



**HENRY D. PERRY, MD**

That this patient has undergone bilateral transplants, one of which was a triple procedure, suggests that the underlying diagnosis is Fuchs corneal dystrophy. With this in mind, to me, the optimal procedure would be a relaxing incision based on the patient's refraction.

In a previous study, my fellow investigators and I achieved excellent results using the LenSx Laser (Alcon Laboratories, Inc.) to perform relaxing incisions within the border of the corneal transplant.<sup>1</sup> For example, in a 7.5-mm graft, the relaxing incisions are placed at the 6.5-mm zone or 1 mm inside the wound margin. To treat errors greater than 6.00 D, we use 60° paired incisions, and for 4.00 to 6.00 D, we use 50° paired incisions.

I would also like to view a topographic modeling system to see the peripheral cornea, but in cases of Fuchs, this is usually not important. Based on the aforementioned study, I would expect the patient to be left with -50 +1.00 @ 180° and to have 20/40 UCVA. The improvement is usually immediate, and the refraction becomes stable at 1 month.

**DAVID R. HARDTEN, MD**

This scenario is very common: difficult irregular astigmatism after PKP with decreased BCVA and significant anisometropia. In general, I prefer to treat these patients with LASIK if I can, although the complication rate is higher and the inclusion criteria are more difficult to meet than for the typical refractive patient, as my colleagues and I found in a review of patients in our practice several years ago.<sup>2</sup>

In this case, I would conduct a careful slit-lamp examination of the junction between the peripheral cornea and transplant. Based on the topography presented, however, there appears to be significant wound disparity, with lifting up of the transplant over the peripheral bed. This situation often leads to thinning of the cornea at the host-transplant junction, and LASIK would therefore create problems in this area. Additionally, an endothelial cell density greater than 1,000 cells/mm<sup>2</sup> is needed to allow strong adherence of the LASIK flap and has not been documented in this case.

For patients with regular astigmatism, PRK with mitomycin C (MMC) is highly predictable.<sup>3</sup> This individual, however, has significant irregular astigmatism, with the superior portion of the cornea's being steeper and the inferior portion's being flatter. The accuracy of PRK will therefore be much less predictable. Still, she has a reasonable BCVA with a refractive error of -2.00 +4.50 × 180, and this orientation of astigmatism matches somewhat with the topographic axis. If her BCVA were worse than 20/40 with this topographic pattern, I would favor a larger repeat corneal transplant to try to gain better regularity of the astigmatism with no peripheral wound override. Here, though, with a BCVA of 20/25 and true intolerance of contact lenses and glasses, I believe PRK

with MMC would be a reasonable option. A wavefront analysis from a system capable of treatments using excimer wavefront ablations is not provided, so I would perform a standard treatment. I would expect reasonable but not great results; Huang and colleagues reported reasonable success using PRK in patients with prior transplants.<sup>4</sup> If the procedure were unsuccessful, then a repeat transplant could still be performed to improve regularity, but it would entail the long recovery period that the patient is trying to avoid.

**JONATHAN B. RUBENSTEIN, MD**

Post-PKP astigmatism is a common but frustrating problem that can significantly reduce visual acuity despite a clear corneal graft. On refraction, the patient has 4.50 D of astigmatism at 180°. On topography, simulated keratometry readings show 51.08 D @ 174° and 47.32 D @ 103°. Her manifest refraction is -2.00 +4.50 × 180°. Fortunately, her spherical equivalent is +0.25 D, so there are two acceptable options for correcting her refractive error.

Because her spherical equivalent is close to plano, the patient could benefit from paired astigmatic keratotomy (AK) incisions performed in the peripheral portion of the corneal graft, just inside the graft-host margin at 180°. The exact placement of these incisions could be guided by the topographic map. To correct 4.00 D of astigmatism, she would need paired 60° AK incisions in the peripheral extent of the corneal graft.

The patient's second option is treatment with an excimer laser. Because she has undergone PKP, she should have a surface ablation or PRK procedure. LASIK on post-PKP eyes can be less predictable. Despite the amount of astigmatism, the patient's manifest refraction is still within a range that should provide an adequate chance for a significant reduction in her refractive error. Post-PKP patients should wait until their refractive errors have stabilized after all sutures have been removed. Because her sutures were removed 2 years ago, this patient should be a good candidate for excimer laser treatment.

**D. REX HAMILTON, MD**

The refraction yields good visual acuity and a treatable amount of astigmatism. An endothelial cell count would be useful here if LASIK is a consideration for this post-PKP patient, owing to the potential for persistent flap edema in eyes with compromised endothelial function. Such may be the case here, as evidenced by the 603-µm pachymetry.

Given the nearly plano spherical equivalent, one could consider performing AK on this patient, although there would likely be residual astigmatism. A femtosecond laser would be the best tool to use for creating the AK incisions.

PRK with MMC would be my procedure of choice. A

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wavefront-guided treatment would be best, given the significant level of higher-order aberrations. Certain aberrometers may have a difficult time capturing a wavefront measurement of sufficient quality to use for treatment in this setting. If wavefront capture were not possible, I would still treat this patient with conventional or wavefront-optimized PRK with MMC. In my experience, there is a higher incidence of subepithelial haze after PRK on post-PKP corneas, particularly in the setting of high astigmatism, as in this case, and in young patients, which is not the case here. I would apply the MMC for 30 seconds and would instruct the patient to use loteprednol etabonate ophthalmic ointment 0.5% (Lotemax; Bausch + Lomb) for at least 6 weeks, starting q.i.d. and tapered after 1 month. ■

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