Sriwijaya Journal of Ophthalmology
Journal Homepage: https://sriwijayaopthalmology.com/index.php/sjo

Epiretinal Membrane Management for Young Adult Patient: A Case Report

Avizena Muhammad Zamzam[1*], Ramzi Amin[2], A.K Ansyori[2]

[1]Department of Ophthalmology, Faculty of Medicine, Universitas Sriwijaya/Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia

[2]Department of Ophthalmology, Vitreoretina Division, Faculty of Medicine, Universitas Sriwijaya/Dr. Mohammad Hoesin General Hospital, Palembang, Indonesia

ARTICLE INFO

Keywords:
Epiretinal membrane
Macular pucker
Membrane peeling
Preretinal macular fibrosis
Young adult

***Corresponding author:**
Avizena Muhammad Zamzam

E-mail address:
avizenamz@gmail.com

All authors have reviewed and approved the final version of the manuscript.

https://doi.org/10.37275/sjo.v7i1.113

A B S T R A C T

Introduction: Epiretinal membrane (ERM) is a condition where a thin fibrotic tissue layer appears on the surface of the macula, which causes a decrease in visual acuity. There are still limited data about the management of ERM due to its low incidence. We reported a case of epiretinal membranes in young adult patients. **Case presentation**: A 40-year-old male complained of blurry vision on the left eye since 6 months ago. His visual acuity was reduced, and a fundus photograph and macula OCT examination were performed. He was diagnosed with left eye epiretinal membrane and planned for left eye membrane peeling. The retinal break was found intraoperatively as a suspected predisposing factor. **Conclusion:** Management of severe ERM focuses on reducing metamorphopsia, improving visual acuity, and improving binocularity with pars plana vitrectomy combined with membrane peeling. At a young age, the predisposing factors for secondary development must be further identified.

1. Introduction

Epiretinal membrane (ERM) is a condition where a thin fibrotic tissue layer appears on the surface of the macula, which causes a decrease in visual acuity. It is a form of retinal proliferation on the inner surface of the retina. Its several other names are premacular fibroplasia, macular pucker, cellophane maculopathy, and preretinal macular fibrosis.[1,2]

Epiretinal membrane (ERM) disorders are more common in women, with a peak age distribution ranging from 70-79 years (11.6%). Only 2% of all patients are under 60 years old.[1,3] The prevalence of ERM differs in each ethnicity. The higher prevalence is found in Chinese and Caucasians, namely around 39% and 27.5%, while lower in the Japanese population, namely around 4%.[2]

Its epidemiological study generally comes from two studies with large sample populations, namely the Beaver Dam Eye Study and the Blue Mountain Study. The overall incidence of ERM in this population over a 5-year period was around 5.3%. The incidence of idiopathic ERM ranges from 19.5% to 31%. Subsequent eye involvement within 5 years was around 15.5%.[3,4]

In the Blue Mountain Study, the incidence of ERM increased significantly after cataract surgery (16.8%), retinal vein occlusion (12.5%), after retinal detachment surgery (3% to 8.5%) and without retinal

abnormalities (9.1%).[1,4] The concept of ERM management is epiretinal membrane peeling and it is reported that it can improve visual acuity in 65% - 80% of patients. However, the low incidence of ERM in the young adult age group means that clinical data regarding risk factors, clinical features, management, and prognosis in these patients are limited. Therefore, further exploration is needed to maximize ERM management according to each individual in this age group. The aim of this case report is to report the diagnosis and management of epiretinal membranes in young adult patients.

2. Case Presentation

A 40-year-old male came to the ophthalmology department on December 5th, 2023, with a complaint of blurry vision of the left eye since one month ago. His symptoms started 6 months ago and progressively worsened since one month ago. Initially, he noticed blurry vision when he accidentally closed his right eye. He described his middle vision as more unclear, like waves, compared to the surrounding area. There was no sudden darkening or flying black spots. Red eyes, pain in the eyes, curtain vision, seeing flashes of light, or changes in colour intensity were denied. He went to an ophthalmologist and was referred to Dr. Mohammad Hoesin General Hospital.

He denied any history of hypertension, diabetes mellitus, wearing glasses, eye trauma, eye surgery, and any family history of similar disease. The patient looks normal. His vital signs were normal. Visual acuity of the right eye was 6/6, and the left eye was 6/60 ph (-). Another ophthalmological examination was normal (Figure 1). Fundus photograph examination found reduced foveal reflex and wrinkling fovea on the left eye (Figures 1 and 2).

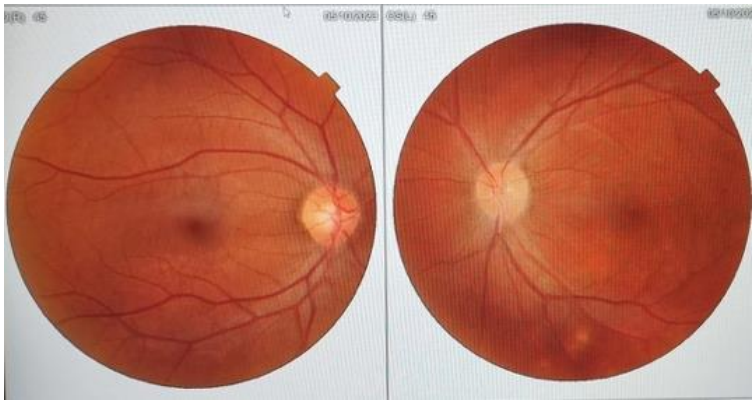

Figure 1. Fundus photograph examination.

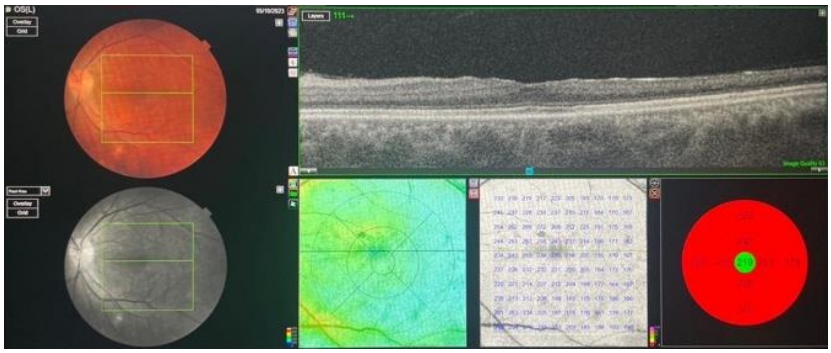

Figure 2. Macula OCT examination on the left eye.

Hyper-reflectivity on the vitreoretinal interface, puckering, and thinning of the inner surface of the intraretinal without any foveal depression were found on OCT examination. It concluded as a macular pucker. The overall laboratory examination was normal. He was diagnosed with left eye epiretinal membrane and planned for left eye membrane peeling with general anesthesia. The overall prognosis of this patient was good.

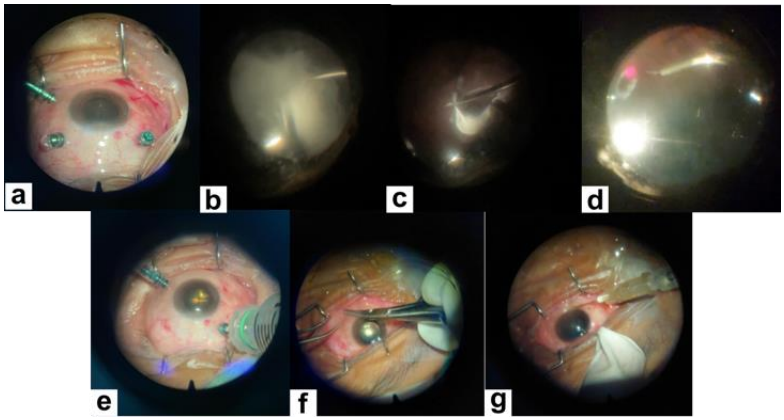

Figure 3. Surgical steps of pars plana vitrectomy, membrane peeling, endolaser and SO implantation.

On November 30th, 2023, He had a left eye membrane peeling with general anesthesia. The images of the surgical steps are shown in Figure 3(a-g). Figure 3a: A 3-port vitrectomy was installed and continued with identification of the left eye's posterior segment. Figure 53: After triamcinolone acetonide was administered, a core vitrectomy was performed. Figure 3c: Induced PVD and membrane peeling were performed around the macula. Figure 3d: The retinal break was identified, and an endo-laser was performed around the break. Figure 3e: Silicone oil was applied as a tamponade. Figure 3f: The sclera was sutured at the sclerotomy port using Vicryl 6-0, 1 stitch at each port. Finally, Figure 3g shows that a subconjunctival dexamethasone-gentamicin injection was administered.

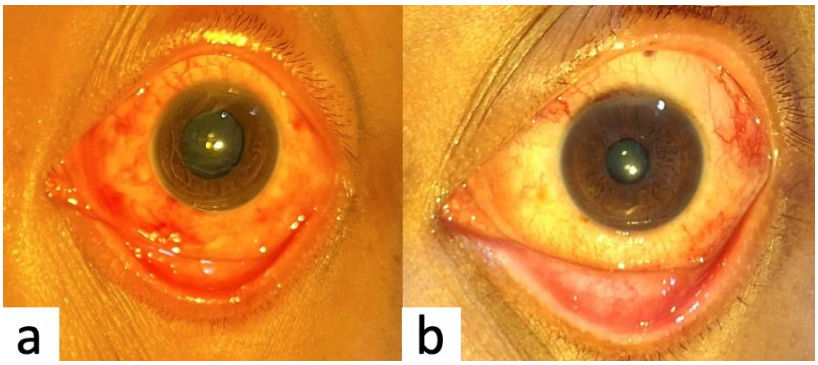

Figure 4. The clinical picture of the patient on (a) December 1st, 2023, and (b) December 12th, 2023.

On postsurgical day 1 (December 1st, 2023), the left eye's visual acuity was 1/60 ph(-), blepharospasm, bright red subconjunctival bleeding, easy to move at 6-9 o'clock, and hyperemic (Figure 4a). The left eye's posterior segment media was silicone oil. Fundoscopy found reduced foveal reflex (Figure 7). The diagnosis was post left eye PPV + Membrane Peeling + EL + SO due to left eye epiretinal membrane. He was given

cefixime 100 mg every 12 hours oral, paracetamol 500 mg every 8 hours oral if needed, levofloxacin ED 1 gtt every 4 hours, and prednisolone acetate ED 1 gtt every 4 hours on the left eye and planned for discharge.

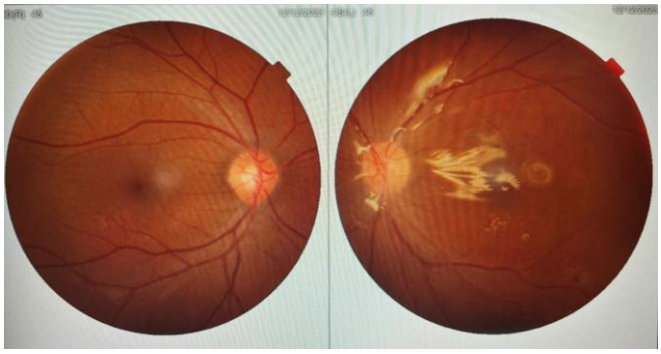

Figure 5. Post-operative Fundus photograph examination on December 12th, 2023.

On a postsurgical day 11 (December 12th, 2023), the left eye's visual acuity was 2/60 ph (-), the conjunctiva was hyperemic, and the posterior segment's media was silicone oil (Figure 4b). Fundus photograph found a reduced foveal reflex with a yellow circle (Figure 5). The macula OCT examination showed foveal depression with a thinning on the inner and outer layer of the intra retina, concluded as post-membrane peeling (Figure 6). Transpalpebral ultrasonography showed an enlarged globe appearance on the vitreous with elongated axial length. Concluded as an SO-filled eye (Figure 7). The diagnosis was post left eye PPV + Membrane Peeling + EL + SO due to left eye epiretinal membrane. He was given levofloxacin ED 1 drop q.i.d and prednisolone acetate ED 1 drop q.i.d.

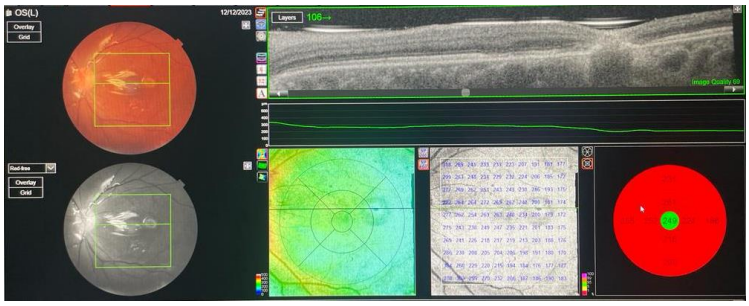

Figure 6. Post-operative macula OCT examination on December 12th, 2023.

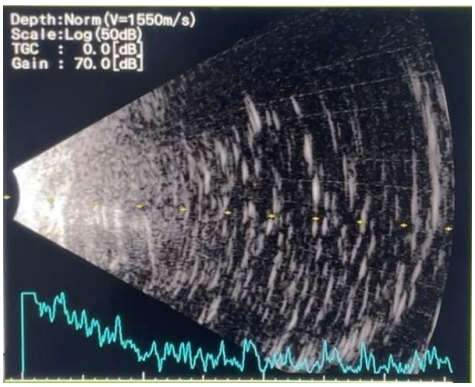

Figure 7. Transpalpebral ultrasonography on December 12th, 2023.

3. Discussion

A 40-year-old male complained of blurry vision in the left eye since 6 months ago. He realized it when he closed his right eye accidentally. In the last month, his vision progressively worsened, so he went to an ophthalmologist and was referred to Dr. Mohmmad Hoesin General Hospital. The visual acuity was 6/60 pH (-) on the left eye. The left eye's posterior segment showed decreased foveal reflex, normal blood vessel contour, and wrinkled fovea. On OCT examination, hyper-reflectivity was found at the vitreoretinal interface, puckering, without thinning at the intraretinal area with foveal depression. It supported the suspicion of left epiretinal membrane oculi.

The pathophysiology of ERM is not clearly known. There is evidence of the role of the reactive gliosis response, which influences the inflammatory response of glial cells. The risk factors are age and ethnicity. Based on age, ERM rarely occurs in patients under 60 years old. Therefore, our patient was planned to be consulted by the Internal Medicine Department for further evaluation and to screen for the presence of a secondary disorder that underlies the occurrence of ERM. The majority of ERMs are not associated with ocular abnormalities and are therefore categorized as idiopathic.[1,2,4] A history of eye or retinal surgery, diabetes mellitus, hyperlipidemia, hypertension, cardiovascular disease, vascular disease retina, trauma, intraocular tumor, and retinal dystrophy were not found in our patient.

Our patient was male. Although there were studies that stated that ERM was more often found in women, the majority of studies conducted argue that there was an equal ratio of men and women in terms of the rate of occurrence of ERM.[2,4] The epiretinal membrane has funduscopy characteristics, namely a translucent membrane, which will show wrinkling where, in our case, the abnormality was seen around the macula. In the mildest form, according to the Gass criteria, the disorder is often mild or asymptomatic, but in our patient, the visual impairment was quite severe (left eye visual acuity showed 6/60 with negative pinhole). This was supported by wrinkling on fundoscopy and also the presence of hyper-reflectivity and absence of foveal depression on macular OCT so that ERM grade 1 according to Gass criteria. The OCT of the macula can also be assessed to determine whether there is macular edema that can occur along with the ERM. Our patient didn't show any signs of macular edema.

Basically, mild ERM does not require surgical intervention and can be observed. However, if there is a severe decrease in visual acuity, as in this case, it is the main indicator for choosing surgical management.[2,4] Subjective complaints are also taken into consideration in determining the management. Our patient was then scheduled for surgical management with pars plana vitrectomy and membrane peeling.

During intraoperative, the patient underwent core vitrectomy followed by administration of triamcinolone acetonide as a dye. Triamcinolone acetonide has an advantage in identifying vitreous abnormalities and makes it easier to perform core vitrectomy and also induced PVD. Another advantage of choosing triamcinolone acetonide is that it can simultaneously colour the ERM around the macula, making the membrane peeling process easier. Another important finding during surgery was the presence of a retinal break at the peripheral retina in the inferior direction. Retinal breaks can be a secondary predisposition to the formation of ERM. Its existence, especially the ILM, can facilitate the migration of glial and Muller cells to the epiretinal surface and aggravate the proliferation and formation of ERM.[2] The retinal break is then treated with an endolaser and a silicone oil tamponade.

Because retinal break also required treatment besides the ERM in our patient, pars plana vitrectomy followed by membrane peeling, endo laser, and silicone oil implantation were currently the main treatment options for this condition and had a fairly effective prognosis. Idiopathic or secondary ERM are known to have a good outcome after surgery. Visual acuity is expected to slowly improve within 6 months but will not be back to normal (6/6). Routine monthly follow-up is needed to assess the anatomical structure of the

macula after membrane peeling using macular OCT. On the 11th day, there was a 1-meter improvement in post-operative left eye visual acuity and resolution as indicated by the presence of foveal depression on macular OCT examination. In a systematic review study, it was found that duration, severity of traction, and cause of ERM influenced postoperative visual acuity.[2,4,5] Continuous follow-up is also useful for monitoring whether there is recurrence because, in these patients, a relatively young age can be a problem. The risk factor for recurrence is around 25% of cases around 20 months postoperatively.[2,6]

4. Conclusion

A case of left oculi epiretinal membrane in young adult males has been reported. The diagnosis was made based on clinical history, physical findings, and OCT examination. Management of severe ERM focuses on reducing metamorphopsia, improving visual acuity and improving binocularity with pars plana vitrectomy combined with membrane peeling. At a young age, the predisposing factors for secondary development must be further identified. In this case, there was a retinal break which was identified during surgery, endolaser was performed and silicone oil tamponade was used.

5. References

1. American Academy of Ophthalmology. 2021-2022 basic clinical and science course section 12 retina and vitreous. American Academy of Ophthalmology. 2021.
2. Schachat AP. Ryan's Retina 6th ed. Elsevier. 2018.
3. Kozak I, Arevalo JF. Atlas of wide-field retinal angiography and imaging. Springer. 2016: 83-91.
4. Kanukollu VM, Agarwal P. Epiretinal membrane. In: StatPearls. Treasure Island (FL): StatPearls Publishing. 2023.
5. Kunavisarut P, Supawongwattana M, Patikulsila D, Choovuthayakorn J, Watanachai N, Chaikitmongkol V, et al. Idiopathic epiretinal membranes: visual outcomes and prognostic factors. Turk J Ophthalmol. 2022; 52(2): 109-18.
6. Szigiato AA, Antaki F, Javidi S. Risk factors for epiretinal membrane formation and peeling following pars plana vitrectomy for primary rhegmatogenous retinal detachment, an OCT-guided analysis. Int J Retin Vitr. 2022: 8(1): 77.