

# ENHANCEMENTS AFTER SMILE



Encouraging evidence for considering primary small-incision lenticule extraction.

BY LANCE KUGLER, MD; AND MIKE STUNTZ, MD

## OUTCOMES OF RETREATMENT BY LASIK AFTER SMILE

Reinstein DZ, Carp GI, Archer TJ, Vida RS<sup>1</sup>

### ABSTRACT SUMMARY

In a retrospective review, Reinstein and colleagues investigated the outcomes of LASIK retreatment after small-incision lenticule extraction (SMILE) in 116 eyes. The patients were gathered from a consecutive series of 2,643 SMILE treatments for an overall retreatment rate of 4.39%. Of the 116 patients, 96 underwent retreatment with thin-flap LASIK. In the others, the SMILE interface was converted to a LASIK flap using the circle technique or a sidecut alone. Although not currently available in the United States, the circle technique converts the SMILE pocket to a LASIK flap in three steps. First, a vertical junctional cut is made at the periphery of the SMILE interface. Second, the interface is extended toward the periphery. Third, a traditional sidecut is made for a LASIK flap.

LASIK flaps were 18  $\mu$ m thicker than the thinnest point of epithelium and 18  $\mu$ m thinner than the thinnest point of the SMILE cap, with at least 40  $\mu$ m of tissue available between these two points. The investigators used 18  $\mu$ m as a safety standard because it was four standard deviations away from previously measured variation in the thickness of SMILE cap cuts.<sup>2</sup>

## ENHANCEMENT AFTER MYOPIC SMILE USING SURFACE ABLATION

Siedlecki J, Luft N, Kook D, et al<sup>3</sup>

## STUDY IN BRIEF

- ▶ A retrospective study examined retreatment results for patients who underwent small-incision lenticule extraction (SMILE) for the correction of myopia or myopic astigmatism.

### WHY IT MATTERS

In the study, SMILE patients could achieve good results with LASIK retreatment and thus avoid the greater discomfort and lengthier recovery period associated with surface ablation. This is the largest study of post-SMILE LASIK treatment to date. In addition to describing alternative techniques, the investigators presented data that should reassure refractive surgeons who are considering adding SMILE to their repertoires that they will have multiple options to offer to the small number of patients who may require an enhancement.

The results of retreatment were encouraging. In 81% and 92% of patients retreated with thin-flap LASIK after myopic SMILE, distance UCVA was 20/20 or better and 20/25 or better, respectively. Furthermore, 86% achieved a UCVA within 1 line of BCVA, and nearly half of all retreated patients achieved a UCVA that was as good as or better than their pretreatment BCVA.

### DISCUSSION

Regardless of primary technique, laser vision correction enhancement rates are exceedingly low, and overall success is unmatched in the field of medicine. Nevertheless, enhancement procedures remain an inevitability for refractive surgeons. The ease and outcome of enhancement are important factors in the choice of primary treatment.

Failure to consider options for possible enhancement is a sure path to dissatisfied patients. In addition to the potential for enhancement, a surgeon's reasons for selecting a primary treatment should be consistent throughout the initial evaluation and any potential enhancement. Performing surface ablation on a patient who underwent SMILE because of a desire to avoid a longer and more uncomfortable recovery would not instill confidence in the refractive surgical process.

For US-based surgeons, use of a thin-flap LASIK technique after SMILE is limited by a lack of options for cap depth, although the procedure may be an option for a limited subset of patients. This technique will likely become more popular in the United States upon further FDA approval of SMILE customization.

Siedlecki and colleagues performed a retrospective evaluation of 1,963 myopic SMILE procedures, 43 of which required retreatment, and of which 40 were

included in this study. Standard surface ablation techniques were employed. Complication rates were low and in line with or lower than those reported

for primary surface ablation procedures. The number of patients in this study whose result was within  $\pm 0.50$  D of target refraction increased from 22% prior to enhancement to 80% postoperatively.

## DISCUSSION

Like Reinstein et al,<sup>1</sup> Siedlecki and colleagues studied retreatment after SMILE and reported evidence to bolster surgeons' confidence. This study also demonstrated a low overall rate of enhancement after SMILE compared with LASIK and surface ablation. Although 6- and 12-month follow-up data on the patients in this study have not yet been published, it seems reasonable to expect them to be similar to 6- and 12-month data from other studies of surface ablation, likely meaning modest overall improvement in visual acuity at those time points.

Taken together, the studies by Reinstein et al<sup>1</sup> and Siedlecki et al<sup>3</sup> encourage refractive surgeons to consider SMILE as primary vision correction for a wide range of patients with myopia and myopic astigmatism. When patients express a preference for a flapless procedure, these studies may give surgeons greater confidence that they can successfully perform

## STUDY IN BRIEF

- A retrospective study assessed outcomes of surface ablation as an enhancement procedure after small-incision lenticule extraction (SMILE) for the treatment of myopia or myopic astigmatism.

## WHY IT MATTERS

This study and previous research by Liu et al<sup>4</sup> found enhancements after SMILE to be highly efficacious. Taken together with the results reported by Reinstein and colleagues,<sup>1</sup> outcomes in this study appeared to be similar for most SMILE patients who underwent retreatment with either LASIK or surface ablation. Overall retreatment rates for SMILE in both studies appeared to be similar to most published reports regarding LASIK. Outcomes of surface ablation for retreatment after primary SMILE also seemed to be in line with most published reports on retreatment of primary LASIK with surface ablation.

an enhancement, when needed, without creation of a flap. Although recovery after surface ablation is longer and more arduous than after SMILE, the infrequent need for retreatment and low overall rate of complications with either flap-based or flapless retreatment procedures will likely increase procedural volume and satisfaction with SMILE. ■

1. Reinstein DZ, Carp GJ, Archer TJ, Vida RS. Outcomes of re-treatment by LASIK after SMILE. *J Refract Surg.* 2018;34(9):578-588.
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3. Siedlecki J, Luft N, Kook D, et al. Enhancement after myopic small incision lenticule extraction (SMILE) using surface ablation. *J Refract Surg.* 2017;33(8):513-518.
4. Liu YC, Rosman M, Mehta JS. Enhancement after small-incision lenticule extraction: incidence, risk factors, and outcomes. *Ophthalmology.* 2017;124(6):813-821.

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