AcrySof SA60TT Toric IOL shows superior rotational stability

A prospective, randomised, multicentre study compared the clinical outcomes achieved with the AcrySof SA60TT Toric IOL with the AcrySof SA60AT monofocal control IOL. The participants were over 21 years old with age-related cataracts in one or both eyes, with at least 0.75 D pre-operative with-the-rule, oblique corneal astigmatism or at least 1.00 D pre-operative against-the-rule corneal astigmatism or both eyes, with at least 0.75 D pre-operative with-the-rule/oblique corneal astigmatism or at least 1.00 D pre-operative with-the-rule/oblique corneal astigmatism or both eyes.

The investigators implanted a total of 243 toric IOLs and 237 standard AcrySof IOLs unilaterally. No limbal relaxing incisions were permitted in the study eyes. The investigators examined the patients one year following surgery for visual acuity, absolute residual cylinder, and lens rotation. All of the study participants had the option of subsequent bilateral implantation.

Visual outcomes at one year revealed significantly (p < 0.0001) better cumulative UCVA with the toric IOL compared to the SA60AT IOL, in UCVA categories of 20/20 or better, 20/25 or better, 20/30 or better, and 20/40 or better. Forty per cent of toric IOL patients achieved 20/20 or better compared to only 19 per cent in the control group. More importantly, 80 per cent were 20/32 or better and over 90 per cent were 20/40 or better, Dr Ernest observed.

The proportion of patients demonstrating less than 0.5 D of residual cylinder was 61.6 per cent for the toric IOLs as compared to 19.6 per cent for standard IOLs. Mean residual astigmatism was 0.55 ± 0.5 for the toric IOL group, and 1.22 ± 0.73 for the control group. Stable positioning of the toric IOL was evidenced by a mean lens rotation of 3.4 ± 3.9 degrees, Dr Ernest reported.

Patients who received the SA60TT in both eyes were 97.3 per cent spectacle free for distance. By contrast, this was true of 61 per cent in the patients who opted for unilateral implantation only.

Haptics provide stability

Dr Ernest praised the AcrySof SA60AT as the “ideal platform” for a toric IOL due to its bio-adhesive material make-up and ‘stableforce’ haptic design. The AcrySofToric IOL, SA60TT and SA60AT IOL share the AcrySof single-piece design, but differ in the toric component located on the posterior surface of the toric IOL optic, he explained.

Dr Ernest noted that the superior rotational stability of the SA60TT was directly related to the haptic design in which the knee of the haptic absorbs the entire force of the capsular bag as it contracts. Dr Ernest suggested that the SA60TT would be a suitable lens for a hyperopic presbyopic patient who is not a good candidate for laser vision correction. The AcrySofToric Natural IOL is now available, which contains a blue-light filtering chromophore to reduce transmission of blue light wavelengths, he said.

He observed that the toricity of the device was built on the posterior surface of the implant, as opposed to the anterior surface, going from one end of the optic to the other. He said that since the toricity was sculpted onto the lens, patients did not experience visual aberrations at all from using this lens.

The SA60TT is available in three cylinder options: 1.50 D, 2.25 D, and 3.00 D, providing an effective correction of 1.0 D, 1.5 D, and 2.25 D, he said. A customised software program helps to calculate the appropriate IOL strength.

Although the surgical technique differs in the additional steps necessary for marking the cornea and the intraoperative alignment of the IOL, it is otherwise similar to standard cataract surgery with an IOL injector system.

Scattergram representations revealed that toric IOL placement was within 5° in 78 per cent of cases and within 10° in 93 per cent of cases. Surgeons who have marked eyes at 3 and 9 o’clock positions and then tried to align implants would understand the difficulty involved in precisely marking the eye and most likely know that being at least 5° off the mark can easily occur. Variations did not come from rotation but from alignment of the lens itself, he stressed.

Jeffrey Horn MD agreed with Dr Ernest that this was indeed a lens that surgeons should pay close attention to. He maintained that the implantation technique was extremely easy with little extra effort on the part of the surgeon.

“The surgical technique allows for uncomplicated delivery into the capsular bag and accuracy of lens placement with minimal deviation from its intended position. Although the surgical technique differs in the additional steps necessary for marking the cornea and the intraoperative alignment of the IOL, it is otherwise similar to standard cataract surgery with an IOL injector system,” he said.

Dr Horn and the other 10 principal investigators involved in the US clinical trials measured the orientation of the IOL cylinder axis after surgery in 254/256 SA60TT toric IOL subjects and compared it to the intended placement axis, as part of a multicentre US trial that used the customised AcrySof toric IOL software to determine which toric IOL model to implant and the axis of the post-incision steep meridian.

The mean absolute difference between the intended axis orientation and achieved axis orientation at surgery was 0.4 ± 1.4 degrees.

Surgeons can access the calculator software online and determine IOL power and axis by entering the K readings and factoring in the induced astigmatism of the incision, although a default value of 0.5 can be used.

As the data is not stored online, the surgeon can print it out for reference in the OR. Once the IOL calculator recommends the appropriate IOL power and the axis, the surgeon places reference marks on the limbus, with the patient sitting upright.

He then performs capsulorhexis and phacoemulsification. Next, the surgeon marks the axis with which the IOL is to be aligned with the astigmatism marker, with the patient lying down. After implantation into the capsular bag using the Monarch II Injector, he removes the viscoelastic and proceeds to precisely align the axis marking indications on the toric IOL with the marked axis of lens placement.

The procedure is very easy and highly accurate with the help of the toric IOL calculator software, Dr Horn maintained.

paul.ernest@tlcvision.com
jeffhorn@bestvisionforlife.com