

## Abstract 36

### NEW ARTIFICIAL INTELLIGENCE ANALYSIS FOR PREDICTION OF LONG-TERM VISUAL IMPROVEMENT AFTER EPIRETINAL MEMBRANE SURGERY.

Oral

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#### **Purpose:**

To predict improvement of best corrected visual acuity (BCVA) 1 year after pars plana vitrectomy (PPV) for epiretinal membrane (ERM) using artificial intelligence (AI) methods on optical coherence tomography (OCT) B-scan images

#### **Methods:**

Four-hundred eleven(411) patients with stage II ERM were divided in a group improvement (IM)( $\geq 15$  ETDRS letters of VA recovery) and a group no improvement (N-IM)( $<15$  letters)according to 1-year VA improvement after 25 G PPV with internal limiting membrane(ILM) peeling. Primary outcome was the creation of a deep learning classifier(DLC) based on OCT B-scan images for prediction. Secondary outcome was assessment of the influence of various clinical and imaging predictors on BCVA improvement.Inception-ResNet-V2 was trained using standard augmentation techniques.Testing was performed on an external dataset.For secondary outcome, B-scan acquisitions were analyzed by graders both before and after fibrillary changes(FC) processing-enhancement.

#### **Results:**

The overall performance of the DLC showed a sensitivity of 87.3% and a specificity of 86.2%. Regression analysis showed a difference in preoperative images prevalence of ectopic inner foveal layer (EIFL), foveal detachment, ellipsoid zone (EZ) interruption, cotton wool sign, unprocessed FC (OR=2.75(CI 2.49-2.96)) and processed FC (OR=5.42(CI 4.81-6.08)) while preoperative BCVA and central macular thickness (CMT) didn't differ between groups.

#### **Conclusions:**

The DLC showed high performances in predicting 1-year visual outcome in ERM surgery patients. FC should also be considered as relevant predictors.

