Difficult cases often require added chair time and thorough patient counseling. We were recently referred an interesting and unusual case that required significant surgical expertise and experience. This case highlights the importance for refractive surgeons to be proficient at corneal surgery in general as well as laser vision correction. In the end, the patient achieved an excellent outcome, but the surgical course was challenging enough to share below and in a video available at eyetube.net/?v=sopaj.

A 32-year-old woman underwent bilateral myopic LASIK at another center 18 months before presentation at our facility and a right eye enhancement 6 months after that. She enjoyed excellent vision in both eyes following the enhancement procedure, but over the past few months complained that her vision had worsened slightly in her right eye.

According to the patient’s recollection, a mechanical microkeratome was used at the time of the initial surgery to create the flap; however, we had no other details regarding the specifics of her original treatment or the enhancement. She had no other past ocular or medical history of note.

On examination, distance UCVA was 20/30 in her right eye and 20/15 in her left. Her refraction was +0.75 -1.50 X 90º OD, which improved distance visual acuity only to 20/25-2, and 0.25 D of sphere OS. Slitlamp biomicroscopy revealed well-centered LASIK flaps bilaterally. The left cornea was normal, but the right cornea had a diffuse inferior area of epithelial ingrowth (Figure 1) and some microstriae that were encroaching on the visual axis. Corneal topography showed corresponding findings, as the left eye was normal but a visible area of irregularity that corresponded to the area of ingrowth was seen on the right eye (Figure 2).

INITIAL FLAP LIFT AND DEBRIDEMENT

Following discussion of the risks, benefits, and alternatives to surgical intervention, the patient elected to undergo a flap lift and debridement of her right eye. After application of topical anesthesia, the edge of the flap was identified at the slit lamp and partially lifted using angled Kelman-McPherson forceps. The patient was then transferred to the operating room, where the eye was prepped and draped in a sterile manner. The flap edges were marked in two places with gentian violet, and the flap was lifted to expose the complete area of epithelial ingrowth.

A solution of 20% ethanol was then applied to the stromal bed for 20 seconds. The epithelium was thoroughly debrided from the stromal bed and the underside of the flap using a blunt-angled epithelial peeler (Epi Peeler; Surgitrac Instruments). The epithelium was further retracted beyond the flap. After the stromal bed was thoroughly irrigated with balanced saline solution, the flap was carefully repositioned and smoothed. A bandage contact lens soaked in preservative-free levofloxacin 0.5% was then placed on the eye.

The patient was given a 4-week tapering dose of Tobradex.
(tobramycin 0.3%, dexamethasone 0.1%; Alcon Laboratories, Inc.) that began at four times daily. Despite these measures, the ingrowth recurred 1 month after surgery, with no resolution of the patient’s symptoms. She again elected surgical intervention.

DEFINITIVE SURGICAL TREATMENT

All steps of the previous procedure were repeated, and the following additional measures were carried out before placing the bandage contact lens: four interrupted 10-0 nylon sutures on a 3/8 curve tapered needle were placed to secure the flap edge to the edge of the peripheral cornea. The sutures were trimmed and buried, leaving the knots in the peripheral cornea. In these cases, because the flap is thin, cheese-wiring of the sutures and induction of flap striae and corneal astigmatism are possible if the surgical technique is not meticulous.

We then applied Tisseel fibrin glue (Baxter) to the LASIK gutter to limit early migration of epithelial cells. A bandage contact lens was placed and the same postoperative medical treatment as for the initial procedure was prescribed.

One month later, the patient’s vision remained 20/30; there was no sign of epithelial ingrowth (Figures 3 and 4). The corneal sutures were removed at that time. At 6 months postoperative, the patient’s UCVA was 20/20, with no photopsia and no sign of recurrence.

DISCUSSION

As a result of differing surgical techniques and criteria for patient selection, as well as the evolution of LASIK surgery, studies vary widely in reported rates of epithelial ingrowth after primary procedures and enhancements.1-3 With the advent of femtosecond lasers for flap creation and a greater understanding of the need to recognize and treat any ocular surface disease prior to LASIK, however, epithelial ingrowth after primary LASIK has become rare. This complication continues to be seen after enhancements, particularly if more than 2 years have lapsed from the time of the initial procedure.

Most cases of epithelial ingrowth are self-limiting and require only observation. Untreated and/or aggressive cases of epithelial ingrowth, however, may result in the development of irregular astigmatism, flap melting, and loss of vision. We prefer to treat only when there are more than 2 clock-hours of involvement or when the ingrowth encroaches on the visual axis, interfering with vision. Our case was particularly severe, with several clock-hours of involvement and close proximity to the visual axis. After the initial recurrence, we felt that the risk for further recurrence was significant and therefore opted for a combined approach that resulted in a successful outcome for the patient.
CONCLUSION

Standard management of epithelial ingrowth involves elevation of the flap followed by mechanical debridement. Surgical debridement alone may not be sufficient, as in our case. One study reported a 44% recurrence rate after primary epithelial removal.4 Adjunctive therapies such as mitomycin C, ethanol, phototherapeutic keratectomy, and Nd:YAG laser have been used with some success, and fibrin glue has been used with success for the prevention of recurrent epithelial ingrowth as well.5 The postoperative course should always be determined on a case-by-case basis, as what works in one situation may not work in the next. Luckily for this patient, two retreatment procedures were enough to resolve her visual complaints.

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