



Multiple Parafoveal Holes after Pars Plana Vitrectomy for Retinal Detachment Surgery

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ABSTRACT

Introduction: To report a case of secondary multiple parafoveal holes after internal limiting membrane (ILM) peeling in case of a vitrectomy surgery for rhegmatogenous retinal detachment.

Case: Thirty-two years old male myopic patient presented with total rhegmatogenous retinal detachment with vision of counting fingers with proliferative vitreoretinopathy (PVR) grade B. He underwent right eye Belt buckle with uncomplicated pars plana vitrectomy with ILM peeling with silicon oil insertion.

Observation: On routine follow up, multiple eccentric parafoveal retinal holes were noticed after two months of pars plana vitrectomy (PPV) which remained stable six months post silicon oil removal with visual acuity (VA) 20/80.

Conclusion: Parafoveal retinal holes may develop due to mechanical surgical trauma leading to retinal weakening caused by muller cell damage followed by a hole formation.

Key words: Internal limiting membrane; parafoveal retinal holes; Pars plana vitrectomy.

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INTRODUCTION

Internal limiting membrane (ILM) peeling is a common technique for the treatment of macular holes or macular oedema in the modern era of vitreoretinal surgeries. However, the role of ILM peeling in primary retinal detachment (RD) repair and its impact on the formation of epiretinal membranes is still considered a topic of debate which has been investigated in several studies.

A significant decrease in the rate of post-operative epiretinal membrane (ERM) formation and the need for a second surgery has been concluded in an analysis done by Yannuzzi et al., of 586 eyes across six studies justifying the role of ILM peeling in primary retinal detachment surgery (Yannuzzi et al., 2018). Another review by Fallico et al., showed similar outcomes. (Fallico et al., 2018)

Even though ILM peeling was considered only in cases of complicated retinal detachment surgeries, a meta-analysis done by Francis et al., demonstrated a lower incidence of post-operative epiretinal membrane (ERM) formation in patients who underwent ILM peeling during primary RD surgery even without proliferative vitreoretinopathy (PVR) (Francis et al., 2023).

Secondary parafoveal hole formation is a rare complication reported after pars plana vitrectomy with internal limiting membrane peeling for epiretinal membrane or macular hole treatment. Herein, a case of multiple secondary

parafoveal hole formation after pars plana vitrectomy (PPV) with ILM peeling for primary retinal detachment repair surgery is presented.

CASE REPORT

A 32-Year-old myopic male patient presented with decrease vision in right eye (RE) for three weeks with visual acuity (VA) being counting fingers. On examination both eyes' anterior segment finding was unremarkable. His RE Fundus showed total retinal detachment with horseshoe tear (HST) at 6'o clock with PVR Grade B. His left eye (LE) fundus was within normal limit. He underwent RE Belt buckle with pars plana vitrectomy with ILM peeling with silicon oil injection. The ILM was stained by brilliant blue dye 0.05% under air. Immediately after staining dye was aspirated. The ILM was peeled by pinch and peel technique in a circular fashion around macula with the help of ILM peeling forceps. No retinal break or haemorrhage was noted intraoperatively while peeling. At one week follow up retina was well attached with no macular holes seen with VA 20/200. At two-month follow-up three eccentric macular holes with oil in situ were noticed. All three holes were noted in the parafoveal region. One of them was nasal to fovea approximately 1 DD away from disc and other two were temporal to fovea 2-3 DD away from the disc. These holes were observed as the vision was stable. No complications occurred after six months' follow-up of post silicon oil removal with VA being 20/80.

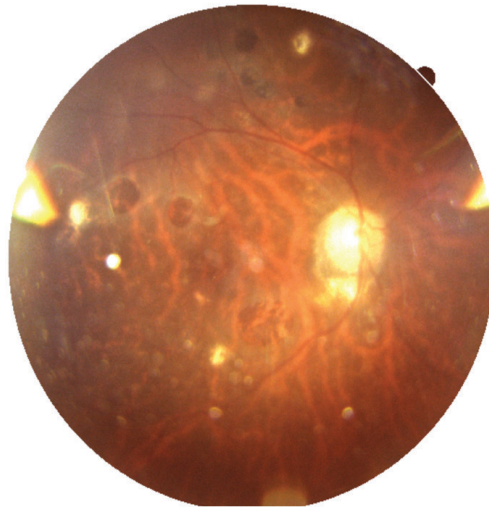


Figure 1: Post-operative fundus photograph showing multiple eccentric macular hole.

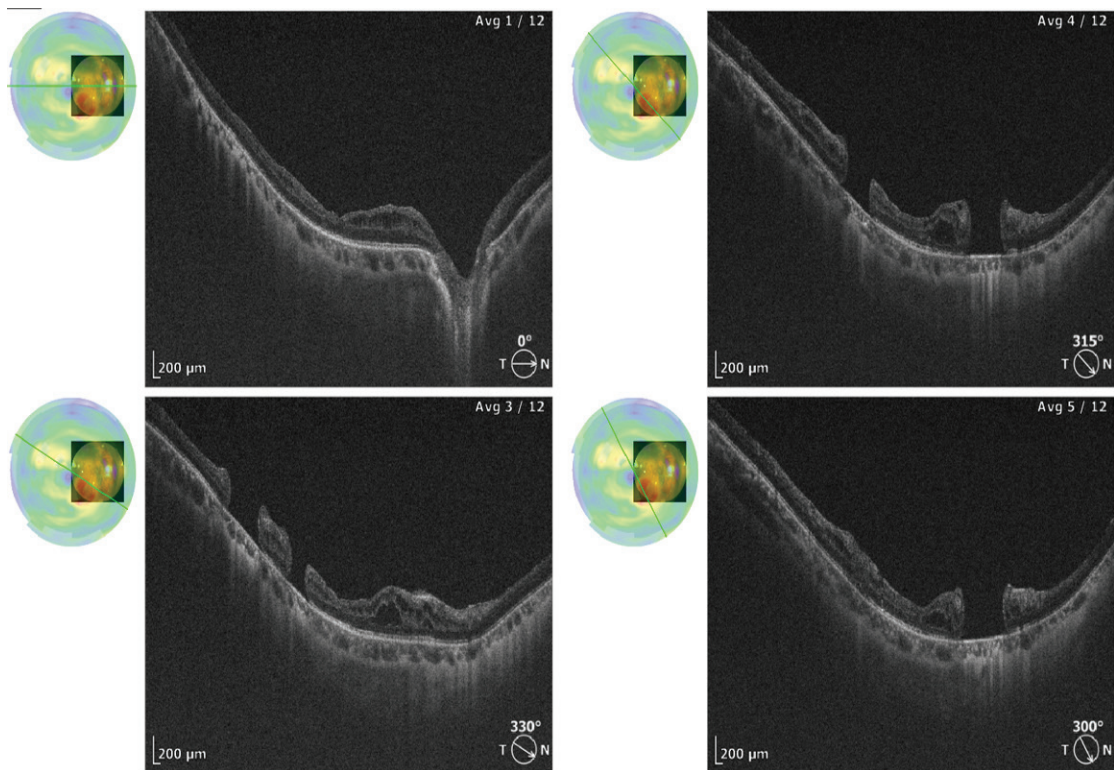


Figure 2: Post-operative optical coherence tomography image showing multiple secondary eccentric retinal holes.

DISCUSSION

Post-operative eccentric macular hole formation is a rare complication after vitreoretinal surgery with an incidence ranging from 0.6-2.5% (Sandali et al., 2012). Rubinstein et al., first reported this kind of eccentric macular hole in the case of a full thickness macular hole surgery (Rubinstein et al., 2005). Few similar cases have been reported in the literature (Brouzas et al., 2017; Steven et al., 2006; Mason et al., 2007). They can be single or multiple and can be located centrally or paracentrally. As often located in the parafoveal area, patient usually does not have any vision complaints. Most of the time they can just be observed with no additional intervention.

The ILM peeling-induced iatrogenic trauma, muller cell damage and residual ILM contraction appears as the most likely cause in this case as stated in earlier case reports. Haritoglou et al., described paracentral scotoma without biomicroscopically visible retinal defects in patients who had undergone ILM removal (without dyes) for macular hole surgery (Haritoglou et al., 2001). Karacorlu et al., presented chorioretinal lesions referred to as iatrogenic punctate chorioretinopathy, caused by end gripping forceps (Karacorlu et al., 2003).

Garnavou et al., have shown the formation of post-operative macular holes after ILM peeling irrespective of the various types of dyes used in

retinal surgeries (Garnavou-Xirou et al., 2017). This excludes dye as the possible causative factor due to their toxicity to the retinal pigment epithelium (RPE) and neurosensory retina.

As location of holes usually represents the area of ILM peeled in this case, ILM peeling-induced iatrogenic trauma and the cell damage may be responsible for the weakening of the glial structures of the central retina leading to retinal hole development.

CONCLUSION

This case report describes for the first time multiple secondary parafoveal hole formation as a possible complication of ILM removal in retinal detachment surgery. If iatrogenic trauma is considered as the most possible reason for the development of eccentric hole, then one needs to consider limiting the size of the area of peeling the ILM.

Further studies are required to study the role of ILM in maintaining the integrity of the retina and assessing the side effects of its removal. Even though large randomised controlled trials are required to assess the role of ILM peeling in retinal detachment surgeries this case report just adds to the scarce literature.

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