Optimised refractive correction shows promising results in LASIK enhancements

Stefanie Petrou Binder MD in Berlin

OPTIMISED refractive correction (ORK) with the Schwind ESIRIS laser is a promising tool for LASIK retreatments, reported researchers at the 103rd annual conference of the German Ophthalmology Society (DOG).

In a study that included 44 eyes of 35 patients with myopia and myopic astigmatism, German researchers compared the refractive and functional results of LASIK retreatments using the Schwind ESIRIS laser for ORK-guided ablation and standard ablation.

"Standard re-LASIK ablations with the Schwind laser showed comparable results, although efficiency, safety and predictability results were slightly in favour of the ORK customised treatments. More patients achieved post-operative refraction of within the 1.0 D of the 'happy zone' with ORK. Re-treatments of decentred ablations, irregular ablations, and enlarged optical zones showed notable improvements in postoperative visual quality," observed Thomas Baier MD, University of Dresden, Germany.

The indications for retreatment included eccentric primary ablation, central islands, higher order aberrations, and any enlargement of the initial small optical zone. The mean patient age was 35 years, ranging from 20 to 54 years.

Dr Baier explained that 44 out of 320 eyes (7.2%) that underwent LASIK at his Dresden clinic with the ESIRIS laser within the last two years required retreatments. The mean spherical equivalent before the initial LASIK was -6.02D, with a mean cylinder of -0.88D.

Dr Baier reported that the six month follow up results showed good stability, revealing a slight undercorrection in both groups, -0.30 D for the ORK customised ablation group and -0.32 D for standard ablation. All of the treatments were completed successfully without intra- or postoperative complications.

Improved safety and efficacy

He described safety as the change in spectacle corrected visual acuity from baseline to the postoperative outcome. In the ORK-guided ablation group, 76% of the eyes remained unchanged, while 18% lost one line of vision, and six percent gained one line. By contrast, the standard ablation group was unchanged in 73%, with 20% losing one line of Snellen, and seven percent showing one line improvement.

In terms of efficacy, 82% of eyes that underwent ORK-guided re-LASIK had a postoperative uncorrected visual acuity equal to or better than 20/25, compared with 74% of those in the standard treatment group. All of the eyes treated by ORK-guided ablation were within 1.0 D of the intended correction, while seven percent of eyes treated with standard ablation were not.

Newer lasers may also show improvement without optimised profiles

Thomas Kohnen MD felt that although Dr Baier's study verified the advantages of ORK-guided LASIK re-treatments, he felt that an additional study was needed to compare more balanced systems with like up-to-date technologies.

"One needs to be careful about stating results of higher safety when comparing systems. This study compares ORK, which uses a certain software and wavefront technology, to the Schwind Keratom F, which is an old machine. Possibly, if the study had been carried out with a more modern machine, the results using standard ablation might have been equal or even better than those achieved with ORK, even without the aid of the topography. Although it is valid to compare the systems to reveal their differences, it is critical to show all of the most important differences.

"Also, when comparing systems, what you definitely have to concentrate on are the contrast results, not only the visual results, because that is where the major differences lie between the two treatments. Predictability of re-treatments of something like 0.5 D is a given these days with standard laser systems. You can do it with almost any software and get good results, so you have to compare the contrast data," he noted.

Dr Baier affirmed that ORK-software was an excellent option for LASIK re-treatment. He said that this was an important option to have since the literature shows the LASIK re-treatment incidence to be from 10.5% - 51.3% and his study confirmed higher efficacy and safety compared to standard ablation. The corneal wavefront information promises an improvement of the functional and refractive outcome, he said.

The ORK (Optimized Refractive Correction) system combines the Schwind ESIRIS Excimer Laser with the high resolution Optikon Keratron Scout, topographic system. The ORK software is the link between the topographer and the laser. The ORK software interprets and translates the transformation data of the cornea into an individual customised ablation profile.

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