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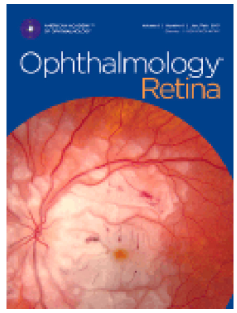

Epiretinal Membrane Surgery After Retinal Detachment Repair: Visual Acuity Outcomes and Optical Coherence Tomography Analysis

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Epiretinal Membrane Surgery After Retinal Detachment Repair: Visual Acuity Outcomes and Optical Coherence Tomography Analysis

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Acronyms:
CFT- central foveal thickness
EIFL- ectopic inner foveal layer
ERM- epiretinal membrane
ILM- inner limiting membrane
LogMAR- logarithm of the minimal angle resolution
MP- membrane peeling
OCT- optical coherence tomography
ONL -outer nuclear layer
PFCL- perfluorocarbon
PPV- pars plana vitrectomy
RD- retinal detachment
RPE-retinal pigment epithelium
SB- scleral buckle
VA- visual acuity

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Abstract

Purpose: To assess visual acuity (VA) outcomes of epiretinal membrane (ERM) surgery following primary rhegmatogenous retinal detachment (RD) repair.

Design: Retrospective, consecutive case series.

Subjects: Eyes undergoing pars plana vitrectomy (PPV) with membrane peel (MP) surgery for ERM following primary RD repair (PPV with or without scleral buckle (SB) and gas tamponade).

Methods: Retrospective chart review from 2015 to 2018. A previously described ERM grading scale was utilized for OCT structural analysis.

Main outcome measures: Visual acuity (VA) and change in VA at 6 months and final follow-up. Secondary outcomes included assessment of structural OCT features predictive of VA outcomes.

Results: 53 eyes of 53 patients were included. VA improved significantly from logMAR 1.00 ± 0.51 (Snellen 20/200) pre-MP to 0.45 ± 0.41 (20/56) at 6 months and 0.42 ± 0.41 (20/53) at final follow-up, a significant improvement ($p<0.001$) at each timepoint. Eyes with macula on RD had better 6 month [0.29 ± 0.18 (20/39) vs. 0.51 □0.46 (20/65), $p=0.02$] and final VA [0.29 ± 0.14 (20/39) vs. 0.46 □0.47 (20/58), $p=0.04$] after MP surgery, but VA improved significantly from pre-MP in both macula on and macula off eyes ($p<0.0001$, respectively). Three (5.7%) eyes were graded as Stage 1, 8 (15.1%) as Stage 2, 8 (15.1%) as Stage 3, and 34 (64.2%) as Stage 4, with a trend toward higher ERM stages having worse pre-MP VA ($p=0.06$). Both MP occurring □180 days from RD repair and ellipsoid zone loss were associated with worse pre-MP VA [1.13 ± 0.09 (20/270) vs. 0.82 ± 0.07(20/132), $p=0.01$ and 1.21 ± 0.07 (20/324) vs. 0.74 ± 0.09 (20/110) $p=0.0003$, respectively]. Ellipsoid zone loss [adjusted means 0.54 ± 0.07 (20/69) vs. 0.25 ± 0.08

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(20/36) at final visit, p=0.006] and RD repair with PPV/SB [0.53 ± 0.08 (20/68) vs. 0.31 ±0.07 (20/41) at final visit, p=0.03] were significantly associated with worse VA at both 6 months and final follow-up.

Conclusions: Eyes undergoing MP after RD repair have significant VA gains independent of macula-status at time of RD repair. Pre-operative ellipsoid zone disruption was the OCT feature best predictive of VA.

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Introduction:

Epiretinal membrane (ERM) formation commonly occurs after primary rhegmatogenous retinal detachment (RD) repair, with a variable incidence of 6.1% to 12.8%.[1,2] The pathophysiology is thought to be due to the release of retinal pigment epithelium (RPE) cells from a retinal break with subsequent proliferation on the macular surface. While some patients may be asymptomatic, others may have significant reduction in visual acuity (VA) or development of metamorphopsia that prompts surgical intervention.[3,4] Small gauge pars plana vitrectomy (PPV) with membrane peeling (MP) with or without inner limiting membrane (ILM) peeling is the standard of care for visually significant ERM.

As visual improvement after ERM surgery may be variable, identifying pre-operative, imaging-based predictors of visual improvement is helpful to guide expectations.[5,6] This may be more difficult in eyes with history of RD repair, as prior macular involvement may limit visual potential. Previous predictors of visual acuity (VA) have focused on outer retinal changes, such as ellipsoid zone loss.[7] For example, Theodossiadis et al revealed that final VA was significantly better in both macula-on and macula-off eyes with intact ellipsoid zone and external limiting membrane layers, as compared to macula-off eyes with disrupted outer layers.[8] More recently, Govetto et al. described inner retinal features on optical coherence tomography (OCT), including microcystic changes and ectopic inner foveal layers (EIFL), that may be prognostic of VA improvement in idiopathic ERM.[9,10] In their study, an OCT staging scheme based on presence and morphology of an EIFL (**Figure 1**) was well-correlated with best-corrected VA both pre- and post-MP in eyes with idiopathic ERM.

To date, limited study has been dedicated to imaging-based predictors of VA outcomes in eyes with ERM after primary RD repair, particularly when examining both outer retinal features

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and recently described inner retinal parameters. The purpose of this study was to determine if pre-operative inner-retinal features, such as microcystic changes and EIFL, and outer retinal changes, such as ellipsoid zone loss, may be predictive of visual outcomes in eyes undergoing MP after previous primary RD repair.

Methods

The study was approved by the Institutional Review Board (IRB) at Wills Eye Hospital (Philadelphia, PA). A waiver of informed consent was obtained by the IRB for this retrospective study. The research adhered to the Declaration of Helsinki and was designed in compliance with the Health Insurance Portability and Accountability Act regulations.

Subjects

A retrospective, consecutive review of clinical records was performed to identify subjects who underwent PPV with membrane peel (MP) for ERM after PPV with or without scleral buckle (SB) for primary RD in the same eye. Eyes were identified using Current Procedural Terminology (CPT) codes 67041, 67042, and 67108 performed between January 1, 2015 and January 1, 2018. Eyes were included if there was a minimum of 6 months follow-up after MP surgery.

Exclusion criteria included more than one RD repair surgeries prior to ERM surgery, use of silicone oil tamponade, previous pneumatic retinopexy, or eyes treated with SB only. Eyes with RD after MP were excluded. Patients with uveitis or with concomitant macular pathology including lamellar or full-thickness macular holes, central serous chorioretinopathy, branch or central retinal vein occlusions, cystoid macular edema, diabetic macular edema, exudative age-

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related macular degeneration, and intermediate or advanced dry age-related macular degeneration were also excluded.

RD characteristics and details of RD repair surgery were recorded. Conventional, 3-port, small gauge (23 or 25-gauge) PPV using the Alcon Constellation Vitrectomy system (Alcon, Geneva, Switzerland) or the Bausch and Lomb Stellaris PC Vitrectomy system (Bausch and Lomb, Bridgewater, New Jersey, United States) with or without SB was performed in all RD repair cases. In regards to MP surgery, all eyes underwent small gauge (23, 25, or 27-gauge) PPV. Dilute indocyanine green (ICG) assisted MP of both the ERM and ILM using 23-gauge or 25-gauge Greishaber ILM forceps (Alcon, Fort Worth, Texas, United States) was performed in all MP surgeries. All post-operative complications noted at any point during the follow up period were recorded. Data including intraocular pressure, slit-lamp biomicroscopy, and indirect ophthalmoscopy at specified timepoints were recorded.

Visual acuity and OCT-based Imaging Parameters

Best-available Snellen VA with habitual correction or pinhole was collected at each of the following specified timepoints: immediate pre-operative visit before RD repair, three months after RD repair, immediate pre-operative visit before MP surgery, three months post-operative to MP surgery, six months post-operative to MP surgery, and final visit.

Spectral domain optical coherence tomography (SD-OCT, Heidelberg Engineering, Heidelberg, Germany) was performed at each timepoint and used for both quantitative measurements and qualitative evaluation. Measurements of EIFL and central foveal thickness (CFT) were performed using Heidelberg Eye Explorer (Version 1.9.13). The Heidelberg caliper tool was used to measure the retinal layers in accordance with the International Nomenclature for Optical Coherence Tomography panel definitions.[11] The EIFL was identified in accordance with

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the ERM staging system proposed by Govetto et al (**Figure 1**).[9,10] Microcystoid changes were defined as small hyporeflective cystoid spaces in the inner nuclear layer not confluent with cystic spaces in other layers and without a cyst wall.[12] Ellipsoid zone disruption was defined as a non-continuous hyperreflective inner segment/outer segment band, of any length, not induced by shadowing. For qualitative variables, two masked graders (RS and RM) independently evaluated all the OCT scans of the included ERMs. All disagreements were adjudicated by a third grader (MAK).

The primary outcome measure was visual acuity (VA) and change in VA from prior to MP to 6 month post-MP and at final follow-up. Secondary outcomes included OCT features predictive of VA.

Statistical Analysis

All data were analyzed with SAS v9.4 (SAS Institute Inc., Cary, NC). Snellen VA was converted to logarithm of the minimal angle of resolution (logMAR) values for statistical analysis. Descriptive statistics were performed using mean and standard deviation for continuous measures and proportions for categorical variables. Continuous variables were analyzed with an independent two sample t-test. One-way analysis of variance (ANOVA) was used to compare the differences in continuous variables between two or more groups. A Fisher exact test was used to compare proportions. Univariate and multivariate generalized linear models were utilized to determine the predictors of: (1) VA at pre-MP, (2) VA at 6 months after MP, (3) VA at the final visit, (4) change of VA from pre-MP to 6 months post-MP and (5) change of VA from pre-MP to final visit. For multivariate analyses, all predictors with $p<0.10$ in the univariate analyses were initially included in the multivariate models, and the multivariate models went through the

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backward variable selection by only keeping the statistically significant predictors ($p<0.05$) in the final multivariate model.

Interobserver agreement for qualitative OCT variables was determined with Cohen kappa coefficient calculation.

Results

A total of 53 eyes from 53 patients met the inclusion and exclusion criteria and were included in the analysis. No patient had both eyes qualify for inclusion in the study. All eyes underwent successful, single surgery RD repair and subsequent ICG-assisted removal of ERM and ILM, as confirmed on post-operative SD-OCT.

Interobserver agreement for qualitative OCT variables, including ERM staging, presence of microcystic changes, presence of EIFL, and ellipsoid zone disruption were found to be excellent. The interobserver agreement and Cohen kappa coefficients are as follows for each qualitative variable: ERM staging (interobserver agreement 89%, Cohen kappa coefficient of >0.81), presence of microcystic changes (interobserver agreement 90%, Cohen kappa coefficient of >0.81), ellipsoid zone disruption (interobserver agreement 84%; Cohen kappa coefficient of >0.81), and presence of EIFL (interobserver agreement 100%, Cohen kappa coefficient of >0.81).

Baseline characteristics, features of RD repair, and features at the time of MP are described in **Table 1**. In regards to macular status at time of RD repair, 14 (26.4%) eyes had a macula-on RD and 39 (73.6%) eyes had a macula-off RD. 28 (52.8%) eyes underwent PPV alone and 25 (47.2%) underwent combined PPV/SB for RD repair. Prior to MP, 3 (5.7%) eyes were graded as Stage 1, 8 (15.1%) eyes as Stage 2, 8 (15.1%) eyes as Stage 3, and 34 (64.2%) eyes as

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Stage 4. An EIFL layer was present in 42 (79.3%) eyes. Sixteen (30.2%) eyes were phakic prior to MP. Of the 16 phakic eyes, 1 (6.3%) was Stage 1, 3 (18.8%) were Stage 2, 2 (12.6%) were Stage 3, and 10 (62.5%) were Stage 4. Eight of the 14 eyes undergoing CE/PCIOL at the time of MP were Stage 4.

Time-course of ERM development

ERM formation was first diagnosed on OCT at a mean of 91 ± 64 days [range, 15 - 289 days)] after RD repair. The ERM was determined to be visually significant, defined as the visit at which the surgeon and patient elected to proceed with MP surgery, at a mean of 206 ± 190 days (range, 45 -1151 days) after RD repair. There was an interval of mean 101 ± 115 days (range, 0 - 458 days) between first diagnosis of ERM on OCT and the visit at which the ERM was determined to be visually significant.

Twenty-three (43.4%) eyes underwent MP surgery □180 days from the time of RD repair. Of these eyes, 17 were macula off (73.9%), 19 were graded as Stage 4 (82.6%), 19 had microcystoid changes (82.6%), and 17 had ellipsoid zone disruption on pre-operative OCT (73.9%). There was no difference in macular status at time of RD repair ($p>0.99$) or presence of pre-operative microcystoid changes ($p=0.13$) between eyes undergoing MP surgery □180 days and those undergoing MP surgery >180 days. Eyes with Stage 4 ERM were significantly more likely to have MP surgery □180 days from RD repair compared to eyes with Stage 1, 2, or 3 ERMs, collectively ($p=0.021$).

Visual Acuity Outcomes Over Time and by Macula Status at RD Repair

Table 2 summarizes VA and change in VA outcomes at each timepoint for all eyes and stratified by macula status. Following ERM removal, VA significantly improved from the pre-MP VA at each subsequent time point. Compared to macula off eyes, VA was significantly

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better in macula-on eyes prior to RD repair, at 6 months post-MP, and at final follow-up. At all timepoints, change in VA from pre-RD repair was greater in eyes with macula-off RD compared to macula-on RD.

Visual acuity outcomes by ERM Stage

Prior to the ERM removal, mean VA tended to be worse with higher ERM stages [Stage 1, 0.62 ± 0.36 (20/83)]; [Stage 2, 0.72 ± 0.43(20/105)]; [Stage 3, 0.84 ± 0.52 (20/138)]; and [Stage 4, 1.13 ± 0.50 (20/270), p=0.06]. There was no significant association between ERM stage and VA at three months, six months, or at final visit after MP. There was no significant association of ERM stage with change in VA from the pre-RD or pre-MP timepoint.

OCT structural thickness

OCT-based thickness measurements were assessed following MP surgery. Mean CFT improved from 565 □168 □m pre-MP to 359 □79 □m at three months post-MP, an improvement of 206 □154 □m (p<0.0001). Mean ± SD outer nuclear layer (ONL) thickness improved from 132 □96 □m pre-MP to 101 □56 □m at three months post-MP, an improvement of 33□82 □m (p=0.01). In the 42 eyes with preoperative EIFL, the mean ± SD EIFL thickness improved from 376 □143 □m pre-MP to 174 □86 □m at three months post-MP, an improvement of 202 □142 □m (p<0.0001). Among 42 eyes (79.2%) with EIFL pre-MP, 15 (35.7%) had full resolution of EIFL at three months post-MP. Among 37 eyes (69.8%) with microcystic changes pre-MP, 11 (29.7%) had full resolution of microcystic changes at three months post-MP. Of 31 eyes (58.5%) with ellipsoid zone disruptiom pre-MP, 22 (71.0%) did not have ellipsoid zone disruption at 3 months post-MP.

Predictors of VA

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Factors associated with VA at the pre-MP timepoint are summarized in **Table 3**. In multivariate analysis, MP □180 days from RD repair and ellipsoid zone disruption retained significance for pre-MP VA. In univariate analysis, presence of EIFL and CFT >550 □m at the pre-MP visit timepoint were both associated with a significantly worse VA; however, these variables became non-significant in multivariate analysis.

Multivariate analysis of factors associated with VA and change in VA from pre-MP at 6 months and final follow-up is summarized in **Table 4**. Ellipsoid zone disruption and RD repair with PPV/SB were significantly associated with worse VA at both 6 months and final follow-up. In multivariate analysis of factors associated with VA change from pre-MP, undergoing MP □180 days from RD repair was significantly associated with greater VA improvement at both 6 months and final follow-up.

A complete summary of univariate and multivariate analysis associated with VA and change in VA from pre-MP at 6 months is available in Table 5 (available at https://www.ophthalmologyretina.org/). A complete summary of univariate and multivariate analysis of factors associated with VA and change in VA from pre-MP at final follow-up is available in Table 6 (available at https://www.ophthalmologyretina.org/).

Discussion

Our retrospective, consecutive case series of eyes undergoing ERM surgery after retinal detachment repair explored visual outcomes and the functional significance of OCT parameters on predicting visual outcomes. In this series, we found an overall improvement in vision after MP surgery at all timepoints, with similar improvement in eyes with history of macula-on and macula-off RD. Furthermore, we analyzed outcomes using the ERM grading system established

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by Govetto et al. [9,10] ERM stage trended with pre-MP VA (p=0.06) and presence of an EIFL was associated with worse pre-MP VA (p=0.03) on univariate analysis. The OCT feature that best predicted 6 month and final visual outcomes in eyes with ERM post-RD repair was presence of ellipsoid zone disruption.

In our study, mean VA improved by 4.5 lines at 6 months and the final visit. These visual outcomes were comparable to the 5.6 Snellen line improvement noted by Katira et al. and the 4 line gain noted by Council et al, which also evaluated outcomes of MP surgery after prior RD repair. [2,13] Interestingly, no significant difference in VA existed between macula on and macula off eyes at the pre-MP timepoint. Similarly, there was no significant difference in the degree of VA improvement after MP between macula-on and macula-off eyes. This suggests that ERM formation has a clinically meaningful effect on VA independent of macula status once ERM development has occurred. This finding is similar to that of Council et al, which found no significance of macula status regarding change in VA from the pre-MP timepoint.[13]

In previous studies, ERM occurred in 12.1% to 35% of post-RD repair eyes.[14,15] Ishida et al. found the majority of ERMs (76.9%) were diagnosed within the first 3 months postoperative to RD repair[14], while Katira et al found that of eyes requiring surgery for ERM after RD repair the mean time to MP was 5.4 months.[2] Our study similarly reveals a brief period from RD repair to first diagnosis of ERM and diagnosis of visually significant ERM (3 and 6 months, respectively). Furthermore, our study suggests that ERM formation soon after RD repair is characterized by a more severe disorganization of macular anatomy compared to idiopathic ERM. In Govetto et al., only 12.6% of idiopathic ERMs were found to be Stage 4, whereas 64.2% of post-RD eyes in our study were found to be Stage 4.[1] Undergoing MP surgery □180 days from RD repair was significantly associated with Stage 4 ERM characteristics (p=0.021).

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This may help explain the association between surgical timing, pre-MP visual acuity, and observed VA improvement after MP in this study. Eyes undergoing ERM surgery ≤180 days from RD repair had worse pre-operative VA ($p=0.01$) and greater visual acuity improvement post MP ($p=0.002$) compared to eyes undergoing MP in >180 days. This greater, relative VA improvement may represent a ceiling effect as eyes undergoing surgery >180 days from RD repair had better pre-MP VA and, thus, less VA to be gained. However, the significant VA gain in eyes undergoing ERM surgery ≤180 days from RD repair is encouraging, reflecting a benefit to MP surgery even in eyes with early, more severe ERM characteristics.

Our study builds upon a recent series of publications utilizing a novel, OCT based grading scale centered on the presence or absence of an EIFL to describe outcomes in eyes with ERM.[9,10] Govetto et al found that the EIFL-based staging system could predict VA in eyes with idiopathic ERM, with a progressive decline in vision from Stage 1 [0.02±0.6 (20/21)] to Stage 4 [0.61±0.26 (20/81)] ($p<0.001$). The presence of EIFL was significantly associated with lower BCVA, ($p=0.001$) suggesting not only that the inner foveal microanatomy is particularly susceptible to disruption in ERM formation but also that such disruption may profoundly affect function.[9] In a subsequent study, the group evaluated the use of the staging system to predict pre- and post-operative VA in eyes with idiopathic ERM undergoing MP surgery. ERM stage ($p<0.001$), presence of an EIFL layer ($p<0.001$), and EIFL thickness ($r=0.58$, $p<0.001$) were negatively associated with pre-operative VA.[10] Moreover, lower ERM stage was significantly and positively associated with VA at all post-operative timepoints through 12 months [Stage 2 0.06±0.08 (20/23) vs. Stage 4 0.31±0.26 (20/41), $p<0.001$].[10]

In our study, EIFL presence was associated with pre-MP VA in univariate analysis ($p=0.03$), but EIFL presence and thickness were not associated with pre-operative VA in

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multivariate analysis. In addition, pre-operative EIFL presence and thickness were not significant predictors of mean VA or change in VA at any timepoint on multivariate analysis. Unlike Govetto et al., where Stage 3 and 4 eyes had the greatest change in VA after surgery ($p<0.001$), our study found similar changes in VA amongst all stages and ERM stage was not associated with post-operative VA at any postoperative timepoint. The lack of association between EIFL presence or thickness with VA in our study may be a result of smaller sample size especially in the Stage 1-3 groups, or may indicate that eyes with prior RD may have additional ultrastructural changes, in addition to EIFL thickness, which are of more predictive value compared to eyes with idiopathic ERM.

Our work emphasizes the importance of outer retinal layer disruption as a key prognosticator of function. Ellipsoid zone disruption pre-operatively was the single OCT feature in our study significantly associated with pre-MP and post-MP mean VA. The significance of the ellipsoid zone in determining visual acuity in post-RRD repair eyes has been previously noted by prior authors.[8,16] Wakabayashi et al. evaluated OCT microstructural changes in eyes undergoing primary RD repair and found that only macula-off eyes had disruption of the ellipsoid zone ($p<0.001$) and that post-operative ellipsoid zone changes were associated with post-operative VA ($r=0.805$, $p<0.001$).[16] Theodossiadis et al. found that ellipsoid zone loss pre-operatively was a significant predictor of final VA at 6 months after MP.[8] From these studies and from our own, the disruption of the ellipsoid zone may indicate structural and functional damage to photoreceptors that contribute to visual prognosis post-RD and post-MP repair.

Limitations of this study are inherent in its retrospective nature. Use of Snellen visual acuity with habitual correction or with pinhole and without refraction may have underestimated VA outcomes. Our sample is weighted to a higher proportion of patients with Stage 4 ERMs,

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which may lead to an underestimation of visual potential in post-RD, post-MP eyes. Moreover, eyes in this sample were chosen for MP surgery based on surgeon discretion, and selection bias against eyes with poorer visual potential post RD may be present. While lens status was not significantly associated with VA or VA change at final follow-up, the fact that the majority of phakic eyes had Stage 4 ERMs could have diminished the significance of VA differences by ERM stage. Possible factors contributing to the severity of ERM or visual impairment , including the intensity or area encompassed by laser or cryotherapy treatment during RD repair, were not quantified in the present study. The strengths of our study include characterization of OCT markers using SD-OCT in all cases, standardization of surgical technique across surgeons, and a relatively high case number of eyes undergoing ERM peel post RD repair compared to prior studies of a similar population.

Eyes undergoing MP after RRD repair did exhibit substantial visual gains post MP, regardless of ERM stage and macular status at time of RD repair. While presence of an EIFL has been previously associated with pre-operative and post-operative visual acuity in idiopathic ERMs,[10,12] ellipsoid zone disruption was the OCT biomarker most associated with pre-MP, 6 month, and final VA in eyes with prior history of RD repair. Larger, prospective studies are needed to further evaluate the utility of inner and outer retinal OCT alterations on predicting function in eyes with secondary ERM after RD repair.

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Figure 1: ERM staging system as based on optical coherence tomography ectopic inner foveal layer (EIFL) presence and disruption of inner foveal layers.[9,10]

A- Stage 1 is defined as the presence of ERM with minimal disruption in inner foveal contour. B-Stage 2 is defined as the presence of ERM with loss of inner foveal contour but no EIFL. C-Stage 3 is defined as the presence of an EIFL but clear distinction between all retinal layers. D-Stage 4 is defined as the presence of an EIFL but loss of distinction between retinal layers.

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Table 1: Baseline characteristics of study subjects and study eyes undergoing membrane peel after primary rhegmatogenous retinal detachment repair.

Age (years)

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CE/IOL= cataract extraction/intraocular lens insertion. ERM=epiretinal membrane. EIFL=ectopic inner foveal layer. MP= membrane peel. PFCL=perfluorocarbon liquid. PCIOL=posterior chamber intraocular lens. PVR=proliferative vitreoretinopathy. RD= retinal detachment. SB=scleral buckle. SD= standard deviation.

Table 2: Visual acuity and change in visual acuity at each time point as stratified by macula status.

Timepoint	All eyes (N=53)	Macula status Off (N=39)
	Mean ? SD in logMAR (Snellen)	Mean ? SD in logMAR (Snellen)

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Table 3: Analysis of variables associated with mean visual acuity at the pre-membrane peel surgery visit.

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* From the generalized linear model with a specific predictor in the model.
** From the generalized linear model with all statistically significant predictors in the final model.
CFT=central foveal thickness. EIFL=ectopic inner foveal layer. MP= membrane peel. Pre-op= pre-operative. PPV=pars plana vitrectomy. RD= retinal detachment. SB=scleral buckle. VA=visual acuity.

Table 4: Factors associated with visual acuity and change in visual acuity from pre-MP at 6 months and final follow-up in multivariate analysis.

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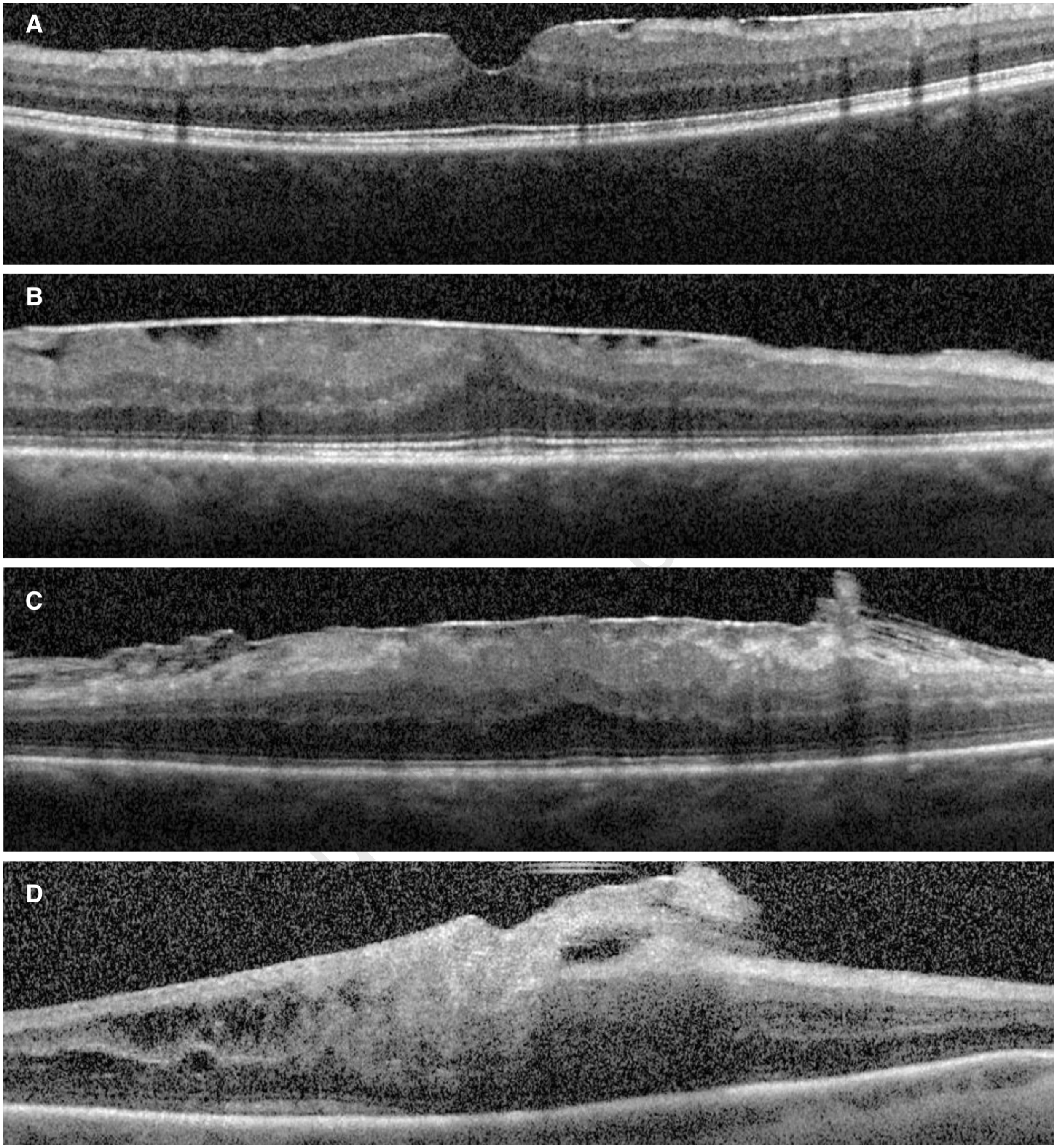
* From a generalized linear model with all statistically significant predictors in the final model.

CFT=central foveal thickness. EIFL=ectopic inner foveal layer. MP= membrane peel. Pre-op= pre-operative. PPV=pars plana vitrectomy. RD= retinal detachment. SB=scleral buckle. VA=visual acuity.


A
B
C
D

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Precis:

Eyes undergoing epiretinal membrane surgery after prior retinal detachment (RD) repair have significant visual acuity gains independent of macula-status at time of RD repair. Pre-operative ellipsoid layer disruption was the OCT feature best predictive of final visual acuity.

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