract 302

SCLERAL WINDOWS FOR UVEAL EFFUSION SYNDROME

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Outcomes of large scleral windows for extensive choroidal effusions associated with retinal detachment.

Three patients presented to our department between 2019 and 2023 with significant 360 degrees of choroidal effusions associated with serous retinal detachment. Each of the patient was treated with scleral windows in either 2, 3 or 4 quadrants of the affected eye, depending in the extent and location of the effusions. Each scleral window was located 6-8 mm from the limbus, each was a full thickness 3 x 6 mm excision of scleral tissue. The tissues were analysed pathologically.

All three patients showed complete or near complete resolution of choroidal effusion during early postoperative period. Vision improved from 6/12 to 6/6 in the first patient, from 6/12 to 6/7.5 in the second and from 6/36 to 6/18 in the third patient. The third patient had other significant ocular co-morbidities. Pathology results were consistent with uveal effusion syndrome in all three patients.

Larger than previously described full thickness scleral excisions are safe as they resulted in a quick resolution of choroidal and subretinal fluid, vision improvement and no complications.

Abstract 452

SPONTANEOUS LATE DISLOCATION OF INTRAOCULAR LENS WITHIN THE CAPSULAR BAG IN PSEUDOEXFOLIATION SYNDROME- SURGICAL OPTIONS

Stamenkovic M.*[1], Milic J.[2], Popovic M.[1], Popovic A.[1], Janicijevic I.[1]

[1]Clinical Hospital Center Zvezdara Ophthalmology clinic ~ Belgrade ~ Serbia, [2]General Hospital Nikšić Ophthalmology department ~ Nikšić ~ Montenegro

We compare and evaluate the visual outcome and complication rate of two different techniques of surgical
management of in-the-bag intraocular lens (IOL) dislocation or aphakia correction. In accordance with the improvement of
surgical techniques, we compared sutureless and double flange technique for IOL bag complex repositioning in IOL
dislocation in pseudoexfoliative syndrome.

We retrospectively reviewed the records of seven patients who had undergone phacoemulsification, followed
by implantation of a posterior chamber IOL in the capsular bag during the years 2015 through 2022 and who showed IOL
dislocation during follow-up. We aimed to evaluate the patient characteristics, expected visual outcomes, surgically
induced astigmatism, and complications. For surgical treatments, we focused on the comparison of the 2 main operation
methods: IOL repositioning suturelles intrascleral fixation and IOL repositioning double flange fixation. Each surgical
technique used will be shown in video format (Yamane, Canabrava etc)

The median time elapsed until the dislocation of IOLs was 10 years (range 4–22 years). Median axial length of the diseased
eye was measured at 24.83 mm (range 23.43-26.87 mm).
- 7 eyes (7 patients)
- Sex: 2 women, 5 men
- Age range from 47 to 72 years
- Mean postoperative follow-up: 29.5+ 3.6 weeks
- Mean postoperative refraction: − 1,23 ± 1,41 diopter sphere
- Postoperative astigmatism: -1.25 median (for -0,5 to 2)
- No intraoperative complications
- IOL was well centered and stable in all the patients
- No postoperative complications were registered (scleral necrosis, cystoid macular oedema, retinal detachment,
endoftalmitis)

Literature indicates that IOL repositioning and IOL
exchange surgical methods have comparable efficacy in terms of visual outcome and that both have acceptable safety with few minor
surgical complications. This paper shows that with the advancement of surgical techniques,
therapeutic approaches are also changing in accordance with the functional effectiveness of surgical methods.

Abstract 306

MULTIMODAL IMAGING IN SILICONE OIL-ASSOCIATED KERATOPATHY

Ferrara M.[2], Lozza F.*[2], Beschi G.[2], Morescalchi F.[1], Romano M.R.[3], Semeraro F.[2], Romano V.[2]

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To characterize macroscopic and microscopic findings of silicone oil (SO) keratopathy through a comprehensive assessment including ophthalmic examination and multimodal imaging along with histopathological examination.

We report a case of right advanced SO keratopathy developed early after removal of heavy SO (HSO) in an eye previously treated with pars plana vitrectomy and HSO tamponade due to open-globe injury. On slit-lamp examination the right eye exhibited subconjunctival HSO bubbles, corneal decompensation, corneal edema, Descemet's folds and HSO emulsion detectable in the anterior chamber (AC). Patient was investigated using anterior-segment OCT (AS-OCT) and in vivo laser scanning confocal microscopy (IVLSCM). At the time of penetrating keratoplasty, the host cornel button was sent for histopathological examination.

Intrastromal large rounded/oval hyporeflective spaces and scattered hyperreflective (HR) dots were detected using AS-OCT, suggestive of large HSO bubbles and emulsified HSO microbubbles, respectively. On IVLSCM, keratocytes and endothelial cells appeared to be reduced in density and altered in morphology; in addition, hyperreflective epithelial fibrotic changes and inflammatory cells on the endothelium were detected. At the time of penetrating keratoplasty, the host corneal button was sent for histopathological examination. The latter showed focal intrastromal vacuoles of silicone oil and surrounding macrophages within the thickened corneal stroma.

We identified hyperreflective dots within the corneal stroma as a novel sign of SO-related keratopathy. In addition, the reported microstructural and histopathological findings support the ability of emulsified SO droplets to penetrate the corneal tissue determining a local chronic low-grade inflammation.

Abstract 129

SING IMT IN PSEUDOPHAKIC EYES: RESULTS OF THE FIRST EXPERIENCES

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Evaluate the feasibility and outcomes of implanting the Smaller-Incision New-Generation Implantable Miniature Telescope (SING IMT) in pseudophakic patients affected by late-stage dry AMD.

Five Pseudophakic patients' eyes with stable dry AMD were suitable for SING IMT implantation. We performed IOL removal and SING IMT implantation. Postoperative follow-up was conducted at regular intervals to monitor visual acuity, device positioning and complications.

Postoperative outcomes demonstrated improvements in visual acuity for most patients with an average gain in CDVA (Corrected Distance Visual Acuity) and CNVA (Corrected Near Visual Acuity) of 16,8 ± 10,2 and 13,8 ± 7,4 ETDRS letters, respectively. Limited complications have been observed. In one case, we observed dislocation of the device into the vitreous chamber, which we managed through vitrectomy and scleral fixation of the SING IMT using GoreTex suture

Despite being traditionally contraindicated for pseudophakic patients, SING IMT implantation in selected cases yielded favorable outcomes, indicating potential benefits for this population. Further research with larger sample sizes and longer follow-up periods is warranted to refine patient selection criteria and optimize surgical techniques

Abstract 236

LONG-TERM SURGICAL OUTCOMES OF SCLERAL FLAP VERSUS SCLERAL POCKET TECHNIQUE FOR SUTURELESS INTRASCLERAL ONE-PIECE LENS FIXATION

Marolo P.*[1], Caselgrandi P.[1], Parisi G.[1], Borrelli E.[1], Fallico M.[2], Toro M.D.[3], Ventre L.[4], Vaiano A.S.[5], Reibaldi M.[1]

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To compare long-term surgical outcomes of scleral flap versus scleral pocket technique for sutureless intrascleral one-piece intraocular lens (IOL) fixation.

A retrospective comparative study was conducted at a single center, involving consecutive patients undergoing sutureless intrascleral one-piece IOL implantation between January 2020 and May 2022. Eyes were divided into two groups based on the surgical technique: group 1 underwent scleral flap (n=64), group 2 received scleral pocket technique(n=59). Visual acuity, refractive outcomes and complications were assessed over a minimum 24-month follow-up period.

Both groups showed improvements in best-corrected visual acuity (BCVA) at 24 months: Group 1 with 0.39±0.23 logMAR (P=0.042) and Group 2 with 0.45±0.38 logMAR (P=0.039). No significant BCVA differences were found between groups at 12 (P=0.496) or 24 months (P=0.557). Spherical equivalent, refractive prediction error, surgically induced astigmatism, IOL tilt, and decentration were comparable (P>0.05). Endothelial cell density was similar: 1545±442.3 cells/mm² in Group 1 and 1417±623.4 cells/mm² in Group 2 (P=0.483). Complication and surgical reintervention rates were similar between the two groups. No cases of endophtalmitis were observed.

The scleral pocket technique for sutureless intrascleral one-piece IOL fixation is comparable to the traditional scleral flap technique in terms of long-term visual outcomes and safety. The scleral pocket technique offers a simplified approach and a viable option even for less experienced surgeons.

Abstract 397

DMEK GRAFT DISLOCATION

Khoyratty F.*

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There are few published reports on DSAEK or DMEK grafts posterior dislocation in vitrectomised eyes. In this report, we describe a case of intraoperative posterior DMEK graft dislocation in a pseudophakic patient(one piece IOL in the bag). A scenario not previously described in the literature.

Retrospective case review

A pseudophakic 64 year old gentleman following multiple retinal detachment surgeries developed bullous keratopathy with CF vision.During DMEK surgery, unfolding manoeuvres aided with vision blue proved to be challenging with posterior dislocation of the graft on air insufflation to bed the graft. B mode ultrasound confirmed posterior localisation of the graft on the macula postoperatively.A plan combined procedure with temporary keratoplasty was attempted to retrieve the graft via standard 23G pars plans vitrectomy approach. Pulsed steroid therapy was needed postoperatively to control intraocular inflammation. The full thickness graft remaining clear at recent follow up with no progressive retinal pathology (PVR,CMO).

makes unfolding manoevres needed for posterior lamellar keratoplasty challenging in eyes with compromised transcorneal view. B mode ultrasound becomes instrumental before committing to a posterior segment procedure.Postoperative intraocular inflammation mandates close follow up to ensure graft survival.

Abstract 387

EARLY VITRECTOMY FOR ACUTE POSTOPERATIVE ENDOPHTHALMITIS: EXPERIENCE OF A TERTIARY REFERRAL CENTRE

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To analyse the efficacy of early pars plana vitrectomy (PPV) surgery for acute postoperative endophthalmitis

Single tertiary referral centre, retrospective, case series of 6 consecutive patients (6 eyes) between January 2023 and December 2023 who underwent early (within 7 days) 25g pars plana vitrectomy (PPV) and BSS tamponade . Primary outcome was final best-corrected visual acuity (BCVA)at final visit and secondary outcome was postoperative complications

Main post-surgical causes for endophthalmitis included phacoemulsification (n=4), intravitreal injection (n=2). The 25g PPV involved core and peripheral vitrectomy, BSS tamponade ad sutures of sclerotomies. A causative organism was cultured: in 4 cases no growth was found and in 2 cases Streptococcus Parasanguinis was detected. Successful outcomes was obtained in all 6 eyes (100%), all patients had baseline perception of light VA and BCVA significantly improved at final visit ($p < 0.001$). No intraoperative and postoperative complications were recorded

PPV and BSS tamponade is safe and effective for the treatment of endophthalmitis leading to VA gains. Functional and surgical outcomes may be improved with early vitrectomy performed within 7 days of the initial event for acute postoperative endophthalmitis

Abstract 21

FLUOCINOLONE IMPLANT SCLERAL FIXATION AFTER ANTERIOR CHAMBER MIGRATION

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To describe the removal of the fluocinolone acetonide (FAc) implant after its migration to the anterior chamber and its scleral fixation, in a patient with macular edema after retinal detachment surgery.

Case report of a 76-year-old female patient with history of retinal detachment in the right eye (RE) and recurrent macular edema. This video was based on the clinical history, objective examination and surgical treatment. The patient was observed in Hospital Pedro Hispano (Portugal). Informed consent was obtained from the patient, and the guidelines outlined in the Declaration of Helsinki were followed.

Case report of a patient with RE retinal detachment (September 2019) that was submitted to phaco-vitrectomy, remaining aphakic because the lens was unstable with gas tamponade. It was implanted intraocular lens in the ciliary sulcus (January 2020) and, due to recurrent macular edema with good intravitreal corticosteroids response, a FAc implant was implanted with edema resolution (January 2022). Two months later, the patient had blurry vision and localized corneal edema because the FAc implant was in the anterior chamber angle.
Patient was submitted to surgical repositioning of the implant, using the FLAT technique (fluocinolone-loop-anchoring technique), described by Herold et al.

Scleral fixation of a FAc implant may be considered in cases with anterior chamber implant migration and in eyes with risk factors.

Abstract 152

EVISCERATION OF AN EYE WITH ENDOGENOUS ENDOPHTHALMITIS IN A PATIENT FOLLOWING TOOTH EXTRACTION: A CASE STUDY

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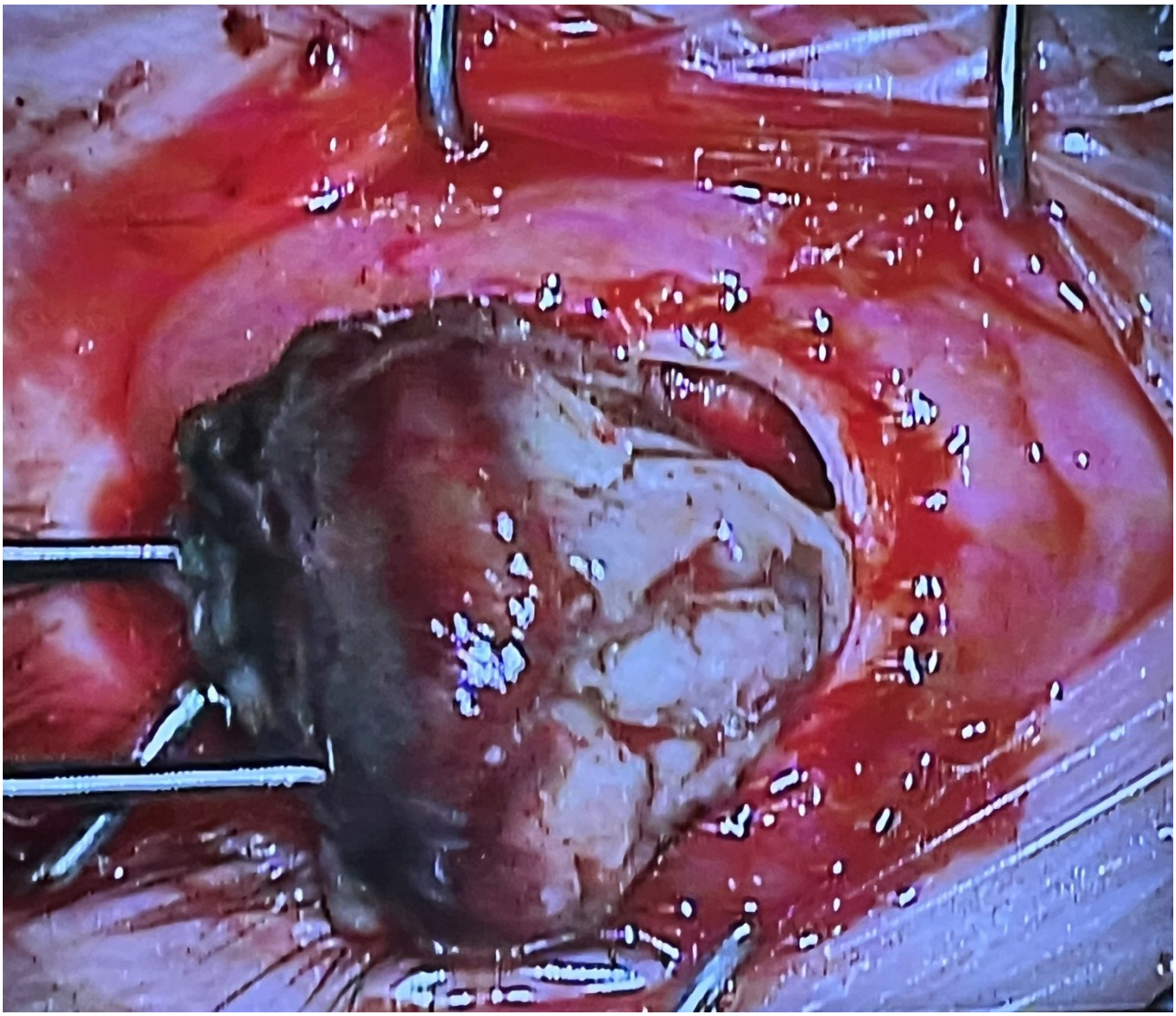
This presentation aims to demonstrate the management of endogenous endophthalmitis following tooth extraction in a female patient with arterial hypertension and hypothyroidism.

A 76-year-old female patient was referred to our emergency department due to the sudden onset of severe pain, reduced vision, and redness in her left eye. The patient reported that the pain began approximately 48 hours after undergoing a tooth extraction, for which no antibiotic prophylaxis had been provided. The patient's ocular examination revealed visual acuity of no light perception. Periorbital swelling, proptosis, conjunctival hyperemia, chemosis, and corneal edema with melting were remarkable. A cranial CTV scan showed non-homogeneous enhancement of the cavernous sinuses, raising suspicion for cavernous sinus thrombosis. A B-scan ultrasound revealed the presence of vitreous opacities.

The patient was initially hospitalized in the neurologic clinic, where she received intravenous antibiotic therapy. A new CTV was performed with no pathological findings from the cavernous sinus. After one week the inflammatory markers were significantly decreased. The patient was then transferred to the ophthalmology department, where intravenous antibiotic treatment was continued for an additional three weeks, nevertheless, the signs of endophthalmitis were getting worse and the eye was in phthisis. Given the poor prognosis for vision recovery, evisceration of the affected eye was performed.

Endogenous endophthalmitis, though rare (2%-8% of cases), can arise from infections elsewhere in the body or normal flora post-surgery through hematogenous spread. Our case illustrates its rapid progression after tooth extraction, emphasizing the need for early diagnosis, prompt treatment, and dental health education.



Abstract 126

ENDOPHTHALMITIS: MULTIVARIATE ANALYSIS OF FACTORS AFFECTING ANATOMICAL AND VISUAL PROGNOSIS

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Beyoglu Eye Training and Research Hospital ~ Istanbul ~ Turkey

To evaluate the factors affecting anatomical and visual prognosis in patients with endophthalmitis

Patients who underwent pars plana vitrectomy (PPV) or intravitreal vancomycin-ceftazidime combination due to endophthalmitis and followed up for at least 1 year between January 2019 and January 2023 were retrospectively analyzed. Demographic characteristics (age, gender etc.), best corrected visual acuity (BCVA - LogMAR) at initial visit and last follow-up, cause of endophthalmitis, the interval between the onset of endophthalmitis symptoms and the performed treatment, total follow-up time, presence of fibrin or hypopyon in anterior chamber at initial visit, accompanying complications, identified pathogen in culture were recorded.

One-hundred-thirty eyes were included.Mean age was 59.78±21.24 years.Initial visit BCVA was 2.41±0.29, last follow-up BCVA was 1.83±0.75($p<0.001$).Etiology was intravitreal injection in 48(36.6%)patients,PPV in 26(19.8%),phacoemulsification in 21(16.0%),intraocular foreign bodies(IOFBs)in 8(6.1%),penetrating trauma in 16(12.2%)blebitis in 3(2.3%)and endogenous in 8(6.1%).No significant difference was found between etiology and final BCVA($p=0.38$)At initial visit,70(53.4%)eyes had fibrin,93(71.0%)had hypopyon.Also,fundus examination shows retinal involvement(necrosis,vasculitis,retinitis foci)in 76(58%)eyes.BCVA was lower in patients with hypopyon and retinal involvement($p=0.002$,$p<0.001$ respectively).The mean time from symptom onset to treatment was 3.15±2.20 days, a positive correlation was found with final BCVA($p<0.001$ $r=0.64$).Also a positive linear correlation was found between initial visit BCVA and final BCVA($p<0.001$ $r=0.34$)

In this study, low initial visit BCVA, presence of hypopyon and retinal involvement, and late admission were found to be associated with poor visual outcome in patients with endophthalmitis.

Abstract 95

SING IMT COMPLICATIONS AND THEIR MANAGMENT

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In the year 2020, the smaller-incision new generation implantable miniature telescope (SING IMT™), received approval for utilization within the European Union. Since then several implants have been done all over the world. We want to share the COMPLICATIONS AND MANAGEMENT

On more than 40 operations performed, we have collected the main complications that can occur during the SING-IMT implant.

We had 1 dropped SING IMT into the vitreous chamber, 1 minor bag dislocation, 1 major bag dislocation, and 3 cases of iris prolapse.
All the complications were solved intraoperatively, and all the eyes with complications had a sight improvement despite the complication happened.

Although SING-IMT has been reported as a promising tool, capable of increase the visual acuity in patients with moderate/severe dry AMD. Knowing the complications that can occur during the surgery, is important to train the surgeons who are keen to approach this surgery.

Abstract 215

AN ENDOGENOUS ENDOPHTHALMITIS WITH ABSCESS OF CAPSULAR BAG

Thibaud G.*

CHNV 15-20 ~ PARIS ~ France

Salmonella is a relatively rare clinical entity among endogenous endophthalmitis. Salmonella causes severe inflammation compared to other germs prognosis could be reserved if appropriate care is delayed.

An 85-year-old Caucasian female with a background of a relapsed multiple myeloma, suffered from unilateral visual impairment. One week after of an episode of watery febrile diarrhea, she had sudden vision loss (hands motion) on her right eye, with ocular pain and redness. Both eyes underwent cataract surgery more than 10 years before without complication. Slit lamp exam associated with anterior segment optical coherence tomography and ocular echography reported a severe panuveitis. At initial presentation, endogenous endophthalmitis with capsular bag abscess was suspected. Intravitreal injections of antibiotics (Day 0+2) and systemic antibiotics were initiated. A complete workup was performed.

At Day 6, a diagnostic and therapeutic vitrectomy was performed, as the two series of IVI did not significantly improve the outcome. Multiples vitreous samples were done for bacterial, viral, fungal, cytopathology, immunology analysis. Capsular bag abscess with severe inflammation (IL6/IL10 ratio 5304/7,5 pg/mL) was confirmed and cleaned, and two intraretinal abscesses were identified. Vitreous cultures identified Salmonella enterica serotype Enteridis. Systemic antibiotics were adapted to the germ, and local antibiotics and anti-inflammatory drugs were pursued and tapered until month 3. Complete healing occurred without subsequent complication. Vision improved until week 12 and was stable thereafter (20/32 , Jaeger 1).

Early care with extensive workup and early vitrectomy is crucial to make the right diagnosis and etiological treatment. Background of diarrhea and fever should orientate clinicians with possible bacteremia and secondary ocular inoculation/endogenous endophthalmitis with intestinal entry of Salmonella Enteridis.

Abstract 154

25G PPV INTRAOPERATIVE OCT GUIDED SUBRETINAL TPA INJECTION IN SMH

Dotan A.*

Rabin Medical Center ~ Petach-Tikva ~ Israel

Usage of Intraoperative OCT in subretinal tPA injection surgery

25G PPV intraoperative OCT
Subretinal tPA injection using 38G needle

adequate subretinal bleb of tPA

The benefit of intraoperative OCT in subretinal tPA injection

Abstract 328

COMPLEX ASSOCIATION.PSEUDOEXFOLIATIVE GLAUCOMA AND SUBLUXATED IOL.SURGICAL SOLUTION

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Decompensation of pseudoexfoliation glaucoma refers to uncontrolled intraocular pressure (IOP) despite medication and laser treatment.
There are multiple possibilities for correcting aphakia without capsular support due to zonular fragility.
We bring to your attention a case in which we associated a Preserflo Microshunt Implant with a Carlevale lens implant.

We present a 2-minute video case of a patient diagnosed with pseudofakia and Preserflo Microshunt Implant for Pseudoexfoliation Glaucoma who presents with a sudden decrease in visual acuity. Subluxated intraocular lens (IOL) was noticed. With new microincision vitrectomy technology and wide-angle microscope viewing systems, vitrectomy can improve visual acuity in eyes with severe complications from pseudoexfoliation, as in our case. New IOL models like Carlevale IOL are less harmful to the eye than older IOL and could be useful in patients without capsular support.

Visual acuity improved from hand movements to 0.8 after one month of surgery.

We decided to perform the replacement of the subluxated IOL with the fixation of a lens to the sclera, with favorable results both for the eye pressure and the stability of the lens.

Abstract 20

MANAGEMENT OF ENDOPHTHALMITIS FOLLOWING CATARACT SURGERY

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G GENNIMATAS ATHENS GENERAL HOSPITAL ~ ATHENS ~ Greece

To describe the management of endophthalmitis following complicated cataract surgery

A 75-year-old male was referred to our emergency service due to blurred vision and pain in his left eye (LE). His past medical history included coronary heart disease treated with angioplasty and oral anticoagulants. The patient mentioned history of complicated cataract surgery, 2 days prior. Visual acuity was 20/20 RE and HM LE. On examination a fibrinous membrane with hypopyon was present in the anterior chamber of his LE. Fundus examination was not possible due to vitreous opacities. B scan ultrasound examination showed involvement of the posterior segment with no signs of retinal detachment.

A vitreous tap and inject was performed immediately with vancomycin and amikacin . Next day the hypopyon was still present, the A/C was flat and there was no improvement of the vitreous opacities. He underwent vitrectomy and intravitreal injection of antibiotics . Intraoperatively, a step-by-step approach was applied, achieving a superb functional and anatomic outcome.

Immediate tap and inject of antibiotics followed by vitrectomy in order to reduce the microbial load, create space for antibiotic action and removal of toxins and vitreous opacities play crucial role in the management of endophthalmitis preserving good functional vision for the patients

Abstract 108

TRANEXAMIC ACID USED TO TREAT SPONTANEOUS POST-OPERATIVE SUPRACHOROIDAL HEMORRHAGE IN A PATIENT ON VORTIOXETINE

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Suprachoroidal hemorrhage (SCH) is a surgical complication with grave prognosis. Vortioxetine, a serotonin modulator for treating depression is associated with bleeding, especially with concurrent NSAIDs consumption. We present a rare case of spontaneous SCH after a retinal detachment (RD) surgery in a patient who is on oral Vortioxetine and etoricoxib.

This is a case report of a 48-year-old patient that presented initially to our clinic with a right eye macula-on rhegmatogenous RD with visual acuity (VA) of 6/9-2, and initially underwent a pneumatic retinopexy which failed due to a subsequent inferior retinal break. Thereafter, he underwent an uneventful 25-gauge trans-pars plana vitrectomy, endolaser and 16% C3F8 gas injection. His pre-operative VA was 6/12-2. He denied any long-term medications at presentation.

On post-operative day 1, the patient had a VA of light perception with significant eye pain. Examination revealed diffuse subconjunctival hemorrhage with chemosis, total hyphaema, vitreous hemorrhage, and intraocular pressure of 26mmHg. B-scan ultrasonography showed 360-degree choroidal detachment with likely hemorrhage. He was diagnosed with post-operative spontaneous SCH. Further history revealed consumption of oral Vortioxetine and etoricoxib for his chronic conditions. Both medications were withheld and intravenous tranexamic acid was administered for 3 days, with enforced posturing. Subsequent reviews showed resolution of SCH and re-attachment of retina at post-operative week 2. His eventual VA at post-operative week 6 was 6/6.

This case highlights an unusual presentation of spontaneous SCH following RD surgery in a patient on concurrent Vortioxetine and etoricoxib. Temporary cessation of these medications should be considered before ocular surgery. Conservative treatment with tranexamic acid appears to be helpful in limiting the extent of SCH and hastening its resolution.

Abstract 399

REFINING DELIVERY AND POSITIONING: A MODIFIED APPROACH TO FIL SSF INTRAOCULAR LENS IMPLANTATION USING THE "FULL REVERSE" TECHNIQUE

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[1]AOOR Villa Sofia-Cervello ~ Palermo ~ Italy, [2]AOUP Paolo Giaccone ~ Palermo ~ Italy, [3]ASST Santi Paolo e Carlo, Ospedale San Paolo ~ Milan ~ Italy

To present a modified surgical technique for implantation of the sutureless scleral-fixated hydrophilic intraocular lens (FIL SSF)

Single surgeon retrospective case series and review of surgical videos with step-by-step technique analysis. Uncorrected and best corrected visual acuity (UCVA and BCVA), refractive error (spherical equivalent), full clinical examination with intraocular pressure (IOP) measurement, endothelial cell density on corneal specular microscopy and macular optical coherence tomography (OCT) were recorded at baseline, 1, 4 and 8 weeks postoperatively.

The FIL SSF IOLs were successfully implanted using the so-called "full reverse" technique, having the lens loaded in the injector in an upside-down fashion, as opposed to IOL technical specifications. In all cases, the FIL SSF IOL was properly placed in the ciliary sulcus, well-centered and without signs of tilt. Follow up figures at 2 months are consistent with published data, confirming the potential benefits of the new implantation technique.

In our preliminary experience, the "full reverse" technique of the FIL SSF IOL has proven effective in preventing incorrect IOL orientation in 100% of cases. However, larger prospective controlled studies and longer follow up are required to either support or disprove our results.

Table 1. Preoperative and postoperative data.

	Preoperative (mean ± SD)	Postoperative at 8 weeks follow up (mean ± SD)
UCVA (LogMAR)	1.7 ± 0.2	0.41 ± 0.28
BCVA (LogMAR)	0.72 ± 0.31	0.23 ± 0.15
Spherical equivalent refraction (Diopters)	+11.73 ± 3.3	+0.48 ± 0.57.
IOP (mmHg)	15.4 ± 3.2	17.1 ± 2.5
Endothelial cell density (cells/mm^2)	1875.39 ± 529.41	1779.72 ± 533.12
Central macular thickness (μm)	277 ± 58	285 ± 67

Abstract 438

LIVE-STREAMING 3D VITREORETINAL SURGERY TO THE METAVERSE

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To demonstrate live streaming of 3D Vitreoretinal surgery to the metaverse

Live streaming 3D Vitreoretinal surgery content using the Alcon Ngenuity 1.5 software, a 4k video capture device (Magewell), and an Apple MacBook Pro. Backend viewing with a Meta Oculus Pro and the ENGAGE metaverse application. Live streaming from multiple sites across the US with viewers in multiple countries.

Live streaming of 3D Vitreoretinal surgery content to the metaverse was feasible for both viewing/education and telementoring with minimal lag or network disruptions. Using a virtual reality headset combined with a metaverse application allowed real-time stereoscopic viewing of live surgery for up to 70 remote attendees at a time.

Live streaming of 3D Vitreoretinal surgery content provides a more immersive and engaging platform to view stereoscopic surgical video for education and telementoring.

Abstract 398

INTRA-OPERATIVE OCT DURING GLAUCOMA SURGERIES

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Intra-operative OCT is widely used in cornea and retinal surgeries. Nevertheless, glaucoma surgeons do not use regularly this technique. We intended to characterize the usefulness of intra-operative OCT (ioOCT) during glaucoma surgeries.

Literature review and surgical video review in a monocentric retrospective study. We obtained videos of all ioOCT that were performed during glaucoma surgeries in our center from November 2023 to 2024, including deep sclerectomy, trabeculectomy, tubes, micro-invasive glaucoma surgeries (MIGS) and less-invasive glaucoma surgeries (LIGS). We assessed their utility helping the surgeon performing the surgery and on anatomical detail provided by ioOCT.

41 surgeries were performed using ioOCT during the study, namely trabeculectomy, deep sclerectomy, Ahmed and Baerveldt tube. ioOCT was useful to guide the surgeon in establishing a correct trabeculodescemetic window thickness in deep sclerectomy. LIGS surgeries (including XEN, Preserflo and MIMS) were also performed with ioOCT. In MIGS surgery, intra-operative OCT allowed the identification of the trabeculotomy of GATT surgery (gonioscopy-assisted transluminal trabeculotomy), the correct intra-canalicular positioning of an Hydrus, and even the identification of the smaller iStents. Nevertheless, ioOCT did not allow systematically the identification of the 210µm trabeculostomies of ELIOS, nor the 210 um microsclerostomy from MIMS.

ioOCT brought anatomical detail in glaucoma surgeries, being useful for residents and novice surgeons, and in deep sclerectomy, tubes, XEN, and Preserflo. Nevertheless, developing an OCT that can work through the surgical gonioscopy lenses will be more useful for increasing utility during MIGS surgeries.

Abstract 12

SUB-ILM HEMORRHAGE

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Sub-ILM hemorrhage are located between the ILM and the retinal nerve fiber layer.Sub-ILM hemorrhages have been described in a variety of clinical settings and often lead to severe visual impairment because of their predilection for the macular region.

A consecutive series of 2 cases in which sub-ILM hemorrhages were clinically suspected and confirmed during early vitrectomy with ILM peeling were reviewed.

Sub-ILM hemorrhages were clinically suspected in 2 patients based on the fundoscopic appearance and clinical setting of Valsalva retinopathy. Vision was severely impaired in both patients (to hand movements) because of a premacular location of the hemorrhage. Both patients were treated with early pars plana vitrectomy because of insufficient spontaneous visual recovery after a median of 6 weeks. The sub-ILM location of the hemorrhage could be confirmed intraoperatively in both patients by biostaining of the membrane overlying the hemorrhage. ILM peeling and aspiration of the hemorrhage resulted in excellent visual recovery in both patients. No procedure-related complications were observed.

Sub-ILM hemorrhages often occur in a specific clinical context and can lead to severe visual impairment in young patients. Given the excellent results and low complication rates, timely surgical intervention is justified when spontaneous resorption is insufficient.

Abstract 336

SUBMACULAR HAEMORRHAGES DIFFERENT REASON -SAME APPROACH

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The purpose of the study was to evaluate pars plana vitrectomy (PPV) with subretinal actylise (TPA) injection and sulfur hexafluoride (SF6) in submacular hemorrhages (SH). The leading cause of submacular hemorrhages (SH) is neovascular age-related macular degeneration (nAMD), followed by retinal macroaneurysm (MA) and trauma.

We present a case series of 16 SH. 9 female, 7 male. The mean age of the patients was 76 years old. 12 cases were medium, ranging from 3 to 7 DD, and 4 was large, crossing the temporal vessels. 13 were associated with nAMD , two cases were associated with MA, 1 after trauma. In all cases, we performed PPV with ILM peeling and tPA injection up to 5-20 µg to cover SH, followed by SF6 gas tamponade and face down position for 5 days. Anty-VEGF treatment was performed 2 weeks after surgery in nAMD and RAM.

We observed a mean visual acuity improvement from counting fingers from 2.5 meters to 0.23. Mean central retinal thickness improved from 779 µm (SD 222) to 297 µm (SD 66.69) No adverse effects local or general were observed.

PPV + subretinal tPA + SF6 (anty VEGF therapy at the time of surgery or postoperative in case of nAMD, RAM). In large and massive SH better to make retinectomy, remove the blood and RPE transplant. Anty-VEGF therapy could be the first line therapy in small kind of SH.

Abstract 153

25G PPV INTRAOPERATIVE OCT GUIDED SUB-ILM HEMORRHAGE ILM PEEL

Dotan A.*

Rabin Medical Center ~ Petach-Tikva ~ Israel

To show the benefit of intraoperative OCT in sub-ILM hemorrhage surgery

Usage of intraoperative OCT in 25G PPV
ILM Peel and saline injection to clear sub ILM hemorrhage

Attach retina and extracted sub ILM hemorrhage

Intraoperative OCT shows as a benefit factor in Sum ILM hemorrhage surgery

Abstract 127

EVALUATION OF TWO NOVEL RIBOFLAVIN-BASED VITAL DYES FOR VITREORETINAL SURGERY

Besozzi G.[1], Ostacolo C.[2], Vastarella P.[3], Troisi M.*[4], Caruso C.[3], Sinisi F.[5], Costagliola C.[4]

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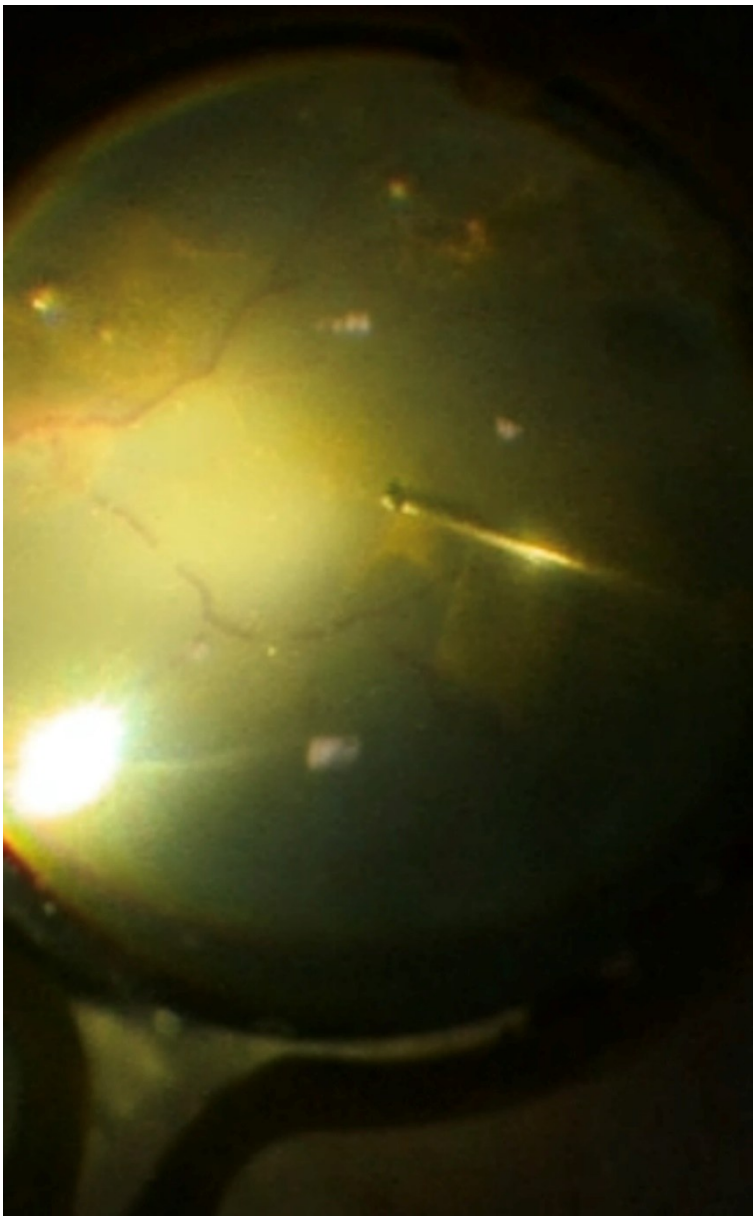
The purpose of this study is to evaluate the staining efficacy and safety of two novel riboflavin-based dyes, REMARK V for vitreous staining and REMARK M for internal limiting membrane (ILM) staining, in porcine eyes, with the aim of assessing their potential use in vitreoretinal surgery.

Two riboflavin-based dyes were evaluated: REMARK V, a 2% yellowish riboflavin suspension for vitreous staining, and REMARK M, a deep blue solution with Arthrospira platensis and TPGS (v/v1:10), Trypan Blue 0.18%, HA 0.3%, and riboflavin phosphate 0.01% for ILM staining. Both were diluted to various concentrations using BSS plus®. REMARK V was injected into the vitreous cavity of 10 porcine eyes and removed after 1 minute. REMARK M was then applied to the retinal surface and removed after 1 minute. Staining was assessed by two independent examiners. The eyes were later fixed for histological assessment using light and electron microscopy.

The subjective evaluation of staining showed that REMARK V produced excellent results at 3%, good at 2%, and weak at 1%. REMARK M provided excellent staining at 2%, good at 1%, and weak at 0.5%. REMARK V stained the vitreous and posterior hyaloid bright yellow, while REMARK M stained the ILM a deep blue. Both examiners agreed 100% on the assessment of staining in all eyes. After surgery, no histological abnormalities or structural changes were observed in any of the eyes by light and electron microscopy.

In this experimental study on porcine eyes, the two novel riboflavin-based vital dyes (REMARK V and REMARK M) demonstrated effective staining properties for both the vitreous and ILM without inducing any structural changes in the eyes. This suggests that these dyes could be promising options for vitreoretinal surgery.



Abstract 305

PARS PLANA VITRECTOMY WITH FEEDER VESSEL LIGATION FOR RETINAL DETACHMENT SECONDARY TO RETINAL CAPILLARY HEMANGIOBLASTOMA: A RETROSPECTIVE STUDY

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To report the anatomical and functional outcomes of vitrectomy with feeder vessel ligation, with or without endoresection of the tumour in cases of complex retinal capillary hemangioblastoma (RCH) associated with retinal detachment (RD) in young patients affected by von Hippel-Lindau (VHL) disease.

This retrospective observational study included 12 eyes of 12 patients with broad retinal detachment secondary to RCH. Based on the location of the lesion and the features of the retinal detachment the patients were divided into two groups. 7 patients with combined exudative retinal detachment and tractional retinal detachment underwent vitrectomy with feeder vessel ligation and tumor endoresection, whereas 5 patients with purely exudative retinal detachment or juxtapapillary lesion underwent vitrectomy with feeder vessel ligation without tumor endoresection. Outcome measures included local tumor control, best-corrected visual acuity (BCVA), anatomical success and rates of complications.

RCH regressed completely in 100% of eyes with no evidence of recurrence. Mean follow-up was 4.6 years. In the tumor endoresection group, the mean BCVA was 2.18±0.3 logMAR at presentation and 0.95±0.5 logMAR after the surgery ($p<0.001$), whereas in the other group the mean BCVA was 1.32±0.2 logMAR before the surgery and 1.52±0.7 logMAR postoperatively. In the first group the retinal attachment was achieved in all eyes, whereas in the second group 2 eyes presented a persistently detached retina with fibrosis and 3 eyes an attached retina under silicon oil. No cases of phthisis bulbi and neovascular glaucoma were registered.

Pars plana vitrectomy with feeder vessel ligation, with or without endoresection is a safe and effective treatment for severe retinal detachment secondary to retinal capillary hemangioblastoma affecting young patients, yielding good tumor control, high anatomical success and acceptable visual outcome, although the severity of the disease.

Abstract 344

EPISCLERAL BRACHYTHERAPY: EXPERIENCE FROM A REFERRAL CENTER OF INTRAOCULAR TUMOURS

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Virgen Macarena University Hospital ~ Seville ~ Spain

The aim of our study was to know the demographic and clinical characteristics of patients with intraocular tumours treated with episcleral plaque brachytherapy in a reference center.

Five hundred ninety-six treatments (596) of five hundred eighty-six patients (586) with ocular tumours from 2006 to February 2024 were included. The characteristics of the treatment performed as well as the clinical characteristics of the patients were evaluated.

The main type of ocular tumor treated was melanoma (83.9 %), including melanoma of the choroid and ciliary body, followed by retinoblastoma (10.4 %), choroidal hemangioma (3%) and retinal vasoproliferative tumours (1.5 %). 305 patients were women (51%) and 291 men (49 %). The mean age was 52.4 years (range: 4 months-89 years). The mean follow-up time was 95.9 months. The mean prescribed dose was 85 Gy in melanoma and 40 Gy in retinoblastoma. In 71.6 % cases the isotope used was Ru-106. 11.6% of melanoma patients died after treatment during follow-up, with a median survival time of 1536,77 days.

Episcleral brachytherapy in a referral center can often be the first line of treatment for intraocular tumors as choroidal melanoma, with a low rate of complications. In the case of vasoproliferative tumors or hemangiomas, the choice of treatment will depend on other factors, such as the size of the tumor.

Abstract 55

SURGICAL TREATMENT OF THE RECCURENT OPTIC DISC PIT

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Makarchuk` s eye microsurgery center ~ Brest ~ Belarus

To determine the cause of recurrence of operated central retinal detachment in patients with optic pit and to find an effective way to treat it.

Repeated 25Ga vitrectomy with repeated revision of the optic nerve disc fossa. Detection of a membrane in the fossa channel that prevents free flow of cerebrospinal fluid in the vitreous cavity and its local elimination.

After removing the membrane from the optic disc fossa canal, we redirected the fluid flow into the vitreous cavity. Before this, the cerebrospinal fluid could not freely exit into the vitreous cavity and the fluid flowed under the retina (subretinal), which provoked retinal detachment.

After removing the membrane from the optic nerve canal, the pathological flow of fluid under the retina ceased. Within 6 months, the subretinal fluid was absorbed and the retina attached.

Abstract 453

CHOROID INVOLVEMENT SECONDARY TO OPTIC DISC PIT MACULOPATHY: OCT ANALYSIS AND EVOLUTION AFTER SURGICAL TREATMENT

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To assess choroidal changes associated to optic disc pit maculopathy (ODP-M) and their evolution after surgical treatment.

Multicentric retrospective case series of 42 patients affected by unilateral ODP-M undergoing surgical treatment between 2013 and 2023. Optical coherence tomography (OCT) were performed at baseline and postoperative months 1, 6, 12, 24 and most recent follow-up. Subfoveal choroidal thickness (SFCT) and peripapillary choroidal thickness (PPCT) were measured in ODP-M and fellow eyes. The presence of retinal pigmented epithelium (RPE) atrophy was used to distinguish between “early” and “advanced” disease, and data regarding fluid localization were collected.

Baseline SFCT in ODP-M eyes was significantly higher than fellow eyes (386.8±88.9 vs. 334.4±72.2 µm, p=0.002), differently from PPCT (192.6±47.8 vs. 181.2±45.7 µm, p=0.46). SFCT decreased 1 month post-operatively (mean reduction 36.5 µm, p=0.009) and remained below pre-operative values throughout the follow-up, showed a mean reduction of 79.4 µm at final follow-up (p<0.001). Conversely, PPCT showed no changes between pre-operative and post-operative values. Nine eyes (21.4%) showed submacular dilated choroidal vessels, correlated with the presence of subretinal fluid (p=0.008) and reducing in caliber after surgical treatment. The 10 eyes (23.8%) with “advanced” disease showed a delayed reduction of choroidal swelling.

Subfoveal choroid may thicken and remodel in response to ODP-M, eventually returning to physiological values after surgical treatment. Moreover, the presence of RPE atrophy may influence retino-choroidal balance. Conversely, PPCT didn’t show comparable modifications.

Abstract 356

SCLERAL PLUG FOR OPTIC PIT MACULOPATHY WITHOUT ILM PEELING

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This case report aims to describe the clinical progression and postoperative outcomes of a patient with optic pit maculopathy treated with a scleral plug.

We present the case of a 33 years old patient who presented with progressive vision loss due to optic pit maculopathy. The patient underwent clinical examinations including OCT and a complete ophthalmic evaluation. After discussing therapeutic options, a surgical intervention using a scleral plug was performed

The surgery was successfully performed, and the patient was followed for 2 months ,During this follow-up, visual acuity improved from compte fingers to 2/10 at 3rd month , and OCT imaging showed the régression of subretinal fluid and the closur of the macular hole

The treatment of optic pit maculopathy with a scleral plug proved effective in this case, resulting in significant improvement in visual acuity and anatomical closure of the optic pit. This case supports the use of this surgical technique as a viable option for the treatment of optic pit maculopathy

Abstract 382

A NOVEL SURGICAL TECHNIQUE FOR OPTIC DISC MACULOPATHY (COMBINED ILM-AMT PLUG TECHNIQUE)

Alyahya A.*, Alqahtani F.

MD ~ Riyadh ~ Saudi Arabia

Optic disc pit (ODP) is a rare congenital abnormality of the optic disc. Patients with ODP will remain asymptomatic in their course of disease. However, many of them will suffer a significant decrease in their vision once ODP maculopathy develops.

This is a case report following a patient with ODP-maculopathy with a series of VA, IOP checks, dilated fundus exams, and OCT data that was collected from the patient medical record.

the patient underwent a Combined ILM-AMT Plug Technique. The patient improved significantly from baseline BCVA 6/200 to 20/40 with good resorption of sub-retinal fluid. No signs of recurrence or macular hole were observed over 1-year follow-up.

optic disc maculopathy is a challenging disease with significant visual comorbidities. A combined ILM-AMT plug technique is a viable option in the treatment of optic disc maculopathy and enhancing good visual and anatomical outcomes.

Abstract 331

INVERTED INTERNAL LIMITING MEMBRANE FLAP FOR MANAGEMENT OF OPTIC DISC PIT MACULOPATHY

Zampogianni A.*, Chatzilaou G., Drakou Z., Delimitrou C., Gotzaridis S.

My Retina Athens Eye Center ~ Athens ~ Greece

The purpose was to describe a technique for creating a large inverted internal limiting membrane (ILM) flap for the management of optic disc maculopathy.

The presentation concerns a case of a 49-year-old woman who was referred due to blurry vision in the right eye since 2 weeks. The best corrected visual acuity (BCVA) was 0.7 logMar in the right eye. On fundoscopy, subretinal fluid in the macula with an optic disc pit was seen, while the findings were also recorded in an optical coherence tomography (OCT) examination. Due to severe optic disc maculopathy, it was decided to perform pars plana vitrectomy with ILM peeling and inverted ILM flap and placing it in the optic disc pit.

The operation was uncomplicated, and after 2 months the vision was 0.2, without any postoperative complications. Simultaneously, during the examination with OCT the reduction of the subretinal fluid is clear. The patient is extremely happy and functional.

In cases with severe optic disc maculopathy vitrectomy with extended ILM peeling and ILM flap placed over the pit can release the attractive forces and stop the entry of fluid in the subretinal space, offering improved vision and a better quality of life to the patients.

Abstract 319

OPTIC PIT MACULOPATHY - AN ATTEMPT TO DEFINE THE PROBLEM.

Gebka A.*

Medical University of Gdansk ~ Gdansk ~ Poland

Optic Disc Pit (ODP) is a rare congenital anomaly of the optic nerve head that can lead to the development of Optic Pit Maculopathy (ODPM), which in turn causes progressive deterioration of central vision. This paper attempts to define the essence of the problem based on the author's experience.

In 4 eyes with Optic Pit Maculopathy (OPM), we performed the pars-plana vitrectomy (PPV) with fluid-aire exchange (FAX) and 20% SF6 endo-tamponade procedure and a very gentle juxta-papillary laser photocoagulation (energy: 50-80 mW per each burn). The number of burns depended on the width of the juxta-papillary macular oedema and ranged from 8-16. During the follow-up period the OCT scans of the macula and optic nerve head together with visual function tests were performed every 3-6 months.

The eyes are in follow-up between 24-60 months. In all 4/4 cases, the subretinal fluid (SRF) is gone without any recurrence. In 3/4 cases the intra-retinal fluid (IRF) has resolved completely. In 1/4 cases the IRF has gradually decreased with no tendency to rise. The profile of the macula has normalised in all 4/4 cases together with the improvement in visual acuity.

Based on imaging and the authors' experience it is claimed that the OPM is morphologically the same entity with 2 different anatomical variants of the papillary morphology. The author suggests the classification of OPM depending on the - Vitreous Origine Type (VOT) and Meningeal Origine Type of ODPM

Abstract 115

NO OPTIC PIT MACULAR RETINOSCHISIS ASSOCIATED WITH MACULAR HOLE AND CHORIORETINAL SCARS: A CASE REPORT.

Franceschi A.*, Zemella N.

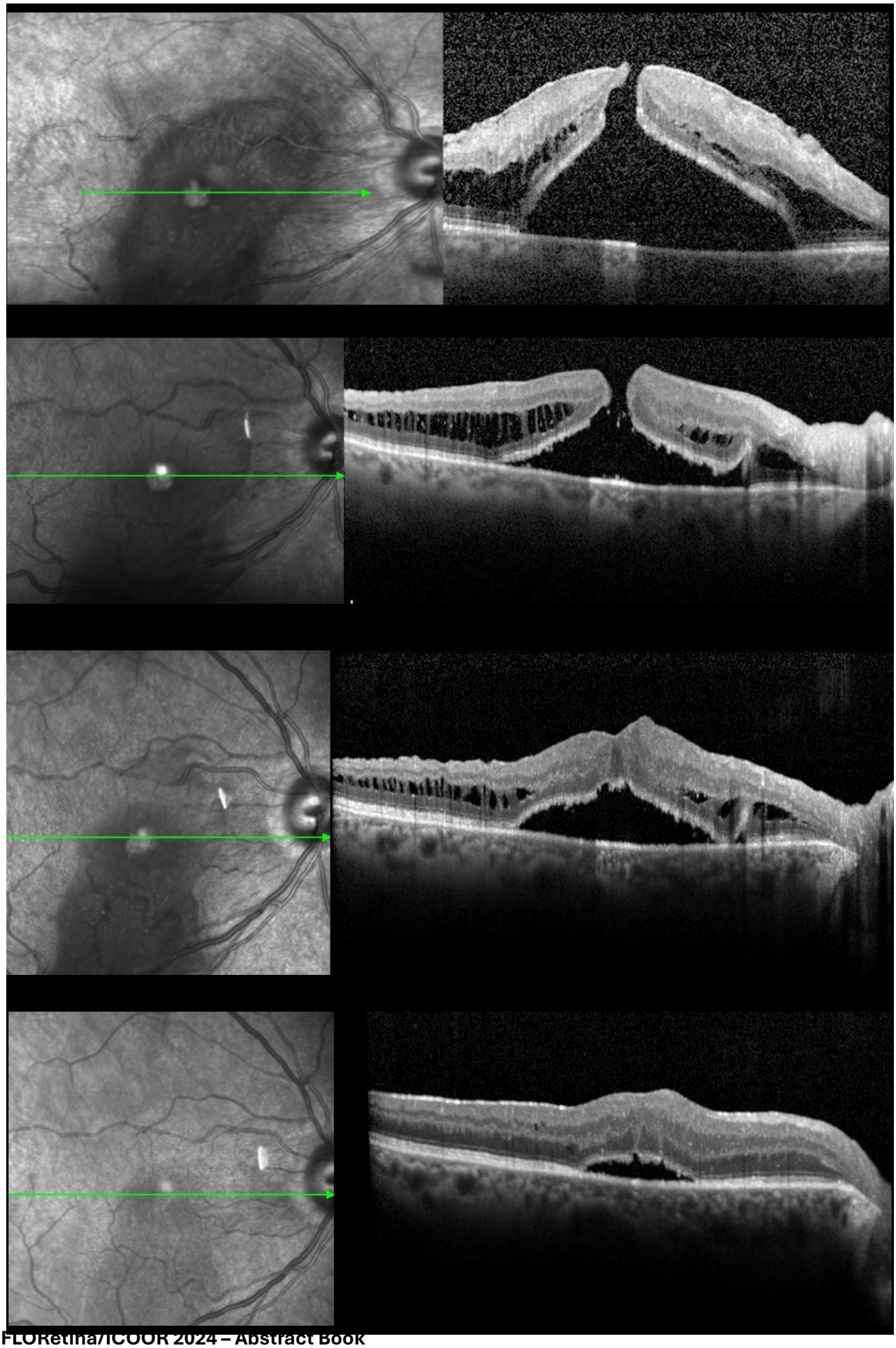
Ospedale di Conegliano ~ Conegliano (TV) ~ Italy

To describe a unique case of no optic pit retinoschisis (NOPIR) associated with a tractional full7 thickness macular hole (FTMH) in a patient with a presumed history of ocular toxoplasmosis.

A non-myopic 65-years old Caucasian male with a presumed history of ocular toxoplasmosis reported sudden visual acuity decrease in his right eye (RE). Fundus examination and optical coherence tomography were consistent with FTMH in no optic pit retinoschisis (NOPIR), furthermore a macular epiretinal membrane was present, originating from two extramacular chorioretinal scars.

The patient underwent pars plana vitrectomy with epiretinal membrane peeling, flower-petal internal limiting membrane flap technique, and gas tamponade. Significant anatomical and functional results were obtained after surgery.

Vitreoretinal surgery for macular retinoschisis complicated with tractional macular hole secondary to inflammatory epiretinal membrane resulted in optimal anatomic and functional recovery in 6 months.



Abstract 381

A NOVEL SURGICAL TECHNIQUE FOR OPTIC DISC MACULOPATHY (COMBINED ILM-AMT PLUG TECHNIQUE)

Alyahya A.*

MD ~ Riyadh ~ Saudi Arabia

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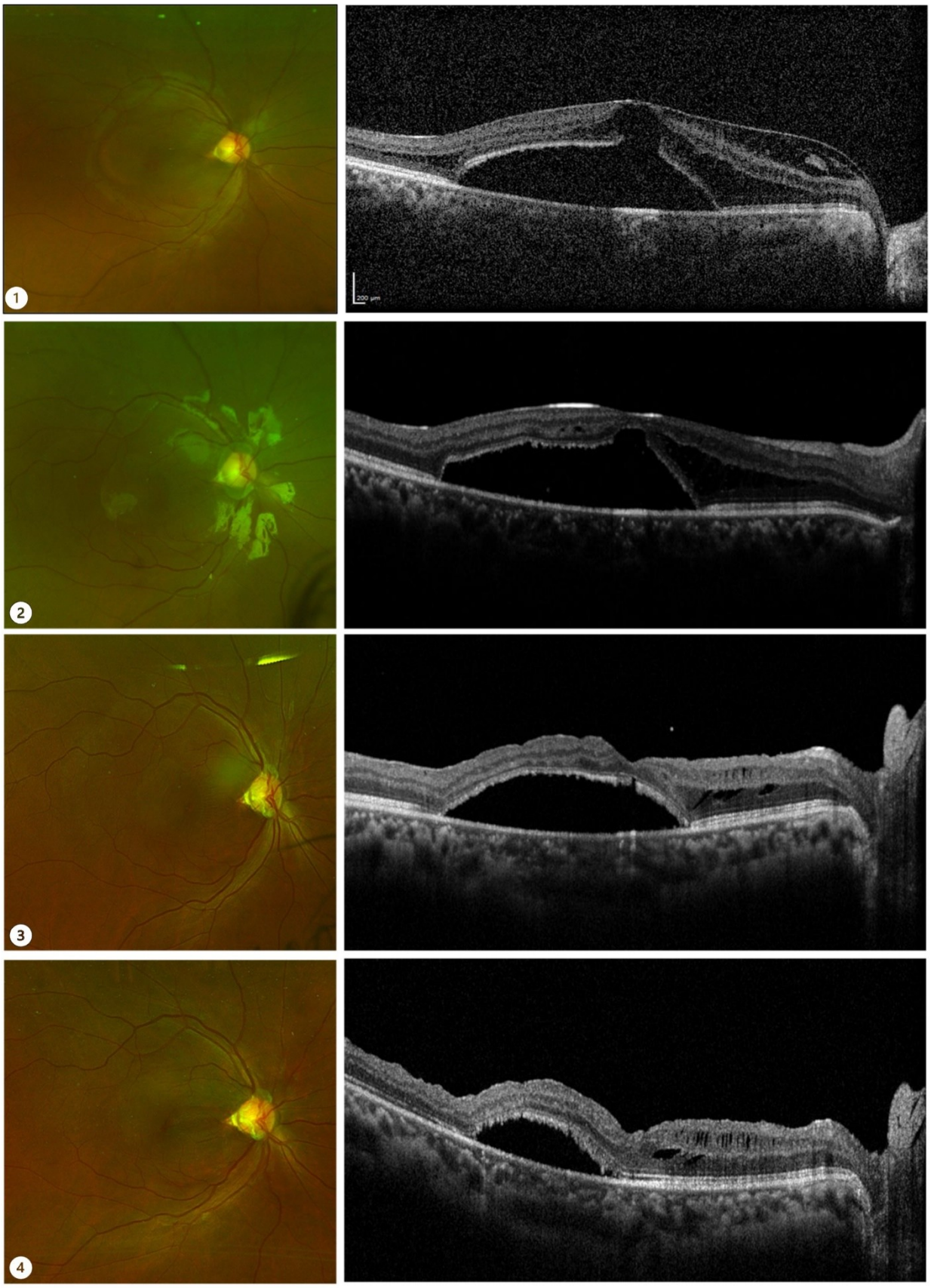
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Abstract 10 – Main Program

COMBINED SURGERY: TEMPORARY KERATOPROSTHESIS, PPV FOR RETINAL DETACHMENT, YAMANE TECHNIQUE FOR IOL IMPLANTATION AND FULL THICKNESS CORNEAL TRANSPLANT

Santoro M.*

Università degli studi di Bari Aldo Moro ~ bari ~ Italy

The objective of the surgery was to restore anatomical integrity and a certain functional recovery in the eye of the patient, suffering from corneal decompensation, surgical aphakia, inveterate retinal detachment.

The eye of the patient, suffering from corneal decompensation, surgical aphakia, inveterate retinal detachment underwent a combined surgery: to have a better visualization during surgery, the patient's decompensated cornea was explanted and a temporary boston keratoprosthesis was used. After that, the patient underwent vitrectomy for inveterate retinal detachment, peeling of the membranes and endolaser. Iol was implantated according to yamane technique. A full-thickness corneal transplant was performed finally after keratoprosthesis removal.

The patient's eye had a good anatomic and aesthetic recovery and a certain functional improvement.

This surgery could be a good solution in those patients suffering from surgical anterior and posterior segment pathologies. When visualization is not good due to corneal decompensation, a temporary keratoprosthesis, before corneal transplant, may be used.

Abstract 8

SMALL GAUGE VITRECTOMY FOR RHEGMATOGENOUS RETINAL DETACHMENT: 3 YEAR RESULTS IN THE COVID ERA

Mavrikakis E.*, Xanthopoulou K.

G Gennimatas Athens General Hospital ~ Athens ~ Greece

To evaluate the functional and anatomical outcomes of eyes who undergone small gauge vitrectomy (23G, 7500cpm) surgery for rhegmatogenous retinal detachment (RRD) during the COVID pandemic (2020-2022) by a single surgeon (EM).

Retrospective review of 120 patients with RRD. Age, sex, visual acuity before surgery and final, lens status, macula status, tamponade used and method of retinopexy were recorded. The patients were divided into two groups: “mac on” and “mac off” group. All patients were followed 6 months or more.

80% of the patients were male and 20% female. The mean age was 62 years. In the mac off group (mean PREOPVA – 0.09) the mean final POSTOPVA was 0.66 ($p<0.001$). In the mac on group (mean PREOPVA – 0.56) the mean final POSTOPVA was 0.75 ($p<0.001$). 53.33% were phakic, 45.83% pseudophakic and 0.93% aphakic. The method of retinopexy used included 96% laser and 4% laser and cryopexy. 76.67% of RRD’s were mac off and 23.33% mac on. C_3F_8 was used in 92.5% of cases, SF_6 in 1.67% and silicone oil in 5.93%. The primary success rate was 98.33%

By using modern surgical techniques and surgical experience, rhegmatogenous retinal detachment can be treated with high primary success rate resulting in good final visual outcomes.

Abstract 368

RISK FACTORS FOR RETINAL DETACHMENT IN MARFAN SYNDROME AFTER PEDIATRIC LENS REMOVAL

Youssef A.*[1], Thibaut C.[1], Costanza B.[2], Regis L.[1], Ismael C.[1], Florence M.[1], George C.[1]

[1]Rothschild Foundation Hospital ~ Paris ~ France, [2]University Vita Salute San Raffaele ~ Milan ~ Italy

To determine retinal detachment (RD) risk factors after lens removal surgery in children with Marfan syndrome (MS)

This was an institutional case series including children (age <18 years) with MS who underwent lens removal surgery. Clinical and surgical characteristics were extracted from the children's electronic files: age, axial length (AL), gender, number of surgeries received, intraocular lens (IOL) implantation at the first surgery, complete removal of the capsular bag, and final best-corrected visual acuity. Risk factors associated with RD occurrence were identified.

Among 158 eyes included (85 children), 35 eyes (22.2%) developed RD during follow-up. Bilateral detachment occurred in 11 patients (45.8%). Age at the time of the lens removal surgery was not different between groups. Children in the RD group had a higher AL (P < .001), longer follow-up, IOL implantation, and capsular residue. Multivariate analysis identified capsular residue (odds ratio, 16.8; 95% CI, 1.9-148.8; P = .01) and AL (odds ratio, 1.3; 95% CI, 1.01-1.7; P = .03) as predictors for RD.

Children with MS and increased AL were more likely to develop an RD after lens surgery. When considering lens removal surgery in a pediatric population presenting with MS, a complete capsular removal seemed to be the safer option regarding RD risk.

Abstract 27

"MY FIRST 100 VITRECTOMIES": 2-YEAR COLLABORATIVE LEARNING VITREORETINAL FELLOWSHIP EXPERIENCE IN SWITZERLAND

Bravetti G.E.*, Ciotu I.M., Thumann G.

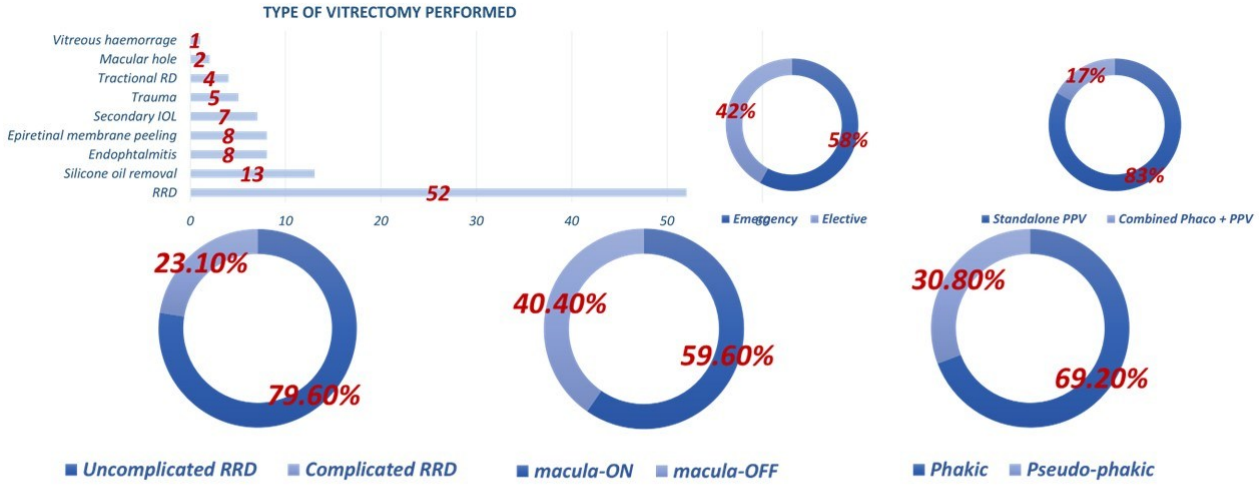
University Hospitals of Geneva ~ Geneva ~ Switzerland

To evaluate the baseline characteristic, intraoperative choices and surgical outcomes of patients operated by a vitreoretinal (VR) fellow during his first 2 years of fellowship in the Swiss medical system.

Longitudinal, monocentric, retrospective study, conducted at the University Hospitals of Geneva. All subsequent cases operated by the same VR fellow, at a tertiary university centre between January 2022 and March 2024 were included. The primary outcome was the surgical success after any surgery. Secondary outcomes were the final best-corrected visual acuity (BCVA) at the final follow-up visit, the number of surgeries required for every patient and the adverse events (AEs).

One-hundred eyes were included. 38.0% were operated by the fellow without supervision (group A), 36.0% were operated under the direct observation of the supervisor sitting at the microscope (group B), and in 26.0% the fellow was able to do perform only some parts of the surgery (group C). The main type of surgery performed was vitrectomy for rhegmatogenous retinal detachment (RRD) (52.0%). In the group of vitrectomy for RRD, 48.1% of the surgeries belong to group A. Out of all surgeries, mean BCVA improved significantly (0.32 ± 0.34 vs 0.47 ± 0.30 decimals). Four eyes (4.0%) were classified as failure.

This study provides a comprehensive analysis of the surgical outcomes and intraoperative experiences of a vitreoretinal fellow during their initial 2-year-fellowship in Switzerland. The majority of surgeries, demonstrated successful outcomes. The collaborative approach between the fellow and supervisor, varying from direct observation to independent performance, showcases a structured training environment.



14% C3F8 gas	42.30%
20% SF6 gas	26.90%
Heavy silicone oil	13.50%
1000 cSt silicone oil	9.70%
5000 cSt silicone oil	3.90%

AEs:

Post-op CME	4%
Re-detachment	4%
Lens touch	1%

Abstract 326

ANATOMICAL AND FUNCTIONAL OUTCOMES OF RECURRENT RETINAL DETACHMENT SURGERY FOLLOWING PARS PLANA VITRECTOMY (PPV) FOR RHEGMATOGENOUS RETINAL DETACHMENT.

Ahmed B.*, Imane S., Sara I., Hassan M., Fouad C., Meriem A., Idriss A.B.

Hassan II hospital ~ FES ~ Morocco

This study aimed to analyze the clinical characteristics of recurrent retinal detachment in post-vitrectomy eyes with rhegmatogenous retinal detachment, and to study the anatomical and functional outcomes of revitrectomy with or without combining it with retinectomy or scleral buckling

This is a retrospective case series analyzed the ocular characteristics of 29 recurrent retinal detachment in post-vitrectomy eyes, evaluated the signifcance of the associations between variables before reoperation and the final anatomical and functional outcomes, and their association with clinico-surgical factors.

Proliferative vitreoretinopathy≥ Grade C1 in re-detached retina (OR, 3.49; 95%CI, 1.25–7.09; P=0.045) and multiple breaks (OR, 0.34; 95% CI, 0.06–0.661; P=0.004) were significant risk factors for the final anatomical failure.
Eyes with PVR≥ Grade C (OR, 3.9, 95%CI, 1,21-4,09; P = 0.01) in primary RD, at the time of recurrent RD, the use of silicone oil tomponade in the management of the recurence (OR, 2,18, 95%CI, 1,42-2,25; P=0.042) were less likely to have final BCVA ≥10/200.
The visual acuity at the time of recurrent RD had a positive correlation (r = 0.96, P < 0.01) with the final BCVA.

PVR≥Grade C, and multiples breaks are associated with higher incidence of anatomical failure.
PVR≥Grade C, the use of silicone oil tomponade are associated with a poorer visual outcome, whereas a better baseline visual acuity of RD after primary repair are associated with a better visual outcome.

Abstract 33

AN OLD GIANT TEAR

Abouelsaad M.R.*

Eye ` ` specialist center ~ Madinah ~ Saudi Arabia

A Giant tear case neglected with PVR grade C

first surgery dealing with GRT and rolled margin, hypotony, PVR, haze. Second surgery dealing with pucker and TRD

VA improved from PL to 0.16p

No giving up, even with severe hypotony and vitreous reaction

Abstract 23

SEGMENTAL BUCKLE AND AIR TAMPONADE FOR RHEGMATOGENOUS RETINAL DETACHMENT RECURRENCE WITH LOCALIZED PVR GRADE C: A CASE REPORT

Tartaro R.*, Colonna A.

Azienda sanitaria locale di Alessandria ~ Alessandria ~ Italy

To describe the clinical course and outcome of a patient with recurrent rhegmatogenous retinal detachment (RRD) associated with localized proliferative vitreoretinopathy (PVR) grade C, treated with segmental buckle and air tamponade.

A 72-year-old female presented with recurrent RRD in the left eye, complicated by localized PVR grade C. On examination, a retinal break with surrounding PVR was identified. During surgery, PVR was peeled in the macular area. A segmental silicone buckle was placed to support the area of the retinal break, followed by air tamponade to promote retinal reattachment.

The patient was followed up at one week, one month, three months, six months, and one year postoperatively. Initial follow-up indicated successful retinal reattachment with no evidence of new retinal breaks or progression of PVR. Visual acuity improved from 0.2 preoperatively to 0.6 at one year. No significant complications were observed during the follow-up period.

This case shows that segmental buckle and air tamponade can effectively and safely treat recurrent RRD with localized PVR grade C. Positive outcomes in this patient suggest benefits of this technique. Further research and case studies are needed to better define its role in similar cases.

Abstract 210

RECURRENT RD .... DIFFERENT SCENARIOS BUT SAME APPROACH

Mansour A.*

Ainshams University ~ Cairo ~ Egypt

To show a step wise approach for managing different cases of recurrent retinal detachment

showing different scenarios of recurrent retinal detachment ... with stepwise approach starting with removal of the pre retinal PVR , staining with kenakort and Brilliant blue to detect PVR , Indentation to check for Retinal shortening and then decision for retinectomy either 180 with the precise radial cuts or 360 retinectomy

12 patients showed successful anatomical attachment provided with Fundus camera Photos and Oct Scans , preoperative visual acuity ranged from with HM to CF 25 Cm with postoperative VA Ranging from 0.05 till 0.3

Stepwise approach for management of different scenarios of recurrent retinal detachment shows anatomical and visual success

Abstract 252

MORPHOLOGICAL AND FUNCTIONAL MACULAR ASSESSMENT AFTER PARS PLANA VITRECTOMY FOR RHEGMATOGENOUS RETINAL DETACHMENT

Paris A., Agliati L., Bianchetti G., Volpe G., Grimaldi G., Clerici M., Menghini M.*

Department of Ophthalmology, Institute of Clinical Neurosciences of Southern Switzerland (INSI), Ente Ospedaliero Cantonale (EOC) ~ Lugano ~ Switzerland

Pars plana vitrectomy (PPV) for rhegmatogenous retinal detachment (RRD) typically achieves high anatomical success, but visual outcomes vary. Visual acuity alone may not fully reflect visual function. This study used microperimetry, combining fundus imaging and retinal sensitivity mapping, to assess visual function in PPV-treated RRD patients alongside BCVA and OCT.

Prospective, single-center study on patients undergoing PPV for uncomplicated RRD. Patients with preexisting macular conditions in the affected eye or in the fellow eye were excluded. Both macula-on and macula-off RRD, with a postoperative follow-up of at least 3 months were included. Patients underwent a complete ophthalmological assessment including BCVA, slit-lamp examination, OCT, and mesopic microperimetry. Unaffected fellow eyes were also tested to serve as healthy control. Primary outcome measures include a comparison between pre-operative logMAR BCVA and post-operative BCVA in the affected eye, and a comparison between average macular sensitivity in the affected eye and healthy fellow eye.

30 eyes of 30 patients were enrolled. 19 eyes had a macula-on RRD. Analyzing this subgroup of patients, the difference between pre-operative and post-operative logMAR BCVA was not statistically significant, nor was the difference in post-operative macular sensitivity between the affected eye and the unaffected fellow eye. Nevertheless, the number of tested retinal points with borderline retinal sensitivity (12-24 dB) in the operated eye was significantly higher than in the healthy eye ($p=0.03$), while the number of tested retinal points with normal retinal sensitivity (>25 dB) in the operated eye was significantly lower compared to the healthy fellow eye ($p=0.03$).

Microperimetry allows for a more precise assessment of visual function compared to visual acuity tests. In macula-on RRD, where no significant difference in pre- and post-operative BCVA is found, it can detect sensitivity differences between the operated and healthy fellow eye, helping to better understand and document patients' visual discomfort.

Abstract 359

FORMATION OF HYPER-VISCOUS STICKY OIL EMULSION DURING DIRECT PFCL-SILICONE OIL EXCHANGE AND EXTRUSION MANAGEMENT

Papayannis A.[1], Antonuccio M.[1], Pellegrini F.[2], Blatsios G.[3], Foltran F.[2], Vita S.*[1]

[1]SC di Oculistica Ospedali di Monfalcone e Gorizia Azienda Sanitaria Universitaria Giuliano Isontina ~ Monfalcone-Gorizia ~ Italy, [2]SC di Oculistica Ospedale di Pordenone Azienda Sanitaria Friuli Occidentale ~ Pordenone ~ Italy, [3]Asklepios Klinik Nord - Heidberg Department of Ophthalmology ~ Hamburg ~ Germany

Purpose: To report a case of hyper-viscous sticky oil emulsion formation during 25G pars plana vitrectomy (PPV) for retinal detachment in a 25-year-old male with high myopia, associated with a posterior capsular break and viscoelastic leak

Methods: A 25-year-old male presented with rhegmatogenous retinal detachment. During combined FACO IOLwith PPV, perfluorocarbon liquid (PFCL) was used, but an unexpected emulsion formed during direct silicone oil exchange, resulting in a sticky bubble. After five days, removal was attempted using a 23G setting with an infusion pressure exceeding 50 mmHg and a long 23G metallic aspiration tip.

Results: The silicone oil, viscoelastic, and PFCL created a hyper-viscous emulsion that adhered to the retinal surface, complicating removal. Initial attempts with 25G and 23G extrusion tips were unsuccessful. After five days, the emulsion separated into two distinct bubbles, and high infusion pressure with a 23G metallic tip effectively dislodged them.

Conclusions: This case highlights complications of hyper-viscous emulsion formation during PPV. Waiting several days can allow for the separation of silicone oil, PFCL, and viscoelastic emulsion. To prevent similar issues, direct contact between these substances under high infusion pressure and high tempereture should be avoided.

Abstract 244

USE OF CITICOLINE AS A NEUROPROTECTIVE AGENT IN PATIENTS UNDERGOING VITRECTOMY AND SILICONE OIL TAMPONADE FOLLOWING RETINAL DETACHMENT

Baldascino A.*, D"Onofrio N.C., Margollicci F., Rizzo S.

Università cattolica del Sacro cuore Roma-IRCCS Policlinico Gemellu ~ Rome ~ Italy

Evaluating the neuroprotective effect of citicoline in patients undergoing vitrectomy with silicone oil

we enrolled two groups of patients with similar clinical histories, Rhegmatogenous retinal detachment, treated with vitrectomy via pars plana and PDMS 1000. Half of the patients received a supplement of citicoline as a neural protector, starting two months before removal, the other half underwent surgery with no supply

The datas we are currently monitoring includes PEV/ERG, macular AOCT and Angiodisc, RNFL, GCC scans, IOP, BVCA and fundus photo.

Citicoline could be a useful aid in mitigating the retinal and optic nerve toxic effects in patients undergoing vitrectomy and silicone oil treatment

Abstract 228

TWO CASES OF SCHWARTZ MATSUO SYNDROME SECONDARY TO BLUNT TRAUMA

Belgin S.*, Kayikci G., Pehlivanoglu S., Artunay H.O.

Beyoglu Eye Training and Research Hospital ~ Turkey ~ Turkey

Schwartz-Matsuo syndrome is a rare condition characterized by a triad of rhegmatogenous retinal detachment(RRD), aqueous cells in the anterior chamber, and elevated intraocular pressure(IOP). Following retinal detachment repair, IOP typically decreases and prognosis is favorable. We aimed to report two cases of Schwartz Matsuo Syndrome secondary to blunt trauma.

We retrospectively evaluated two patients with Schwartz-Matsuo Syndrome in this study. Both of these patients presented to emergency department with complaints of decreased vision of right eye. Both of them had no uveitis, glaucoma and undergone previous ocular surgery.First patient was a 74-year old man had fallen frequently resulting in head injuries, second patient was a 64-year-old man had blunt trauma to the right eye 10 months ago and have had decreased vision for 2 months. We saved their best corrected visual acuities, biomicroscopic examination, IOP measurements, funduscopic examination and optic coherence tomography images.

The patient’s best corrected visual acuities(BCVA) were 50/1250 and 20/1250 in the right eye's at the first examination,respectively.At the biomicroscopic examination,they had +3 cells in the anterior chamber, microcystic corneal edema and elevated IOP’s(56 mmHg and 40 mmHg).There was a horse-shoe tear and nearly total RRD in the first patient's right eye;there was severe vitreous haze, pigmentation and total RRD in the second patient's right eye.First treatment was aimed to lower the IOP’s by medical agents.They underwent to vitrectomy surgery.After 2.5 months post-operation BCVA’s improved, the IOP’s were 10 mmHg and12 mmHg in the right eyes without any anti-glaucomatous medications.

We report two cases of Schwartz-Matsuo syndrome.RRD may developed secondary to blunt trauma in both cases.Management should include maximizing medical glaucoma treatment until surgery and repairing the retinal detachment.Early intervention in retinal detachment,preventing photoreceptor damage as well as controlling high intraocular pressure may be important in protecting the optic disc.

Abstract 428

TRANS-SCLERAL PLUGS FIXATED FIL SSF IOL IMPLANT COMBINED WITH 25G VITRECTOMY AND SF6 TAMPONADE IN EYES WITH RHEGMATOGENOUS RETINAL DETACHMENT AND SECONDARY APHAKIA

Pignatelli F.*[1], Niro A.[1], Boscia G.[2], Viggiano P.[2], Giancipoli E.[3]

[1]S.S. Annunziata Hospital ~ Taranto ~ Italy, [2]Department of Translational Biomedicine Neuroscience, University of Bari "Aldo Moro" ~ BARI ~ Italy, [3]Department of Ophthalmology, Policlinico Riuniti Foggia, University of Foggia ~ Foggia ~ Italy

To report the clinical outcomes of the use of trans-scleral plugs fixated (IOL)
combined with 25-gauge pars plana vitrectomy (PPV) and intravitreal gas tamponade in aphakic patients
with retinal detachment and absence of capsular support.

Eleven aphakic eyes without capsular support from complicated cataract surgery
were recruited to our study. A single-piece hydrophilic acrylic trans-scleral plugs fixated IOL (Carlevale
IOL, Soleko, Italy) was implanted into the posterior chamber. Preoperative and postoperative refractive
status and complications during and after surgery were recorded.

Mean age of patients was 78.0years.Overall BCVA significantly improved from 0.69±0.62 logMAR preoperatively to 0.34±0.39 logMAR at 1 month, 0.31±0.35 logMAR at 3 months, 0.23±0.24 logMAR at 6 months, and 0.23±0.24 logMAR at 12 months after surgery (p<0.001 Friedman test).CRT did not significantly change from 266±66.9 µm at 1 month after vitrectomy to 249±20.6 µm at 3 months, 240±11 µm at 6 months, and 238±13.8 µm at 12 months after vitrectomy (p=0.48 Friedman test).Mean final refraction (SE) was – 0.18±0,73.None of the patients has shown IOL opacification following SSF combined with PPV and intravitreal gas injection and none required re-operation.

FIL SSF IOL implantation combined with 25g PPV and intravitreal gas injection a safe and effective solution for correction of aphakia in patients without capsular support. The face-down position for ≥ 15 days seems to reduce the IOL opacification rates of the hydrophilic IOL

Abstract 1

A PVR CASE

Abouelsaad M.*

eye specialist center ~ madinah ~ Saudi Arabia

A 49 yo male with neglected rhegmatogenous detachment and advanced grade C PVR involving posterior pole planned for phacovitrectomy.

As PVD was difficult to initiate, use of suction active and passive, scraping retina to elevate an edge of the hyaloid, followed by extensive ILM peeling on a totally detached retina till the edge of the temporal break. PFC was then used as an extra hand to stabilize posterior pole while shaving mid periphery and periphery.

VA improved in first month from hand motion to 2/60, retina stable with no signs of PVR.

ILM peeling, use of forceps/scraping to pull hyaloid, PFC and shaving from posterior to anterior, are all methods to clear PVR from the surface of the retina

Abstract 254

EPIRETINAL MEMBRANE DEVELOPMENT AFTER SCLERAL BUCKLING FOR PRIMARY RHEGMATOGENOUS RETINAL DETACHMENT

Pastore M.*, Celega M., Colombo O., Guerin G.M., Tognetto D.

Eye Clinic, Department of Medicine, Surgery and Health Sciences, University of Trieste ~ Trieste ~ Italy

To investigate the incidence, clinical characteristics, and risk factors for epiretinal membrane (ERM) formation following scleral buckling (SB) surgery for primary rhegmatogenous retinal detachment (RRD)

The analysis included 252 consecutive eyes that underwent primary RRD repair using scleral buckling (SB) within seven days of symptom onset, with a follow-up of at least 12 months. The preoperative morphological and anatomical RRD features were recorded. All patients underwent a comprehensive ophthalmological examination at 1 month, 3 months and 6 months after surgery.

Two hundred eight eyes achieved primary surgical success and completed a 24-month follow-up. The incidence of ERM increased from 9.1% in the preoperative assessment to 40.4% at the last follow-up. A progression of ERM was recorded in 62 patients (29.8%). Proliferative vitreoretinopathy (PVR) and subretinal fluid are independent predictors of ERM development at 12 and 24-month postoperatively, but only the PVR predicts the ERM progression between baseline and 24 months postoperative assessment ($p < 0.001$). No correlation was detected between the use of subretinal fluid drainage, pneumatic retinopexy, cryoretinopexy or laser retinopexy, and the development of postoperative ERM.

The incidence of epiretinal membrane following SB for RRD increased at 24 months postoperatively compared to baseline. PVR and persistence of postoperative subretinal fluid were predictive factors for postoperative ERM development. Only PVR was a predictive factor for ERM stage progression during 24-month follow-up.

Abstract 213

OUTCOMES OF PRIMARY VITRECTOMY FOR RHEGMATOGENOUS RETINAL DETACHMENT: INTERVENTIONAL RETROSPECTIVE CONSECUTIVE CASE SERIES OF 116 PATIENTS WITH NO POST-OPERATIVE POSITIONING

Almeida D.*, Babel A., Xu K., Chin E.

The Centers for Advanced Surgical Exploration (CASEx) ~ Erie ~ United States of America

Face-down positioning after surgery for rhegmatogenous retinal detachment (RRD) is standard practice, but its effectiveness with modern surgical techniques still needs to be determined. This study investigated the outcomes of RRD repair without postoperative face-down positioning.

Retrospective consecutive interventional case series of 116 eyes in 116 patients undergoing primary vitrectomy for RRD repair. All eyes underwent vitrectomy RRD re-attachment with endolaser and intraocular tamponade with either 14% perfluoropropane gas (C3F8) or 20% sulfur hexafluoride (SF6) gas. Surgical outcomes, single surgery anatomic success (SSAS), and visual acuity were investigated. The primary objective is to study the anatomic and visual outcomes of vitrectomy RRD re-attachment employing no post-operative face-down posturing.

SSAS was achieved in 112 (96.5%) of 116 eyes; SSAS was 100% in phakic patients (n=56) and 93% in pseudophakic patients (n=60), with both groups experiencing a mean improvement in BCVA. Macula status revealed that 39 (70%) of phakic patients presented with macula-off compared to 44 (73%) of pseudophakic patients with macula-off presentations. Intraocular tamponade with 14% C3F8 gas was utilized in 54 (96%) and 52 (87%) of phakic and pseudophakic patients, respectively; the remaining patients had either 20% SF6 gas; 32 (57%) patients received cataract surgery within the study follow-up period. Only four (4) eyes required second surgical intervention.

Primary vitrectomy with no post-operative face-down positioning is a successful surgical intervention for RRD repair. Our current anatomical closure rate is one of the highest reported in the literature and involved many macula-off RRDs, with minimal complications and significant improvement in BCVA.

Abstract 392

SCLERAL BUCKLE EVACUATIVE PUNCTURE WITH ENDOLASER: LONG TERM RESULTS

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Eye Unit, Humanitas-Gradenigo Hospital, Turin, Italy ~ Turin ~ Italy

To report all the advantages using endolaser to perform scleral buckle evacuative puncture

Use endolaser for scleral buckle surgery to perform evacuative puncture

Results of 20 years of using this technique with no hemorrhagic complication

The use of endolaser to perform scleral buckle evacuative puncture is safe and effective

Abstract 205

FUNCTIONAL AND ANATOMICAL OUTCOMES AFTER SHORT-TERM HEAVY SILICONE OIL ENDOTAMPONADE FOR INFERIOR RHEGMATOGENOUS RETINAL REDETACHMENT: A PILOT STUDY

Zerbinati M.*, Boscia F., Albano V., Sborgia L., Boscia G., Viggiano P., Pozharitskiy N., Binetti R.

Policlinico di Bari ~ BARI ~ Italy

To assess the success of the short-term location of the heavy silicone oil (Densiron 68, HSO) as endotamponade after pars plana vitrectomy for rhegmatogenous complex retinal redetachment.

Consecutive, retrospective, nonrandomized, pilot study was conducted. Twenty-two eyes of 22 patients with complex inferior retinal redetachment previously tamponade with gas (SF6 or C3F8) or 1000 cSt standard silicone oil (SSO) were selected. All were treated with HSO endotamponade, and its removal was performed after 1 month. The main outcomes were best-corrected visual acuity and postoperative complications after the HSO removal.

Of the 22 eyes, 10 were treated with SSO endotamponade, 3 with C3F8, and 9 with SF6 at first surgery. In all eyes, an inferior retinal redetachment was observed after the first surgery. In 10 eyes, the proliferative vitreoretinopathy was found. The main BCVA before HSO removal was 0.55 ± 0.20 the logarithm of the minimum angle of resolution (range 0.4-0.7) and after the HSO removal, it was 0.32 ± 0.29. Among the postoperative complications, only in four eyes the macular edema was found, in four eyes an increase of intraocular pressure, and none of these developed the epiretinal membrane.

The main purpose of this study is to establish a short-term HSO endotamponade in eyes with complex retinal detachment recurrences, reducing the possible postoperative complications and having a better prognosis for visual acuity outcomes.

Abstract 401

RHEGMATOGENOUS RETINAL DETACHMENT WITH CHOROIDALS IN A MONOCULAR PATIENT: IS EARLY INTERVENTION THE BEST OPTION?

La Mantia A.*

AOOR Villa Sofia-Cervello ~ Palermo ~ Italy

To describe the management of a case of total rhegmatogenous retinal detachment with concurrent choroidals in a monocular myopic patient with history of complicated cataract surgery.

Interventional single-surgeon case report. Review of preoperative clinical data, step-by-step surgical description, recording of postoperative data.

The patient underwent 25G pars plana vitrectomy, transcleral drainage of the suprachoroidal fluid, IOL repositioning, endolaser treatment of retinal breaks and silicone oil tamponade. Prompt intervention, anticipating potential complications, resulted in a favorable outcome with complete retinal and choroidal reattachment and BCVA improvement from hand movement to 0.4 decimal. No intraoperative or postoperative complications occurred.

Early intervention might be a good option in cases of concurrent rhegmatogenous retinal detachment and choroidals in only eyed patients.

Abstract 416

EFFICACY OF 5-FLUOROURACIL (5-FU) AND LOW MOLECULAR WEIGHT HEPARIN (LMWH) IN HIGH- RISK PEDIATRIC RETINAL DETACHMENT; RANDOMIZED CLINICAL TRIAL

Nasr M.*, Abdelhadi A., Bessa A., Ibrahim T.

Faculty of Medicine, Alexandria University ~ Alexandria ~ Egypt

To assess the efficacy of intraoperative 5-FU and LMWH in preventing PVR in high-risk pediatric patients with RRD undergoing vitrectomy, silicone oil injection, and scleral buckle, compared to placebo.

After informed consent, children under 14 years of age with high-risk PRRD underwent pars plana vitrectomy and silicone oil injection with scleral buckle divided into 2 groups in prospective randomized trial. The study included 21 patients in group A and 21 in group B
Group A received intraoperative infusion of 5-FU (200 µg/ml) and LMWH (5 IU/ml), group B received infusion of normal saline. Primary outcome was occurrence of recurrent PRRD within 12 weeks, secondary outcomes were occurrence of PVR, best corrected visual acuity (BCVA), number and timing of secondary procedures within 12 weeks.

The rate of recurrent PRRD was higher in group B 33% compared to 19% in group A ($p = 0.292$)
Recurrent PRRD occurred at 9.5 ± 5 weeks in group A compared to 2.86 ± 2.41 weeks in group B ($p = 0.042$), more patients in group B ended up with more advanced PVR ($p = 0.038$)
BCVA was hand movement (HM) only in all cases preoperatively with better improvement in group A compared to group B($p = 0.035$)

This study concluded that the use of the 5-FU and LMWH combination in high risk PRRD resulted in lower rate of postoperative PVR, later recurrence of PRRD and better final BCVA.

Abstract 418

ADAPTIVE STRATEGIES FOR RECURRENT MACULAR HOLE RETINAL DETACHMENT

Nasr M.*[1], Anastasi M.[2], Mitry D.[2]

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Case report of multiple strategies to achieve closure of macular hole causing recurrent RD

Incidentally discovered MH in RRD case, prompted ILM peel anchored at the optic disc with cryo and gas tamponade.Six weeks later, a temporal redetachment with a persistent macular hole necessitated another vitrectomy and silicon oil injection. At the 3-month mark, ROSO, inferior PVR peel, phaco with IOL and air tamponade were performed, only for the retina to redetach with an open macular hole shortly after. A subsequent vitrectomy with retinectomy for inferior grade C PVR and utilization of the retinectomy specimen under heavy liquid effectively closed the chronic macular hole with laser to retinectomy site and silicon oil tamponade.

The macular hole closed with retinal graft in place and the retina successfully reattached after final silicone oil removal 3 month later, demonstrating the importance of adaptability in surgical planning and the potential for innovative techniques in the treatment of complex retinal detachments.

Recurrent macular hole retinal detachments are one of the difficult surgical challenges VR surgeons can face. PVR retinectomy graft can offer a solution for mechanical closure of the hole achieving successful retinal reattachment.

Abstract 194

COMBINED PHACOEMULSIFICATION, VITRECTOMY, AND SCLERAL INDENTATION FOR CHORIORETINAL DETACHMENT: A SURGICAL CASE

Benchekroun Belabbes S.*, Boutaj T., Benchekroun Belabbes M., Laarif Y., Tachfouti S., Cherkaoui L.O.

Ophthalmology department "A", Ibn Sina University Hospital (hôpital des spécialités), Mohammed V University, Rabat, Morocco. ~ Rabat ~ Morocco

To report the surgical management of a 70-year-old highly myopic patient presenting with choroidal detachment, dense cataract with phacodonesis, and zonular dehiscence. The combined procedure of phacoemulsification, posterior vitrectomy, and scleral indentation was performed to address these complex ocular conditions and restore visual function

A 70-year-old Moroccan male with high myopia and previous retinal detachment surgery presented with a red eye and decreased vision in the right eye. Ophthalmological examination revealed intraocular pressure of 4 mmHg, a dense cataract with phacodonesis, and an inaccessible fundus. Ultrasound confirmed a choroidal detachment. A combined surgery under general anesthesia was performed, involving phacoemulsification with rhexis and vitrectomy. Zonular dehiscence led to posterior dislocation of the lens, managed by phaco-fragmentation. Drainage of subchoroidal fluid was performed, followed by placement of a 240 band, air-fluid exchange, laser photocoagulation, and gas tamponade with C2F6.

The surgery was completed successfully under general anesthesia. After the release of synechiae and rhexis, a large zonular dehiscence was observed, leading to posterior lens nucleus dislocation. Phaco-fragmentation of the nucleus and posterior vitrectomy were performed. Subchoroidal fluid drainage and placement of a 240 band in the inferior hemisphere were carried out. A laser retinopexy and air-fluid exchange were performed, concluding with C2F6 gas tamponade. The patient's intraocular pressure normalized postoperatively, and anatomical reattachment was achieved.

Combined phacoemulsification, vitrectomy, and scleral indentation can successfully address complex cases of choroidal detachment with lens dislocation and zonular dehiscence, offering a viable approach to restoring visual function in patients with high myopia and cataract.

Abstract 191

COMBINED PHACOEMULSIFICATION, VITRECTOMY, AND SCLERAL INDENTATION FOR CHOROIDAL AND RETINAL DETACHMENT: A SURGICAL CASE

Benchekroun Belabbes S.*, Boutaj T., Benchekroun Belabbes M., Laarif Y., Tachfouti S., Cherkaoui L.O.

Ophthalmology department "A", Ibn Sina University Hospital (hôpital des spécialités), Mohammed V University, Rabat, Morocco. ~ Rabat ~ Morocco

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Abstract 219

INTRACORNEAL ENCIRCLING BUCKLE MIGRATION: A CASE REPORT

Alsaedi N.*, Bantan I.

King Abdullah Medical City ~ makkah ~ Saudi Arabia

To report a rare case of late encircling band migration through cheesewiring phenomenon into the corneal stroma .

Case report :
We describe a case of delayed anterior intracorneal migration of encircling band in a young myopic patient 6 years after a successful retinal detachment surgery . The only presenting complaint was foreign body sensation with preserved ocular motility function .The patient was managed successfully with band removal .

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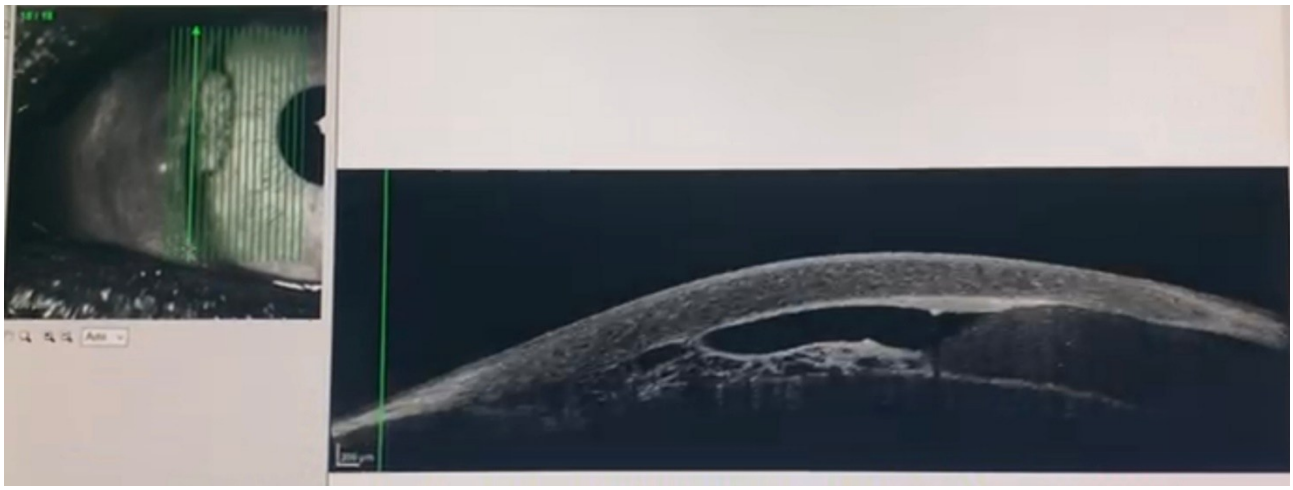
Delayed encircling band migration into the cornea can occur many years after the primary surgery . Retina surgeons should be aware of predisposing factors of cheesewiring complication of encircling band .



Abstract 290

PARS PLANA VITRECTOMY IN BILATERAL COMBINED RHEGMATOGENOUS AND TRACTION RETINAL DETACHMENT IN PATIENT WITH CONCOMITANT SYPHILIS AND HIV INFECTION - CASE REPORT

Davidovic S.*, Barišic S., Babovic S., Pavin S.

University Eye Clinic ~ Novi Sad ~ Serbia

The aim is to present retinal complications of concomitant active systemic infection with syphilis and HIV, and surgical treatment of complicated tractional and rhegmatogenous retinal detachment, which occurred as a result of severe and progressive uveitic reaction in both eyes.

In the patient S.I. (52 years old), as part of the analysis for possible factors causing bilateral chronic uveitis, with foudroyant deterioration and bilateral decrease in vision due to combined tractional rhegmatogenous retinal detachment, the simultaneous activity of treponema pallidum and HIV virus in the blood was detected. The finding in both eyes consisted of signs of chronic anterior uveitis, vitritis and advanced complicated retinal detachment with thickening of the entire retina and proliferations in both eyes.

After systemic anti-infectious therapy, as signs of systemic activity of the diseases have subsided, pars plana vitrectomy was performed, including phacoemulsification, implantation of foldable intraocular lens, placement of episcleral encircling band, and tamponade with silicone oil, first on the right and then several weeks after on the left eye. Retinal reattachment under silicon oil in both eyes was achieved. The patient's vision from L+P+- bilaterally, in the right eye improved to 0.2 Snellen chart, and in the left eye to 2/60, with IOP values within the reference values. No sign of reactivation of inflammatory reaction was noted in both eyes.

Recognizing syphilis and HIV as possible cause of uveitic changes, which can sometimes lead to complicated eye conditions such as retinal detachment, is important, as well as systemic and eye (if necessary, surgical) treatment, in order to reduce visual impairment caused by luetic and HIV infection in affected patients.

Abstract 69

SCLERAL BUCKLE AND VITRECTOMY 2 IN 1

Naser M.N.*

Tawam Hospital ~ Abu Dhabi ~ United Arab Emirates

I will demonstrate a case with bilateral rhegmatogenous retinal detachment, in young myopic male, where Macula on was managed with segmental scleral buckle and macula off with vitrectomy and gas. It demonstrates clearly indication of each type of RD. Patient had background of recurrent anterior uveitis as well.

First, RE, with Macula on RRD and atrophic hole in lattice, managed immediately, with segmental scleral buckle without drainage, using Chandelier 27G, and without need for drainage of SRF. Then one week apart, LE was managed with combined phacoemulsification/IOL/25G TPPV/Afx/EL/C3F8 gas, due to presence of cataract and posterior synechiae, from previous recurrent anterior uveitis attacks. The video included in presentation will show step wise approach of RE SB Chandler assisted surgery, without draining SRF, with excellent results, whereas, LE had uneventful combined surgery. However, patient has been given oral steroids pre operatively, and RE was used for biometry for LE.

RE, had successful SB surgery (video will be shown in presentation), with excellent results from POD 1. Meanwhile, LE, after having combined cataract and retina surgery, also had successful attachment of retina from day 1, but one month later, was complicated by LE cystoid macular edema, which was managed by two injections of intravitreal Faricimab, and finally BCVA was 20/20 in RE and 20/40 in LE. The administration of perioperative oral steroids helped in achieving such results. Another challenge was LE biometry, where RE was used for IOL calculation, because both eyes refractive power was almost similar in both eyes.

This demonstrates many aspects of retinal detachment repair, including role of scleral buckle in managing macula on RD in young, phakic, myopic patients, with a single tear in lattice without PVD, using chandelier and without SRF drainage, while other eye required combined Phaco/vitrectomy surgery, with further management of CMO.

Abstract 357

TYPE II UVEAL EFFUSION SYNDROME WITH NORMAL SCLERAL HISTOLOGY: A CASE REPORT.

Espino--García A.*, Saavedra Feijóo L., Redondo Martínez E., Caracuel Caballero M.D.C., Toledano Fernández N.

Hospital Universitario de Fuenlabrada ~ Madrid ~ Spain

Uveal effusion syndrome (UES) refers to fluid accumulation in the suprachoroidal space, often with associated ciliochoroidal and retinal detachment. UES classification into 3 types depends on presence of scleropathy and axial length. The purpose of this case-report, is to provide an updated management of an atypical type 2 UES.

A 47-year-old man experienced progressive visual loss in his left eye (OS) for a week. Uncorrected visual acuity (UCVA) was 20/100 (Snellen chart). Fundus exam revealed ciliochoroidal 360º detachment, inferior exudative retinal detachment and leopard spot changes in RPE. Retinography and angiography were done (Optos California). Subretinal fluid (SRF) was confirmed by optical coherence tomography (Triton OCT multimodal swept source, Topcon). Ultrasound exam showed an axial length of 20.79 mm and scleral thickness of 1.7mm (Compact Touch, Quantel Medical). Data on the patient was inserted to medical records (CGM Selene Clinical Workflow system). Scleral samples were sent for Histology exam.

Firstly, treatment consisted in oral 1mg/kg Prednisone and ophthalmic latanoprost drops. After no significant improvement, inferotemporal and inferonasal scleral windows surgery was performed 8 weeks later. Each window consisted of a 50–75% thickness sclerectomy measuring 6 mm by 6 mm in area, with the anterior edge at the insertion site of the extraocular muscles. A central 1 mm diameter sclerotomy was also done in each scleral windows. Histology of sclera was not abnormal. Postoperatively, 24 weeks after surgery, resolution of SRF was completed and best corrected visual acuity (BCVA) reached 20/30.

UES presents a diagnostic and therapeutic challenge. Evidence of scleropathy, eye size phenotype, and history of hypermetropia may help further classify UES. Medical therapy can be a reasonable first step, but proceeding to surgery in almost all cases should be considered when syndrome remains, particularly when sclera is thickened.

Abstract 161

COMPARISON OF GAS AND SILICONE TAMPONADES IN TERMS OF LOWER QUADRANT RECURRENCE IN PATIENTS WHO UNDERWENT PARS PLANA VITRECTOMY FOR RHEGMATOGENOUS RETINAL DETACHMENT

Karahan E.*, Girgin Y.

MD ~ BALIKESİR ~ Turkey

Comparison of gas and silicone tamponades in terms of lower quadrant recurrence in patients who developed retinal detachment due to a tear and underwent pars
plana vitrectomy

121 eyes of 121 patients who had rhegmatogenous retinal detachment and underwent at Balıkesir University
between May 2019 and February 2023 were included in the study. The PVR level in the patients was C1 or below.
62 patients treated with gas (41 patients SF6, 21 patients C3F8) were accepted as group 1, and 59 patients treated with silicone were accepted as group 2.
The two groups were compared in terms of age, gender, lens status, combined surgery rate, postoperative intraocular pressure increase, recurrent detachment rate,
number of surgeries, final visual acuity and final anatomical success.

In patients treated with gas, recurrent lower quadrant detachment was detected in 7 out of 62 patients (11.3%) after the first surgery, in 4 out of 59 patients (6.7%)
treated with silicone, and in 3 out of 59 patients (5.1%) after silicone removal. (p=0.438) The mean number of surgeries in patients treated with gas was 1.16±0.48, and
in patients treated with silicone, the mean number of surgeries was 2.18±0.57. (p<0.0001). Intraocular pressure increase requiring treatment occurred in 9 (15.3%) of
the patients given gas and 16 (34.0%) of the patients given silicone.

There is no difference between gas and silicone tamponade in terms of lower quadrant recurrence after PPV in patients with
rhegmatogenous RD without serious PVR. In these patients, giving silicone for does not prevent lower quadrant
recurrences, on the contrary, it leads to unnecessary additional surgical interventions and complications.

Abstract 276

INTRAOCULAR PERFLUORODECALIN AND SILICONE OIL TAMPONADE (DOUBLE FILLING) IN THE MANAGEMENT OF COMPLICATED RETINAL DETACHMENT: AN UPDATE TO THE 2022 REPORT

Zanzottera E.*, Ricciotti G., Suzani M., Coppola M.

IRCCS San Gerardo ~ Monza ~ Italy

To describe the functional and anatomical results of complicated retinal detachment (RD) treated with small-gauge pars plana vitrectomy (PPV) and combined perfluorodecalin and polydimethylsiloxane tamponade (double filling, DF).

Retrospective analysis of consecutive patients with complex RD (severe proliferative vitreoretinopathy, inferior/posterior/giant retinal tears, and traumatic detachments) treated with small-gauge PPV, membrane peeling, and DF at the Department of Ophthalmology at San Gerardo Hospital, Monza, Italy. Main outcome measures included best-corrected visual acuity (BCVA), rates of retinal reattachment, and complications.

This study included 22 patients with a median follow-up (FU) of 8.7 months (range 1-22). At the last examination, BCVA improved in 50% of patients and remained stable in 33% of patients; anatomical success was achieved in 77% of eyes, 58% of them without any endotamponade. Three eyes had retinal redetachment after perfluorodecalin/silicone oil exchange because of diffuse proliferative vitreoretinopathy (PVR) and required reoperation to achieve retinal attachment. In eyes with anatomical success, macular pucker was the most frequent long-term complication (41%).

Updated report confirmed the previous data, in the management of complex RD, small-gauge pars plana vitrectomy, and double filling endotamponade using wide-angle viewing systems was a well-tolerated and effective technique to preserve visual acuity and achieve anatomical success.

Abstract 72

25G PPV FOR COLOBOMA ASSOCIATED RETINAL DETACHMENT

Dotan A.*

Rabin Medical Center ~ Petach-Tikva ~ Israel

To show surgical procedure for coloboma associated retinal detachment

 A large inferior coloboma was visible which was very close to the inferior optic disc rim and fovea.
 After Kenalog injection for vitreous visualization, gently a posterior vitreous detachment was done.
 Follow by a 360 degrees pars plana vitrectomy
 Superior retinal retinotomy followed by air-fluid exchange, endolaser around the coloboma and silicon oil injection.
 Should be noticed the proximity of the coloboma to the optic disc and fovea which caused a limitation to the endolaser around the coloboma.

Attach retina under silicon temponade

The technique showed to be successful . After surgery retina is attach.

Abstract 73

25G PPV FOR TRACTIONAL RETINAL DETACHMENT (TRD) IN A PDR PATIENT

Dotan A.*

Rabin Medical Center ~ Petach-Tikva ~ Israel

Delamination procedure for tractional retinal detachment

Pars plana vitrectomy for TRD
Delamination procedure with end grasp forceps followed by retinotomy , air fluid exchange , laser, gas tamponade

Attach retina at the end of surgery

Delamination procedure for extreme TRD in DR patients

Abstract 76

ANATOMICAL AND FUNCTIONAL OUTCOMES OF THE MULTILAYERED INVERTED INTERNAL LIMITING MEMBRANE FLAP FOR CONCURRENT MACULAR HOLE AND RHEGMATOGENOUS RETINAL DETACHMENT: A RETROSPECTIVE STUDY

Yassine M.*

Dr Malek Ophthalmology Center - Moroccan Military Hopitals ~ Agadir ~ Morocco

To assess the preoperative clinical features and evaluate the visual and anatomical outcomes of 22 patients with concurrent macular hole (MH) and rhegmatogenous retinal detachment (RRD) managed with pars plana vitrectomy associated with the multilayered inverted internal limiting membrane (MLILM) flap technique.

This retrospective, single-center study included 22 consecutive patients who underwent surgery for concurrent MH and RRD between September 2020 and January 2024. Diagnosis of MH was established either preoperatively via slit-lamp examination and optical coherence tomography (OCT) B-scans or intraoperatively during vitrectomy. Preoperative evaluation included best-corrected visual acuity (BCVA) converted to LogMAR, lens status, retinal detachment topography, and proliferative vitreoretinopathy (PVR) grading. Swept-source OCT (SS-OCT) was performed in some patients. Postoperative outcomes assessed were BCVA in LogMAR, MH closure rate, type of MH closure on OCT, and retinal reattachment rates.

Of the 22 patients, 10 were male and 12 female, with 12 being pseudophakic. The estimated duration of detachment before surgery ranged from 20 to 136 days (mean 70 ± 30 days). Preoperative BCVA ranged from 2.7 to 1.4 LogMAR (mean 2.2 ± 0.3). OCT was performed in 8 patients (36%). High myopia was present in 40% of cases. The mean surgical time was 70 ± 30 minutes. Silicone oil was used in 12 patients, and C3F8 gas in the remaining 10. The MH closure rate was 100%, and the primary retinal reattachment rate was 86%.

Concurrent MH and RRD are frequently associated with advanced PVR and postponed surgical intervention, complicating treatment. The MLILM flap technique demonstrated a 100% MH closure rate, outperforming conventional ILM peeling, and revealed proliferative gliosis as a novel closure type related to the use of silicone oil.

Abstract 298

DENSIRON-68 IN THE TREATMENT OF RETINAL DETACHMENT ASSOCIATED WITH INFERIOR PROLIFERATIVE VITREORETINOPATHY OR CAUSED BY LOWER OR POSTERIOR BREAKS

Alkwas A., Alhumiari M.*

Zagazig University Hospital ~ Zagazig ~ Egypt

The aim of this study is to demonstrate the efficacy and complications of heavy silicone oil (Densiron-68®) in the treatment of retinal detachment (RD) with inferior, posterior breaks, or associated with proliferative vitreoretinopathy (PVR).

A prospective interventional noncomparative case series study of 25 eyes of 25 patients. Inclusion criteria were patients having RD arising from PVR, posterior breaks or inferior retinal breaks between 4 and 8 o'clock hours. Primary vitrectomy followed by Densiron-68 injection was performed for each patient. The study protocol involved at least 8 visits: 1st day, 1, 2, 3 weeks 1, 2, 3, and 6 months. Densiron-68 removal was performed after 2–3 months. The assessment of retinal attachment, visual acuity (VA), and complications were recorded.

Final anatomical success was 84% (21 of 25) cases which increased to 92% with second intervention. Mean final VA improved from mean logarithm of minimum angle of resolution of 1.89± (0.66) preoperatively to 1.094± (0.29) postoperatively. The most common complications were cataract in 60% of phakic eyes, and early emulsification in 32%.

: Densiron-68 could be used to support the lower retina in cases with RD associated with PVR, inferior, or posterior breaks. It gives a better tamponade to the inferior retina in the in the supine or upright positioning of the patient with high anatomical success rate.

Abstract 77

SURGICAL MANAGEMENT OF PROLIFERATIVE VITREO RETINOPATHY : TIPS AND TRICKS

Yassine M.*

Dr Malek Ophthalmolgy Center ~ Agadir ~ Morocco

To outline the various approaches and techniques for managing the diverse aspects of PVR.

This Videos will show a variety of PVR related retinal detachments : Open Funnels, closed funnels, anterior loops, all managed with 23 or 25 gauge pars plana vitrectomy, with a monomanual of bimanual approach.

Visualisation is key : Improvement of anterior segment clarity with the removal of any cataract / repositioning of dislocated IOL.
Early Chromovitrectomy : Triamcinolone +Trypan Blue for the staining of epiretinal membranes, and Sodium fluorescein for the visualization of vitreous Bases
Postero-Anterior Approach : therefore opening step by step the funnel, and stopping the pulling at the equator
PFCL for stabilization
BBG under PFCL and large peeling of the ILM
Bimanual approach to peel the anterior Loops in a Tug of war way, grabbing in opposite directions the membranes to avoid iatrogenic brakes.
Relaxing retinotomies,direct or indirect PFCL X SO exchange

A systematic approach to advanced PVR cases may improve anatomical outcomes and make the surgery more straightforward. However, the greatest challenge remains postoperative PVR, for which intravitreal methotrexate injections could be a promising path.

Abstract 451

COMBINED SURGERY: TEMPORARY KERATOPROSTHESIS, PPV FOR RETINAL DETACHMENT, YAMANE TECHNIQUE FOR IOL IMPLANTATION AND FULL THICKNESS CORNEAL TRANSPLANT

Santoro M.*

policlinico di Bari ~ Bari ~ Italy

The objective of the surgery was to restore anatomical integrity and a certain functional recovery in the eye of the patient, suffering from corneal decompensation, surgical aphakia, inveterate retinal detachment

The eye of the patient, suffering from corneal decompensation, surgical aphakia, inveterate retinal detachment underwent surgery: to have a better visualization during surgery, the patient's decompensated cornea was explanted and a temporary boston keratoprosthesis was used. After that, the patient underwent vitrectomy for inveterate retinal detachment, peeling of the membranes and endolaser. IOL was implantated according to yamane technique. A full-thickness corneal transplant was performed finally after keratoprosthesis removal

The patient's eye had a good anatomic and aesthetic recovery and a certain functional improvement.

This combined surgery could be a good solution in those patients suffering from surgical anterior and posterior segment pathologies. When visualization is not good due to corneal decompensation, a temporary keratoprosthesis, before corneal transplant, may be used.

Abstract 78

MACULAR MICROCIRCULATION CHARACTERISTICS AND FUNCTIONAL OUTCOMES AFTER VITRECTOMY FOR RHEGMATOGENOUS RETINAL DETACHMENT REPAIR

Christou E.E.*[1], Georgalas I.[2], Stavrakas P.[3], Stefaniotou M.[1]

[1]University of Ioannina ~ Ioannina ~ Greece, [2]National and Kapodistrian University ~ Athens ~ Greece, [3]University of Patras ~ Patras ~ Greece

To investigate macular microcirculation changes as seen on OCT-Angiography and postoperative visual acuity of eyes undergoing vitrectomy with gas tamponade for rhegmatogenous retinal detachment (rRD).

Retrospective, case-control study included 63 eyes following vitrectomy for rRD. The patients were divided in three groups with regards to the macular condition and the preoperative retinal detachment duration. Group A included 17 eyes of rRD without macular involvement, group B and C included cases of rRD with macular involvement with acute (21 eyes) and longstanding (25 eyes) presentation of symptoms, respectively. All eyes underwent a single uncomplicated pars plana vitrectomy with C2F6 gas tamponade. We analyzed OCT-Angiography microvasculature at the full macular area and each separate region (fovea, parafovea, perifovea) and visual outcomes at 12 and 48 weeks postoperatively.

Vessel density (VD) and flow density (FD) in superficial capillary plexus (SCP) were higher ($p<0.001$) in group A compared to group B and C at full macular area and each separate region (fovea, parafovea, perifovea). Foveal avascular zone (FAZ) area and perimeter were significantly reduced ($p<0.001$) with higher circularity in group A compared to group B and C. There was positive correlation of FD at SCP with postoperative visual acuity in group A ($p=0.028$). There was positive correlation of VD and FD at SCP with postoperative visual acuity in group C ($p<0.001$), though not in group B.

Macula-off rhegmatogenous retinal detachment may cause functional retinal changes even after successful anatomical reattachment after vitrectomy. The macular detachment duration could be a predicting factor of flow density in macular capillary plexus which in turn may be an indicator of visual outcomes in chronic cases.

Abstract 8 – Main Program

AUTOLOGOUS RETINAL TRANSPLANT FOR A REFRACTORY MACULAR HOLE

Besozzi G.*

ASL LECCE ~ LECCE ~ Italy

An autologous retinal transplant was performed to treat a patient affected by a full thickness extremely large macular hole refractory to other surgical treatments. A full-thickness retinal graft may provide a sturdier scaffold for retinal gliosis with better tissue integration, which may lead to better anatomical and functional outcomes.

The patient underwent a pars plana vitrectomy and a full-thickness autologous retinal transplant and silicone oil tamponade. A full-thickness autologous retinal graft was harvested from the XII meridian. The size of the graft was approximately 1.2 to 1.5 times the diameter of the MH (1000 µm approximately). Before the graft's mechanical dissection with vertical scissors, the surgeon applied endodiathermy of the borders. The graft was placed completely into the MH. Additional encircling photocoagulation to the retinal donor site was then applied. Finally, silicon oil (1000 centistokes) was used as tamponade.

The patient underwent pre and post-surgery, a best-corrected visual acuity (BCVA), slit lamp examination, fundus examination and optical coherence tomography. At the 6-month follow-up visit, the patient had a closed MH; the retinal autologous graft showed excellent tissue integration, recovery of the external retinal layers, and the. There was not a significantly increased BCVA.

An autologous full-thickness retinal transplant may improve the anatomical and structural outcome of patients with refractory macular holes. The full safety profile of this new technique is still unknown. More studies are needed in order to assess functional changes through time.

Abstract 404

SURGICAL MANAGEMENT OF RETINAL DETACHMENT WITH PROLIFERATIVE VITREORETINOPATHY AND MACULAR HOLE USING RELAXING RETINECTOMY AND AUTOLOGOUS RETINAL TRANSPLANT

Alasil T.*

Retina Institute of California and Acuity Eye Group ~ Pasadena ~ United States of America

To report the surgical management of retinal detachment with proliferative vitreoretinopathy (PVR) and full thickness macular hole.

23 gauge pars plans vitrectomy ports were placed and PVR was peeled using ILM forceps. Cautery was applied to the detached nasal retina while harvesting the retinal transplant. Vertical scissors were utilized to harvest the graft. PFO was injected up to the equator level, then the retinal transplant was teased and dragged (under the PFO using Finesse Flex loop) towards the macular hole, where it was gently tucked in position. A 120 degree relaxing nasal retinectomy was performed, and the PFO was extended to flatten the retinectomy edge and apply endolaser. PFO-air exchange was completed followed by Silicone oil infusion.

At 4 week post op visit, the retina was attached and the macular hole was closed with the neurosensory retinal transplant in position. Vision improved from HM to 20/400.

Autologous retinal transplant coupled with relaxing retinectomy present a viable strategy to close macular holes in complex retinal detachment cases with PVR. This technique can be performed without the need for Chandelier endoillumination or bimanual tissue manipulation.

Abstract 6

NEAR-REAL SURGICAL SPECIMENS (NRSS): DISCOVERY AND APPLICATION OF SURGICALLY-RESPONSIVE OPHTHALMOLOGICAL BIOLOGICAL TISSUES

Almeida D.*, Oyole P., Trein Jr J.

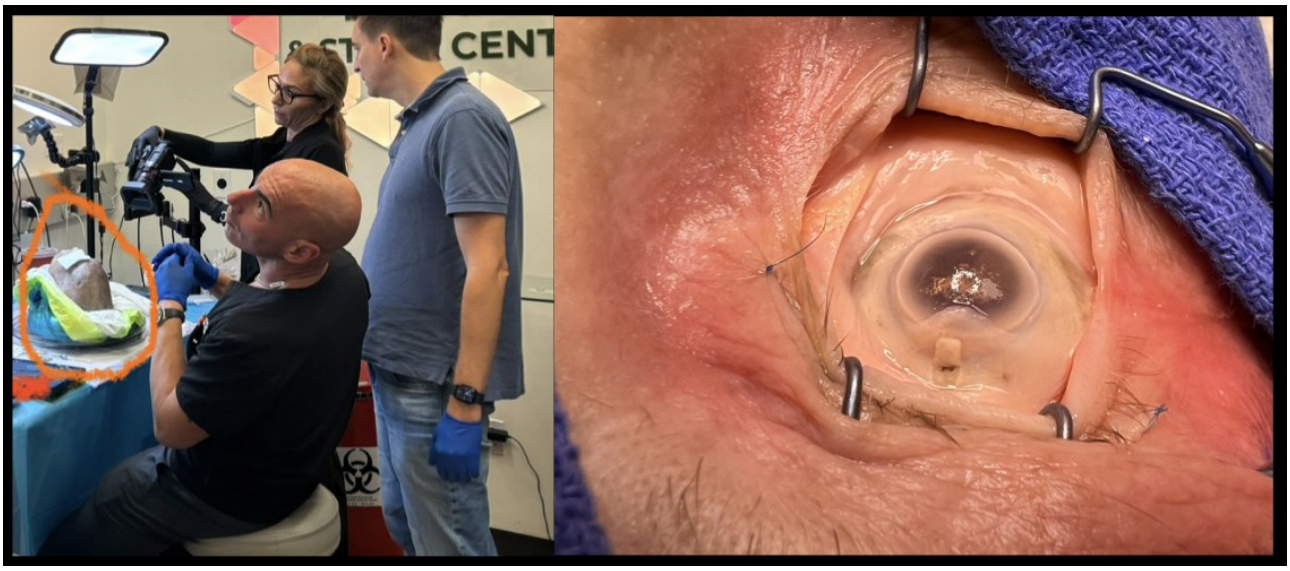
Centers for Advanced Surgical Exploration (CASEx) ~ Miami ~ United States of America

To introduce and present the discovery of Near-Real Surgical Specimens (NRSS), the first surgically-responsive ophthalmological biological specimens. This novel technology promises to revolutionize ophthalmic research and development and standardize surgical training by providing unparalleled realism and surgical feedback.

NRSS is developed by the Centers for Advanced Surgical Exploration (CASEx) via the Knowledge-driven Engineered Precision for Healthcare Advancement of Lifesaving Operative Systems (KEPHALOS) project. KEPHALOS provided biologically-engineered specimens that respond dynamically to surgical manipulation. These specimens are designed using advanced tissue engineering techniques to mimic human ocular tissue's structural and functional characteristics. The process involved: 1. tissue harvesting and preservation (proprietary methods ensuring structural integrity); 2. biological engineering (engineered substrates to retain tissue properties of the human eye); 3. validation testing to assess their responsiveness to human tissue.

NRSS demonstrates remarkable similarity to human ocular tissue regarding texture, elasticity, and response to surgical instruments. NRSS provides high-fidelity simulation in a non-toxic and odorless re-usable form. Surgeons reported that the NRSS provided an indistinguishable experience from live human tissue. Using NRSS in surgical training significantly improved the proficiency and confidence of trainee surgeons, with measurable improvements in surgical technique and patient outcomes. The NRSS demonstrate excellent durability and retained their properties over extended preservation (months), offering a transformative solution for surgical training and regulatory certification programs.

The discovery of NRSS marks a significant advancement in the field of ophthalmology. This innovation enhances surgical training and has the potential to improve surgical outcomes by providing a more realistic research and development substrate. NRSS shrinks the gap between theoretical knowledge and practical expertise while maintaining maximal safety.



Abstract 391

ROLE OF TECHNOLOGY FOR MINIMALLY INVASIVE EYESURGERY

Panico C.*, Montericcio A.

Eye Unit, Humanitas-Gradenigo Hospital, Turin, Italy ~ Turin ~ Italy

To report all the advantages by using technology in minimally invasive eyesurgery

Use of technology, such as 3D heads up surgery and 27G vitrectomy, for minimally invasive eyesurgery

3D heads up surgery and 27G vitrectomy used in order to reduce inflammation and to make life easier for the surgeon

The use of technology, such us 3D heads up surgery or 27G victrectomy, could be used for minimally invasive eyesurgery in complicated cases to enhance safety and surgical outcomes and to increase surgeon comfort.

Abstract 211

MULTIFOCAL ELECTRORETINOGRAPHY CHANGES IN PATIENTS WITH LATE-STAGE AGE RELATED MACULAR DEGENERATION (AMD) AFTER SMALLER-INCISION NEW-GENERATION IMPLANTABLE MINIATURE TELESCOPE (SING IMT):

Landini L.*[1], Boscia G.[1], Vidal Aroca F.[2], Viggiano P.[1], Levy M.H.[3], Sborgia G.[1], Boscia F.[1]

[1]Università degli Studi di Bari Aldo Moro ~ Bari ~ Italy, [2]Samsara Vision ~ Far Hills ~ United States of America, [3]Sarasota Memorial Hospital ~ Sarasota ~ United States of America

This study aims to report changes in multifocal electroretinography (mfERG) 6 months post-SING-IMT implantation.

In this case series, we prospectively evaluated a cohort of phakic patients with late-stage AMD who underwent SING-IMT implantation at the Ophthalmology Unit, University of Bari Aldo Moro, Italy. We assessed best-corrected distance visual acuity (BCDVA) and best-corrected near visual acuity (BCNVA) preoperatively and at 6 months postoperatively. Additionally, mfERGs were conducted using Retimax

All four treated patients showed an increase in both BCDVA and BCNVA at the 6-month follow-up. Additionally, all eyes demonstrated increased P1 density at this time point, with the greatest augmentation observed at the central fixation point, gradually diminishing across the five concentric rings. While all patients displayed a general increase in P1 amplitude, the third patient exhibited a slight decrease in the foveal region.

The new generation implantable miniature telescope, SING-IMT, demonstrates promising results in enhancing mfERG parameters in patients with late-stage AMD. Six months post-surgery, we observed an augmentation in both P1 density and amplitude, predominantly at the fixation point and gradually tapering in the surrounding concentric rings.

Abstract 372

OPHTHALMIC SURGICAL SIMULATOR: AN EFFECTIVE AND SAFE APPROACH FOR TRAINEES IN VITREO-RETINAL SURGERY

Giannuzzi F.*, Carlà M.M., Cestrone V., Marcelli S., Stanislao R.

Fondazione Policlinico A. Gemelli ~ Rome ~ Italy

This study aims to assess the safe and the impact of using the EyeSi virtual surgery simulator on trainees' performance in vitreo-retinal surgery.

Routine general ophthalmological and orthoptic examinations, including the cover-uncover test, ocular motility, fusional amplitude near and far, fusional amplitude with Bagolini striated lenses, convergence and stereopsis (TNO stereotest) were conducted at baseline (T0) and 30 minutes after 90 minutes of vitreo-retinal surgery simulator(T1). In addition, trainees were interviewed using a questionnaire consisting of 18 symptoms, with each item containing three questions regarding the frequency, severity, and bothersomeness of the symptoms. The scores achieved in the initial 15 minutes were compared with those in the final 15 minutes by performing the same module.

Orthoptic examination was done before and 30 minutes after VR simulator use on 34 trainee. The simulator significantly increased far fusion amplitude both without (19.4±8.8 vs. 23.9±9.7, p=0.003) and with striated glass (18.2±10.4 vs 20.5±9.1, p=0.02).Near fusion amplitude did not vary with or without striated glasses. TNO was 60 in 82% of patients at V0 and 120 in 18%. Only 52% of eyes had 60 stereopsis at TNO after VR simulator use, 41% had 120, and 7% had 240 (p=0.02). All trainees scored > 60%. The first and final workout scores were compared, and 100% scored higher. Only 15% reported discomfort.

The Eyesi surgical simulator has proven to be a valuable tool for enhancing surgical proficiency in vitreo-retinal procedures, with negligible effects on stereopsis and a minimal incidence of discomfort.

Abstract 358

THE COMBINATION OF BILATERAL SUBLUXED LENSES, RETINAL DETACHMENT FROM MULTIPLE GIANT RETINAL TEARS AND MACULAR TEARS FROM BLUNT TRAUMA

Smarandache L., Michael K.*

NHS Ayrshire and Arran, UK ~ AYRSHIRE ~ United Kingdom

To report the complex clinical features, surgical management and post operative management in a patient with severe intraocular damage from repeated self harming injuries.

A 33-year-old Caucasian male with a long history of self-harming behaviour was referred to Eye Casualty for gradual onset reduced vision after intentionally banging his head on a headlamp. Despite being uncooperative during examination, perception of light vision with normal intraocular pressure was noted. Slit lamp and fundus exams revealed severe intraocular damage, including lens subluxation and retinal detachment. Pre-operative biometry was impossible to obtain. He underwent a single surgical procedure under general anesthesia for bilateral lensectomy, vitrectomy, and anterior chamber intraocular lens implantation. Post-operative follow-up showed visual acuity of counting fingers and normal intraocular pressure in the early period.

Following surgery, the visual acuity improved with stable attached retinas under silicone oil. The early post operative period also highlighted issues arising from challenging patient behaviour which influenced patient recovery and overall prognosis.

This case highlights the complexity of issues we observe in a patient with severe intraocular damage requiring urgent surgery and the tumultuous post operative period and uncertain future prognosis due to patient's challenging behaviour.

Abstract 384

5CM NAIL PERFORATION

Dotan A.*, Nahum Y.

Rabin Medical Center ~ Petach Tikva ~ Israel

To present a surgical case of a unique 5cm nail eyeball perforation

We hereby present a case of a 40 y/o builder male patient, who presented with unusual globe perforation due to metal 5cm nail with distal end that reached the apex of the orbit. The patient immediately referred to O.R to manage his globe penetration. The video of the surgery will illustrate interesting and challenging surgery for unusual trauma, our presentation will include interesting 3-D C.T series.

Closed eyeball globe after Vitrectomy and corneal suturing

Vitrectomy and corneal suturing for a metal nail eyeball perforation

Abstract 347

SECONDARY REPAIR OF RUPTURED GLOBE IN NO PERCEPTION OF LIGHT SCENARIO: IS IT WORTH THE EFFORT?

Chwiejczak K.*

Nottingham University Hospitals NHS FT ~ Nottingham ~ United Kingdom

To present a case report of a patient who underwent secondary repair of the globe and discuss current approaches to operating in situation of no perception of light.

A case report and video presentation of a 72 year-old male patient who underwent primary repair and consecutive Vitreoretinal procedures for left ruptured globe, following a blunt trauma with a piece of wood in May 2024 at Nottingham University Hospitals NHS Foundation Trust. Primary repair was conducted, but due to no light perception, vision and disorganized anterior segment, option of enucleation was discussed with the Patient. After consultation with a vitreoretinal surgeon secondary repair was offered in attempt to preserve the eye. There was no fundal view, but ultrasound examination revealed kissing haemorrhagic choroidal detachments.
Current literature was reviewed.

10 days after the initial repair, secondary surgery was carried out. Choroidal blood was drained via 2 mm cutdown incision. Anterior chamber was cleared from necrotic tissue and blood and opened with viscoelastic. Closed funnel retinal detachment with anterior retina incarceration and large choroidal cleft were visible. Funnel was open with and heavy liquid (HL). Retinectomy was completed and 360 laser performed. Choroidal cleft was closed with 10.0 Prolene. HL was left in situ for 10 days. After that it was exchanged to 5000cs silicone oil. Retention sutures were placed 1.5mm from the limbus. Patient recovered perception of light vision.

Despite poor visual prognosis in severe trauma cases, option of surgery should be offered to patients whenever possible, Vitreoretinal Team should be involved in the assessment of such cases to avoid premature enucleations. Honest discussion about risks, including sympathetic ophthalmia, and patient involvement in the decision making is very important.

Abstract 346

BIMANUAL EXTRACTION OF SUBRETINAL METALLIC FOREIGN BODY WITH FOCAL CHORIORETINECTOMY

Yassine M.*

DR MALEK OPHTHALMOLOGY CENTER ~ Agadir ~ Morocco

To describe the surgical technique of sub retinal foreign body extraction and focal chorioretinectomy

Patient underwent 4 ports Pars Plana vitrectomy with bimanual sub retinal foreign body extraction followed by a focal chorioretinectomy.

Retina remained attached under silicon oil with significant improvement in best corrected visual acuity, and reduction in intraocular inflammation without any consequent postoperative proliferative vitreoretinopathy.

Bimanual sub retinal foreign body extraction is an effective and safe technique for the removal of IOFB. Focal chorioretinectomy prevents prostoperative PVR.

Abstract 10

IOFBS- 4 WAYS

Alfoqahaa M.*

German Eye Center ~ Ramallha ~ Palestinian Territory, Occupied

Intraocular foreign bodies (IOFBs) caused by trauma or occupational injuries can be challenging due to the wide range of presentation and associated injuries. This video aims to show 4 different cases of IOFBs and the different ways tailored for each case to give the best chance of visual recovery.

The first case presents a 6 mm long metallic nail penetrating the cornea, lens and reaching the anterior vitreous. The patient underwent corneal laceration repair and lensectomy.
The second case shows a sharp metallic FB penetrating both the cornea and the lens through a self-sealed wound, causing a traumatic cataract and an open posterior capsule to be embedded within the peripheral retina. The FB was retrieved using the Iris Shelf Technique.
The third case shows a retained FB complicated by endophthalmitis.
The fourth case presents a case of siderosis masquerading as chronic uveitis caused by a missed IOFB for more than 1 year.

All 4 cases deployed a plethora of anterior segment and vitreoretinal surgical skills to be able to mange the variety of these IOFBs.

Intraocular foreign body management needs a case-by-case approach with tailored interventions according to the size, location and associated complications of the IOFB.

Abstract 209

CLOSED FUNNEL RETINAL DETACHMENT … THE APPROACH

Mansour A.*

AinShams University Hospitals ~ Cairo ~ Egypt

To describe stepwise approach for managing complex cases of closed funnel RD

prospective study case series on 13 eyes of 13 patients who had surgery for post penetrating injury closed funnel RD with or without suprachoroidal Hemorrhage , Stepwise approach will be described starting from trochars insertion going with dealing with pre and sub retinal PVR , Flattening of retina and choice of proper tamponade

Out of 13 eyes .. 1ry attachment occurred in 100 % of cases with recurrence of RD in 2 cases that needed second intervention .. Visual acuity ranged from PL to HM With post operative visual gain ranging from CF 1m. to 0.2 Vision

This technique shows a reproducible and effective method in dealing with Post penetrating injury closed funnel RD

Abstract 40

PENETRATING EYE INJURY REPAIR

Qureshi M.*

Birmingham Midland Eye Centre ~ Birmingham ~ United Kingdom

To show how to manage a complex trauma case with an intra-ocular foreign body removal and surgical repair

Video to show the surgical management of IOFB

Successful surgery

A detailed history, examination and the use of ultrasound/CT imaging is important in peri-operative surgical planning as well as managing patients visual expectations
The use of protective eyewear such as safety glasses or goggles will provide additional protection and significantly reduce the risk of harmful injury

Abstract 425

RESTORING VISION IN PAEDIATRIC TRAUMATIC SUBMACULAR HAEMORRHAGE: SUCCESSFUL VISUAL RECOVERY WITH SUBMACULAR TPA INJECTION FOLLOWING CHORIORETINAL RUPTURE

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Royal Free Hospital Ophthalmology Department ~ London ~ United Kingdom

This case report illustrates clinical outcomes following submacular tissue plasminogen activator (tPA) injection for the displacement of submacular hemorrhage resulting from traumatic chorioretinal rupture in a pediatric patient.

A 12-year-old male patient with traumatic submacular hemorrhage and chorioretinal rupture presented with severe visual impairment, with visual acuity reduced to hand movements. Initial treatment involved intravitreal tPA injection and pneumatic displacement, which yielded minimal improvement. Subsequently, pars plana vitrectomy with submacular tPA injection and air tamponade was performed.

Following the submacular tPA injection, the patient experienced a complete resolution of the hemorrhage within one week. Visual acuity improved to 6/24 after one week and 6/9 at the one-month postoperative follow-up, demonstrating significant recovery and restored visual function.

This case contributes to the existing literature for management of extensive submacular haemorrhages in paediatric cases with successful outcomes, offering insights into the submacular tPA injection approach for similar challenging cases in paediatric ophthalmology.

Abstract 272

SEVERE SCLERITIS FOLLOWING IATROGENIC TRAUMA: A CASE REPORT OF A SURGICAL COMPLICATION

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To report the clinical and imaging features of a case of severe scleritis accompanied with resistant uveitis after an accidental globe perforation following retrobulbar block.

This observational case report presents the case of a 32-year-old male who was diagnosed with intraocular lens (IOL) opacification three months following an accidental trauma, suggesting the possibility of multiple episodes of uveitis.
Following vitrectomy with IOL cleaning, complicated by globe perforation during anaesthesia, the patient developed a severe scleritis with uveitis, which remains poorly controlled despite corticosteroid therapy. A comprehensive ophthalmological examination was performed, including slit-lamp examination, fundoscopy, and optical coherence tomography (OCT) imaging

At presentation, the visual acuity was 4/10 with numerous opaque spots from inflammation on the IOL implanted after a previous traumatic cataract. The patient underwent a vitrectomy and IOL cleaning procedure. During the retrobulbar block, a globe perforation occurred, resulting in a vitreous haemorrhage and a chorioretinal injury. Following vitrectomy with laser barrier of the retinal lesion and the cleaning of the IOL, the patient developed anterior chamber inflammation associated with keratic precipitates, vitreous cells and diffuse scleritis.
Despite persistent inflammation that was resistant to corticosteroid therapy and new opaque spots, the patient remarkably achieved a final BCVA of 10/10.

This case report highlights the role of an exaggerated immune response in the development of severe scleritis and resistant uveitis following iatrogenic trauma. The findings emphasize the need for aggressive corticosteroid therapy with a slow tapering schedule to effectively manage inflammation and prevent IOL opacities in such patients.

Abstract 224

AMNIOTIC MEMBRANE TRANSPLANTATION FOR LARGE TRAUMATIC CHOROIDAL RUPTURE

Blatsios G.*

Department of Ophthalmology, Asklepios Clinic Hamburg Nord ~ Hamburg ~ Germany

To present a case of severe chorioretinal trauma treated with vitrectomy and amniotic membrane transplantation

A 40 year old male presented with traumatic globe rupture and no light perception vision. Primary repair consisted of globe suturing. During secondary repair vitrectomy with silicone oil injection and intraocular amniotic membrane transplantation were performed to treat the associated closed funnel retinal detachment and large choroidal rupture. Three methotrexate intravitreal injections were perfomed during follow-up to prevent PVR.

At the last follow-up visit 10 months after secondary treatment the retina was attached, IOP was within normal limits and vision had improved to hand movement.

Amniotic membrane transplantation combined with Methotrexate injections can be a preventive measure against massive PVR arising from large traumatic choroidal rupture areas in selected cases.

Abstract 444

TEMPORARY IRIS-DIAPHRAGM IN A GLOBE INJURY CHARACTERIZED BY TRAUMATIC ANIRIDIA, APHAKIA AND RETINAL DETACHMENT

De Luca M.*, Interlandi E., Tortori A., Esposito Abate C., De Marco R.

Ospedale del Mare ASL NA 1 ~ Naples ~ Italy

The management of a globe rupture with concomitant aniridia, aphakia and retinal detachment can require silicon oil tamponade. Due to the absence of compartimentalization , we report the management of this type of problem using a prolene diaphragm grid in order to separate the anterior from posterior chamber.

We are reporting a case of a 70 years old man referred to our Vitreo Retinal Unit after 2 months of severe eye trauma caused by an assault. A full eye examination disclosed a healed sclero-corneal wound, aniridia, aphakia, vitreous hemorrhage and retinal detachment, visual acuity (VA) was of light perception. The patient underwent to a 25+ Gauge (GA) pars plana vitrectomy, once the retina was flat under PFCL and performed endolaser was created a diaphragm with a suture of 10.0 polypropylene in order to reduce oil migration from posterior chamber, finally the eye was filled with silicon OIL

1 month after surgery the retina was flat, silicon oil and retention sutures on sites, cornea , no droplets were found in anterior chamber that was deep and quiet, VA of 2/10 and a normal ocular pressure.

In eyes severely traumatized, lacking iris and lens with concomitant retinal detachment where there is a need for silicone oil tamponade, modern small gauge vitrectomy combined with the positioning of a grid pattern sutures can provide a long-term anatomic and functional restoration.

Abstract 28

ERRARE HUMANUM EST… COMPLEX TRAUMATIC EYE INJURY: MANAGEMENT AND COMPLICATIONS

Bravetti G.E.*, Ciotu I.M., Malclès A., Thumann G.

University Hospitals of Geneva ~ Geneva ~ Switzerland

The aim of this report is to show the management and complications of a complex traumatic eye injury with an intra-ocular foreign body (IOFB).
The patient was admitted to the Ophthalmology Department of the University Hospitals of Geneva.

This case report presents the management and outcomes of a 44-year-old male patient who sought urgent ophthalmological attention following a high-velocity foreign body injury to the right eye while operating a nail gun at his workplace. The patient reported a sudden decrease in visual acuity.
Upon examination, the right eye exhibited limited VA to counting fingers, with IOP measuring 13 mmHg. The anterior segment revealed a paracentral transfixing corneal wound of 2.4mm, shallow anterior chamber, and traumatic cataract. Fundoscopy was not feasible initially.
Orbital CT imaging confirmed the presence of a metallic foreign body in the vitreous cavity of the right eye.

The treatment plan involved two stages: the first emergency surgery aimed at closing the corneal wound with nylon sutures. The second procedure began with the removal of the traumatic cataract, followed by central vitrectomy. However, during attempts to extract the intraretinal foreign body, I made a mistake by pulling the foreign body before an exhaustive peripheral vitrectomy, resulting in iatrogenic retinal traction and massive haemorrhage. A meticulous vitrectomy was subsequently performed to clear the blood, locate, and finally extract the foreign body through a sclerotomy. The postoperative period proceeded uneventfully, the patient regained corrected visual acuity of 0.8.

This case underscores the challenges and complexities involved in managing traumatic eye injuries, emphasizing the importance of careful surgical planning and execution to achieve favourable outcomes. Errare humanum est, perseverare diabolicum...

Abstract 342

RESULTS OF EXTERNAL DRAINAGE AND COMBINED PARS PLANA VITRECTOMY IN CASES OF MASSIVE SUPRACHOROIDAL HEMORRHAGE

Korkmaz A.*, Arici M., Artunay H.O.

University of Health Sciences, Beyoglu Eye Training and Research Hospital ~ Istanbul ~ Turkey

To evaluate the surgical results in cases with massive suprachoroidal hemorrhage

23 eyes of 23 patients operated for massive suprachoroidal hemorrhage in our clinic were retrospectively reviewed. The patients were evaluated in terms of mean age at the time of surgery, etiology, time to surgery, follow-up period, baseline and final best corrected visual acuity.

Twenty-three eyes of 23 patients with a mean age of 55.7± 25.9 years were evaluated. The patients were 7 (31%) female and 16 (69%) male. The follow-up period was 24.0±12.9 months. In 7 cases external drainage was performed, in 16 cases pars plana vitrectomy and external drainage were performed.The mean time to surgery was 17.6±6.1 days. Best corrected visual acuity improved from 2.11±0.14 logMAR at baseline to 1.68± 0.74 logMAR at the last visit (p:0.006). Additional pars plana vitrectomy was performed in 4 patients in the combined group. 20 (86%) patients had anatomical success.

Massive suprachoroidal hemorrhage is a rare complication with poor visual outcome. We believe that external drainage and combined pars plana vitrectomy is an anatomically and visually effective treatment in selected cases.

Abstract 92

CAN AN IMPERFECT PEELING IN MACULAR TRACTIONAL SYNDROME HAVE A GOOD VISUAL RESULT IN SELECTED CASE? OUR EXPERIENCE.

Nicoletti G.A.*, Scalia G.

ASP CATANIA, PO S. MARTA e S. VENERA ~ ACIREALE ~ Italy

Female, 78y.o. radiotherapy for tongue and salivar glands neoplasia, OS cataract+macular pucker+ macular tractional syndrome (SVTM). OCT shows strong traction, with risk of iatrogenic macular hole (MH) (5-20% during peeling in Litereture). Visual acuity (AV) pre-operative = 1/10 (Snellen).

Faco-vitrectomy 25G+peeling +air in CV were performed, but there was very strong adherence of epiretinal membrane (MER) on a large area of macula (about 600 micron), so we decided, after removing tangential and perpendicular vitreo-macular traction, by direct control of intra-operative OCT, to leave a part of MER on the fovea, very difficult to remove by vitrectomy and forceps: it was cramble and tightly fitting to the hyaloid.

Anatomy of macula was restored (OCT data), with reduction of retinal central thickness (RCT)and impairment of visual acuity (BCVA) (9/10, Snellen) at follow-up after 4 months from surgery.

In selected cases an inperfect peeling, without complete removal of MER (very strong adherence in our case, possibly secondary to radiotherapy), is safe and can increase visual acuity after vitrectomy

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