

Case Report

Iris-claw, retropupillary-fixated, aphakic intraocular lens implantation for traumatic aphakia following penetrating keratoplasty

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Summary

We report the correction of aphakia using an iris-claw, aphakic intraocular lens (IOL) fixated in a retropupillary location in a 17-year-old young man who suffered blunt trauma to his eye 5 months after penetrating keratoplasty (PKP). There were no intraoperative complications. At 21 months after implantation, the patient's uncorrected distance visual acuity was 20/28; his corrected distance visual acuity was 20/22, with +0.50 -3.00 × 155. Intraocular pressure was normal, and endothelial cell count was 1798 cells/mm².

Introduction

The iris-claw intraocular lens (IOL) was originally developed for the treatment of aphakia in intracapsular cataract extraction surgery. Its indications have extended to include secondary IOL implantation to treat aphakia in cases with insufficient capsular support, including subluxated lens extraction,¹ traumatized eyes,² and keratoplasty.^{3,4} We report our experience with retropupillary fixation of the iris-claw aphakic IOL (Ophtec BV, Groningen, The Netherlands) for the correction of aphakia following trauma, which resulted in subluxated cataractous lens, glaucoma, anterior synechiae, and vitreous prolapse in the left eye of a patient who had previously undergone left penetrating keratoplasty (PKP).

Case Report

A 17-year-old young man with a history of bilateral keratoconus presented at Mouassat University Hospital (Damascus University-Syria) having suffered blunt ocular trauma to his left eye 5 months after PKP in that eye. The trauma resulted in a dehisced PKP graft and subsequent open globe injury. The wound was repaired primarily and the same graft was sutured. Two months later the eye showed a subluxated cataract and anterior synechiae. At 7 months after the injury, following removal of the graft sutures and cessation of the associated topical

corticosteroid treatment, the left eye showed raised intraocular pressure (IOP), which was unresponsive to medical treatment. A combined subluxated cataract extraction, trabeculectomy surgery, and anterior vitrectomy was performed to extract the subluxated cataract and to manage the elevated IOP and the anterior synechiae.

At 4 weeks' after surgery the eye was aphakic with vitreous strand at the PKP incision and normal IOP without medications (Figure 1A). Uncorrected distance visual acuity was 20/70 and best-corrected distance visual acuity was 20/25. On retinoscopy, refraction was +11.00 -4.00 × 160, with some irregular astigmatism. Keratometry readings were 42.00 × 160 and 47.50 × 070. The endothelial cell count was 2036 cells/mm² (Topcon SP-2000P Non-Contact Specular Microscope, Topcon Corp, Tokyo, Japan). The anterior chamber depth was 3.32 mm.

An Artisan iris-claw aphakic IOL implantation fixated on the posterior iris and an anterior vitrectomy procedure was planned and performed after discussing the case with the patient and his parents. The patient's glaucoma was controlled without medications from the prior surgery. A 5.0/8.5 mm +15.0 D Artisan iris-claw

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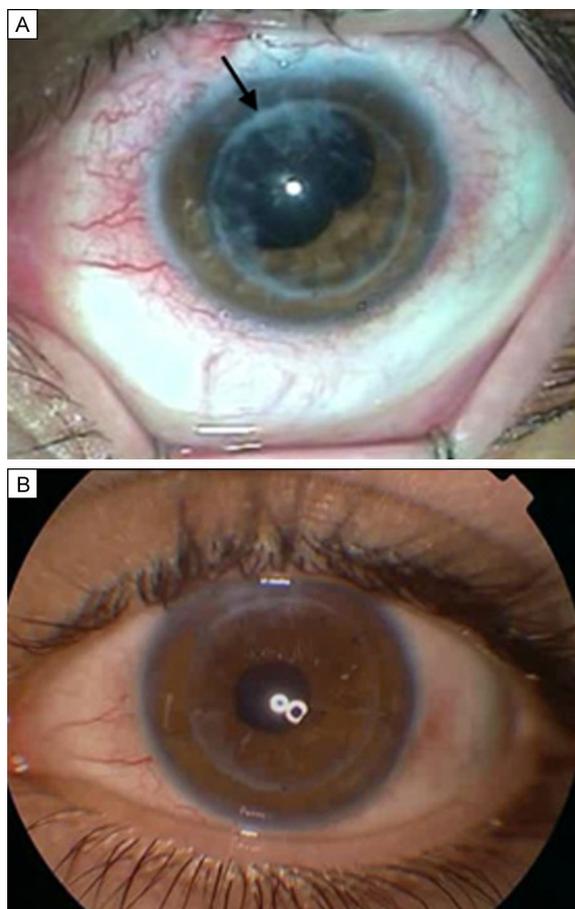


Figure 1. A, Preoperative view of the aphakic eye with normal IOP and vitreous wick at the penetrating keratoplasty incision (arrow) following subluxated cataract extraction, trabeculectomy, and anterior vitrectomy surgery (photography via operation microscope). B, Postoperative view showing Artisan iris-claw aphakic IOL retroiridid fixation and anterior vitrectomy procedure (photography via anterior segment camera).

aphakic IOL was implanted in a reverse position, through a two-plane 5.5 mm posterior corneal (limbal) incision. We prefer a scleral tunnel; however, the presence of the bleb in this case did not afford sufficient room. The lens was fixated to the posterior surface of the iris, and interrupted sutures were used to control the postoperative astigmatism by selective postoperative suture removal.

At 5 months postoperatively, the IOP was normal, uncorrected distance visual acuity was 20/70 and best-corrected visual acuity was 20/22, with a refractive error correction of $+3.25 -6.00 \times 150$ and keratometry read-

ings of 43.50×150 and 48.50×060 . A 10-0 polyester (Mersilene; Ethicon Inc, Somerville, NJ); compression suture was placed at axis 150° at the graft incision to treat the remaining refractive error.

At 21 months after Artisan aphakic IOL implantation (Figure 1B), uncorrected visual acuity was 20/28, and best-corrected visual acuity was 20/22 with a refraction of $+0.50 -3.00 \times 155$. Keratometry readings were 45.25×155 and 48.25×065 . IOP was normal. Endothelial cell count was 1798 cells/mm². Trabeculectomy function was stable through the postoperative follow-up period of 12 months.

Discussion

Artisan iris-claw aphakic IOL implantation has been used with good results as primary or secondary procedure to manage aphakia.⁵ It has been used in subluxated lens extraction¹ and in traumatized eyes with insufficient capsular support for IOL implantation.² Implantation of iris-fixated IOLs with anterior iris fixation and with posterior iris fixation have been reported.⁶

In the present case, with insufficient capsular support, the refractive correction options were anterior chamber, angle-supported IOL, which was excluded because of possible complications with respect to endothelial cell loss and secondary glaucoma^{7,8}; sclera-fixated posterior chamber IOL, which was also excluded because of possible complications with respect to suture cut, ciliary body hemorrhage, and cystoid macular edema^{9,10}; and anterior, iris-fixated IOL, which was excluded on account of possible endothelial cell loss in general¹¹ and in particular compared to posterior iris-fixated IOL in PKP patients.¹²

Artisan iris-claw retropupillary fixated aphakic IOLs have been shown to be safe for aphakia in general^{13,14} and in aphakia with keratoplasty.³ An Artisan iris-claw retropupillary fixated aphakic IOL was implanted in our case after considering its good published results and the future possibility that the patient might have to undergo endothelial keratoplasty, which would be much more difficult in the presence of an anterior chamber IOL.^{4,15,16} The retropupillary fixated IOL also does not prevent pupil dilation for posterior segment examination and treatment purposes.^{14,17} In this case of traumatized PKP, implantation of iris-claw aphakic IOL with retropupillary fixation proved to be a feasible treatment with a good outcome, although the long-term outcome is unknown.

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