

Case report

Spontaneous late reopening of a successfully operated and closed full-thickness macular hole

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ABSTRACT

Purpose: To report a case of myopic young male with spontaneous late reopening of a closed full thickness macular hole without any of the known contributing factors.

Observations: A 37-year-old male who presented with gradual, progressive and painless diminution of vision in right eye was diagnosed with climatic droplet keratopathy and total retinal detachment with full thickness macular hole. Penetrating keratoplasty with temporary keratoprosthesis combined with total pars plana vitrectomy, internal limiting membrane peeling, fluid air exchange, 360° endolaser and silicone oil injection was done. Postoperatively, retina was well-attached and macular OCT showed a type 2 V-shaped closure. Later, it went on to a type 4 open closure and reopening of the hole after 1 year.

Conclusions and importance: Reopening of a successfully repaired (with internal limiting membrane peeling) and closed full thickness macular hole without any evidence of known contributing factors (epiretinal membrane, cataract surgery, trauma and cystoid macular edema) is very rare. Further studies are necessary to elucidate the factors that may be involved in the recurrence of full thickness macular hole.

1. Introduction

Idiopathic full thickness macular holes (FTMH) are most commonly caused by vitreous-mediated anteroposterior and tangential forces on the retinal surface.¹ The prevalence of FTMH is estimated to be 3.3 per 1000 with female preponderance.² Reopening of a previously successfully operated macular hole is not so common with a reported rate of 4.8%–9.5%.^{3,4} Macular hole reopening after successful surgical repair is well documented in the literature and it is found to be caused by cataract surgery, growth of an epiretinal membrane (ERM), and development of cystoid macular edema (CME).^{4,5} We report a case of myopic young male with spontaneous reopening of successfully repaired FTMH without any known contributing factors.

2. Case report

A 37-year-old male presented to us with gradual, progressive and painless diminution of vision in right eye. He underwent cataract extraction in both eyes at 2 years of age and multiple vitreo-retina surgeries in left eye 10 years ago. There was no history of trauma. On examination, corrected distance visual acuity (CDVA) was counting fingers close to face in right eye and 20/200 in left eye. Intraocular pressure was not recordable in right eye and 19 mmHg in left eye.

Anterior segment evaluation showed aphakic eyes with Climatic Droplet Keratopathy (CDK) in right eye. There was no view of posterior segment in right eye and silicone oil was present with attached retina in left eye. B-scan ultrasonography of right eye showed a thin bright continuous line of echoes with less mobility, high spike and insertion into the disc and ora serrata suggestive of total retinal detachment. Intraoperatively, a FTMH was found along with total retinal detachment in right eye. Penetrating keratoplasty with temporary keratoprosthesis combined with 25G total pars plana vitrectomy (PPV), Brilliant-Blue-Green (BBG) assisted internal limiting membrane (ILM) peeling, fluid air exchange, 360° endolaser and silicone oil injection was done in right eye. Prone position was maintained for 2 weeks. **Figs. 1 and 2** show the postoperative anterior segment and posterior segment photographs of right eye respectively. Postoperatively, right eye CDVA improved to 20/200 and macular optical coherence tomography (OCT) showed a type 2 V-shaped closure [**Fig. 3**]. The successfully repaired macular hole in right eye, later went onto a type 4 open closure with flattening of hole edges and residual neurosensory defect with bare retinal pigment epithelium [**Fig. 4**] and reopening of the hole after 1 year [**Fig. 5**]. Right eye macular OCT showed no evidence of epiretinal membrane (ERM). The right eye CDVA remained 20/200. Because of the guarded prognosis, we decided not to perform surgery again.

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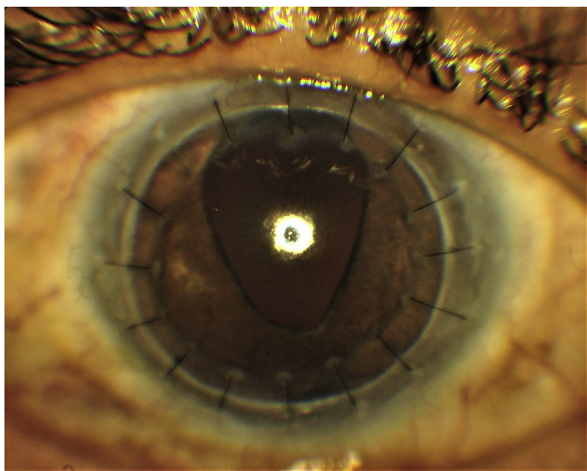


Fig. 1. Anterior segment photograph of the right eye status post penetrating keratoplasty with temporary keratoprosthesis.

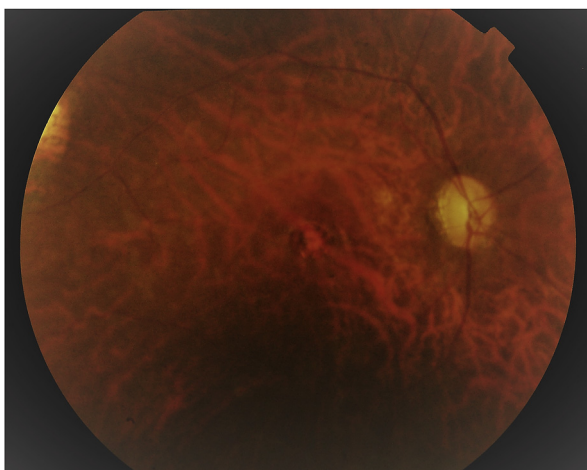


Fig. 2. Posterior segment photograph of the right eye status post pars plana vitrectomy with internal limiting membrane peeling.

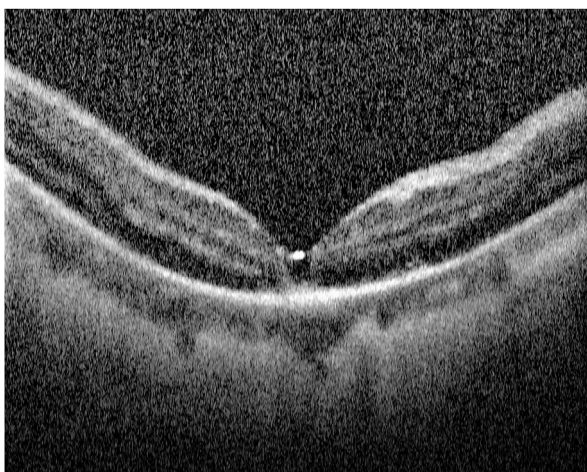


Fig. 3. Spectral domain macular OCT of right eye showing type 2 V-shaped macular hole closure (radial scan).

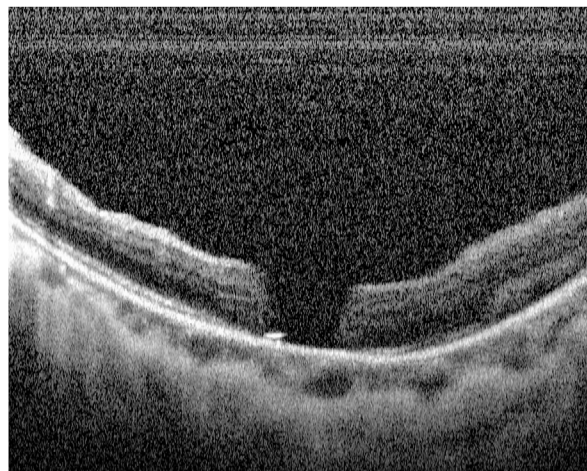


Fig. 4. Spectral domain macular OCT of right eye showing type 4 open macular hole closure with flattening of hole edges and residual neurosensory defect with bare retinal pigment epithelium (radial scan).

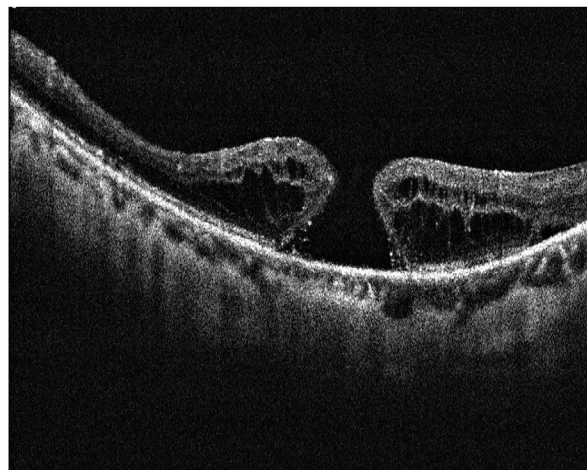


Fig. 5. Spectral domain macular OCT of right eye showing reopened full thickness macular hole with intraretinal cystic spaces (radial scan).

3. Discussion

The mechanism of closing of macular holes appears to be through stimulation of glial cell proliferation, which bridges the macular hole.

Reopening is an uncommon outcome of a successfully operated and closed FTMH, and the exact mechanism of reopening is not well understood. ILM peeling is now widely used in macular hole surgery, with decrease in the rate of reopening from 2% to 16% in eyes in which the ILM was not peeled to 0%–8.6% in eyes in which the ILM was peeled.⁶ There are three well-known factors that contribute to reopening of a surgically repaired macular hole: cataract surgery after the macular hole repair, growth of an ERM, and development of CME.^{4,5} Cataract extraction might cause the passage of factors that are chemotactic for glial cells, which diffuse through the vitreous cavity to the retina, thus initiating the formation of an epiretinal membrane over the operated macular hole.⁴ In addition, Bartolini et al. described a case of macular hole reopening after successful surgical repair 12 years later, which could have been caused by incomplete ILM removal.⁷ However, reopening of a surgically repaired macular hole without any of the known contributing factors is very rare. In our case, ILM peeling was performed and prone position was also maintained for 2 weeks. No cataract surgery was performed after the macular hole repair. Reopening of the macular hole was observed after 1 year. The time period for reopening in our case is comparable to other studies.^{3–5} Macular OCT didn't show any evidence of ERM. There was no history of any ocular trauma after the surgery.

In this case, one probable mechanism for reopening of the macular

hole is intraretinal tension.⁹ Christmas and associates hypothesized that the reopening of a macular hole is caused by a continuous intraretinal and cellular remodelling that would result in intraretinal traction.³ The shape of the posterior segment in a myopic eye may reflect a portion of the intraretinal tension. The causes for late reopening remain unclear as in this case, it may be a spontaneous event.^{4,8}

4. Conclusion

In conclusion, we report a case of myopic young male with reopening of successfully repaired (with ILM peeling) and closed FTMH who had already undergone cataract surgery in childhood and no evidence of ERM at the time of reopening. Further studies are necessary to elucidate the factors that may be involved in the recurrence of FTMH.

Patient consent

Written consent to publish this case has been obtained. This report does not contain any personal identifying information.

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Authorship

All authors attest that they meet the current ICMJE criteria for

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Declaration of competing interest

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