Broken toric intraocular lens haptic left in the capsular bag after penetrating keratoplasty

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We report the case of a broken and torn leading haptic of a custom-made double-loop toric posterior chamber intraocular lens left within the capsular bag of a patient who had had penetrating keratoplasty. The free broken part was removed uneventfully, and the postoperative visual acuity was excellent.

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Astigmatism is a common sequela of penetrating keratoplasty (PKP). Toric intraocular lenses (IOLs) gained popularity as an excellent solution for the correction of astigmatism during cataract surgery. Until recently, toric IOLs were considered contraindicated in post-keratoplasty astigmatism due to the possible need for graft replacement, which would result in a change in the corneal astigmatism that required IOL exchange. Advancement in lamellar corneal transplantation, primarily Descemet-stripping automated endothelial keratoplasty and Descemet membrane endothelial keratoplasty, which has little effect on corneal astigmatism, encouraged surgeons to use toric IOLs in these patients as well. Damage in the form of cracking of the acrylic IOL during implantation was reported by Carlson and Johnson. We report a case of a broken and torn toric IOL leading haptic in a patient who had PKP. We decided not to exchange the IOL during the surgery and describe the subsequent visual outcome.

CASE REPORT

A 56-year-old woman who was 28 months after PKP surgery for keratoconus and who had high residual corneal astigmatism of −9.25 @ 170 in her left eye, presented to our clinic with symptomatic cataract. She was scheduled for cataract surgery with implantation of a custom-made toric IOL, T-flex aspheric 623T (Rayner Intraocular Lenses Ltd.) with +7.5 D sphere and +11 D cylinder. This hydrophilic acrylic IOL is from the line of the C-flex IOL. It was the highest cylinder power the company could manufacture, and a residual astigmatism of 1.4 D with a spherical equivalent of −0.3 D was expected.

Standard phacoemulsification using the vertical chopping technique was performed, and during implantation of the IOL, a fragment of the double-loop leading haptic outer rim was broken and torn (Figure 1). There was no sign of IOL or cartridge damage during inspection before the IOL implantation. The torn piece was removed from the eye without causing damage. Since the IOL appeared to be stable and centered, it was decided to leave it in the eye and not exchange it. The IOL was rotated to the planned axis at 87 degrees with no damage to the capsule. During the 18-month postoperative follow-up, the cornea remained clear; the IOL did not undergo significant rotation but did have a mild inferior subluxation that was seen only after pupil dilation (Figures 2 to 4). The uncorrected distance visual acuity at the last follow-up (18 months after cataract surgery) was 20/25, and the corrected distance visual acuity was 20/22 with a correction of −0.5 −1.00 × 120.

DISCUSSION

We report a case of a broken and torn toric IOL leading haptic that we did not exchange in a post-PKP patient. The visual result was excellent. Various types of damage to the IOL during implantation have been described, among them cracks, deposits, and fractures in different locations. The actual incidence of an IOL fracture during implantation is not known, but it is considered a rare complication of cataract surgery. When an IOL haptic fracture does occur, it is more commonly at the trailing haptic than at the leading haptic. Possible causes for intraoperative IOL fracture include using inappropriate instruments for folding the IOL during cartridge insertion, incorrectly loading the
IOL in the cartridge, either a shearing force of an overriding plunger on the trailing haptic or catching the IOL haptic within the cartridge side wall, damaged IOL, dried IOL due to early loading of the IOL into the cartridge, and damaged cartridge.

To our knowledge, this is the first report of a torn IOL haptic in the Rayner hydrophilic acrylic IOL series and the first report of a torn toric IOL. An IOL exchange during surgery is always a dilemma, especially in a patient after PKP, since it may increase the risk for endothelial cell damage, which is more significant in a post-PKP eye that has a lower endothelial cell reserve. The decision to exchange an IOL with a broken haptic depends on the extent of the break and the stability of the IOL. The design of the IOL is also important: a partial break of a double-loop haptic leaves at least a part of the haptic intact and may increase IOL stability. Because the IOL in our patient was stable and centered in the capsular bag despite the broken haptic, we decided not to exchange it.

It is crucial to remove the loose broken fragment from the eye, regardless of the IOL type. Corneal decompensation from an IOL fragment may occur from repeated trauma to the corneal endothelium by the free haptic fragment. Our patient's astigmatism over-correction can be the result of various causes: the mildly subluxated IOL that may have had a mild tilt, which could increase the IOL astigmatic power; the effect of the posterior astigmatism, which we did not measure at the time; or another mistake in measurement or calculation.

This case represents one of the less common complications of cataract surgery. It shows that under certain circumstances, despite the manufacturer's recommendation to exchange an IOL in the event of damage, a fractured IOL haptic may be left in the capsular bag.

Figure 1. Schematic illustration of the IOL with the broken haptic.

Figure 2. Slitlamp photograph of the patient 18 months postoperatively showing the stabilized IOL in the capsular bag.

Figure 3. Ultrasound biomicroscopy image showing the mild inferior subluxation and tilt of the IOL.

Figure 4. Scheimpflug image showing the mild inferior subluxation and tilt of the IOL.
bag and maintain good stability with a good visual outcome if the IOL appears to be stable and centered in the capsular bag, even if it is a toric IOL.

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