Successful Corneal Flap Replacement Following Complete Traumatic Flap Amputation After Laser-Assisted In Situ Keratomileusis

Traumatic corneal flap displacement is an uncommon complication following laser-assisted in situ keratomileusis (LASIK). Most reported traumatic flap displacements are partial and can subsequently be repositioned with satisfactory results. Occasionally, however, significant force may completely avulse the corneal flap, resulting in a lost flap. Complete loss of the flap may cause significant haze and loss of best spectacle-corrected visual acuity. To our knowledge, no successful replacement of a lost corneal flap due to LASIK has previously been reported. In this case report, we describe a technique resulting in successful replacement of a lost corneal flap following LASIK.

Report of a Case. A 59-year-old woman was referred following replacement of the corneal flap after complete flap avulsion 5 months after an uncomplicated LASIK procedure. Two days previously, she had been hit with a tree branch. She was immediately evaluated by her primary ophthalmologist who noted the absence of the corneal flap. The patient returned to the site of injury to look for the lost flap. The flap was found on the ground approximately 8 hours after the trauma and was replaced by her primary ophthalmologist with a bandage contact lens. She was prescribed 0.3% ofloxacin (Allergan, Irvine, Calif) every hour and 0.5% loteprednol etabonate (Bausch & Lomb, Rochester, NY) every 6 hours and referred to the Department of Ophthalmology at Stanford University (Stanford, Calif) the following day.

At her initial examination at Stanford University, the patient's uncorrected visual acuity was 20/200 in the affected eye. An anterior segment examination revealed a superior hinged flap that was misaligned nasally (90° off-axis). The bandage contact lens was in place. There was evidence of diffuse conjunctival injection, eyelid edema, grade 3 diffuse lamellar keratitis, interface debris, epithelial ingrowth, and diffuse macrostriae (Figure 1).

There was no evidence of a focal infiltrate, ulceration, hypopyon, or melting.

The patient underwent flap lifting; removal of flap debris, interface inflammatory cells, and epithelial ingrowth; culture of the interface; flap realignment; and flap suturing with 8 interrupted 10-0 nylon sutures (Figure 2). The bandage contact lens was replaced, and the patient was given 0.3% ofloxacin every 6 hours, 1.0% prednisolone acetate

Figure 1. Initial evidence of diffuse lamellar keratitis and epithelial ingrowth.

Figure 2. Suture of the flap with multiple interrupted nylon sutures.
every hour, and oral prednisone at a dosage of 50 mg/d for 3 days. There was no recurrence of epithelial ingrowth or diffuse lamellar keratitis. Culture results remained negative. All sutures were removed on postoperative day 11. The prednisolone was tapered, and the ofloxacin treatment was discontinued. At postoperative month 8, there was mild interface haze (Figure 3). In the affected eye, the uncorrected visual acuity was 20/25, and the best spectacle-corrected visual acuity was 20/20 with a refractive error of −0.50 D + 0.75 D × 72.

Comment. Previous methods of correcting a completely avulsed corneal flap following LASIK have been limited to epithelial supportive measures including application of a bandage contact lens, topical steroids to minimize haze, prophylactic topical antibiotics, lubrication, and vigilant observation to detect secondary infection. Although the lamellar flap is thought to be refractive neutral, secondary haze or irregular astigmatism may cause complications in these eyes.5,6 However, if the amputated flap is found, consideration can be given to replacement of the flap. The free cap should be carefully inspected to evaluate whether it is still viable. If the integrity of the free cap has been excessively compromised (ie, traumatically shredded) or it has become necrotic, it should not be replaced. If it remains viable, any epithelialization of the stromal bed should be carefully removed, and the free corneal flap should be cultured, irrigated, and replaced with or without sutures. Suturing the flap may prevent epithelial ingrowth and assist in stretching the previously folded flap to prevent striae formation. Caution should be exercised to prevent misalignment of the flap or replacing the flap with the epithelial side down. Misalignment of the flap may not only result in irregular astigmatism but also predispose the patient to the development of epithelial ingrowth. Careful inspection of the flap under high magnification will demonstrate a smooth, shiny surface (Bowman membrane) and a slightly dull, rough surface (stroma). A bandage contact lens is placed over the eye. Prophylactic broad-spectrum antibiotics and topical steroids may also be indicated. During the postoperative period, the culture results should be monitored and the patient should receive daily follow-up to provide the earliest diagnosis of a secondary infection.

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Figure 3. At postoperative month 8, the flap is well positioned with only mild interface haze.