A 64-year-old man was referred to our clinic for analysis of residual refractive astigmatism following cataract surgery with toric IOL implantation in his left eye. As we were able to obtain his medical history, we knew the following: Preoperative biometry had been performed prior to the initial procedure using the IOLMaster (Carl Zeiss Meditec), and the toric IOL cylinder power and alignment axis were calculated based on automated keratometry (K) values from the same instrument (steep K, 49.30 D at 59º; flat K, 45.40 D at 149º). Standard phacoemulsification had been performed through a 2.2-mm limbal incision located at 100º, and a SN60T8 toric IOL (Alcon Laboratories, Inc.) with a spherical power of 18.50 D and a cylinder power of 5.25 D at the IOL plane aligned at 55º had been implanted. Expected residual astigmatism was 0.28 D. No intraoperative complications occurred.

At 6 weeks postoperative, the patient was referred to our clinic for analysis of residual refractive astigmatism. Distance UCVA in the treated eye was 20/400, and distance BCVA was 20/25 with a subjective refraction of +3.75 -5.75 X 135º. Slit-lamp examination showed that the toric IOL was aligned at 143º (Figure 1). Scheimpflug imaging (Pentacam; Oculus Optikgeräte GmbH) demonstrated inferior steepening (Kmax 51.70 D); a central corneal thickness of 484 µm; and an inferonasal displacement of the thinnest corneal point, indicative of keratoconus (Figure 2).

ENHANCEMENT OPTIONS

Options available to correct residual refractive astigmatism following toric IOL implantation include repositioning the IOL and performing laser refractive surgery. We believe that the latter is most suitable for patients with low amounts of residual refractive astigmatism. In this case, because the toric IOL misalignment of almost 90º resulted in a large amount of astigmatism, we preferred to reposition the IOL by rotating it from 143º to 55º.

Figure 1. Slit-lamp image showed that the toric IOL was aligned at 143º instead of the intended 55º.

Figure 2. Scheimpflug imaging showed an island of inferior corneal steepening and protrusion indicative of keratoconus.

The timing of surgery is crucial in any realignment procedure to avoid formation of adhesions between the haptics and the lens capsule that cannot be dissected. To retract the distal haptic-end (ie, the knuckle) from its adhesion (Continued on page 57)
pocket, one pearl is to use a counterpressure technique, in which a fork is used to apply centrifugal force toward the bag circumference while a Lester hook is used to pull the haptic-end out of the pocket (eyetube.net/?v=wihen).

In this case, 1 month after the IOL was repositioned, distance UCVA in the left eye improved to 20/25 and distance BCVA was 20/20 with a subjective refraction of +0.25 D sphere.

CONCLUSION

This case demonstrates that preoperative corneal topography is mandatory in toric IOL implantation to rule out irregular astigmatism (in this case, caused by forme fruste keratoconus) and that repositioning of a misaligned toric IOL can be performed to improve distance UCVA and decrease residual refractive astigmatism. IOL repositioning should be performed as soon as possible—ideally in the early weeks after toric IOL implantation—to avoid formation of adhesions between the capsular bag and the IOL. However, as we have demonstrated in this case, with a meticulous surgical technique, repositioning of a toric IOL is still possible at a later time.

**Take-Home Message**

- In every case of toric IOL implantation, preoperative corneal topography is mandatory to rule out irregular astigmatism.
- Realignment of the toric IOL should ideally be performed in the early weeks after implantation, but it is still possible at a later time.

**CONCLUSION**

This case demonstrates that preoperative corneal topography is mandatory in toric IOL implantation to rule out irregular astigmatism (in this case, caused by forme fruste keratoconus) and that repositioning of a misaligned toric IOL can be performed to improve distance UCVA and decrease residual refractive astigmatism. IOL repositioning should be performed as soon as possible—ideally in the early weeks after toric IOL implantation—to avoid formation of adhesions between the capsular bag and the IOL. However, as we have demonstrated in this case, with a meticulous surgical technique, repositioning of a toric IOL is still possible at a later time.

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