

# Idiopathic Epiretinal Membranes

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## Introduction

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### **Definition:**

An epiretinal membrane (ERM) is a semi-translucent fibro cellular tissue on the inner surface of the retina.

### **Types:**

ERMs can be classified into idiopathic or secondary to other factors. Idiopathic ERMs (iERMs) are the most common type and the focus of this document.

### **Incidence:**

The mean age of ERM diagnosis is 65 years old.<sup>1</sup> The 5 year cumulative incidence of developing an ERM in the primary eye, in this age group, is 6.6%; it gets lower in the older population ( 1.1% for patients aged 80 and older). The incidence of developing an ERM in the fellow eye is reported to be 2.5 times higher than the incidence for the first eye involvement.

### **Prevalence:**

Idiopathic macular epiretinal membranes are common and have a prevalence of up to 34% in the over 60-year old population.<sup>1</sup> In their more advanced form, macular pucker, they accounted for 10% of vitrectomies in a large UK audit.<sup>2</sup>

### **Presentation:**

Patients with iERMs typically present over the age of 50 and both sexes are equally affected. The vast majority of patients with ERMs are asymptomatic. In advanced cases, patients can present with metamorphopsia, blurred vision, monocular diplopia, and aniseikonia. Reading ability, contrast sensitivity and binocular function can also be affected. However, symptoms can be masked by ocular dominance.

### **Role of Optical Coherence Tomography (OCT):**

Clinically, iERMs appear as a sheen or abnormal reflectivity on the macular surface. Definitive diagnosis is confirmed by Spectral Domain (SD)OCT which also plays an important role in monitoring progression and assessing the macular area following surgery.

## Objectives

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Several changes in vitreoretinal (VR) practice have questioned the traditional practice of surgery only in more advanced cases with reduced vision, and earlier surgery has been advocated. In addition, a common dilemma in patients with no or minimal symptoms, particularly in the presence of advanced ERMs, is the risk of progression.

In this Concise Practice Point, we critically appraise published literature to produce evidence-based recommendations on criteria for referral, decision to operate, follow up and surgical technique used by vitreoretinal surgeons.

## Methods

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A literature search was conducted using PUBMED, for all publications in English language for the past 10 years using the search terms; “epiretinal membrane” or “macular pucker” or “vitreomacular traction” or “pre-retinal fibrosis”. References of cited publications were examined to identify further relevant articles.

ERMs secondary to other causes were excluded.

## Results and Recommendations

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### **When to Refer:**

The flow chart is a guidance to when to refer patients to hospital eye VR services. The referral should take into account symptoms/ visual function and OCT appearance, if OCT available.

A detailed history, including whether the patient’s quality of life is affected, should be taken, and should answer questions on driving, reading, hobbies, work.

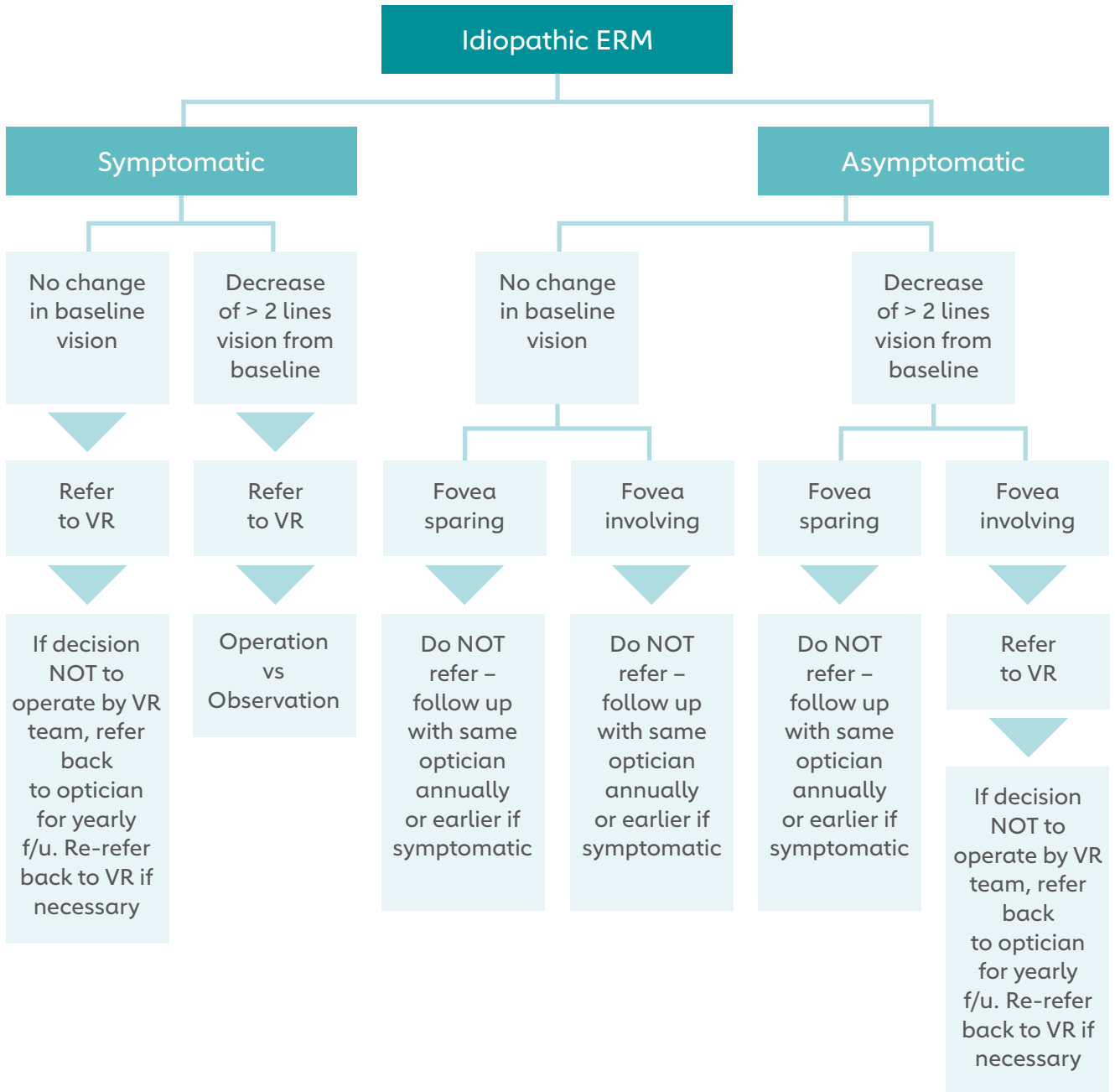
Asymptomatic patients with good visual acuity (VA) can be monitored in the community by the optometrist.

Refer if decrease in distance vision (to 6/12 or loss of 2 lines from baseline-if available-and no other reason for decreased vision) and/or presence of either metamorphopsia, aniseikonia, decreased binocular function, reading speed and lifestyle changes due to decreased VA. Beware of ocular dominance, which sometime can mask symptoms.

OCT macula should accompany the referral as a number of OCT criteria may suggest more likely progression of symptoms and worse final VA ( loss of foveal dip, outer retinal layer changes, inner retina cysts and increase in central retinal thickness (Govetto stages 2 to 4).<sup>3</sup>

In stage 2 there is absence of foveal pit with well-defined retinal layers; in stage 3 an ectopic inner foveal layer (EIFL) and absence of foveal pit with well-defined retinal layers are present; Stage 4 is defined by presence of EIFL with no foveal pit and disrupted retinal layers.

**Flowchart: Management of patients with idiopathic ERM**



**Conversion to Surgery:**

Overall, 10–30% of patients that present to surgeons and are initially observed, progress to surgery within a 2–7-year period. There appears to be a point in the curve at 4 years, where eyes that have not progressed by this time, appear to be stable, without surgery at 7 years.<sup>4</sup>

Patients with good vision ( $\geq 6/12$ ) and asymptomatic are less likely to progress rapidly and require surgery. On the other hand, those who are symptomatic with inner and outer retinal changes are more likely to progress and require surgery.<sup>5</sup>

**Does the Internal Limiting Membrane (ILM) need to be peeled?**

ILM peel can be performed in addition to the ERM peel and has been shown to reduce the recurrence rate of ERMs. However, there is no evidence that ILM peel improves final VA or reduces metamorphopsia as compared to vitrectomy with ERM peel only.<sup>6</sup>

## Appendix 1: Key Papers

Author	Methodology	Key Message	Strengths	Limitations
Chen X et al <sup>4</sup>	Retrospective Case notes review of patients (201 eyes from 170 patients) with idiopathic ERMs referred to the VR clinic.	Surgical was offered when vision worsened to 20/50 or beyond and/or when patients could not tolerate symptoms.  No eyes with normal foveal contours progressed to surgery at 7 year and eyes with complete loss of foveal contour progressed faster than those with incomplete loss of foveal contour.	None identified	Retrospective  Surgeon bias to waiting versus observation.
Chua PY et al <sup>5</sup>	Systematic review in which progression and timing of surgery for ERMs is discussed.	Higher baseline CMT, presence of external limiting membrane or EZ disruption, loss of foveal contour is associated with conversion to surgery.	Factors predicting progression and factors which might predict the visual outcome are identified.	None identified
Azuma K et al <sup>6</sup>	Systematic review of literature and meta-analysis of 1286 eyes; included 16 studies comparing between ILM peeling and no ILM peeling groups.	Additional ILM peeling in vitrectomy for idiopathic ERM could result in a significantly lower ERM recurrence rate, but it does not significantly influence postoperative best-corrected visual acuity and central macular thickness.	Systematic review and meta-analysis.	Retrospective studies included and small number of studies included. Heterogeneity amongst studies.

EZ: ellipsoid zone CMT: central macular thickness ERM: epiretinal membrane VA: visual acuity RCT: Randomised control trial VR: Vitreoretinal clinic

Author	Methodology	Key Message	Strengths	Limitations
Okamoto F et al <sup>7</sup>	Prospective, interventional, consecutive, comparative case series (28 eyes).	The severity of metamorphopsia strongly influences VR-QOL in patients with ERM.  Surgery is highly effective in improving metamorphopsia, but significant improvement of VA may not be expected in many cases.	Prospective study, comparative.  Metamorphopsia measured with M charts.	Placebo effect with taking the NEI VFQ-25 before and after surgery.  Small sample size.  Short follow up.
Luu KY et al <sup>8</sup>	Retrospective case notes review of patients (145 eyes from 118 patients) with good visual acuity (20/40 or better) with a median follow-up of 3.7 years.	Eyes with greater CMT and disruption of the EZ were more likely to undergo surgery, while those with a lamellar hole and intraretinal fluid suffered more rapid visual decline.	Good number of cases and good follow up interval.	Retrospective  Not all suggestions were backed up with evidence.
Kofod M et al <sup>9</sup>	RCT of 53 patients with good VA and mild symptoms; 33 eyes randomised to watchful waiting and 20 to immediate surgery.	After 12 months, the mean VA was not significantly different between the groups, but 24% of patients randomised to observation required surgery.	Prospective and randomised.	None identified
Kauffmann Y et al <sup>10</sup>	Retrospective Case notes review of patients (142 eyes from 142 patients) with idiopathic ERMs undergoing surgery.	10-point predictive score including age, duration of symptoms, anatomical and functional prognostic factors.  With a score >5, patients had a ≥56% chance of recovering 20/20 final VA instead of ≤27% when the score was ≤5.	Score achieved good sensitivity and specificity.	Retrospective  ≥20/20 cut-off for BCVA is debatable.

EZ: ellipsoid zone CMT: central macular thickness ERM: epiretinal membrane VA: visual acuity RCT: Randomised control trial VR: Vitreoretinal clinic

# References

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## Authors:

Arijit Mitra, Sandwell and West Birmingham NHS Trust

Christopher Williams, Cardiff and Vale University Health Board

Daniela Vaideanu-Collins, The James Cook University Hospital, Middlesbrough

Kathrin Greiner, Aberdeen Royal Infirmary University Hospital

Teresa Sandinha, The Royal Liverpool and Broadgreen University Hospitals

The Royal College of Ophthalmologists  
18 Stephenson Way, London NW1 2HD

T. 020 7935 0702

contact@rcophth.ac.uk rcophth.ac.uk



18 Stephenson Way  
London, NW1 2HD

T. 020 7935 0702  
[contact@rcophth.ac.uk](mailto:contact@rcophth.ac.uk)



[rcophth.ac.uk](http://rcophth.ac.uk)  
[@RCOphth](https://twitter.com/RCOphth)