

3rd International Congress on Surgery and Anesthesia

September 02 | Virtual Event

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Predicting Epiretinal Membrane Recurrence with Intraop Optical Coherence Tomography Biomarkers

Abstract:

Objective: To correlate epiretinal membrane (ERM) remnants on intraop optical coherence tomography (iOCT) with ERM recurrence and vision following surgical removal.

Methods: Retrospective cohort study of 109 patients who underwent surgery for ERM removal from 2015–2024. Two image readers assessed iOCT images for residual ERM fragments to evaluate recurrence and vision changes at postoperative months 6 and 12. Analyses were performed using Python to calculate Cohen's kappa (κ) for inter-reader agreement, Kolmogorov-Smirnov tests, paired t-tests, two-tailed Fisher's exact tests, and multivariable logistic regression. Risk ratios (RR), odds ratios (OR), and 95% confidence intervals (CI) were reported. P-values < 0.05 were considered statistically significant.

Results: Presence of ERM fragments within 1mm of the foveal center on iOCT was associated with a 1.75-fold increased risk of ERM recurrence after postoperative month 12 (RR = 1.75; 95% CI: 1.24–2.46; $p < 0.005$). After adjusting for central subfoveal thickness, recurrence risk rose to over fivefold (adjusted OR = 5.25; 95% CI: 1.69–16.24; $p < 0.005$). ERM recurrence was also associated with reduced visual improvement by postoperative month 12. Patients without recurrence gained 2.41 ± 0.69 lines on the eye chart, while those with recurrence gained only 0.57 ± 0.55 lines ($p < 0.046$).

Conclusion: Residual ERM fragments within the 1mm foveal zone on iOCT were associated with significantly higher ERM recurrence rates and reduced visual improvement compared to eyes without fragments.

Biography

Jesse Maynard earned his undergraduate degree from Rutgers University and then spent many years working in the music industry in the U.S. and abroad. He later completed a post-baccalaureate premedical program at California State University and is now a second-year MD candidate at Howard University College of Medicine.