

Ophthalmology Times

**Research Scholar**

Honoree Program

Progression to Surgery for  
Epiretinal Membranes with  
Good Vision

November 9, 2017



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# FINANCIAL DISCLOSURES:

None



# MY ROLE IN THIS RESEARCH:

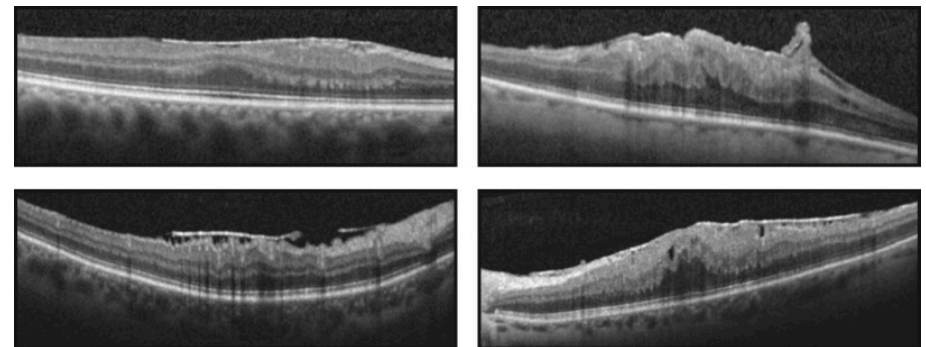
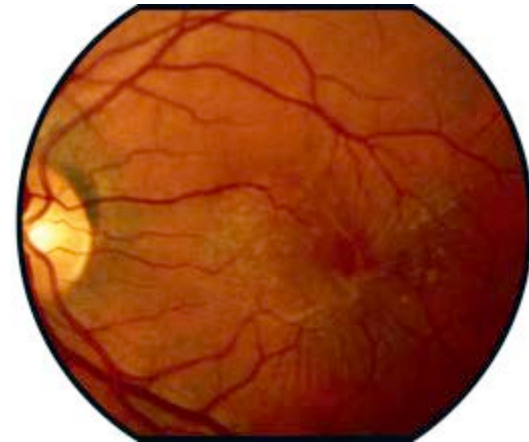
Please answer which of the following portions of the research you participated in:

- X Conception and design of the work/project
- X Acquisition of data
- X Analysis and interpretation of data
- X Creation and/or critical review of the presentation



# Epiretinal membrane (ERM)

- Sheet-like fibroglial membranes over the inner surface of macula
  - Idiopathic
  - Secondary
- Visual symptoms
  - Asymptomatic
  - Decreased vision, metamorphopsia, diplopia
- ERM present in 30 million adults in the United States 43 to 86 years old.<sup>1</sup>



1. Klein R et al. Transactions of the American Ophthalmological Society 1994



# Management for ERM

- Observation
- Pars plana vitrectomy (PPV) with membrane peel
  - Overall, successful in improving vision but final vision often imperfect
  - Complications: cataract, retinal breaks (<1.5%), retinal detachments (<1.5%) and endophthalmitis (<0.05%) with small gauge PPV<sup>1</sup>
- Traditionally, PPV reserved for intolerable symptoms and poor vision
- Recently, PPV done for symptomatic good vision eyes<sup>2-5</sup>
  - Compared with poor vision eyes: smaller visual gain, but better absolute vision following surgery

1. Folk et al. Ophthalmology 2016
2. Reilly G et al. Retina 2015
3. Thompson JT. Retina 2005
4. Lehpamer BP. Retina 2015
5. Moisseiev E. Curr Eye Res 2016



# Management for ERM

- Deciding when to operate?

- **Operate:** Intolerable symptoms (symptoms worse than visual requirements for every day activities)
- **Observe:** Asymptomatic
- **Unknown:** Tolerable symptoms

**Clinical question: For patients referred to a retina practice who have currently have tolerable visual symptoms for their everyday activities, what is the risk of progression to intolerable symptoms?**



# Natural History of ERM

- **The Blue Mountain Eye Study<sup>1</sup>**
  - 3654 eyes: ERM progressed (28.6%), regressed (25.7%), and remained stable (38.8%) by stereo fundus photos at 5 years
- **Byon et al<sup>2</sup>**
  - 62 eyes with VA  $\geq$  20/40: 9.7% had decreased vision, 6.5% had improved vision at 24 months

1. Fraser-Bell S et al. Ophthalmology 2003.
2. Byon IS et al. Ophthalmologica 2015.



# Study Design

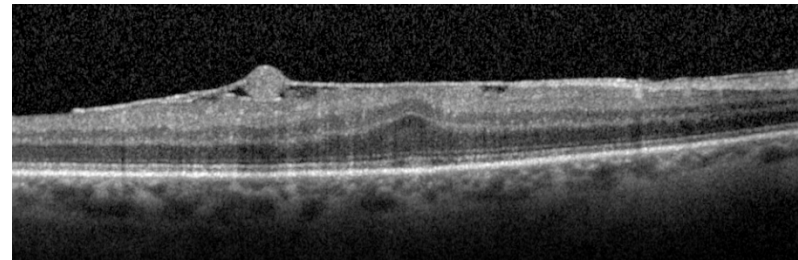
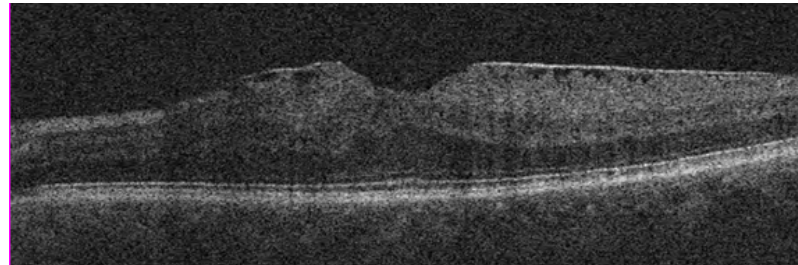
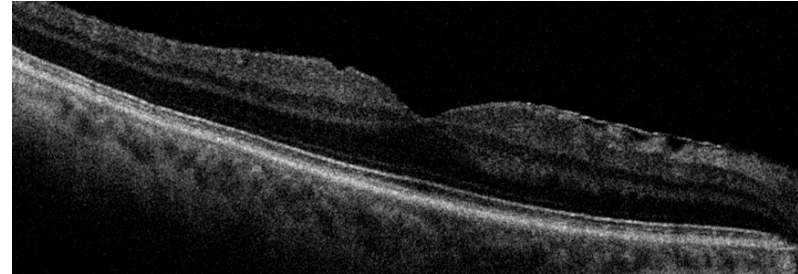
- Retrospective
- Inclusion Criteria
  - New diagnosis of idiopathic ERMs 20/40 or better and no intolerable visual symptoms
  - 2009 and 2012
  - 5 surgeons in retina practice
- Exclusion Criteria
  - Absence of baseline and/or final OCT
  - Lamellar hole, vitreomacular traction
  - Eye with other ocular pathologies: macular degeneration, retinal vascular diseases, amblyopia, severe glaucoma, high myopia greater than 6D, retinal detachment/tears, vitreous hemorrhage, history of intraocular surgery other than cataract, limiting corneal pathology
- Primary outcome measure
  - Time to visual acuity 20/50 or worse and/or intolerable visual symptoms attributable to the ERM (demonstrated worsening on OCT), leading to surgery





# Study Design

- Categorized by baseline OCT morphology
  - Normal foveal contour
  - Mild loss of foveal contour
  - Loss of foveal contour
- **Goal:** quick recognition by surgeon and patient





# Results

- 107 eyes from 99 patients
- Age  $66 \pm 10$  years

	n	Baseline VA
<b>Overall</b>	107	20/27
<b>Normal Foveal Contour</b>	24 (22%)	20/26
<b>Mild Loss of Foveal Contour</b>	26 (24%)	20/25
<b>Loss of Foveal Contour</b>	57 (53%)	20/29



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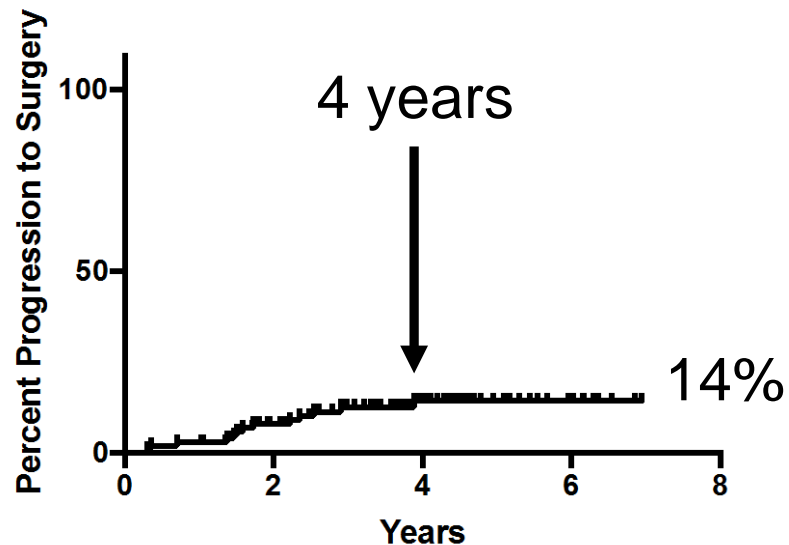
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# Results

Kaplan Meier Curve for Progression to Surgical Membrane Peel For All Eyes

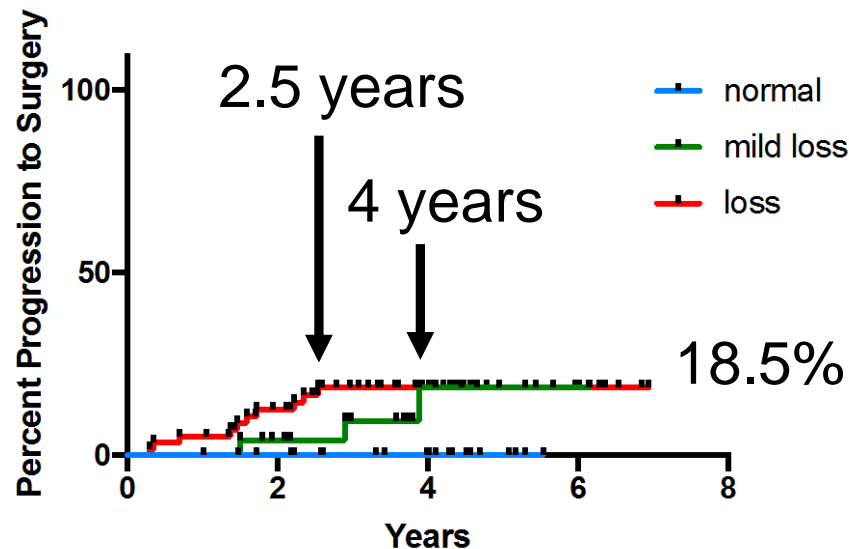


- 14% of ERMs became sufficiently symptomatic for surgery at 7 years
- No eyes progressed to surgery after 4 years



# Results

Kaplan Meier Curve for Progression to Surgical Membrane Peel by Baseline OCT Morphology

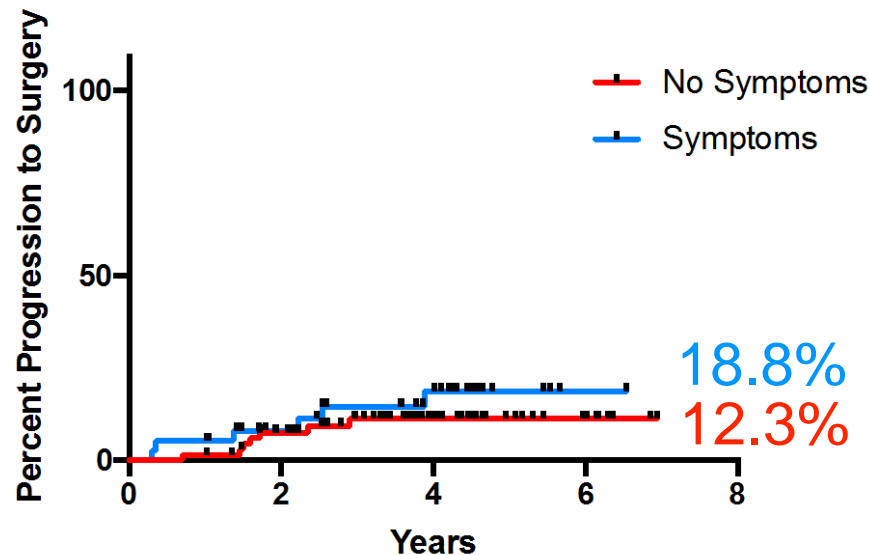


- Eyes with **normal foveal contours** did not progress to surgery at 5.5 years
- 18.5% of eyes with **mild loss of foveal contour** and 18.5% of eyes with **loss of foveal contour** progressed to surgery by 7 years
  - Eyes with **loss of foveal contour** progressed faster than **mild loss of foveal contour**



# Results

Kaplan Meier Curve for Progression to Surgical Membrane Peel by Presence of Symptoms



- Symptoms = blurry vision, metamorphopsia, diplopia
- 18.8% of eyes **with symptoms** progressed to surgery
- 12.3% of eyes **without symptoms** progressed to surgery
- $p = 0.34$



# Limitations

- Retrospective nature
- Best-available vision maybe worse than best-corrected visual acuity
  - Our study would over-estimate progression rate
- Referral bias to retina clinic
- Surgeon bias to discussion with patient
- However, real-world data





# Summary Points

- 14% of ERMs referred to retina practice with good vision became sufficiently symptomatic for surgery at 7 years
- Progression of ERMs with good vision is associated with baseline OCT morphology
  - No eyes with normal foveal contours progressed to surgery at 7 years
  - ERMs with complete loss of the foveal contour progresses more rapidly than incomplete loss of foveal contour; however, the curves converge at 4 years
- Eyes with baseline symptoms did not have a statistically different progression to surgery as eyes without symptoms



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# Thank you

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# Appendix

Subtitle



# Results

- 107 eyes from 99 patients
- Age  $66 \pm 10$  years

	n	Baseline VA	Follow-up Duration
<b>Overall</b>	107	20/27	$3.8 \pm 1.5$
<b>Normal Foveal Contour</b>	24 (22%)	20/26	$3.6 \pm 1.4$
<b>Mild Loss of Foveal Contour</b>	26 (24%)	20/25	$3.5 \pm 1.4$
<b>Loss of Foveal Contour</b>	57 (53%)	20/29	$3.9 \pm 1.5$