

# Removal of Corneal Tissue

Why a customized, sub-Bowman's flap is the best approach in LASIK.

BY STEPHEN G. SLADE, MD

**T**he debate about the optimum thickness of a LASIK flap or whether an Epi-LASIK/PRK approach is best really has seemed endless, but I think the situation is about to change. I believe the best option for our refractive surgery patients is the creation of a customized, sub-Bowman's flap. In my opinion, the most consistent and safest method for making this flap uses a femtosecond laser.<sup>1</sup>

## REMOVING CORNEAL TISSUE

The debate about the appropriate thickness of a LASIK flap has much to do with our growing fear about causing postoperative ectasia. We are all aware that there is a limit to how much corneal tissue can be removed without the risk of producing a negative postoperative response. Concerns about ectasia have motivated many of us to perform PRK or Epi-LASIK.

## CORNEAL THICKNESS AND STRENGTH

Professor John Marshall and his group at King's College in London have compared the relative strength of the cornea following PRK, Epi-LASIK, and thin-flap LASIK or sub-Bowman's keratomileusis (SBK). They concluded that, with a femtosecond LASIK flap of 80 or 90 $\mu$ m, the biomechanics of the SBK corneas are indistinguishable compared to surface ablation and do not damage the epithelium.

A sub-Bowman's flap requires a consistent thickness across its entirety in order to avoid buttonholes or perforations. In my practice, all SBK flaps are designed with the Intralase laser (Intralase Corp., Irvine, CA) to be 90 $\mu$ m across the entire diameter. I am able to

achieve a very consistent thickness across the flap with very small standard deviations in thickness (Figure 1).

Consistent flap thickness is important to consider, not only because of the relative strength it provides, but also because of the associated visual outcomes. Mechanical microkeratomomes create flaps that are thicker in the periphery than the center, whereas the Intralase laser produces a flap that has relatively the same thickness across its diameter.

## CUSTOMIZED SUB-BOWMAN'S FLAPS

The advantages to using sub-Bowman's flaps include fewer cut nerves; a trend toward improved visual outcomes, particularly with customized LASIK; less required time for creation; a reduced occurrence of post-LASIK dry eye; and less risk of lost suction.

My goal is to create a flap of less than 80 $\mu$ m with a diameter that is between 1.0 to 1.5mm outside of the

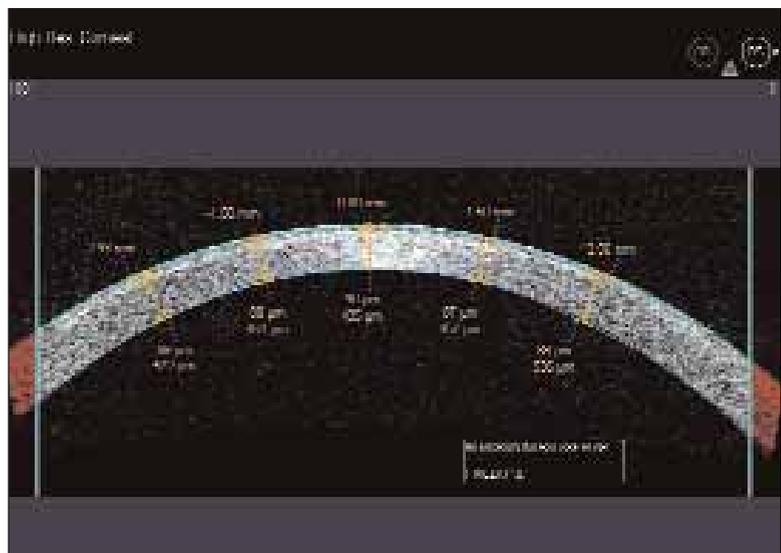


Figure 1. The consistent thickness of a sub-Bowman's flap decreases the risk of a buttonhole or perforation.

