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Crosslinking-Enhanced Hyperopic LASIK: No Regression Benefit at 6 Months

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NEW ORLEANS — The addition of corneal crosslinking to hyperopic LASIK surgery is safe but offers no significant gains in the prevention of visual regression or in other clinical outcomes at 6 months, a prospective study indicates.

"Adjunct crosslinking in hyperopic LASIK is safe, with outcomes similar to control eyes," said lead researcher Avi Wallerstein, MD, from McGill University in Montreal.

Crosslink-treated eyes "had minimal regression of effect at 6 months," he told *Medscape Medical News*.

Crosslinking was [recently approved](#) by the US Food and Drug Administration.

The study findings were presented by Nataly Trang, MD, a third-year resident at Laval University in Quebec City, Canada, here at the American Society of Cataract and Refractive Surgery 2016 Symposium.

All 48 study participants were treated with LASIK plus crosslinking in the eye with the most severe hyperopia. The contralateral eye, which served as the control eye, was treated with LASIK only. When vision was equal in both eyes, treatments were randomly assigned.

Dr Wallerstein and his colleagues compared pre- and postmanifest refraction, uncorrected distance visual acuity, corrected distance visual acuity, and higher-order aberrations at 6 months. They also performed cylinder vector analysis and assessed patient-reported quality of vision.

To perform crosslinking, the surgeon placed 0.25% riboflavin on the stromal surface after excimer ablation for 3 minutes. After the flap was replaced, the eye was treated with ultraviolet light 18 mW/cm² for 3 minutes.

At 6 months, regression did not significantly differ between the two treatment groups. In addition, at 6 months, there were no significant differences between groups in accuracy, efficacy, induced higher-order aberrations, subjective quality-of-vision ratings, or clinically relevant increase in haze.

No intraoperative or postoperative complications were noted.

Table. Six-Month Outcomes

Outcome	Crosslinking Group	Control Group
Accuracy, ± 0.50 D	83%	81%
Uncorrected distance visual acuity efficacy index	0.92	0.93

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Change in corrected distance visual acuity	1.01	1.00
Change in spherical equivalent refractive stability > 0.50 D	22%	22%
Cylinder vector correction index	1.09	1.07
Grade of haze	0.09	0.03
Patient-rated uncorrected vision "better"	90%	95%

The effective prevention of hyperopic regression after LASIK "has been elusive for years," said Louis Racine, MD, from Notre-Dame Hospital in the Centre Hospitalier de l'Université de Montréal.

Regression after LASIK surgery can result in lower visual acuity for some hyperopic patients, causing them to seek retreatment, he told *Medscape Medical News*.

The biomechanics behind crosslinking make sense, said Dr Racine. The corneal stiffening and greater stability afforded by crosslinking during primary treatment would minimize the need for retreatments and any associated complications.

He added that he is looking forward to more data demonstrating a beneficial effect.

Other Indications

"Besides using crosslinking as an adjunct in certain indications with LASIK, we have also been using crosslinking for keratoconus and corneal ectasia," Dr Wallerstein reported. He is cofounder of a network of 50 private-practice eye surgeons in Canada, which has crosslinking experience in more than 1200 eyes.

"Crosslinking allows us to preserve vision and prevent post-LASIK corneal ectasia when treated early," Dr Wallerstein explained. He said he uses a combination of topography-guided partial surface ablation and simultaneous crosslinking. "The results have been very good," and can prevent corneal transplants in keratoconus patients "as long as we can treat with crosslinking early enough."

Dr Wallerstein, Dr Trang, and Dr Racine have disclosed no relevant financial relationships.

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