

# Toric IOLs

These lenses can benefit many patients with glaucoma provided that surgeons take extra steps to ensure a successful outcome.

BY KATHRYN B. FREIDL, MD, AND MARLENE R. MOSTER, MD

**T**oric IOLs represent a valuable tool for managing eyes with preexisting corneal astigmatism and cataract. The AcrySof Toric IOL (Alcon Laboratories, Inc., Fort Worth, TX) was a valuable addition to the cataract surgeon's armamentarium and is the toric lens we use primarily. The AcrySof platform has a solid history, and studies of the AcrySof SA60AT single-piece acrylic IOL have demonstrated a high level of stability, efficacy, and safety in healthy cataract patients.<sup>1-4</sup> In clinical practice, of course, cataracts often occur in aging eyes with comorbidities such as glaucoma. Can patients with concurrent glaucoma and cataract benefit from toric lenses?

## CONSIDERATIONS

It stands to reason that, as long as an eye has good central visual field function, it should benefit from a toric IOL, and thus far, our experience with the AcrySof Toric IOL in glaucoma patients has been very positive. Certainly, surgeons should take the standard steps of carefully marking the 90° and 180° axes preoperatively and marking the exact axis intraoperatively.

It is important to note that glaucomatous eyes may not simply have high IOP. They are also more prone to zonular instability than eyes without the disease, and this weakness may be difficult to detect at the slit lamp due to poor pupillary dilation. The surgeon therefore must be watchful during the operative procedure for poor zonular support. In such eyes, the placement of a toric lens may be ill advised, because slippage or rotation of the IOL will affect its refractive power.<sup>5</sup> In addition, glaucoma patients in general are at higher risk of capsular phimosis, so surgeons must carefully create an adequately sized capsulorhexis. If there is early evidence of capsular phimosis, the surgeon can apply YAG laser energy to the anterior capsule at the 12-, 3-, 6-, and 9-o'clock positions to create 2- to 3-mm cruciate "incisions." This step will prevent postoperative contracture of the capsule and possible rotation of the IOL.

## COMBINED PROCEDURES

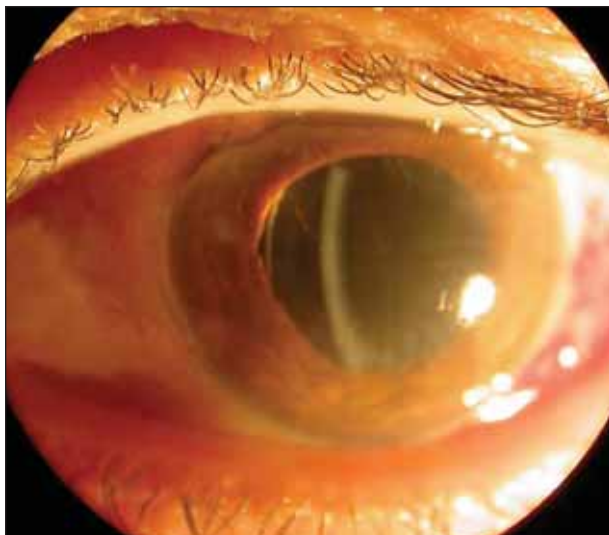
The AcrySof Toric IOL may be used successfully in combined phacotrabeculectomy procedures. The tra-

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beculectomy, however, can induce a significant amount of astigmatism, typically aligned against the rule or with the wound.<sup>6,7</sup> The degree of induced astigmatism may decline over time, as the eye heals. Ophthalmologists can take several steps to minimize surgically induced astigmatism. For example, preplacing flap sutures before the eye becomes hypotonous will minimize distortion of the globe. For surgeons who prefer single-site phacotrabeculectomy, there is evidence that a small incision induces less astigmatism, on par with cataract surgery alone.<sup>6,8</sup> There are conflicting reports in the literature about whether or not removing sutures early alleviates some of the induced astigmatism.<sup>7,9</sup> We remove conjunctival sutures around postoperative week 3. Moreover, we use a purse-string conjunctival closure, which, in a published study, induced less astigmatism than tight mattress sutures.<sup>8</sup>

Before implanting a toric IOL in a phacotrabeculectomy procedure, surgeons should determine how much surgically induced astigmatism they can typically expect with their technique 6 months to 1 year postoperatively. That information should be factored into IOL power calculations—an easy step with the AcrySof Toric Calculator (<http://www.acrysoftoriccalculator.com>).

Probably the biggest concern over using the AcrySof Toric IOL in the setting of a combined procedure is the risk of a flattened anterior chamber with either overfiltration or malignant glaucoma. Theoretically, early postoperative fluctuations in the depth of the anterior chamber could cause the lens to rotate in the bag. We have seen several flat anterior chambers after the placement of a toric IOL. One patient with primary open-angle glauco-



**Figure 1.** A flat anterior chamber in an eye with malignant glaucoma.

ma underwent combined bleb needling and cataract surgery. The early postoperative course was complicated by hypotony due to overfiltration with flattening of the anterior chamber. This patient required two reformations of the anterior chamber at the slit lamp in the first postoperative week. Six months later, his UCVA was 20/20, with an IOP of 15 mm Hg and no residual astigmatism to suggest significant rotation of the IOL. Another patient with pseudoexfoliation glaucoma developed malignant glaucoma, with increased IOP, corneal edema, and a grade 2 flat chamber 3 days after phacotrabeculectomy (Figures 1 and 2). Fortunately, YAG vitreolysis successfully resolved the crisis. A refraction 6 weeks after the episode suggested slight rotation of the lens (approximately 7°), which did not exceed that reported in straightforward cataract cases. The patient's refraction and vision were stable 1 year later.

## CONCLUSION

We now have over a year and a half of experience with the AcrySof Toric IOL in our glaucoma patients. We have used toric implants in cataract surgery in cases of established trabeculectomy as well as in the setting of combined phacotrabeculectomy. As long as patients with glaucoma have a strong potential for central vision, they can benefit substantially from a toric IOL. □

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**Figure 2.** A deepened anterior chamber 3 weeks after vitreolysis, with a well-functioning filtering bleb.

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1. Gayton JL, Seabolt RA. Clinical outcomes of complex and uncomplicated cataractous eyes after lens replacement with the AcrySof toric IOL. *J Refract Surg.* 2011;27:56-62.
2. Koshy JJ, Nishi Y, Hirschschall N, et al. Rotational stability of a single-piece toric acrylic intraocular lens. *J Cataract Refract Surg.* 2010;36:1665-1670.
3. Kwart J, Edwards K. Evaluation of the long-term rotational stability of single piece, acrylic intraocular lenses. *Br J Ophthalmol.* 2010;94:1003-1006.
4. Vizzeri G, Weinreb RN. Cataract surgery and glaucoma. *Curr Opin Ophthalmol.* 2010;21:20-24.
5. Teichman JC, Ahmed IK. Intraocular lens choices for patients with glaucoma. *Curr Opin Ophthalmol.* 2010;21:135-143.
6. Vernon SA, Zambarakji HJ, Potgieter F, et al. Topographic and keratometric astigmatism up to 1 year following small flap trabeculectomy (microtrabeculectomy). *Br J Ophthalmol.* 1999;83:779-782.
7. Hong YJ, Chole CM, Lee YG, et al. The effect of mitomycin-C on postoperative corneal astigmatism in trabeculectomy and triple procedure. *Ophthalmic Surg Lasers.* 1998;29:484-489.
8. Klink T, Rauch N, Klink J, Grehn F. Influence of conjunctival suture removal on the outcome of trabeculectomy. *Ophthalmologica.* 2009;223:116-123.
9. Dietze PJ, Oam O, Kohnen T, et al. Visual function following trabeculectomy: effect on corneal topography and contrast sensitivity. *J Glaucoma.* 1997;6:99-103.

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