Isolated traumatic aniridia after trabeculectomy in a pseudophakic eye

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This is a single case report of an elderly patient who had blunt trauma in an eye that had phacoemulsification and two trabeculectomies. She had good vision with a well-functioning bleb before the trauma. She presented during her routine follow-up visit for glaucoma with isolated aniridia and an intact globe. The capsular bag, zonules, and the intraocular lens were intact. The cupping was 0.8, and the rest of the fundus and macula were normal. Pigments were seen over the scera extending posteriorly up to the fornix. Gonioscopy revealed only faint pigments at the fistula. Following the trauma, the intraocular pressure had increased to 26 mm Hg. The mechanism and the management of the glaucoma are discussed.

Key words: Aniridia, blunt trauma, detached iris, iridodialysis

The consequences of blunt trauma in a pseudophakic eye far differ from that on an unoperated eye. The classical description of damage at the seven rings of the eye associated with severe blunt trauma does not always occur in a pseudophakic eye as opposed to an unoperated one.\(^1\)\(^2\) Now that phacoemulsification with foldable intraocular lens has become the standard of care, much of the effects of blunt trauma have been reduced due to the presence of corneal or scleral tunnel and a flexible intraocular lens.\(^3\)\(^4\)

Limited injury in the form of traumatic aniridia has been reported in pseudophakic eyes.\(^5\)\(^-\)\(^8\) We report for the first time a patient who had isolated traumatic aniridia in an eye which had phacoemulsification and foldable intraocular lens as well as trabeculectomy. The mechanism and management of the glaucoma resulting from the trauma is discussed.

Case Report

A 70-year-old Chinese lady attended the glaucoma clinic during routine follow up in November 2007. She had undergone trabeculectomies with 5FU OU in 1998 for primary open angle glaucoma and phacoemulsification OD with foldable IOL implantation (SA60AT) through a 2.8-mm corneal tunnel in 2003. In 2005, she had a repeat trabeculectomy with MMC and a needling procedure OD. In her previous visits, the bleb in OD was thin, minimally vascular with slight elevation, and the intraocular pressure (IOP) was maintained at 12–15 mmHg (applanation tonometer), the iris was normal, and the best-corrected visual acuity was 20/30. The cupping in OD was noted to be 0.65 with inferior neuroretinal rim thinning. Fast retinal nerve fiber thickness analysis by optical coherence tomography showed similar inferior thinning with thickness in other quadrants in normal range. The Humphrey field analysis (24-2) showed a superior nasal step. When she presented in November 2007, the best-corrected visual acuity was 20/40 in OD and 20/30 in OS and the IOP was 26 mmHg and 16 mmHg OD and OS, respectively. The cornea was strikingly clear, the corneal wound appeared intact, and the chamber was deep. Surprisingly, the iris was completely absent and the posterior chamber intraocular lens with the opacified intact capsular bag was visible in its entire extent [Fig. 1]. Few remnants of iris tissue were stuck to the nasal anterior capsulotomy margin. The bleb was almost flat with some vascularization, and the underlying sclera was pigmented and the pigmentation extended posteriorly up to the fornix [Fig. 2]. On questioning about possible trauma, the patient revealed that she sustained injury OD 4 months ago by hitting against the edge of a table back in China. She had pain and decreased vision following the injury for which topical medications were started but could not provide further details although no intervention was done. Gonioscopy showed no signs of angle recession; faint pigments were found at the second sclerostomy opening/fistula and none at the previous fistula. Dilated fundus examination revealed 0.8 cup with superior and inferior thin rims but healthy retina and macula OD. The field defect had increased to a superior arcuate scotoma. There was a functioning bleb with normal iris OS. She was started on latanoprost eye drops OD, but since adequate control was not achieved, Baerveldt tube surgery was subsequently performed.

Discussion

The condition of irideremia or traumatic aniridia results when the root of the iris is wholly torn from its attachment to the ciliary body, that is, when the dialysis is complete.\(^9\) Such a condition usually results from a gross injury, causing severe damage to the other ocular tissues, to the extent of even rupture of the globe. A complete hyphema is the rule, usually accompanied by a massive vitreous hemorrhage as well as dislocation of the lens and detachment of the retina entailing ultimate blindness.\(^10\) Our patient presented to us 4 months after blunt injury with total aniridia, an intact globe, pigmentation under the bleb, and normal vision. The decreased vision at the time of injury must be due to hyphema and or limited vitreous hemorrhage.

Traumatic aniridia occurring as an isolated injury after blunt trauma to the eye that had phacoemulsification through corneal tunnel has been described.\(^2\)\(^-\)\(^3\) However, this is the first report of isolated aniridia occurring after trabeculectomy in a pseudophakic eye. Ball et al. proposed that the impact of the trauma caused the original corneal tunnel to open and the
iris to be completely disinserted and expelled through the wound. The tunnel then closed so the globe appeared intact on presentation. This theory does not hold good in our patient as pigments were found under the bleb.

Blunt trauma occurring in a normal unoperated eye far differs from that on an eye where the ocular rigidity is lowered from multiple surgeries. Such trauma causes stretching of limbal tissues, equatorial scleral expansion, displacement of lens iris diaphragm, and acute elevation of IOP with consequent tearing of the tissues near the anterior chamber angle. This sequence of events is unlikely to have occurred in this patient due to the low ocular rigidity and the presence of a flexible intraocular lens which has limited the consequences to merely tearing of iris tissue from its weak attachment to the scleral spur. The hyphema which caused the decreased vision at the time of trauma resulted from the iridodialysis. The so detached iris reduced to a small ball was drawn toward the functioning trabeculectomy fistula which apparently is the pathway of least resistance as opposed to the previous trabeculectomy fistula (scarred) and the cataract wound. The iris tissue then must have been washed away with the aqueous through the trabeculectomy fistula into the episcleral space which is evident by the presence of pigments on the sclera overlying the bleb and beyond.

As for the intact bag and zonules, the foldable IOL due to its flexibility must have absorbed the impact of the force reverting to its original position on dissipation of the force as proposed by Muzaffar et al. It is surprising to note that all the reported cases with isolated aniridia including our patient had a similar mode of injury by hitting against the edge of a table. This reflects the severity of the trauma that could have disorganized the whole eye but for the eye being pseudophakic—a blessing in disguise!

On presentation, our patient had an intraocular spike in the traumatised eye. As only faint iris pigments were found at the fistula, this could not be blocking the fistula and worsening the pre-existing glaucoma. Furthermore, traumatized trabeculae or angle recession not present in this case tend to occur in a firm globe with good ocular rigidity. The plausible explanation for the pressure rise OD is that the inflammation and bleeding at the time of trauma and the escape of iris through the fistula induced fibrosis and reduced functioning of the filtration bleb. The patient was started on latanoprost eye drops but eventually required intervention in the form of tube implant for adequate control.

References