Surgical correction of astigmatism with IOL implantation has experienced rapid advances in the past few years. Toric IOLs not only provide correction of astigmatism in addition to spherical refractive error, but they also preserve the corneal contour—all with the bonus of being reversible. Toric IOLs are a growing surgical option, not only in cataract surgery patients but also in refractive surgery patients.

Several studies have been published recently on anterior chamber iris-fixated toric phakic IOLs that demonstrate a significant reduction in spherical and astigmatic refractive errors. However, concerns still exist regarding the potential of this lens to induce progressive endothelial cell loss and surgically induced astigmatism by implantation of the lens through wide corneal incisions.

The Visian ICL (STAAR Surgical, Monrovia, California) is a posterior chamber phakic IOL that provides safe, effective, predictable, and stable visual and refractive outcomes with minimal intra- and postoperative complications when used for myopia and hyperopia correction. The recently published outcomes from the clinical trial for US Food and Drug Administration (FDA) approval of the Toric ICL (TICL) showed good efficacy and predictability. Additionally, for cases in which keratorefractive or other alternative refractive procedures were not good or feasible options, TICL implantation showed promising results.

The TICL is a posterior chamber phakic IOL manufactured with a haptic design identical to the spherical ICL in terms of size, thickness, and shape. It features a central convex/concave optical zone and cylinder as necessary to address each patient’s astigmatic condition. TICL power calculation is performed using manufacturer-provided software.

**SURGICAL IMPLANTATION**

What I have found regarding implantation of this lens is that the amount of rotation required is minimal—no more than 22.5° (three-fourths of a clock hour) from the horizontal meridian. Each TICL comes with a guide demonstrating the amount and direction of rotation from the horizontal axis required to exactly align the cylinder axis of the phakic IOL to the patient’s required cylinder correction.

With the exception of marking the horizontal axis and rotating the lens in some cases, the surgical technique is the same as with the spherical ICL. To control for potential cyclotorsion with the patient lying supine, the surgeon should make the 0° horizontal axis at the slit lamp while the patient is sitting upright. The surgeon also should use a Mendez ring to measure required rotation from horizontal during the surgical procedure.

Our experience implanting these lenses has been excellent. At 12 months, the mean distance Snellen decimal BCVA in 55 eyes implanted with the TICL was 0.85 ±0.18, with 62% of patients achieving a visual acuity of 20/20. More than 50% of eyes gained at least 1 line of visual acuity, and 93.5% and 100% of eyes were within ±0.50 D and ±1.00 D of the attempted spherical equivalent, respectively. The efficacy index was higher than 1.0 after 3
months and continued to increase (up to 1.08) at 1 year. In addition to the immediate good results and improvement of visual acuity observed from the first month after surgery, the TICL was highly stable during the 12 months of follow-up. These results confirm that the TICL is a safe, predictable, and effective procedure for moderate and high astigmatic correction. A proper surgical technique such as the one outlined above is important to achieve maximal results.

José F. Alfonso, MD, PhD, practices at the Fernández-Vega Ophthalmological Institute, Surgery Department, School of Medicine, University of Oviedo, Spain. Dr. Alfonso states that he has no financial interest in the products or companies mentioned. He may be reached at tel: +34 985245533; fax: +34 985233288; e-mail: j.alfonso@fernandez-vega.com.


POSTERIOR CHAMBER PHAKIC IOLs

By Roberto Zaldívar, MD

Reason No. 1: The surgical technique for implanting a posterior chamber phakic IOL allows an incision of 3 mm or slightly less. Such incision sizes induce only a small amount of corneal astigmatism. Once familiarized with the technique, implantation is easy in experienced hands.

Reason No. 2: After 20 years of experience with different types of phakic IOLs, I believe that posterior chamber phakic IOLs interact with the endothelium better than anterior chamber phakic IOLs.

Reason No. 3: This IOL is made of excellent material, thus allowing better intraocular tolerance and producing fewer cases of photic phenomena.

Reason No. 4: Because of its placement behind the iris, complications and visual side effects such as halos and glare are minimal. This coincides with the lens’ material and its interaction with the endothelium.

Reason No. 5: The posterior chamber is the natural place for an IOL inside the eye. This position drastically reduces the amount of light reflection on the surface and any complication this may cause. It also helps to avoid the mirror effect of potential iris deformities, especially during the nighttime.

Roberto Zaldívar, MD, is the Scientific Director of the Instituto Zaldívar, Mendoza, Argentina. Dr. Zaldívar states that he is a consultant to STAAR Surgical. He may be reached at tel: +54 261 441 9999; e-mail: zaldivar@zaldivar.com.