Roibeard O’Héineachain in Athens

**Implantation** of intracorneal ring segments (Intacs®, Addition Technology) using a femtosecond laser (IntraLase) followed by implantation of a toric posterior chamber IOL (Visian TICL®, Staar Surgical) can greatly reduce irregular astigmatism and high refractive errors and improve visual acuity in keratoconus patients, said Efekan Coskunseven MD, Dunya Eye Hospital, Istanbul, Turkey. Speaking at the 11th ESCRS Winter Refractive Surgery Meeting, Dr Coskunseven reported that he had performed the two procedures in three keratoconus eyes of two patients. In all cases, astigmatism was reduced and uncorrected and best-corrected visual acuity was improved, first by the intracorneal ring segments and then further by the phakic IOL, he added.

At the 12-month follow-up examination, the patients’ mean uncorrected visual acuity had improved from 0.01 to 0.40 and their mean best-corrected visual acuity had improved from 0.28 to 0.57. In addition, the mean spherical equivalent decreased from -18.29 D to 0.54 D and keratometry decreased by a mean of 6.2 D from the pre-operative readings.

“**There were no complications during the follow-up and all patients were satisfied with the surgery,”** he added.

Dr Coskunseven created the channels for implanting the ring segments with an IntraLase femtosecond laser. The channels had an inner diameter of 6.5mm, an outer diameter of 7.3mm and a depth of 75 per cent of thinnest corneal thickness at the tunnel location, provided that was less than 400 microns. The incision for insertion was on the steepest axis and had a length of 1.0mm. The size of the Intacs implanted was 450 microns.

He carried out ICL implantations six months after the INTACS procedures. He based his ICL calculation on the eyes’ refraction after the intracorneal rings were implanted and performed white-to-white measurements with the Orbscan. At least one week prior to ICL implantation he also performed two peripheral iridotomies, one at 1 o’clock and the other at 11 o’clock. He used general anaesthesia during the implantation surgery.

**Improved acuity in all cases**

Dr Coskunseven noted that in the first eye (a 32-years-old woman) that underwent the two procedures, Intacs implantation improved UCVA 0.01 to 0.10 and BCVA from 0.15 to 0.40. In addition, refractive improved from -18.0 D sphere and -7.0 D cylinder to -15.25 D of sphere -2.00 D of cylinder, and the mean K reading improved from 54.85 to 48.95 D.

Following ICL implantation, UCVA improved further in that eye to 0.60 and best corrected acuity improved to 0.6. In addition, refraction improved to 0.25 D cylinder and -0.75 D cylinder while mean keratometry was only slightly changed at 48.45 D.

**“The combination of implantation of Intacs and Toric ICLs to correct irregular astigmatism and high refractive errors in keratoconus patients can be a safe and effective alternative treatment”**

He noted that his current inclusion criteria for the combined procedure is grade I, II, III keratoconus, age greater than 21 years, contact lens intolerance and corneal thickness of at least 350 microns at its thinnest point and at least 450 microns at the tunnel location.

He excludes patients with keratometry readings of 65 D or greater, those with endothelial cell counts lower than 2000/mm² or anterior chamber depth less than 2.8mm. (After Intacs implantation ACD is getting smaller. Because of that, after Intacs implantation we should check ACD again and it should be ≥2.8mm.) He also excludes those whose refraction has changed by more than 0.5 D in the previous six months and those with mesopic pupils greater than 6.0mm.

“**The combination of implantation of Intacs and Toric ICLs to correct irregular astigmatism and high refractive errors in keratoconus patients can be a safe and effective alternative treatment**,” he added.