PTK and mitomycin C can improve results of surface ablations

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COMBINING PRK and PTK with 0.25 sodium hyaluronate (Laservis) as a masking solution, the two-step procedure for the treatment of myopic and myopic astigmatic patients proved successful.

Dr Mrukwa-Kominek presented a second study involving PRK/PTK procedures followed by application of mitomycin C to the corneal surface after laser photoablation and masking solutions can help solve this problem. The photoablation rate of 0.25 % sodium hyaluronate is similar to that of the corneal tissue. This solution can be applied onto the corneal surface before, during and after the laser procedure. In the PTK-treated eyes, the mean time to re-epithelialisation was 3.7 days (range: 2-4 days) and the haze score, on a scale of 0 to 4, was 0.13 at the six month follow-up. That compared to a mean re-epithelialisation time of 4.13 days (range: 3-5 days) and a haze score of 0.73 in the eyes that did not undergo PTK.

The patients in the study included 11 men and nine women with a mean age of 29 years, ranging from 21 to 41 years. All had myopia or myopic astigmatism; the mean preoperative spherical equivalent was -4.44 D ranging from -1.5 D to -6.0 D. All underwent PRK alone in one eye and PRK alone in the other. The Polish researchers found that the time to re-epithelialisation was a day shorter in the PTK-treated eyes. Moreover, there was considerably less haze at six months in the PTK-treated eyes compared to those undergoing PRK alone, Dr Mrukwa-Kominek said.

“Irregularities on the corneal surface will remain after laser ablation and masking solutions can help solve this problem.”

Two-step procedure

After performing an initial ablation to correct the refractive error, Dr Mrukwa-Kominek applied sodium hyaluronate 0.25% to one eye of each patient and performed a PTK to a depth of 10 microns, she explained. “Irregularities on the corneal surface will remain after laser ablation and masking solutions can help solve this problem.”

Correcting regression, removing haze

Dr Mrukwa-Kominek presented a second study involving PRK/PTK procedures followed by application of mitomycin C in eyes with severe haze and regression from previous PRK. The treatment eliminated haze and appeared to result in a stable postoperative refraction.

The study involved 11 eyes of nine patients with regression and severe haze ranging from grade 3 to 4 (on a scale from 0 to 4) resulting from PRK they had undergone an average of five years earlier. Before the procedure the mean uncorrected visual acuity was 0.17, the mean best corrected visual acuity was 0.51 and the mean preoperative spherical equivalent was -4.0 D.

Dr Mrukwa-Kominek applied 0.02 % mitomycin C to the corneal surface following PRK/PTK. She initially applied the agent for one minute, but later extended the time to two minutes, which she found to be more effective.

After a follow-up of six months the mean spherical equivalent was -0.75D. In addition, UCVA improved in all eyes (mean 0.6) and was better than the BCVA before surgery. Postoperative BCVA was 0.8 After six months, eight eyes (72.7%) had haze grades 0 to 0.5, two eyes had grade 1 and only one eye showed haze grade 2.

“The scar-like tissue observed in confocal microscopy before surgery in the site of previous photoablation, was not observed during the follow-up time. Only in one eye blurred structures of keratocyte nuclei was noticed. Any toxic or side effects on the cornea and conjunctiva have not been observed,” she added.

Dr Mrukwa-Kominek noted that mitomycin C inhibits keratocyte activity and collagen synthesis and also has antibacterial properties. The agent has a wide variety of applications in ophthalmology, including glaucoma procedures, pterygium surgery, refractive surgery and the treatment of corneal and intra-epithelial neoplasia.

“Local mitomycin C in post-PRK patients prevents corneal haze formation, improves visual acuity, and exerts no adverse effects on the conjunctiva and cornea.”

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Results

Mean Haze – five grades scale (0-4)

Changes in haze seventy 3 and 6 months after the procedure.

Results

Changes in the mean spherical equivalent before and after the PRK/PTK procedure.

The mean contrast sensitivity changes in group I - without application of 0.25% sodium hyaluronate.

The mean contrast sensitivity changes in group II - with application of 0.25% sodium hyaluronate.

The mean contrast sensitivity changes in group II - with application of 0.25% sodium hyaluronate.

The mean contrast sensitivity changes in group I - without application of 0.25% sodium hyaluronate.