

On the Borderline: to Operate or Not?

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AND WILLIAM B. TRATTLER, MD**

CASE PRESENTATION

A 34-year-old woman seeking refractive surgery presents to your office. She has trouble wearing contact lenses and, for the past 3 years, has only worn glasses. Her past medical history is unremarkable, and her ocular examination is entirely normal. Her dry eye workup is negative. The IOP measures 14 mm Hg OD and 13 mm Hg OS. Ultrasound pachymetry readings are 481 μm OD and 479 μm OS (Figure). Her manifest refraction is $-4.75 +3.25 \times 86$ OD and $-5.75 +3.75 \times 94$ OS. The fundus examination is unremarkable.

Would you perform surgery on this patient? If so, which procedure would you offer?

—Case prepared by Karl G. Stonecipher, MD

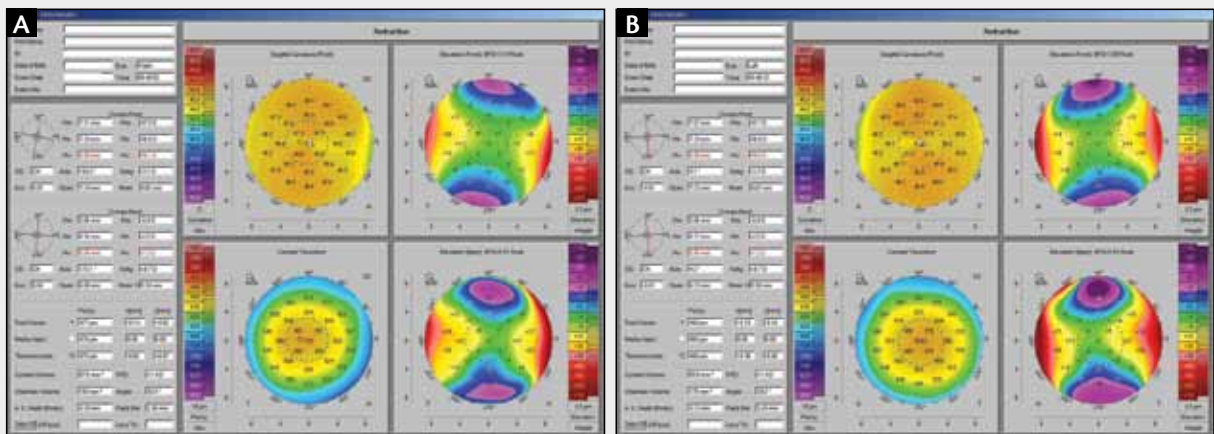


Figure. Imaging with the Pentacam Comprehensive Eye Scanner (Oculus Optikgeräte GmbH) of the patient's right (A) and left (B) eyes shows normal with-the-rule astigmatism. The thinnest pachymetry readings are 475 μm OD and 468 μm OS.

ARTHUR CUMMINGS, FRCS(Ed)

I would have no problem offering LASIK or PRK to this patient. The European guidelines for LASIK are currently a minimum preoperative pachymetry reading of 480 μm . Until a year ago, the requirement was 500 μm . The creation of a 100- μm flap with a femtosecond laser and a 90- μm ablation would leave a residual corneal thickness of 278 μm in the patient's left eye. For the past 10 years, 250 μm is the residual corneal thickness that most surgeons have said they believe to be safe. Some prefer 270 μm . I myself favor a thickness of 300 μm , especially in young women. Research has sug-

gested that pregnancy may increase the incidence of keratoconic progression,¹ so I attempt to decrease risk by leaving a thicker bed. I would therefore recommend PRK to this patient. I would perform alcohol debridement of the epithelium and apply mitomycin C 0.002% for 30 seconds. (I use this concentration of MMC, because I find it works as well as 0.02% in Ireland, where patients' exposure to ultraviolet light is not significant.)

ABI TENEN, MBBS(Hons), FRANZCO

My first preference would be to implant a phakic IOL (Visian ICL V4c Aquaport model; STAAR Surgical

“The key issue is the irregular astigmatism visible on the Pentacam map.”

—William B. Trattler, MD

Company; not available in the United States) to provide full refractive correction without risking a suboptimally shaped cornea and its consequences. In my opinion, the patient’s corneas are too thin for LASIK, and I would not be keen on PRK for this prescription.

PETER HEINER, MBBS, FRANZCO, FRACS

The problems in this case are myopic astigmatism and thin corneas. Assuming an anterior chamber depth of more than 2.8 mm, I would implant a phakic IOL (Visian TICL; STAAR Surgical Company; not available in the United States) in each of the patient’s eyes.

DOUGLAS KATSEV, MD

I would recommend PRK, and during my discussion with the patient, I would explain the reason for my decision (ie, why I think she is at slightly higher risk of ectasia with any refractive procedure that removes tissue). If she were unwilling to assume the increased risk with PRK, I would recommend she not have surgery.

WILLIAM B. TRATTLER, MD

Corneal thickness does not appear to be an independent risk factor for post-LASIK ectasia. Multiple peer-reviewed articles have examined LASIK using metal microkeratomes on eyes with thin corneas (< 500 µm) and have found no increased risk of ectasia.²⁻⁵ Nor is there any scientific evidence that LASIK with flaps created by a femtosecond laser in eyes with thin corneas are at increased risk for ectasia (assuming topography is normal). The key is evaluating the corneal shape, which is the best indirect measurement of inherent corneal strength.

In this case, imaging with the Pentacam demonstrates orthogonal astigmatism and a normal posterior curvature in both eyes. There is mild superior steepening on the sagittal view in both eyes, however, and the left corneal steepness superiorly exceeds 50.00 D. I therefore would not grade these maps as completely normal. Dry eye or ocular surface disease can be associated with this irregularity, so I would recommend a careful slit-lamp examination. Other tests that could be performed to better identify the significance of the superior steepening include evaluating the Pentacam’s Belin-Ambrósio Enhanced

Ectasia Display as well as placido disc topography.

Based on the information provided, the key issue is the irregular astigmatism visible on the Pentacam map. I would recommend PRK rather than LASIK regardless of the corneal thickness. ■

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