STAAR Toric IOL

Experienced-based tips for success with this lens.

BY STEPHEN BYLSMA, MD

The STAAR Toric IOL (STAAR Surgical Company, Monrovia, CA) has been available in the United States since it received FDA approval in 1998. Accordingly, the IOL has undergone an evolution in both its design and its clinical application. This article highlights the unique features that set this IOL apart from the more recently released AcrySof Toric IOL (Alcon Laboratories, Inc., Fort Worth, TX). The piece also focuses on how ophthalmologists' accumulated experience with the STAAR Toric IOL may allow surgeons to enhance their ability to correct astigmatism at the time of cataract surgery.

HISTORY

The first toric IOL available in the United States was the silicone STAAR Toric IOL. Its plate-haptic design was found to be more resistant to postoperative rotation many months after surgery than contemporary lens designs in the 1990s.[1-3] Although today's AcrySof Toric IOL clearly has superior rotational stability in the early postoperative period, it is important to recognize the profound breakthrough in terms of achieving emmetropia that the STAAR Toric IOL represents. It was the first optic-based technique for correcting astigmatism, an alternative to less predictable tissue-based techniques such as limbal relaxing incisions or LASIK.

The STAAR Toric IOL provided exceptional correction of refractive astigmatism in numerous clinical studies.[4-16] Unfortunately, it also had a nagging propensity to occasionally and unpredictably rotate off the intended axis, thereby minimizing its refractive effect and, in rare cases of extreme malpositioning, inducing more refractive astigmatism than present preoperatively. Although infrequent, malpositioning typically became apparent on the first postoperative day, whereas late rotations were generally not observed. A change in design significantly reduced the occurrence of this early postoperative off-axis rotation; the manufacturer increased the overall length of the IOL from 10.8 mm (model AA4203-TF) to 11.2 mm (model AA4203-TL). Cases of off-axis rotation became uncommon, but I believe that their occurrence was a significant reason why the STAAR Toric IOL did not achieve greater popularity.

Figure 1. A Web-based calculation printout shows expected refractive results for the STAAR Toric IOL.

The cumulative experience of surgeons who have worked with the lens has shown how to maximize outcomes with this IOL, and those lessons are the subject of the rest of this article.

EXPERIENCED-BASED TIPS

Certain requisites for obtaining excellent results with the STAAR Toric IOL are obvious. As a positive-cylinder astigmatic lens, it must be aligned with the steep corneal axis. It is the keratometric cylinder that needs correcting. Rather than the preoperative refractive cylinder, surgeons should emphasize the postoperative keratometric cylinder when deciding on which axis to place the IOL. Predicting how the surgical incisions will change the cornea is an important aspect of calculating the postoperative keratometry. The PreVise Optimized STAAR Toric IOL Power

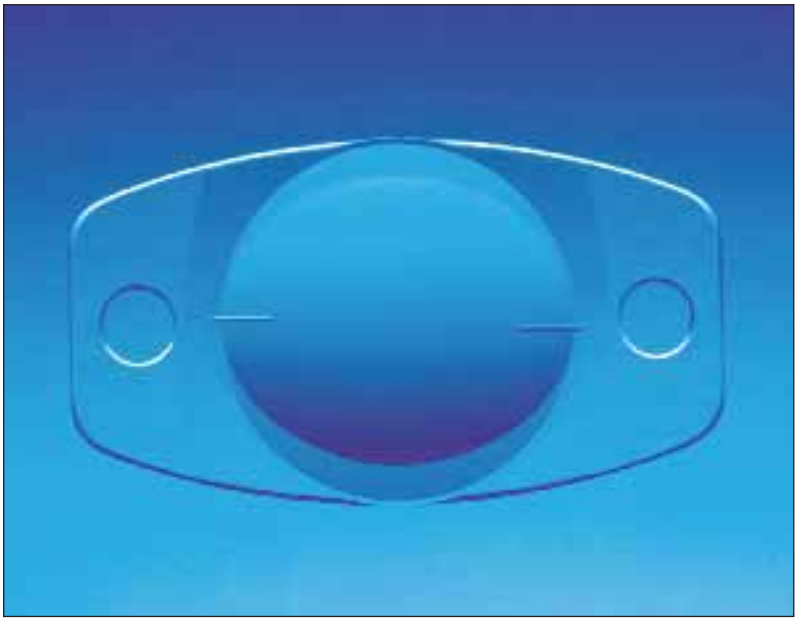

Figure 2. The STAAR Toric IOL.

Calculation Web site (www.staartoric.com) is available to the lens' users to help them determine the IOL's spherical and toric power as well as the best axis for implantation. The printout from this Web site includes a schematic diagram that can help surgeons to verify the appropriate alignment of the Toric IOL in the OR (Figure 1). In many ways, the tool is similar to the online AcrySof Toric IOL calculator.

Along with properly aligning the STAAR Toric IOL, surgeons must maximize its rotational stability. Implanting the IOL in a reversed position, with the toric surface facing the posterior capsule, increases the lens' rotational stability.[15,16] Most surgeons currently implanting the STAAR Toric IOL employ this technique. Packaged with its anterior (toric) surface facing upward, the IOL is loaded into the cartridge with the toric surface face down and implanted in this configuration. With this approach, my rate of off-axis rotation is less than 2%.

If the STAAR Toric IOL rotates significantly off axis (more than 15º), then surgeons may wish to reposition it. An off-axis IOL should produce a spherical equivalent near plano (or other intended postoperative refractive goal) if it is of the correct power. Repositioning of the IOL is best performed at 2 weeks postoperatively, when fibrosis in the capsule has begun but is not severe. LASIK or an IOL exchange are alternative corrective options and may be preferred in the unlikely event that spherical correction is necessary. Typically, the spherical equivalent of a malpositioned lens will be that which was targeted preoperatively, indicating that the IOL is of the correct power and simply misaligned, and any apparent spherical error will resolve when the IOL is properly aligned on axis.[15,16]

IN SUMMARY

The well-established long-term results obtained with the STAAR Toric IOL (Figure 2) have been consistent and excellent. Many surgeons continue to use this IOL for the correction of astigmatism at the time of cataract surgery. The longer TL model and the reversed positioning of the IOL are key elements to obtaining emmetropia after cataract surgery. ■

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