

TREATING PRESBYOPIA

Femtosecond laser technique can restore good reading vision in presbyopes with low hyperopia

by Roibeard O'hEineachain in Budapest

The three-month to one-year results with the INTRACOR™ procedure indicate that the technique can restore good reading vision in presbyopes with low hyperopia with only a small sacrifice of distance vision in some patients, according to a series of studies presented at the 14th ESCRS Winter Meeting.

Invented by Colombian refractive surgeon Luis Ruiz MD, the INTRACOR technique reshapes the central cornea through the creation of circular concentric intrastromal incisions with a femtosecond laser, said Mark Tomalla MD, Duisburg, Germany.

“The femtosecond laser cuts are generated only in the stromal tissue, without damaging epithelium or endothelium. As a result, biomechanical properties are locally changed and central steepening of cornea is achieved,” he added.

In a study involving 21 low hyperopic presbyopes who underwent the procedure, at one year's follow-up, patients achieved a median gain of six lines of uncorrected near vision, and median gain of two lines of uncorrected distance vision, Dr Tomalla said. The patients were highly satisfied and did not appear to lose any contrast sensitivity, he noted.

The patients in the study included 11 women and 10 men with a mean age of 53.8 years. All were presbyopic and their spherical error ranged from 0.5 D to 1.0 D. None had more than 0.5 D of cylinder. All underwent the INTRACOR procedure in their nondominant eye with the FEMTEC®, femtosecond laser (Technolas Perfect Vision), and all but one patient had completed 12 months of follow-up.

Best in low hyperopes Dr Tomalla noted that by one year all patients had gained lines of uncorrected near visual acuity, with an average gain of 4.8 logMAR lines. He said that 20 per cent gained one to three lines, 57 per cent gained four to six lines and 24 per cent gained seven to eight lines.

“Low hyperopic patients are the winners with the INTRACOR procedure. The patients have stable refraction after four weeks and they lost the haloes after nearly four to 10

weeks. Sometimes there is a reduction of distance vision for six to nine months,” he told *EuroTimes*.

He noted that uncorrected distance visual acuity remained unchanged or improved in over 75 per cent of the patients after 12 months. Furthermore, 40 per cent achieved 20/20, compared to 20 per cent preoperatively. On the other hand, due to the slight myopic shift the surgery induces, five per cent of the patients lost two lines of uncorrected distance vision and 10.5 per cent lost one line,

“Patients with up to +1.0 D of hyperopia are the best candidates because we have a reduction up to 1.0 D of sphere in addition to the myopic shift up to 2.0 D in the central area. In emmetropic hyperopes additional intrastromal radial cuts will help preserve distance vision,” he said.

When performing the INTRACOR procedure, Dr Tomalla created five intrastromal circular incisions with diameters of 2.0mm to 10.0mm, which he centred on the corneal apex as determined through Purkinje reflexes. To insure that there was 10 per cent to 15 per cent of stroma above and below the incisions, he measured corneal thickness with the Pentacam® (Oculus) and Orbscan (Bausch + Lomb), Dr Tomalla said.

He noted that the only complication so far has been scarring of the cornea in a couple of eyes, due to accidental damage to the Bowman's membrane from the femtosecond laser. He added that he and his associates have started a new trial in which they will seek to determine whether INTRACOR performed with six, rather than five, concentric incisions will achieve better results in terms of near visual acuity.

Good early results with bilateral treatment In another study presented at the Budapest meeting, bilateral INTRACOR treatment achieved good results in presbyopic patients who were nearly emmetropic preoperatively, with a good preservation of distance vision and significant improvements in uncorrected near visual acuity, said Tarek Abdel Wahab MD, Cairo Egypt.

The study involved 10 presbyopic patients with a mean age of 49.2 years. All of the patients were nearly emmetropic, with a mean sphere of +0.5 D, and they all required a near add of at least +1.75 D. All underwent INTRACOR in both eyes in the same surgical session, with femtosecond incisions based on Pentacam measurements of corneal thickness, Dr Wahab said. The mean uncorrected and distance-corrected near visual acuities appeared to stabilise three months at 0.8 and 0.9, respectively, Dr Wahab noted. However, mean distance visual acuity was slightly lower at 0.8, compared to 0.9 preoperatively, he added.

In addition, Dr Wahab commented, the contrast sensitivity was not affected following the procedure. Under photopic conditions, no change was observed in contrast sensitivity, although postoperative can sometimes be better than preoperative contrast sensitivity. The keratometry values changed substantially from preoperatively to postoperatively, he said.

Erik L Mertens MD, FEBO, director and ophthalmic surgeon at Medipolis Eye Center, Antwerp, Belgium told the meeting's attendees that INTRACOR is a very patient-friendly technique, not only because of the satisfactory visual results it achieves, but also because the surgery is very quick and completely painless.

“It's a 20-second procedure and the patient does not feel it. Pain and discomfort has been an issue with a number of procedures. In my experience with CK people had a lot of pain afterwards and were photophobic for two days, but this procedure eliminates all those risks,” Dr Mertens said.

He noted that in his preliminary results with the technique in 13 eyes of 13 patients, all gained four lines in near visual acuity and all were J3 or better. There was, however, a mean loss of one line of uncorrected distance visual acuity, he added.

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