



PURPOSE

The authors report a case of acquired macular schisis detachment following glaucoma surgery in an eye without a visible optic disc pit.

CASE REPORT

A 43-year-old woman complained of vision loss in the right eye (OD) promptly after a Trabeculectomy procedure. She had a medical history of primary open-angle glaucoma. One week after glaucoma surgery the best-corrected visual acuity (BCVA) was 0.3 in OD, intraocular pressure (IOP) was 12 mmHg with no antihypertensive eyedrops, and funduscopy showed smacular schisi associated with a large and asymmetrical cup to disc ratio .

Optical coherence tomography (OCT) showed inner and outer retinal layers' schisis and macular detachment associated with glaucomatous optic disc, but no obvious optic disc pit or coloboma. Fluorescein angiography (FA) and Indocyanine green angiography (ICG) showed hypofluorescence of the macular region that was surrounded by a well-delineated hyperfluorescent ridge at late phase but with no dye leakage.

The patient underwent laser photocoagulation (532 nm) at the temporal disc margin 15 days after the glaucoma surgery. No improvement of the abnormalities was observed in the following thirty days. Posterior vitrectomy with inverted ILM flap creation and fluid gas exchange was performed two months after the onset of the symptoms. Gradual regression of subretinal fluid was observed over 6 months of follow-up, and the BCVA improved to 0.5.

DISCUSSION

Macular schisis corresponds to the splitting of the retinal layers at the macula, with or without serous retinal detachment. The acquired form of macular schisis is usually associated with congenital cavitory anomalies, although similar macular pathology has also been described in association with acquired cavitations of the optic disc in advanced glaucoma and/or pathologic myopia.

Macular schisis in patients with advanced glaucoma and without optic disc pit or coloboma are uncommon and the mechanism of schisis progression lacks of consensus.

Choi et al observed in their study using OCT with enhanced image depth (EDI) that approximately 77% of patients with acquired pit of the optic nerve in patients with glaucoma had changes in the lamina cribrosa (LC)¹ Recently, cases associating macular schisis and glaucomatous optic nerve have been reported. The authors stated that chronic elevated IOP in patients with advanced glaucoma may cause microscopic damage to the internal limiting membrane and the cribriform lamina, allowing the liquefied vitreous to enter the retinal layers^{2,3,4}.

Another hypothesis is that the posterior hyaloid itself could cause traction on the inner retina and optic disc and cause schisis^{5,7}.

Takashima et al. (2013) described a case similar to ours, however, in this case, fibrous tissue was seen in the optic nerve which, through contraction, formed a tunnel communicating the vitreous cavity with the retina⁶.

There are other reports of macular schisis associated with a tunnel communicating the vitreous cavity and the retina⁷, however, in our case, several OCT slices were evaluated, and no direct communication was found.

In our study, a patient with glaucoma and no signs of optic disc pit developed macular schisis promptly after trabeculectomy surgery. Among the possible mechanisms that could explain the development of macular detachment , the following hypothesis were considered: (1) migration of liquefied vitreous through pre-existing lesions in the lamina cribrosa, and (2) Acute microperforations at the lamina cribrosa level. A sudden reduction in IOP may induce transitory changes in the axial length of the eye, which may cause traction of the posterior hyaloid, and entry of the liquefied vitreous through these lesions^{9,10,11,12}.

Peripapillary photocoagulation is a noninvasive treatment that aims to create a barrier preventing the entry of fluid. In our study, the laser was not effective. The success of the condition occurred when PPPV was performed with detachment of the posterior vitreous associated with the creation of an ILM flap with a flap adhered to the optic disc with the purpose of buffering the structural changes in the lamina cribrosa.



Photo A: fundus of the right eye after trabeculectomy surgery. **Photo B:** OCT after trabeculectomy surgery demonstrating macular retinoschisis and subretinal fluid. **Photo C:** first month post posterior vitrectomy surgery with resolution of macular schisis

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