# Postoperative Rotation of a Toric IOL

BY CARLOS BUZNEGO, MD; MARK KONTOS, MD; TAL RAVIV, MD; JEFFREY WHITMAN, MD; AND JEFFREY C. WHITSETT, MD

***Toric IOLs represent a significant advance in achieving optimal cylindrical and spherical refractions after IOL surgery. Have you experienced postoperative rotation of a toric IOL that has required surgical intervention? What pearls can you share regarding minimization of rotation and misalignment as well as the technique for positioning the IOL on the axis?***

## CARLOS BUZNEGO, MD

The earliest STAAR Toric IOLs (STAAR Surgical Company), with their plate design, were notorious for intra- and postoperative rotation, which made postoperative results inconsistent. The breakthrough of the AcrySof Toric IOL (Alcon Laboratories, Inc.) has been its consistency, meaning that the IOL stays where you put it. I have not had personal experience with significant IOL rotation, but it can occur on rare occasions with this lens. Unforeseen rotation can happen in eyes with asymmetric capsular bags or a localized absence of zonules due to colobomata of the crystalline lens. A capsular bag with an extremely large diameter could also allow unwanted IOL rotation. Oftentimes, these cases are not recognized pre- or intraoperatively, and the reasons for decentration are only determined postoperatively. In these patients, should stable repositioning be unsuccessful, then incisional or laser refractive approaches to astigmatism would be my procedure of choice.

## MARK KONTOS, MD

In our practice, toric IOLs have become the most utilized of all the specialty lenses. We have found them to be useful in many different situations for patients undergoing cataract surgery or refractive lens exchange. Success with these lenses requires careful pre-, peri-, and postoperative care. We mark the 180º axis and the desired axis at the slit lamp just before patients go into surgery. To my mind, the key to rotational stability is to make sure that, at the end of surgery, the IOL is the only thing in a well-polished capsular bag; no viscoelastic or cortex at all should remain. A watertight seal and a normally inflated anterior chamber are also important to achieve stability on the first postoperative day. If the lens is not on the correct axis, I am quick to go back to the OR and reposition the IOL. Having our surgery center within our practice makes this a relatively simple process. I expect that, in the future, newer IOL designs will greatly reduce the likelihood of unwanted postoperative rotation.

## TAL RAVIV, MD

I have personally only experienced relatively minor (less than 10º) rotations with the AcrySof Toric IOL (Alcon Laboratories, Inc.), although I have seen larger ones. I suspect this phenomenon is more common in long eyes with capsular bags that have a large diameter. Because the single-piece AcrySof Toric IOL only comes in one diameter, I have relied on the material's stickiness to stabilize the lens. Specifically, in addition to carefully removing viscoelastic from behind the IOL, I leave the underside of the capsule unpolished. More importantly, I deliberately undersize my capsulorhexis. By creating a capsulorhexis slightly smaller than 5 mm (as opposed to my customary 5.5 mm), I achieve more anterior capsular overlap to "lock" in the lens during the immediate postoperative period.

Bausch + Lomb just released additional models of the Crystalens with longer diameters (12 vs 11.5 mm) for higher-diopter powers. These had been limited to IOLs from 4.00 D to 16.50 D but will now be available up to 24.00 D. I believe the company made this decision because eyes with a long axial length (and large capsular

diameters) that had undergone LASIK were receiving the shorter-diameter lens. This could lead to IOL "propellering" in the bag or decreased accommodative effect. I believe that, in the future, surgeons and industry will all pay closer attention to capsular sulcus-to-sulcus diameter (which to my knowledge can only be measured by ultrasound biomicroscopy) when determining sizing for toric and accommodating IOLs.

## JEFFREY WHITMAN, MD

I have only had one AcrySof Toric IOL rotate enough to require repositioning. For this IOL, I find that going under the lens to remove all of the viscoelastic is key to preventing postoperative rotation. Pushing the IOL down against the posterior capsule at the end of the case can really make it stick. Also, I try to leave the eye a bit soft at the end of the case. Hyperinflation can cause the lens to "float," which can result in its rotation.

I recently began using the current model of the STAAR Toric IOL, which is less expensive than the AcrySof Toric IOL, and I have not had to reposition any of the STAAR lenses that I have implanted. If "propellering" of the lens occurs during irrigation toward the end of the case (indicating a large bag-to-lens diameter ratio), I insert a capsular tension ring over the IOL, which I believe helps to prevent rotation.

For accurate alignment of a toric IOL, at the time of surgery, I first mark the patient's limbus at the 3- and 9-o'clock hours at the slit lamp using a horizontal beam. When the patient is on the table, I use an instrument I developed with Bausch + Lomb Storz Ophthalmic Instruments (Whitman Axis marker E2430), which makes linear, midperipheral marks on the cornea for easy alignment and eliminates the need to "guestimate" the alignment of the lens marks to the limbal marks.

## JEFFREY C. WHITSETT, MD

As described in the case, misalignment of toric IOLs will affect UCVA and occasionally BCVA. My colleagues and I have been using the ORA System (WaveTec Vision) to confirm alignment with great success. As far as preventing rotation, eyes with large capsular bags, which are generally myopic, present a challenge. My pearls to ensure the IOL's stable placement are: (1) create a 5-mm anterior capsulorhexis contacting the optic 360º, (2) remove all viscoelastic from behind the IOL, (3) do not hyperinflate the capsular bag with BSS (Alcon Laboratories, Inc.), and (4) gently tap the optic to ensure contact between the capsular bag and the optic. These subtle maneuvers will help keep toric IOLs in alignment to yield the best visual results. ■

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