



Jason E Stahl

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in Las Vegas

CONDUCTIVE keratoplasty (CK) appears to be an effective treatment for presbyopic emmetropes and in those who have undergone LASIK surgery in the medium to long term, according to some of the first three-year data available.

Speaking at the annual AAO meeting during refractive surgery specialty day, Jason E Stahl MD of Durrie Vision in Overland Park, Kansas, presented the three-year results from his first 10 CK patients. All patients were near-plano presbyopes who underwent conventional, standard-pressure CK in the nondominant eye, using 16 spots at the 6.0 and 7.0 mm optical zones. The target correction was -1.25 D to -1.75, and the average age was 51.

Three years later, nine patients were available for follow-up. Dr Stahl found that the mean manifest refraction spherical equivalent (MRSE) changed from -0.17 to -1.06, and that the mean near uncorrected visual acuity (UCVA) changed from J10 to J3. Seven of the nine patients (78 per cent) had near UCVA of J3 or better and binocular distance UCVA of better than 20/20.

There was some loss in vision from the one-year results, in which the mean MRSE was -1.31 and the mean near UCVA was J1, but Dr Stahl explained that the +0.25 change in CK-treated eyes was not significantly different than the +0.18 D change in non-treated eyes from one to three years during the same period.

He pointed out that this is comparable to the natural hyperopic shift observed in this age group in longitudinal population-based studies.

At three years, faint CK spots were still present on slit-lamp examination. The spots were less dense but the stromal depth was still approximately 70 to 80 of corneal thickness as demonstrated on anterior segment optical coherence tomography.

There was not significant change in keratometry from one year to three years which indicates no regression of CK's corneal tightening (steepening) effect.

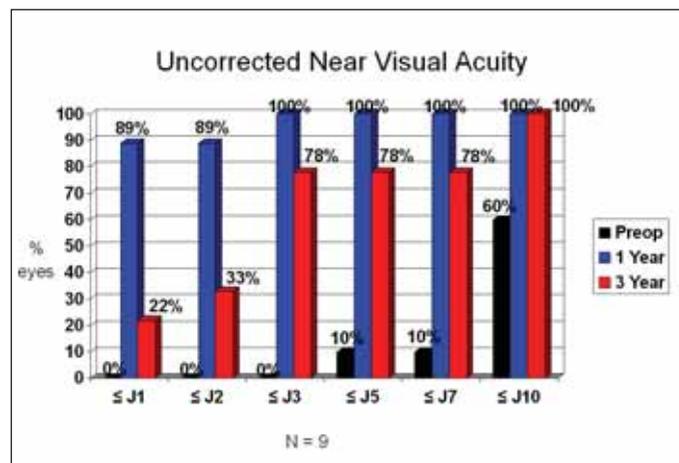
No eyes lost any lines of best spectacle-corrected visual acuity at one or three years or had an increase in cylinder of greater than 0.75 D.

Dr Stahl concluded that CK for presbyopia is "safe, effective, predictable and stable at three years." He also emphasised that the refractive stability was similar between CK and non-treated eyes, with only a small hyperopic shift.

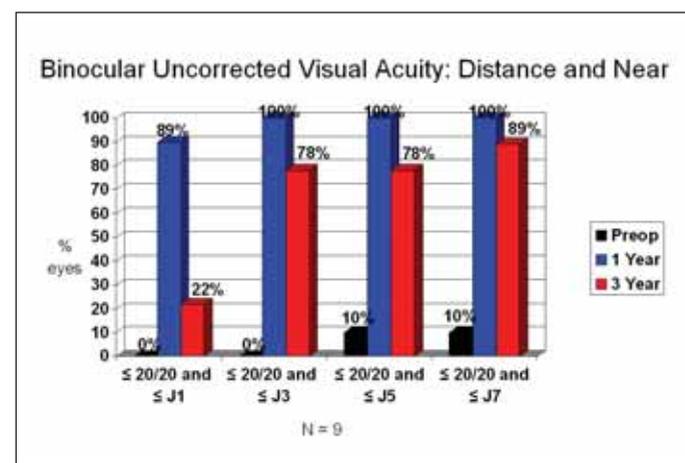
Conductive keratoplasty after LASIK

A second study presented at the AAO was a prospective multicentre clinical trial of CK in people with emmetropia after LASIK.

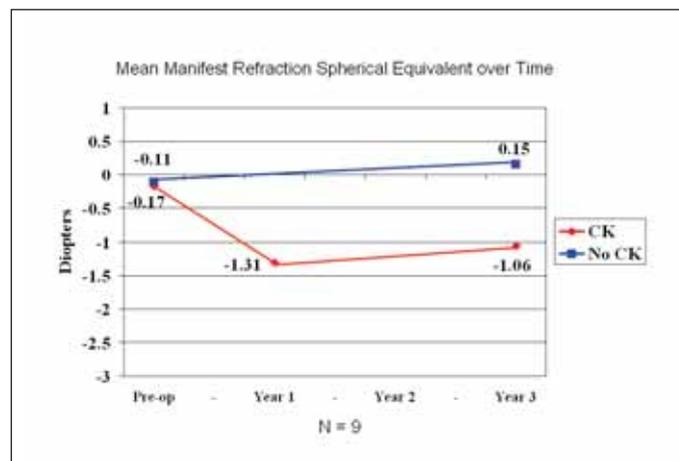
Conductive keratoplasty appears stable at three years



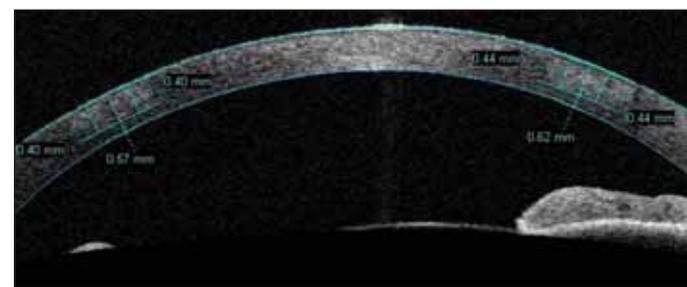
Pre-operative, one-year and three-year postoperative uncorrected near visual acuity (Jaeger)



Pre-operative, one-year and three-year postoperative binocular uncorrected visual acuity at near (Jaeger) and distance (Snellen)



Mean diopter change in MRSE over 36 months of follow-up



Anterior segment Optical Coherence Tomography image demonstrating adjacent CK spots that extend approximately 70 to 80 per cent of stromal thickness three years following surgery

The trial was sponsored by Refractec, which is seeking an expanded US Food and Drug Administration indication for its NearVision CK system.

"CK is very appealing to people who have had LASIK. They're motivated to stay free of glasses, and they're drawn to the safety and simplicity of the procedure," said Michael Gordon MD of the Gordon/Binder Institute in San Diego, California, who presented the results.

The study included 150 eyes in 150 patients, average age 52 years, who were emmetropic after having LASIK an average of 5.1 years earlier. Candidates were required to have a central corneal thickness of at least 400 microns and a peripheral corneal thickness of at least 560 microns. The average MRSE was -0.14 D.

Patients underwent conductive keratoplasty in the nondominant eye, using eight spots at the 8.0mm optical zone. The goal was to add 1.25 D of correction.

At the time of the presentation, 63 patients were available for one-month follow-up. Dr Gordon said that the near UCVA acuity "exceeded all targets," with 87 per cent achieving near UCVA of J1 or better and 97 per cent achieving near UCVA of J3 or better. The majority of

patients (76 per cent) also achieved an intermediate UCVA of 20/25 or better.

Three months after the procedure, 60 patients were available for follow-up. Of these, 73 per cent had a near UCVA J1 or better and 95 per cent had a near UCVA of J3 or better. The majority of patients (70 per cent) also achieved an intermediate UCVA of 20/25 or better.

Most patients – 85 per cent – were satisfied or very satisfied with their vision overall. Most also reported that they were able to work at their computer, scan a menu, and read a newspaper without the use of glasses. In addition, most patients were satisfied with the quality of depth perception.

No eye lost two or more lines of distance best spectacle-corrected visual acuity (BSCVA), had distance BSCVA worse than 20/40, or had an increase in cylinder of greater than 2.0 D. Dr Gordon also said that there were no adverse events or flap complications and no change in contrast sensitivity.

Dr Gordon concluded that CK with NearVision is "a safe and effective method for improving near vision in post-LASIK emmetropes". He and the other trial investigators are continuing to follow their patients as part of the study.

Unanswered questions

Jorge L Alio MD, PhD, one of the moderators at refractive surgery specialty day, told *EuroTimes* that CK has the advantage of offering better near vision performance than LASIK monovision because it provides blended vision. However, he expressed some reservations about the procedure.

First of all, he pointed out that results could be unpredictable.

"Even in the best hands, you have some degree of irregularity that cannot always be predicted. This is especially more frequent in LASIK patients in whom you are dealing with an abnormal topography," said Dr Alio, who is professor and chair of ophthalmology at Universidad Miguel Hernandez, Alicante, Spain.

The second drawback is regression. "I do not perform CK in patients under 55 because if I do, I have to keep very clear in the minds of my patients that the results will regress at least 50 per cent in the following one to three years, and they will need a new enhancement," he said.

Dr Alio cautioned that longer follow-up data would be required before one could judge the clinical utility of the procedure.

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