ABSTRACT

PURPOSE: To present a case of photorefractive keratectomy (PRK) after late traumatic LASIK flap loss.

METHODS: The initial LASIK procedure was performed in 2003 with a Moria M2 microkeratome and NIDEK EC-5000 excimer laser using a 5.0/9.0-mm aspheric ablation pattern, resulting in 20/20° uncorrected distance visual acuity (UDVA) and plano refraction. Traumatic flap loss of the right eye occurred in 2007. The patient was treated for the trauma, and PRK for −5.00 −1.25 × 090° was performed 2 months later.

RESULTS: Posttraumatic flap loss UDVA was 20/200 in the right eye, with corrected distance visual acuity (CDVA) of 20/25°. After PRK with mitomycin C (MMC), UDVA was 20/15 2 months postoperatively and was maintained through the last postoperative follow-up in 2010 (approximately 3 years after PRK).

CONCLUSIONS: Treating a patient with traumatic LASIK flap loss can be done by careful, conservative treatment of the abrasion followed by correction of the refractive error using PRK with MMC.

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gatifloxacin ophthalmic solution (Zymar, Allergan) four times daily for 10 days, followed by fluorometholone four times daily to treat mild haze for 6 weeks. One week postoperatively, UDVA was 20/60 in the right eye with mild haze formation. During 1- and 2-month follow-up, UDVA was 20/30 and 20/15, respectively, and the patient was happy with his vision.

The patient was again lost to follow-up until 2010, at which time UDVA remained 20/15 in the right eye. Final corneal thickness was 359 µm at the thinnest point and final average curvature was 40.13 D. Most recent UDVA was 20/15-1 with a plano refraction. No epithelial abnormalities were noted, although the outline of where the flap edges had been was still faintly visible.

**DISCUSSION**

Traumatic corneal flap dislocation after LASIK has been reported previously, but flap loss has been a rare occurrence after refractive surgery. The case presented herein is noteworthy as the trauma induced was highly improbable. The only way the shovel could have amputated the flap was to strike it at a particular angle.

The trauma and resultant inflammation put the patient at risk for significant haze; however, this was controlled using fluorometholone. Although a longer recovery period was considered, the eye was sufficiently quiet and the refraction was stable, therefore PRK was performed 2 months after the trauma to treat the resultant refractive error. The cornea was treated with an aspheric, prolate profile, which reduces the amount of oblate spherical aberration that would result from further flattening of the cornea with laser vision correction. Postoperative corneal thickness was sufficient to ensure corneal stability. The generally accepted minimal amount of residual stromal bed remaining after refractive surgery is 250 µm. With the addition of 50 to 60 µm of epithelium, we determined that our postoperative PRK goal would be to leave the central cornea with at least 350 µm of tissue for corneal stability.

After flap loss, the resultant refractive error was similar to the patient’s original prescription. The original flap thickness was not measured specifically, but average flap thickness at the time of LASIK was approximately 120 µm. Taking into account that epithelium usually is approximately 50 µm thick, approximately 60 µm of stromal tissue were lost, which accounts for the >5.00-D loss. Little haze was present even after
PRK. Although healing time was slower, the final visual outcome was excellent. It took 1 week for the abrasion to heal and 2 months for the patient to achieve full visual rehabilitation.

Some ophthalmologists have been proponents of performing lamellar keratoplasty in cases of flap loss or flap removal. However, issues with suturing and induced refractive error may occur. Our case report shows that excellent visual results can be obtained without adding tissue. However, enough tissue must be available to safely perform refractive correction after flap loss. This also holds true for cases in which flap removal is indicated because of scarring or other damage to the flap.

The long-term outlook for this patient appears favorable, as stable 20/15 uncorrected vision in the right eye was noted at the last postoperative examination 2.5 years after PRK.

**AUTHOR CONTRIBUTIONS**

Study concept and design (M.M.); data collection (M.M., G.J.L.); analysis and interpretation of data (M.M., K.Y., C.E.); drafting of the manuscript (M.M., G.J.L., K.Y., C.E.); critical revision of the manuscript (M.M., K.Y., C.E.); administrative, technical, or material support (M.M., G.J.L.); supervision (M.M.)

**REFERENCES**


