A downhill course from vitrectomy for floaters to end-stage glaucoma

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Abstract

We report a case of a 55-year-old male who experienced a downhill course following pars-plana vitrectomy (PPV) for floaters and consequently developed end-stage glaucoma with severe vision loss. Elective PPV for symptomatic vitreous floaters is a controversial procedure. Though patient satisfaction with PPV is promising, potential complications arising from this procedure should be carefully considered.

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Case report

A 55-year-old male underwent bilateral pars plana vitrectomy (PPV) because of the development of disabling floaters approximately fourteen years ago. Following his surgery, he developed retinal tears in both eyes, which were treated with laser retinopexy. Subsequently, his left retina detached and was repaired by pneumatic retinopexy. Persisting inflammation was treated with topical corticosteroids, leading to a steroid-induced glaucoma. This was followed by bilateral cataract extraction, the latter being complicated. He developed additional retinal detachment in his left eye, for which he underwent another PPV. Following this surgery, he was treated for elevated intraocular pressure (IOP) and was referred to our practice for further evaluation.

Diagnosis

On examination, the patient’s visual acuity was 20/20 in the right eye and 20/250 in the left. IOP was 13 mmHg in the right eye, and 12 mmHg when controlled on his prior medication. On slit lamp examination we observed that the intraocular lens of the left eye was dislocated superiorly, causing transient illumination defects. Ultrasound bimicroscopy showed that the edges of the intraocular lens caused iris chafing (Figure 1). He had extremely dense pigment in the posterior trabecular meshwork for 360 degrees, with pigment pooling in the inferior angle. The left optic nerve showed end-stage cupping with a Disc Damage Likelihood Scale (DDLS) score of 10, which corresponded with a tubular visual field (Figure 2).

We advised repositioning the intraocular lens and at the same time performing an Ahmed tube-shunt procedure. Surgery was completed without complication. Eight months following surgery, IOP was 27 mmHg in the left eye, and vision was reduced to inconsistent light perception. The eye was persistently painful and was treated for periodic inflammation.

Discussion

Vitreous opacities, or “floaters”, are a common phenomenon, occurring more frequently in older individuals [1]. They represent degenerative changes in the vitreous body, and patients may see them as small moving spots in their field of vision.
Figure 1. Left panel: Slit-lamp photograph demonstrating a superiorly dislocated intraocular lens with iris transillumination defects. The edges of the intraocular lens (large arrow) was chafing the iris causing transillumination defects (small arrow). This resulted in pigment dispersion and deposition of pigment within the trabecular meshwork, impaired drainage of aqueous humour, elevated intraocular pressure, and end-stage glaucoma.

Right panel: Ultrasound bimicroscopy showing the dislocated intraocular lens against the iris tissue.

Figure 2. Left panel: Optic disc of the left eye with end-stage cupping and complete loss of the neuroretinal rim. This represents a Disc Damage Likelihood Scale score of 10. The left panel shows a corresponding visual field defect.

In an acute state, floaters can appear following posterior vitreous detachment. The prevalence of posterior vitreous detachment increases above 50 years of age and is 87% above 80 years of age [2, 3]. For the majority of patients experiencing this condition, cognitive adaptive mechanisms may decrease symptoms. However, some find this condition disabling, affecting activities of daily living such as reading, driving, and near-vision work.

PPV for floaters appears effective and is generally considered to be relatively safe [4]. Patients have reported increased satisfaction, better quality of life,
good visual acuity, and no complications post-PPV [5]. Some studies have reported increased patient satisfaction and quality of life, with 96% of patients being “satisfied”, and 94% rating the experience as a “complete success” [4, 6]. Advances in retinal surgery have prompted surgeons to recommended the removal of vitreous floaters by a PPV. Minimally invasive techniques have introduced new variations in the procedure that further reduce complications. A 2014 study showed that the use of minimally invasive vitrectomy to repair posterior vitreous detachment lowers the occurrence of retinal tears (from 30% to 0%) and cataracts (from 50% to 23%) [7].

However, in contrast to the above-mentioned studies, a retrospective non-randomized series of 116 cases presenting with primary and secondary floaters had retinal breaks in 16.4% of operations, retinal detachment in 2.5% and cataracts in 50% of cases. These complications can occur whether vitrectomy is performed for floaters or any other elective indication [8]. Similarly, one study found serious complications in 6% of patients, and 10% of those cases were dissatisfied with the surgery [9]. The rare complication of endophthalmitis caused by *Staphylococcus caprae* was reported in one of these case reports, following PPV for vitrectomy [10].

Our case report presents a similarly complicated series of events following PPV, which included retinal tears, retinal detachment, and cataracts leading to dislocation of the intraocular lens. While the level of optic nerve damage caused by steroid-induced elevation of IOP is not clear in our case, the subsequent development of iris chafing from IOP dislocation resulted in a marked rise in pressure along with the release of pigment from the iris to cause optic nerve damage. This case, which resulted in end-stage glaucoma, presents a rare complication of PPV to add to the current literature. Though patient satisfaction with PPV is promising, potential complications arising from this procedure should be carefully considered, based on this report and other supporting literature. Practitioners should carefully weigh the risks and potential benefits before administering the procedure. The possible complications of PPV should also be thoroughly explained to patients to help them make a well-informed decision.

References