

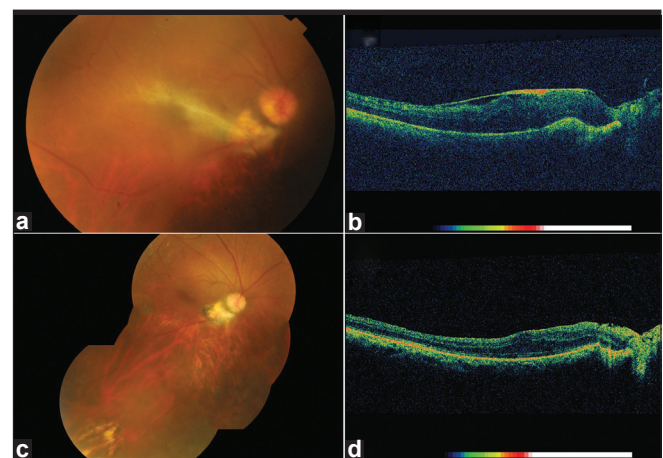
## Management of macular epiretinal membrane secondary to accidental globe perforation during retrobulbar anesthesia

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Retrobulbar and peribulbar routes of ocular anesthesia carry a small risk of rare but severe complications; and inadvertent penetration of eyeball with the injection needle is a well-known hazard.<sup>[1-3]</sup> Globe perforation may be accompanied by more severe consequences than penetration, although injection of a large volume of anesthetic into the eye can occasionally have acute “explosive” consequences, that is, globe rupture.<sup>[4,5]</sup> I present the successful management of a macular epiretinal membrane (ERM) secondary to accidental globe perforation during retrobulbar anesthesia.

A 53-year-old woman underwent cataract surgery OD at a branch of our tertiary eye care center. She was referred for the lack of visual improvement 1 month postoperatively. Her systemic history was unremarkable. Best-corrected visual acuity (BCVA) was 20/240 pre-and postoperatively. Surgical notes revealed minor subconjunctival hemorrhage

and chemosis after retrobulbar anesthesia with a 23-gauge blunt needle by ophthalmologist; no other perioperative complications, such as hypotony or positive pressure were observed. The axial length was 23.86 mm by ultrasonography. Anterior segment examination OD revealed a quiet eye with an intraocular lens well placed in the capsular bag. OS was unremarkable. Fundus examination OD revealed faint, settling vitreous hemorrhage with a posterior globe perforation, manifest as a scleral exposure inferotemporal to the optic disc, with a dense ERM stretching across the macula [Fig. 1a]. Optical coherence tomography (OCT) confirmed the retinal elevation and distortion by the ERM [Fig. 1b]. With informed consent of the patient and under guarded visual prognosis, the patient underwent vitrectomy, internal limiting membrane peeling, and sulfur hexafluoride (20%) tamponade. Intraoperatively, another globe perforation was observed at the inferotemporal equator. At 1 month postoperative visit, the media were clear,



**Figure 1:** (a) Fundus examination OD reveals a dense epiretinal membrane originating from the site of globe perforation inferotemporal to the optic nerve and running obliquely across the macula, (b) Horizontal optical coherence tomography (OCT) scan shows the central retinal elevation (549  $\mu\text{m}$ ) caused by the membrane, (c) Fundus view 6 months after surgery show macula free of membrane. Note the second inferotemporal equatorial perforation visible now, (d) Repeat OCT scan shows partial restoration of the foveal contours (central macular thickness: 349  $\mu\text{m}$ ). Snellen visual acuity has improved to 20/50

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macula was free of ERM, and BCVA had improved to 20/120 OD. By the last followup at 6 months, BCVA improved further to 20/50 [Fig. 1c-d]. This study was performed in compliance with the Tenets of Declaration of Helsinki and with the approval of the Institutional Review Board.

Peribulbar anesthesia was introduced to reduce the risks associated with retrobulbar injections; however, the complication rates of the 2 techniques are similar.<sup>[1]</sup> Proliferative vitreoretinopathy (PVR; manifest in this case as ERM) occurs in nearly half of globe perforations within about 6 weeks, 2- to 4-folds more commonly and also 2–3 times faster than other types of open globe injuries.<sup>[4]</sup> PVR is the main cause of poor visual outcomes in open globe injuries.<sup>[1-4]</sup> As PVR membranes contract, severe tractional and rhegmatogenous retinal detachments (RD) may follow.<sup>[4]</sup> Early intervention is therefore the key to good outcomes in anesthesia-related globe punctures.<sup>[2,3]</sup> However, some punctures, especially perforations, may go unnoticed due to final release of needle contents in the retrobulbar space.<sup>[2]</sup> Such asymptomatic presentation may provoke a suspicion of pre-existing ERM, secondary to, say, chorioretinitis. The alignment of the 2 punctures along the track of retrobulbar needle as classically described for anesthetic needle perforation,<sup>[5]</sup> presence of vitreous hemorrhage, and intraoperative observation of vitreous incarceration at the puncture sites, however, suggested anesthesia-related trauma. I obtained a good outcome in spite of the delay in diagnosis, probably because an RD had not developed. Unlike others,<sup>[1-3]</sup> Barrage photocoagulation was not applied for the retinal lacerations, as the inflammation produced by a lacerated puncture of the blunt retrobulbar needle was deemed adequate to seal the wound, and vitreoretinal traction at the wound edges was removed by vitrectomy. In contrast,

sharp punctures produced by peribulbar needles should probably be barraged, especially if vitrectomy is not required or deferred.<sup>[1-3]</sup> This case reminds us of the risk of injectable regional anesthesia, particularly for an elective ocular surgery, and highlights the importance of warning the patients about the risks and potential complications. However, such iatrogenic perforating injuries are not necessarily associated with a grave prognosis even when the diagnosis and intervention are relatively delayed, provided tractional or rhegmatogenous RD has not developed.

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