Artiflex (Foldable Iris Claw IOL) Secondary Implantation for Correction of Aphakia After Penetrating Ocular Injury

To the Editor:

Options for refractive surgical correction of aphakia include ciliary sulcus fixation of a posterior chamber IOL (sutured in the absence of sufficient capsular support), anterior chamber angle-supported IOL, and anterior chamber iris-supported (iris claw style) IOL.

Scleral fixation (sutured) of a posterior chamber IOL preserves the anatomy of the eye better than an anterior chamber IOL, but complications such as ciliary choroidal body hemorrhage, retinal detachment, cystoid macular edema, vitreous prolapse into the anterior chamber, and conjunctival erosion of the transcleral sutures with associated intraocular infection risk have been described. However, a small number of surgeons use a posterior chamber IOL, holding the haptics to the midperipheral iris with a Prolene single suture in each side. We have doubts about the long-term stability of the implant, because of the necrosis of the iris tissue grasped by the suture. Meanwhile, varying results have been reported using anterior chamber angle-supported IOLs, depending on the preoperative status of the eye, surgical technique, and lens style. With both the flexible open-loop anterior chamber IOL or Kelman tripod lens, the association with corneal edema, cystoid macular edema, glaucoma, implant instability, lens decenteration, pupil distortion, and retinal detachment have been described.

In the early 1980s, an iris-fixated IOL was introduced by Worst. This lens (Artisan) is fixated to the midperipheral portion of the iris, centered over the pupil, and does not interfere with the physiological vascularization and movement during midriasis of the iris or the angle structures. Some studies have indicated favorable visual outcomes and a low incidence of intraoperative and postoperative complications with the actual model, and several groups, including ours, have had good outcomes with the use of this IOL style as a secondary implant (unpublished data). The most evident limitation has been wound size and control of induced astigmatism.

We recently began an evaluation of a new silicone iris-supported 6-mm optical zone IOL with PMMA haptics—the Artiflex—which has the advantages of an iris claw style IOL (mainly fixation at 8.5 mm and centration) and is introduced through a small incision (2.75/3.2 mm). We present results in our first aphakic patient corrected with an Artiflex aphakia IOL, with 12-month follow-up.

Case Report

A 24-year-old man had a traumatic perforation of the left eye after a car accident in May 1989. He had emergency surgery with traumatic crystalline lens extraction and corneoscleral suture. We first saw him in April 1991, and proceeded with anterior vitrectomy and extraction of a pupillary dense membrane. After surgery, his refraction was -3.75 +14.75 x 165°; visual acuity was 20/30, and with a +13.50-D rigid gas permeable contact lens, visual acuity was 20/25. Unfortunately, he was not able to adapt to the contact lens because of great discomfort.
In March 2002, in a quiet eye with a mean central endothelial cell density of 1850 cells/mm², we decided to secondarily implant an Artiflex +18.00-D IOL (Ophtec, Groningen, Netherlands). Surgery was uneventful and 4 weeks afterward his UCVA was 20/100 with a residual refraction of -1.50 -3.00 x 25° and BSCVA of 20/25, with some amount of binocular diplopia. Twelve months after surgery, the patient did not present with diplopia and had UCVA OD of 20/20 and OS 20/100 (-2.00 -2.50 x 15°) and a mean central endothelial cell count of 1910 cells/mm². If the patient chooses not to maintain this residual refractive error for monovision in the future, we will proceed with two-step LASIK in order to correct it (LASIK would be performed in two steps because in posttraumatic corneas, the lamellar cut itself can induce a significant refractive change, which cannot be preoperatively calculated).

Taking into account the technical limitations of biomaterials today (mostly regarding the refractive index-thickness relationship), we think the Artiflex is the most advantageous IOL, both as a secondary implant or as a phakic IOL, in those patients whose anterior segment anatomy allows its safe implantation.

REFERENCES

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Traumatic Corneal Rupture 18 Years After Radial Keratotomy

To the Editor:

Radial keratotomy (RK) incisions may permanently weaken the cornea. Histopathology shows that the healing is incomplete and strength of the cornea remains suboptimal years after surgery. Rupture of the cornea after RK has frequently been described. We report a case of repeat dehiscence of 18-year-old RK incisions following suture removal 14 months after the initial wound repair.

A 39-year-old man presented in March 2003 to the outpatient services with complaints of poor vision in the right eye for the past 14 months. The patient had undergone RK (six incisions) in both eyes 18 years previously (January 1985) for myopia of -2.50 diopters (D) in both eyes. Fourteen months before our first examination (January 2002), the patient sustained injury to his right eye and had complete traumatic dehiscence of the RK incisions. A primary repair was performed in January 2002. Postoperatively, the patient achieved best-corrected visual acuity of 20/200 with a rigid toric contact lens. However, the patient did not tolerate the contact lens. Slit-lamp microscopy showed six radial keratotomy incisions, extending to the central 3 mm of the corneal, from which five incisions had been made and interrupted sutures placed. Corneal topography (Cornea Orbscan II, Orbtek Inc., Salt Lake City, UT) of the right eye showed irregular astigmatism (31.60 D x 51°, 65.70 D x 67°). In consideration of the astigmatism, selective suture removal was performed. Alternate sutures of the three inferior RK incisions were removed. Two days after suture removal, the patient had dehiscence of two RK incisions following a trivial trauma to the same eye. An emergency repair was carried out under general anesthesia.

Radial keratotomy structurally compromises the eye; scars never regain the original tensile strength of the unoperated normal cornea. Tenisile strength of the cornea is decreased to 50% of the preoperative value. Histopathology and ultrastructural studies have demonstrated that the corneal keratotomy scars show incomplete healing even years after RK. These eyes may rupture with half the force required to rupture an unoperated eye.

Although the popularity of laser in situ keratomileusis (LASIK) is confirmed, incisional refractive surgery is still performed in various parts of the world. There are many reports of repair after traumatic RK wound dehiscence and poor visual gain. In an analysis of 26 such cases, visual recovery of 20/40 or better was achieved in 31% (6 of 26 eyes). In our case, the patient had visual acuity recovery of only 20/200 because of irregular astigmatism. Whether suture removal can be considered in such cases—to deal with the suture related astigmatism—remains unresolved. Our case is reported to emphasize that corneal healing and strength may