

Epi-LASIK considered surface ablation procedure of choice

Procedure offers more reproducible technique for flap creation, less pain than LASEK

By Cheryl Guttman

San Francisco—Epi-LASIK using the EpiVision epikeratome (Gebauer) is a safe and effective surface ablation alternative for treating myopia and hyperopia, said Thanh Hoang-Xuan, MD, at the annual meeting of the American Society of Cataract and Refractive Surgery.

Dr. Hoang-Xuan is professor and head of ophthalmology, and director, cornea and refractive surgery departments, Fondation Ophthalmologique Rothschild and Hôpital Bichat, Paris. He reported his experience with epi-LASIK in a series of 62 eyes, including 55 myopic patients and seven hyperopic patients. Mean SE values were -4.51 D (-1.00 to -10.25 D) for the myopic group and $+2.54$ D ($+1$ to $+4.25$ D) for the hyperopic group. Mitomycin-C was not used in any of the procedures.

Results from this group showed five cases needed to be converted to PRK because of a free or incomplete flap, but a good outcome was achieved in all of those eyes. In the remaining cases, epi-LASIK was associated with minimal postoperative pain and haze as well as rapid visual recovery. The mean maximum pain rating on the first day after surgery was 3.11 on a VAS scale with 10 as the worst possible score, and one-third of patients did not complain of any pain. By day 4 postoperatively, two-thirds of the eyes had achieved an uncorrected visual acuity (UCVA) of 20/30 or better, and at 1 month, mean haze scores were 0.33 for eyes treated for < -6.0 D and 0.94 for those with higher corrections, reported Dr. Hoang-Xuan.

“Surface ablation procedures may be considered in patients who are not good candidates for LASIK because of features that place them at risk for flap complications or secondary keratectasia,” he said. “Based on my experience, I believe epi-LASIK is the best option. Compared with LASEK, epi-LASIK offers a more reproducible technique for flap elevation and avoids the potential for alcohol cytotoxicity, while it is associated with less postoperative pain and faster rehabilitation compared with PRK.”

Dr. Hoang-Xuan noted there are four epikeratomes available on the market (EpiVision; Epi-K, Moria; Centurion SES, Norwood Abbey; Amadeus II, Advanced Medical Optics), and he has experience with all of those devices. Comparing their features, he observed that only the EpiVision and Epi-K have an applanation plate that can provide a safety advantage for preventing stromal incursion. However, one drawback of the Epi-K is that it takes about 45 to 50 seconds for flap creation compared with only about 15 seconds using the other devices. There is also a difference among the epikeratomes with respect to the amount of flap hydration required. In that regard, the EpiVision and Centurion SES may be considered to have an advantage because they require the least hydration of the flap, which may minimize effects on the nomogram.

Postoperative regimen

In performing epi-LASIK, Dr. Hoang-Xuan’s postoperative regimen includes 3 days of treatment with topical diclofenac (Voltaren, Novartis Pharmaceuticals), a 10-day course of topical corticosteroid and antibiotic, bandage contact lens wear for 4 to 5

days, and an oral analgesic (acetaminophen) as needed. “This regimen is relatively simple, and an advantage of epi-LASIK compared with PRK is that because of the presence of the epithelial flap, topical NSAID treatment can be started on the day of surgery,” he said.

Dr. Hoang-Xuan noted that in contrast to LASEK, epi-LASIK results in an epithelial flap that includes the basement membrane. In a previous study, he and colleagues demonstrated the basement membrane acted as a barrier against the induction of matrix metalloproteinases (MMPs) in the stroma by extracellular matrix metalloproteinase inducer (EMMPRIN), an MMP inducer that is expressed by epithelial cells. In his presentation, Dr. Hoang-Xuan showed images from transmission electron microscopy of three flaps demonstrating the basement membrane was present on most of the flap surface.

“The cleavage plane with this technique is within the superficial part of Bowman’s layer at the level of the lamina fibroreticularis where the anchoring plaques are located. The preserved basement membrane is important for minimizing pain and haze because it prevents exposure of stromal cells to EMMPRIN and to the pro-inflammatory mediators present in tears,” he said.OT

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Dr. Hoang-Xuan has a financial interest in all the companies that market epikeratomes.

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Epi-LASIK was performed using the EpiVision epikeratome (Gebauer) in 55 patients with myopia (mean SE -4.51 D) and seven patients with hyperopia (mean SE $+2.54$ D). Outcomes were favorable with respect to speed of visual recovery, postoperative pain, and haze.