THE toric ICL (Visian, Staar) offers a safe and effective refractive treatment option for patients with even high levels of astigmatism, according to John Chang MD of Hong Kong.

Dr Chang presented his results with the toric ICL during a session of the 21st Congress of the Asia-Pacific Academy of Ophthalmology.

“The toric ICL is a posterior chamber sulcus fixated phakic IOL that can correct up to -19.0 D myopia and 6.0 D cylinder. The nice thing about the toric ICL, unlike the toric IOL, is that it doesn’t rotate in the eye, except in cases of trauma,” he said.

Dr Chang described his experience implanting the lens in 20 eyes. Patients ranged in age from 23 to 44 years, with a mean age of 33 years. Pre-operative myopia ranged from -5.88 D to -17.0 D, with a mean of -12.62 D. The mean pre-operative astigmatism was 3.24 D. The pre-operative anterior chamber depth ranged from 2.8 to 3.4, reflecting the shallow AC depth typical in Asian eyes, he noted.

With a mean follow-up of six months, 76 per cent of eyes were within 0.5 D of the intended correction, and 100 per cent were within 1.0 D. Nearly two thirds achieved 20/20 or better postoperative best-corrected visual acuity and 100 per cent were at least 20/40. Mean postoperative astigmatism was 0.65 D, with normal standard deviation, he reported.

“No patient lost any lines of vision. The nice thing about this approach is that, unlike LASIK, you do not have to overcorrect. You get a very stable refraction from day one,” he said.

Complications were few. One patient had elevated IOP for a month, but is now normal without any medication. Night vision problems were none to minimal. No early cataracts occurred. Dr Chang said his results with the toric ICL mirrored those he had seen with the non-toric standard ICL. He noted that his normal ICL patients were stable at two years and beyond.

“The short-term results with the toric ICL are very encouraging. The accuracy is better than LASIK for high myopia. We get much better immediate and long-term results and stability than with LASIK. The surgery itself is not technically difficult, taking only 10 to 15 minutes on average. The learning curve is short. It is much easier to learn than phaco,” he noted.

The lowest correction available with the toric ICL is -1.25 D and 0.75 cylinder. The highest correction is -14D, with 5 degrees of cylinder or -18D with a three-quarters cylinder. Surgeons order custom-made lenses for each patient.

Dr Chang told EuroTimes that the toric ICL has rapidly become an important part of his practice. He considers it an option in patients under age 45 with myopia and astigmatism. Initially he would implant the non-toric ICL in appropriate patients with up to 2.0 D of astigmatism, using limbal relaxing incisions for the astigmatism.

“I really like the toric ICL. As my experience has increased, I’ve been decreasing my criteria down to 1.5 D of cylinder, and now I would use it for almost any astigmatism. You get quick visual recovery. Patients are seeing at least 20/40 within three hours, even those starting with -19 D of myopia and 4.0 D astigmatism. The results are impressive,” he said.

He explained that the surgical procedure is much the same as with the standard ICL. One week before surgery he does two laser peripheral iridotomies. A surgical iridotomy during surgery is another option, but could lead to haemorrhage. For the surgery itself, he makes a temporal 3.0-3.2mm self-sealing, astigmatically neutral incision. The foldable lens is injected via injector into the anterior chamber. It is then dialled into the sulcus, all under topical anaesthesia.

The surgery usually takes less than 10 minutes. The patient is scheduled on the routine cataract list. Most patients see 20/40 within three hours of the procedure and nearly all are 20/20 the next day.

The toric ICL is provided with correct power and sphere, but cylinder axis is different by up to 20 degrees. The surgeon, therefore, needs to dial the lens into position. While at the slit-lamp Dr Chang marks the cornea at the 90-degree axis, then in surgery he marks the axis the lens is to be dialled into.

For example, the patient needs a lens power -32, +3 x 96. If the lens is supplied with axis 90, the lens is inserted and then dialled it to six-degree axis. A chart shows how to calculate and dial the lens, he explained.

“Most people go in at the horizontal and rotate according to the chart. I’ve actually started making the incision at the axis site. Say there is a six-degree rotation, I mark the six degree and I go in at six degrees, rather than go in at zero and rotate. Then I don’t have to do any dialling, just inject the lens. That way there is even less lens touch.

It is quicker too, it saves me a lot of time,” he said.

The lens unfolds in the anterior chamber, and is dialled into the sulcus. The key at that point is to avoid the central area so you do not touch the lens, he advised.

“The nice thing is that with the lens on top of the crystalline lens even if you gently touch the crystalline lens, the ICL is touching over a broad area of the crystalline lens, so it is unlikely to induce cataract. It is a gentle surgery. If you are an experienced cataract surgeon this is really not difficult at all,” he commented.

He noted that while earlier versions of the ICL did have an associated risk of induced cataract, this has not been seen with the newer designs. He said that the main challenge with the toric ICL is in the sizing. Other than that, the only notable disadvantage of the lens was that it is quite expensive.

“Sizing is probably the most difficult thing because we don’t really have an instrument that measures sulcus-to-sulcus. At present there is a good nomogram that gives you a range. If you are towards the end of the range you might want to do a larger lens. That really comes with experience. My advice is to err towards a slightly too large lens than too small. The reason is that if it is too small you don’t want to go back and touch it, because of a high chance of a cataract. If it is a little too large it would be easy to explain if necessary and exchange,” he told EuroTimes.

Dr Chang said he prefers the ICL to the iris clip phakic IOL because there is no concern about endothelial cell loss. He added that it is better than LASIK in that night vision problems were minimal and no initial overcorrection was required. Moreover, the toric ICL is reversible, corrects a much higher range of myopia, and can correct hyperopia as well.

Surgeons interested in implanting the ICL are required to take a training course with follow-up mentoring. Staar offers the course, which includes the standard and toric ICL, at major ophthalmology conferences.