There's residual astigmatism postop—now what?

by Liz Hillman EyeWorld Staff Writer

Experts discuss how to deal with astigmatic surprises as well as prevent them in the first place with toric IOL patients

If patients are willing to pay for a premium toric lens in the hope of achieving a refractive cataract surgery that will leave them glasses-free, then the surgeon has to be ready to "get people into the end zone of their visual goals," said John Berdahl, MD, Sioux Falls, South Dakota.

At the postoperative stage, this means not stopping at "good enough"—not settling for a 20/25–3 outcome, for example, if your patient is unhappy, Dr. Berdahl said.

"They put their trust in you to do everything that you can to deliver on that outcome so be prepared to take it all the way until they are satisfied," he said.

The first thing to do when assessing toric IOL patients postop is to simply ask them if they're happy with their vision, Dr. Berdahl said, noting they’d complain of a lack of clarity, blur, or double vision if there was residual astigmatism.

"If their postoperative refraction has residual cylinder and they’re not satisfied with their vision, then you need to take further steps to figure out how to get them to a place that’s consistent with their visual goals," Dr. Berdahl said.

From there, Dr. Berdahl said he looks at the placement of the toric lens, checking on its axis placement. He uses the slit beam on his slit lamp, lining it up with the marks on the lens. Then he’ll pull the slit lamp back and uses an app, like Axis Assistant, to determine the axis of the lens.

"Once you know the axis of the lens, the power of the lens, and the refraction, you can go to a website like astigmatismfix.com, enter the information, and it will [determine] if rotating the lens would be helpful by calculating an expected refraction after rotation," he said.

If the refraction is satisfactory—both spherical equivalent and cylinder—Dr. Berdahl said he would rotate the lens. But if the spherical equivalent is not acceptable or if there is too much residual cylinder, then he would consider a lens exchange or laser vision correction.

Jeremy Kieval, MD, Lexington, Massachusetts, conducts his postop assessments 1 week after surgery, also using Axis Assistant to determine the IOL’s axis of alignment. If there is any unanticipated residual astigmatism, he’ll first repeat all of the measurements of the patient’s corneal astigmatism, verifying that the appropriate surgical plan was created and carried out in the operating room. He’ll also look for conditions that could be causing it, such as corneal edema, dry eye syndrome, or anterior basement membrane dystrophy. Once these factors are ruled out, he looks at IOL malpositioning or rotation.

"Once I can determine a stable refractive cylinder, anywhere between 1–3 months postoperatively, I use the Berdahl-Hardten toric IOL calculator (astigmatismfix.com) to determine the ideal axis of alignment with the patient. More often than not, I can rotate or exchange the IOL to reduce residual cylinder," Dr. Kieval said, noting that the ideal time to take someone back to the OR for a fix is between 4 weeks and 6 months postop.

David Hardten, MD, Minneapolis, said he would go back into the OR 1 or 2 months postop for a patient needing rotation or lens exchange.

"I typically use topical anesthesia and will use paracenteses to add viscoelastic material to provide anterior chamber stability. Then, using either the viscoelastic cannula, a 30-gauge needle, or a visco-canalostomy cannula, I’ll dissect the anterior capsule from the IOL and free the haptics of the IOL," Dr. Hardten said. "I will rotate the IOL into the correct orientation with a Sinskey hook. I often add a capsular tension ring as I feel that it may reduce rotation of the implant again. The meridian for rotation is based not on preoperative markings in the rotation of an already implanted IOL, but on the difference between current position and the new desired position, so it is important to mark where the implant is and where you want to leave the implant. I then remove the viscoelastic with bimanual irrigation aspiration to reduce any effect of a larger wound on corneal astigmatism."

Similarly, Dr. Berdahl said lens rotation is easier than the first time around because you don’t have to take cyclorotation into account. It’s as simple as rotating the IOL to its new location based on the results provided by a tool like astigmatismfix.com.

Fixing residual astigmatism is all well and good, but what about efforts to prevent it in the first place? The 2 previous “YES Connect” columns addressed the pre- and intraoperative steps that should be taken to correct astigmatism at the time of cataract surgery, but Drs. Kieval, Berdahl, and Hardten reiterated some advice to help avoid pitfalls in the end as well.

At the preop stage, Dr. Kieval said making sure all corneal astigmatism measurements are consistent and taking into account posterior corneal astigmatism are key, not to mention treating any ocular surface disease that could skew measurements. Intraoperatively, Dr. Kieval said he uses a “bubble level marker” to mark patients while they’re seated upright with the head straight.
After insertion, he’ll leave the IOL 10 degrees shy of its intended axis, remove all of the viscoelastic, and rotate the lens into its final position.

Dr. Berdahl had similar advice, noting that using stable IOLs in the first place can help prevent rotation. In addition to making sure you remove all the viscoelastic and give the lens adequate time to unfold completely, he suggested surgeons tamp on the lens, making sure it comes into solid contact with the posterior capsule.

Dr. Hardten said 1 of the most common preoperative pitfalls is using a toric IOL in a patient with irregular astigmatism.

“Toric IOLs are designed to treat regular astigmatism, so if the patient has irregular astigmatism from keratoconus, significant basement membrane dystrophy, prior corneal refractive surgery, or traumatic corneal scarring, beware of the use of toric IOLs in this situation. Corneal topography is an important tool to analyze the regularity of the astigmatism,” he said.

Dr. Hardten said that while most of the time physicians will be on target with their initial astigmatism corrections, they should have a plan for patients with residual astigmatism who have a strong desire to achieve good uncorrected visual acuity.

“It is difficult for patients to be told that there is still residual refractive error and that they need to wear glasses for their vision after you have done the initial procedure. Develop the skills and the knowledge to take these patients all the way to spectacle independence for their distance uncorrected vision,” he said.

In the end, Dr. Kieval said while toric IOLs can be wonderful, residual astigmatism postop is not uncommon. Fortunately, there are strategies to successfully treat these surprises.

“Be sure to communicate with the patient throughout this process,” Dr. Kieval added. EW

Editors’ note: Dr. Berdahl has financial interests with Alcon (Fort Worth, Texas), Abbott Medical Optics (Abbott Park, Illinois), ClarVista Medical (Aliso Viejo, California), and Calhoun Vision (Pasadena, California). Dr. Hardten has financial interests with Abbott Medical Optics and Oculus (Arlington, Washington). Dr. Kieval has financial interests with Abbott Medical Optics, Alcon, and Shire Pharmaceuticals (Lexington, Massachusetts).