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Devices to Facilitate Mini-PRK and Mini-LASEK

The "mini" versions of these procedures may heal faster and more comfortably than the original techniques.

BY SCOTT M. MACRAE, MD

Less is often best. As a cataract surgeon, I have enjoyed the evolution to smaller, less-invasive incisions that induce a minimal amount of astigmatism. Clearer corneas are the result of reduced ultrasonic energy and less fluidic turbulence. Less inflammation leads to fewer complications and happier patients. Dr. Scott MacRae has developed a series of instruments designed to attain a refractive goal with less surgery. This sure makes sense to me!

—Robert H. Osher, MD

Mini-PRK is an adaptation of the original procedure that uses smaller treatment zones for refractive touch-ups; say, for treating 1.00 D of astigmatism. Compared to standard PRK, in which surgeons often use an 8.5-mm treatment zone, the treatment area for mini-PRK is approximately 7 mm in diameter (6.0 to 6.5 mm of optical zone plus a narrow transition zone). Thus, mini-PRK reduces the amount of epithelium removed and thereby gives patients greater comfort and faster healing than traditional PRK. By removing 30% to 40% less tissue with mini-PRK versus the traditional procedure, I find that eyes generally heal a day sooner. Additionally, I feel that mini-PRK is safer than the original method, because treating a smaller surface area reduces the risk of a persistent epithelial defect, especially in the elderly eyes frequently seen in the cataract population.

Another advantage of performing mini-PRK or mini-LASEK is that cataract patients are more accepting of a "mini" procedure than of a full-sized enhancement. The idea of a small treatment that minimizes pain and quickens rehabilitation helps reduce the disappointment many patients feel over not being candidates for a LASIK enhancement.

TECHNIQUE

To perform mini-PRK or mini-LASEK, I first place the 6.5- or 7.0-mm MacRae Mini LASEK/PRK Well (E9105 and E9104, respectively; Storz Ophthalmics/Bausch + Lomb, Rochester, NY; Figure 1) on the cornea, centered over the pupil, and fill it with a 20% diluted alcohol solution (Figure 2). The 6.5-mm well is designed to remove 33% to 40% less epithelium than those that are 8.5 to 9.0 mm in diameter (Storz also sells a 7.0-mm version of this well). I keep the well on the eye for approximately 50 seconds, because I want the epithelium to peel off easily without having to scrape it. Then, I am able to simply use a Weck-Cel sponge (Beaver-Visitec International, Inc., Waltham, MA) to remove the epithelial tissue (Figure 3).

Figure 1. The MacRae Mini LASEK/PRK Well, 7 mm (E9104).

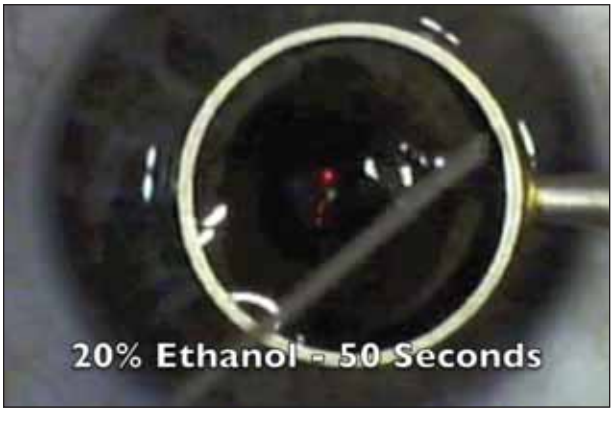

Figure 2. The author performs mini-PRK on an eye that has undergone refractive surgery. Here, he fills the MacRae Mini LASEK/PRK Well with diluted alcohol solution.

Figure 3. The author peels back the epithelium using a Weck-Cel sponge.

Figure 4. The MacRae Thin Flap LASIK Spatula (E9102).

Figure 5. The MacRae Flap Flipper (E9103).

Figure 6. The MacRae Epithelial Ingrowth Scraper (E9106).

HEALING RESPONSE AFTER MINI-PRK

Patients' typical healing time after traditional, 8.5-mm PRK is approximately 4 days, depending on the age of the patient and the health of the eye. With mini-PRK, I see individuals heal in about 2.5 to 3 days. I generally keep these patients in contact lenses for 6 days after the procedure, because I do not want their surface area to break down; I want it to be adherent and strong. After 6 days, the epithelium underneath the contact lens is suitably stable.

> "Mini-PRK reduces the amount of epithelium the surgeon removes and thereby gives patients greater comfort and faster healing than traditional PRK."

FOR RE-TREATMENTS

The MacRae Thin Flap LASIK Spatula (E9102; Figure 4) is designed for dissecting thin flaps of 90 to 100 µm without placing undue pressure on the interface. It minimizes focal pressure placed on the stroma when the surgeon lifts the flap and therefore reduces the risk of buttonholing. This instrument is curved on one end to mimic the curvature of the cornea, and its other end is rounded for fracturing the edge of the flap.

The MacRae Flap Flipper (E9103; Figure 5) is designed to slide along the edge of the flap to separate it from the stromal bed with a minimal amount of epithelium disruption. The inside blades of the Flap Flipper are relatively sharp so that the surgeon may easily lift the edge of the flap without engaging the stroma. This instrument gives me a sharp demarcation of the epithelium without causing loose tags or scrolls.

FOR EPITHELIAL INGROWTH

If it is necessary to scrape the interface for epithelial ingrowth, I designed an Epithelial Ingrowth Scraper (E9106; Figure 6) that has a relatively sharp, narrow tip that fits into the interface. I typically use this instrument at the slit lamp to simply scrape out epithelium without having to ask the patient to recline and retract the flap. I find it an effective tool for this procedure.

One trick I use to further reduce the risk of epithelial ingrowth when performing re-treatments is to run a small, handheld fan over the flap for about 20 seconds to help the flap dry out and separate from the stromal bed. I have had a very low rate of epithelial ingrowth (approximately 1 in 200 cases) combining this strategy with these instruments. ■

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