

# Combined aniridic intraocular lens implantation and vitreoretinal surgery

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A 45-year-old man presented with post-traumatic aniridia. We describe the combined surgery done to treat both aniridia and epiretinal membrane simultaneously. A combined aniridic intraocular lens and vitreoretinal surgery was done. The case report highlights the advantage of combined surgery in terms of cost factor and surgical time.

**Key words:** Aniridic intraocular lens, combined surgery, traumatic aniridia

*Indian J Ophthalmol 2007;55:391-3*

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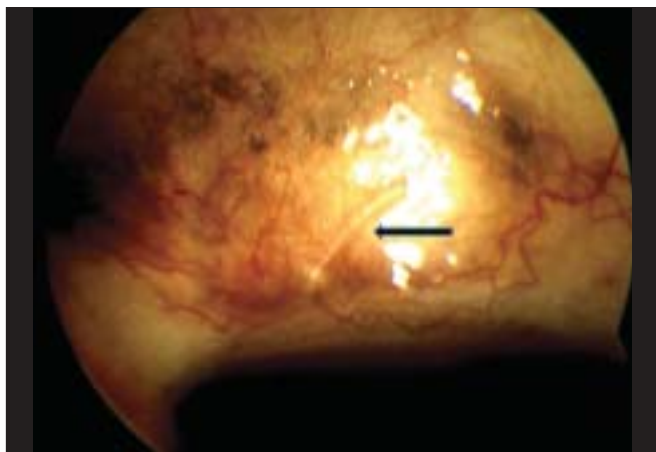
Manuscript received: 10.03.05; Revision accepted: 20.04.07

An intact iris diaphragm is essential for accurate and satisfactory visual function because it decreases the spherical and chromatic aberrations arising from the crystalline lens and increases depth of focus. Partial or complete aniridia may occur developmentally or after severe trauma. We report a case of traumatic aniridia with retinal detachment, vitreous hemorrhage and intraocular lens (IOL) haptic extrusion, in whom the aniridic IOL was combined with a vitreoretinal surgery with good anatomical and functional outcome.

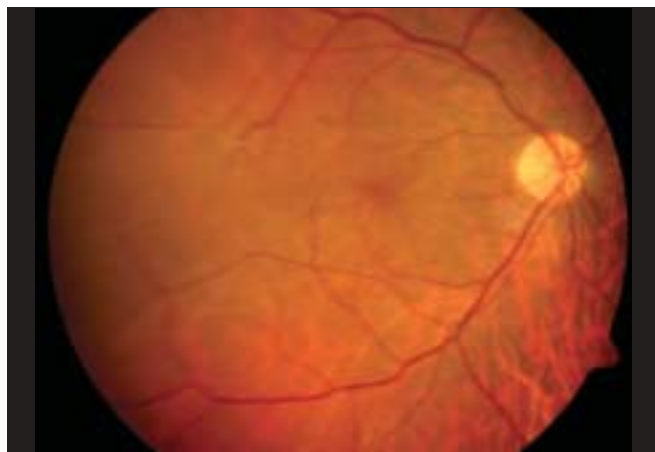
## Case Report

A 46-year-old gentleman presented with sudden onset of loss of vision following blunt trauma to the right eye. The patient had sustained the injury when he was assaulted with a stone. He had undergone cataract surgery with posterior chamber (PC) IOL in the right eye three months ago elsewhere.

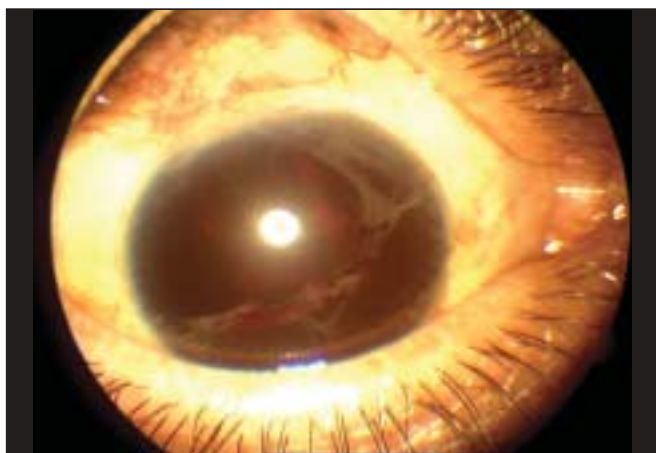
On examination his visual acuity was perception of light, accurate projection of rays in the right eye and 20/30, N6 in the left eye. Anterior segment evaluation revealed IOL haptic ("J" type) extrusion through the scleral tunnel with hyphema, aniridia and posterior capsular remnant in the right eye [Figs 1, 2]. The left eye was within normal limits. His intraocular pressure (IOP) was undetectably low in the right eye and 16mmHg in the left eye. There was vitreous hemorrhage in the right eye, with no retinal details seen. Ultrasonography revealed total retinal detachment (RD) with vitreous hemorrhage. He was diagnosed to have traumatic RD with vitreous hemorrhage



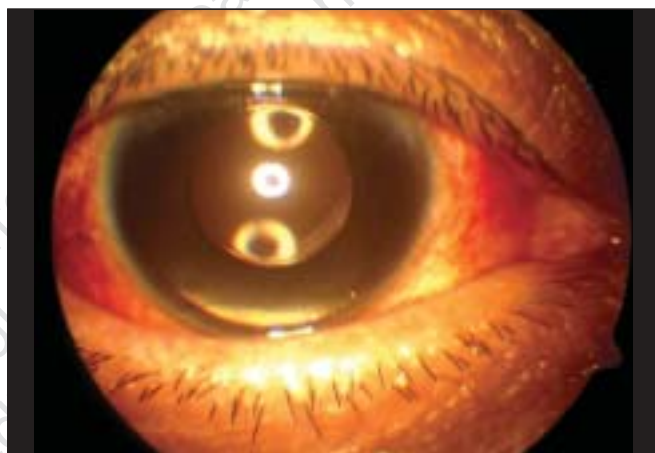
**Figure 1:** Extruded intraocular lens haptic (arrow)



**Figure 4:** Fundus photograph showing the epiretinal membrane seen after the first surgery



**Figure 2:** Aniridia, remnant of posterior capsule and vitreous hemorrhage



**Figure 5:** The aniridic intraocular lens in place after the second surgery



**Figure 3:** The anterior segment picture after the first surgery showing aniridia with posterior capsule crescent



**Figure 6:** The fundus picture after the epiretinal membrane removal

with IOL extrusion with total aniridia. He was advised IOL explantation, vitreoretinal surgery with encircling band and silicone oil.

Intraoperatively, after clearing the vitreous hemorrhage, the total RD was evident, with two peripheral retinal tears.

There was no evidence of proliferative vitreoretinopathy (PVR). The breaks were well supported after the application of silicon encircling band (Mira - 240 with a width of 2.5 mm). Hence  $C_3F_8$  (perfluoropropane) gas was used as a tamponade. A single-piece IOL was explanted. The inferior and nasal

180° posterior capsule was intact and was left behind for a secondary implant later.

At six weeks follow-up his best-corrected visual acuity (BCVA) was 20/120 +1, N10 with aphakic correction. Anterior segment evaluation showed aphakia with aniridia and posterior capsular remnant in the right eye [Fig. 3]. His IOP was 14.0mmHg. Indirect ophthalmoscopy showed attached retina with epiretinal membrane (ERM) and mild macular pucker in the right eye [Fig. 4].

At three months follow-up BCVA was 20/80 (hazy), N8 in the right eye with correction. Fundus examination showed attached retina with ERM and internal limiting membrane striae in the right eye. Optical coherence tomography (OCT) showed ERM and cystoid macular edema (CME). He underwent secondary aniridic PCIOL (IO care Baroda; optic 10 mm, central 2.25 mm opaque with surrounding 5.5 mm clear, A constant 118.2) with ERM removal in the right eye under local anesthesia. The ERM was removed after staining with trypan blue. Although a scleral fixated IOL was planned, the IOL when placed on the inferior capsular rim was found to be stable. The posterior capsule had fibosed since the injury and hence provided adequate support without the need for scleral fixation. Moreover, since the IOL was rigid and measured 12.75 mm in length, it was found to be stable in the scleral sulcus. The incision had to be widened to 10 mm to accommodate the IOL. At six weeks follow-up his BCVA was 20/30 and N6, with -2.00 diopter cylinder X 170° and IOP was 15 mmHg. The cornea was clear, with aniridic IOL in place [Fig. 5]. Indirect ophthalmoscopy revealed normal disc, macula and attached retina with good buckle effect [Fig. 6]. Optical coherence tomography revealed resolution of CME. At six months follow-up the above findings were maintained.

## Discussion

An abnormal iris can be acquired or congenital. Abnormal pupils affect patients in several ways, including photophobia and glare. These patients often describe discomfort or difficulty in brightly lit areas, such as on sunny days. Concern over the cosmetic appearance of the eye is also a factor.

Traumatic aniridia is often associated with injury to other structures of the eye. A history of blunt trauma besides damage to the iris; tends to be associated with trauma to the angle or zonules. The most common of these are traumatic cataract, retinal detachment and vitreous hemorrhage. Both penetrating and blunt injuries can cause traumatic total iridectomy.<sup>1</sup> In our case there was significant damage to the iris with a crescent of posterior capsule intact. Iridoplasty, colored contact lenses and corneal tattooing have been developed to overcome the visual function impairments that arise from damage to the iris.<sup>2,3</sup> However, when significant amounts of iris tissue are damaged

or missing, iris repair may be impossible. In these eyes, artificial iris implants can augment the iris diaphragm, thereby reducing photophobia and glare. Several ophthalmologists have used this artificial iris implants called aniridic IOL in patients with traumatic and congenital aniridia.<sup>4</sup>

Additional procedures along with IOL implantation may be required, including cataract surgery, transscleral IOL fixation, keratoplasty and vitreoretinal procedures. A combined aniridic IOL implantation and vitreoretinal procedure is possible without significant intraoperative complications.<sup>5</sup> A black diaphragm IOL design allows simultaneous treatment of aniridia and aphakia<sup>6</sup> as was the situation in our case wherein the previously implanted IOL had extruded through the scleral tunnel and was removed in the first sitting along with retinal detachment surgery. At the second sitting the aniridic IOL was implanted with an ERM removal.

The patient did not suffer from any of the complications associated with such similar procedures such as, persistent intraocular inflammation, glaucoma, endophthalmitis and residual photophobia. The patient had good visual recovery, with his vision being 20/30 on his last follow-up six months after the surgery.

We present a rare case of traumatic aniridia with vitreous hemorrhage and retinal detachment, in which a good visual outcome was achieved after a combined surgery. After a detailed Medline search, there were less than five such cases reported in the literature. No such case has been reported from the Indian subcontinent. Both the cost factor and surgical time could be reduced with a combined approach giving an excellent cosmetic, visual and surgical outcome.

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