

Toric IOLs: Planning for success



Experts share their preoperative strategies to optimize outcomes

To achieve optimal refractive outcomes with toric intraocular lenses (IOLs), clinicians need to carefully lay the groundwork when performing preop assessments and selecting technology.

Diagnostic requirements

Ocular surface assessment is key. “The tear film absolutely impacts your toric IOL outcomes,” said **Cynthia Matossian, MD**, Matossian Eye Associates, Doylestown, Pa., during a presentation at the 2015 ASCRS•ASOA Symposium & Congress in April.

She performs tear osmolarity tests during each cataract surgery consult. If osmolarity is greater than 308 mOsm/l, she begins treatment. “If you base your toric calculations on a hyperosmolar ocular surface setting, you are going to end up with a surprise, and not a pleasant surprise,” she said. Dry eye affects keratometry, topography, and wavefront imaging, she explained.

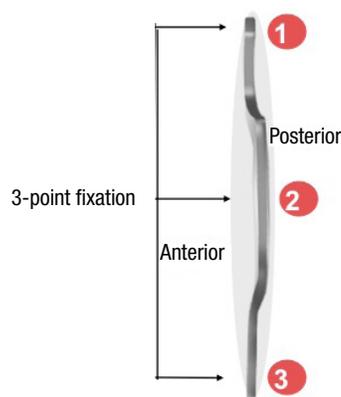
She performs the InflammDry test for MMP-9 (Rapid Pathogen Screening, Sarasota, Fla.), lissamine green staining, the Sjő Diagnostic Test (Bausch + Lomb, Bridgewater, N.J.) if appropriate, and ocular allergy testing. She asks patients to stop wearing their contact lenses 2 to 4 weeks before testing because they impact astigmatism measurements.

Based on disease severity, treatment may include preservative-free artificial tears, oral omega-3 supplements, cyclosporine ophthalmic emulsion 0.05%, loteprednol 0.5% gel or ointment, or a microwavable heat mask.

To measure the magnitude and axis of cylinder, Dr. Matossian compares Ks for axis and magnitude with 4 different pieces of equipment: a manual keratometer that is calibrated daily, IOLMaster (Carl Zeiss Meditec, Jena, Germany) or LENSTAR (Haag-Streit, Koniz, Switzerland), OPD III topographer and wavefront analyzer (Marco, Jacksonville, Fla.),

- 3-point fixation provides:
 - Constant capsular contact
 - Additional stability over traditional single-piece lenses
- Offset haptic design enables the lens to adhere to the posterior capsule
- Contact of 360-degree square edge against the posterior capsule enables LECs to close the capsular bag

Figure 1. Key IOL design considerations



Source: Mark H. Blecher, MD

and Cassini (i-Optics, The Hague, the Netherlands) to examine the posterior cornea.

“If there is greater than 10 degrees of difference in your Ks or more than 0.5 D in the magnitude of your Ks, you have to stop,” she said. “You have to figure out what is going on. What is it that’s giving you unreliable data?”

Ultimately, for toric IOL success, the surgeon must optimize the ocular surface, compare Ks, review the pattern of the astigmatism for symmetry (bow-tie pattern), assess the posterior cornea, and be sure the patient leaves out his or her contact lenses before testing, Dr. Matossian said.

IOL selection

In selecting an IOL, it is important to consider IOL optics, said **Mark H. Blecher, MD**, co-director, Cataract and Primary Eye Care, Wills Eye Hospital, Philadelphia, during the ASCRS program.

“You are not going to have good astigmatism correction or good multifocality and reading ability if you don’t start with good optics,” he said.

Dr. Blecher chooses IOLs without glis-tenings and that provide full transmission of healthy blue light, correction of spherical aberration to essentially zero, and a high Abbe number and less light dispersion resulting in less chromatic aberration.

Lens material and manufacturing are also important concerns. Lenses can be injection molded or lathe cut. “Cryolathing takes a

little longer to produce lenses, but it gives you a much finer finish,” he said.

In addition, Dr. Blecher looks for ease of insertion, with bag-friendly coplanar delivery, reduced lens thickness, and polished haptic loops.

Stability is particularly important with toric IOLs (Figure 1). “I like a vaulted lens because it puts the optic farther back against the capsular bag,” he said. “It keeps it closer to the nodal point to the eye, and it gives you a little more stable fixation because the haptics and the optic are independently fixated in the bag.”

Proper patient selection is critical for high technology lenses, which continue to evolve, he said. Suitable candidates for toric lenses should desire good uncorrected distance vision but be comfortable with spectacles for near. They also should have more than 1.0 D regular astigmatism on corneal topography, he said. While one can use toric lenses in cases of irregular or nonorthogonal astigmatism, results—while good—can be a bit less predictable, he said.

“Our success with these lenses will be further improved as we are better able to measure preoperative total corneal astigmatism and better anticipate postop refractive cylinder,” Dr. Blecher said.

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