

Toric posterior chamber phakic IOL effective over long term for myopic astigmatism

**Dermot McGrath
in Barcelona**

THE toric implantable contact lens (ICL, Staar) provides safe and stable correction of moderate to high myopic astigmatism, according to a study presented at the 8th Winter Refractive meeting of the ESCRS.

Tobias Neuhann MD reported outcome data from a series of 58 eyes with a mean follow-up of 21 months and a maximum follow-up of four years. Patients presented with myopia ranging from -4.0 D to -14 D and regular astigmatism between 1.5D and 8D. All eyes had a minimum anterior chamber depth of 2.8 mm and a corneal diameter of at least 12.0 mm.

The toric ICL predictably corrected sphere and cylinder in the majority of eyes and was associated with good functional outcomes. The phakic IOL maintained a stable position after implantation and was associated with a favourable safety profile so far as well.

"We now have reasonably long-term follow-up for the toric ICL and it has proved its efficacy and safety to date. The toric ICL deals with one of the key issues for any phakic refractive lens, which is astigmatism, and it also helps

other refractive procedures to stay in their safety zones," said Dr Neuhann.

Postoperative uncorrected visual acuity was 20/40 or better in 92 % of eyes. A small number of the implants (5.0 %) had to be readjusted because of inaccurate axis alignment during the surgery. Some 39% of patients experienced a gain in best spectacle-corrected visual acuity of between one and four lines. No loss of BSCVA was observed.

One patient developed an intumescent cataract two weeks after surgery, which Dr Neuhann said was probably surgically induced.

Discussing the properties of the lens, Dr Neuhann said that the toric version of the ICL is constructed of the same collamer material as its spherical counterpart and also has the same plate-haptic design, size, thickness and configuration.

The lens is implanted through a 3.0 mm temporal clear corneal incision and positioned behind the iris posterior to the iris plane and into the sulcus. However, the toric ICL features a central convex/concave optical zone design with spherical cylinder in a specified axis location to address the unique astigmatic conditions of each individual patient.

Additional measurements are

necessary for the toric ICL before surgery, since in addition to the dioptre values, the axis is central to the correction of astigmatism. The surgeon must ensure that the implanted lens does not rotate inside the eye and that the correct position of the axis is maintained long-term.

A recent Swiss study, presented at the ESCRS Congress in Munich last September, suggested that the design and material of the toric ICL made implantation more challenging and led to iatrogenic cataract in a high proportion of patients who had been implanted with the toric ICL.

"Compared with the spherical version, insertion of the toric ICL is overall more traumatic and seems to increase the risk for contact with the crystalline lens," commented Dr. Bornet, one of the chief researchers of the study.

She explained that the toric ICL is more rigid than its spherical counterpart and sometimes unfolds asymmetrically in the anterior chamber, a phenomenon that may occur because of the presence of the cylinder correction. Furthermore, the ICL lacks manipulation holes, and that feature makes the insertion of the footplates more complex.

The lens is available in power ranges of -6.0 D to -23.0 D and

for correction of +1.0 to +6.0 D of cylinder. While initial lens power calculation were performed by Staar Surgical based on subjective refraction along with information from automated keratometry and corneal topography, Dr Neuhann said that since 2002 an electronic calculation program has enabled him to perform the power calculations himself.

He also noted that while the indications allowed corrections up to -23.0 D he personally preferred not to perform ICL implantation in patients beyond the range of -15.0 D with some degree of astigmatism present.

"Intraoperative complications are rare but the potential risk of this unique phakic refractive implant is the loss of accommodation if cataract formation occurs," he said.

In selecting best-case scenarios for using the toric ICL, Dr Neuhann said that his clinical experience suggested that the lens was ideal for "rehabilitation" after lamellar or penetrating keratoplasty, in patients with high ametropias combined with astigmatism, or for biopitics, a combined procedure in which the ICL is implanted before a subsequent LASIK treatment.

"In my view, it is currently the only genuine customised implant,

although we know that other customised ICLs are on the way and may offer additional treatment options for conditions such as keratoconus in the future," he said. "The nomogram is very reliable and the postoperative refraction remains stable even after four years.

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