Combination of CK plus Intacs shows promise in keratoconus patients

San Francisco

A new treatment strategy which combines conductive keratoplasty (CK, Refractec) and intrastromal corneal ring segment (ICRS, Intacs, Addition Technology) appears to be a useful method for improving visual outcomes in patients with keratoconus or post-LASIK ectasia, reported Jason K Darlington, MD, at the annual ASCRS symposium.

He presented a retrospective study which involved 25 eyes operated on by a single surgeon, (David R Hardten MD). Nineteen (76%) eyes had keratoconus and the remaining six (24%) were being treated for post-LASIK ectasia.

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The researchers divided the patients into two groups consisting of eyes with pre-operative BCVA of 20/30 or better and those with BCVA worse than 20/30. Mean postoperative UCVA among eyes with BCVA of 20/30 or better was 20/25, and that outcome was significantly better than the mean postoperative UCVA of 20/40 achieved by the eyes that underwent treatment with a poorer level of pre-operative BCVA.

The surgeons individualised CK spot placement based on topographic and pachymetric analysis using the Humphrey ATLAS and Orbscan II systems. In eyes that underwent simultaneous surgery, the CK was performed first in the peripheral cornea in the meridian of the most elevated portion of the cone. Then, Intacs implantation was performed using a pair of 0.35mm rings centred on the axis of the most elevated portion of the cone.

“Mean follow-up for the group was about 16 months after the last surgery. Analyses based on data from the last available visit showed that mean cylinder was significantly reduced. There was an overall significant improvement in uncorrected visual acuity from 20/200 pre-operatively to 20/80 at last follow-up. Best-corrected acuity improved or remained stable in 19 eyes, with a mean improvement from 20/40 to 20/30.

However, one eye lost two lines of best-corrected acuity, two eyes lost three or more lines and five eyes had gone on to penetrating keratoplasty.

“These initial findings are encouraging regarding a potential adjunctive role of CK and ICRS implantation in eyes with keratoconus or post-LASIK ectasia when contact lenses or glasses fail to provide acceptable vision. Ideally, we will be able to determine prognostic features that will allow us to identify patients who are most likely to benefit. However, it is also reassuring to know from our experience that penetrating keratoplasty can still be performed if combination treatment with ICRS implantation and CK is not successful,” said Dr Darlington, Minnesota Eye Consultants, Minneapolis, Minnesota, US.

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““It seems intuitive that patients with a better pre-operative BCVA would have a better postoperative vision outcome. Nevertheless, this finding emphasises an important issue for patient counselling. Declining BCVA is often what prompts patients with keratoconus or post-LASIK ectasia to seek visual rehabilitation, and it is helpful to inform those whose BCVA is 20/40 or worse that they are less likely to improve after the ICRS and CK procedure,” Dr Darlington said.

In the analysis of pre-operative topographic elevation, patients were divided into two groups consisting of eyes with a greater than 60 micron topographic elevation in the region of the cone compared to the best fit sphere and those with a less than 60 micron elevation.

Those with the steeper elevation had a mean postoperative UCVA of 20/320 that was significantly worse than the mean UCVA of 20/63 achieved by eyes with less elevation. Postoperative BCVA was 20/25 for the eyes with less topographic elevation and 20/40 for those in the higher elevation group. The difference between groups in post-operative BCVA showed a trend toward statistical significance.

CK and ICRS implantation were each associated with a single complication. A CK-induced perforation occurred in one eye that required gluing and resulted in a BCVA loss of three lines. Another eye required ICRS removal due to migration under the wound. However, the patient still achieved improvement in BCVA and was tolerating contact lenses.

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