**CASE REPORT**

# Traumatic corneal flap displacement five years after Laser in situ keratomileusis

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**Abstract**

Laser in Situ Keratomileusis (LASIK) is the most common surgical procedure for the correction of refractive deviations[1]. LASIK has been ongoing lately in our country, exclusively in private settings. This is the reason for which our clinic has no experience with LASIK procedure and complications following it.

We are presenting a case of a 23 year-old female with traumatic flap displacement on the left eye, 5 years after the original LASIK operation. She was presented to our clinic on the 6th posttraumatic day. The patient was immediately operated and the flap repositioned. The case we present, is the only one treated to our clinic with such a vision-threatening complication of LASIK procedure. Hippokratia 2010; 14 (1): 48-50

**Key words:** LASIK, correction of refractive deviations, laser, traumatic corneal flap displacement, trauma

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Laser in Situ Keratomileusis (LASIK) is the most common surgical procedure for the correction of refractive deviations. It may correct hypermetropia of up to 4D, astigmatism of up to 5D and myopia of up to 12D depending on corneal thickness. A very thin corneal flap is created using a keratome, the stromal bed is treated with excimer laser and then the corneal flap is repositioned, at its original position. Most complications associated with this procedure are flap-related. The flap slippage and dislocation most commonly occurs in the early postoperative period and probably as a result of mechanical disruption such as forceful blinking, lid squeezing and eye rubbing. Late displacement, although rare, has been reported previously in the literature[2].

LASIK procedure has been ongoing lately in our country, exclusively in private settings. Hippokratia 2010; 14 (1): 1-4

## Case Report

A 23 year-old female, presented to our clinic, complaining of recent onset reduced visual acuity, pain, lacrimation and foreign body sensation. The patient reported a recent trauma with a piece of rod, 6 days ago. She had been treated with topical tobramycin eyedrops, and VitA, for a traumatic Lamellar Corneal Perforation in the traumatized left eye, without any apparent subjective improvement. Her past ocular history entailed a bilateral simultaneous LASIK operation 5 years ago (- 3.0 D/-6.0D of previous myopia).

On presentation, the right eye was normal with 10/10 visual acuity; left eye has 0.06 visual acuity. Slit lamp examination disclosed superior lid edema, conjunctival hyperemia, flap displacement and folding near the center of the cornea and edema of the stromal bed.

The patient was immediately operated. We had no possibility to make any photo pre- or intraoperatively, so Figure 1 represents a schematic demonstration of the displacement of the corneal flap at the time when the patient came to our clinic.

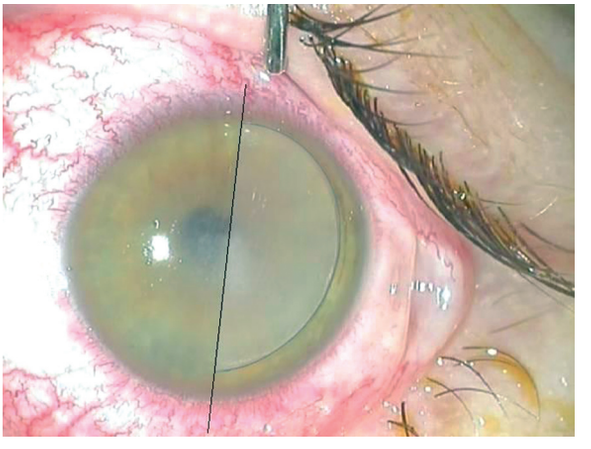

**Figure 1:** Schematic demonstration of the displacement of the corneal flap of our patient. The dark straight line represents the line of the flap folding. The light-grey marked area on the right side represents that part of the corneal flap which was doubled up and attached over the well-positioned nasal one.

## Operation procedure

OS: Cleaning and repositioning of the corneal flap, compressive patching.

Topical anesthesia with xylocaine 2%. Deep rinsing out of the stromal bed with isotonic solution and cleaning of the borders of corneal fold mainly from epithelium. Careful detachment of the folded and attached flap

from the epithelium using a hokey and repositioning of it. Rinsing out with Cephasoline solution and patching.

Therapy prescribed: Ciprofloxacin and tobramycin eyedrops every two hours.

**The third day postoperatively:**

Hyperemia present, minimal chemosis mainly inferiorly. LASIK flap is well positioned. The flap border is more elevated temporally and inferiorly (1.00-5.00 o'clock) and it represents some haziness. The cornea is almost clear and fully adherent super-nasally.

We have photos of both eyes this day (Figure 2 and 3).

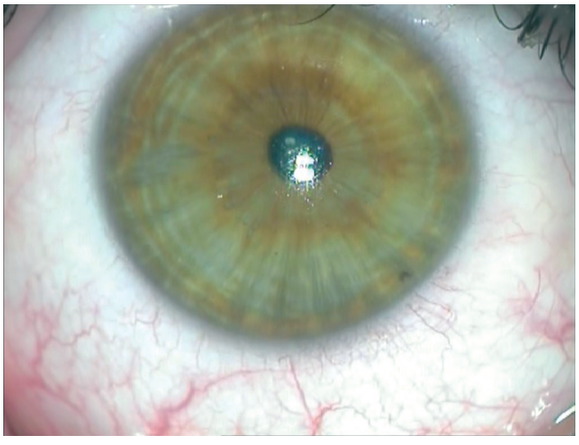

**Figure 2:** Right eye photo in the 3rd day.

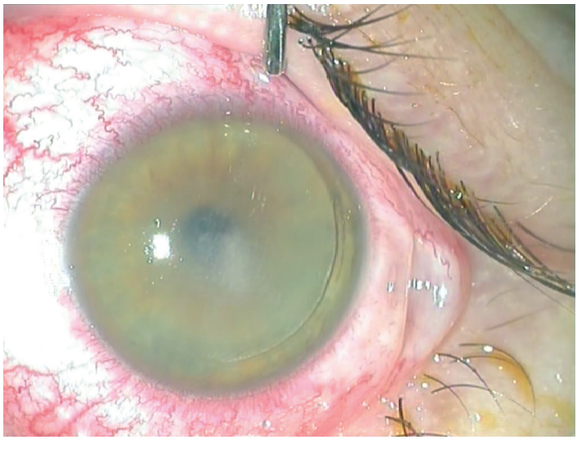

**Figure 3:** Left eye photo in the 3rd day.

**The fourth day:**

The eye is quiet. The corneal flap is hazy and edematous with temporal and inferior elevated borders. Initial neovascular growth at 12 o'clock. Soft contact lens was placed. Tobramycin eyedrops was replaced with a tobramycin and topical dexamethasone eyedrops.

**The eighth day:**

The eye is quiet. The contact lens is well positioned. The corneal flap is almost at the same level with the peripheral corneal epithelium. The haziness is much more subtle especially in the periphery. The central haziness is more apparent.

**Figure 4:** Left eye photo in the 8th day.

**The ninth day:**

The eye is completely quiet, without hyperemia. The contact lens is well positioned. Flap haziness is subtle. The visual acuity is 3/10 with the soft contact lens of -5.0 D. The patient will be followed as an outpatient.

**Discussion**

It is thought that adhesion occurs only in the anterio-posterior plane and probably never happens in the tangential plane. Injuries due to shearing mechanisms such as a fingernail injury or a contact lens injury can more often cause flap displacement than seemingly heavier injury in the anterio-posterior direction such as boxing or blunt ocular trauma from occupational hazards. Patients should be warned for such sequelae. Likewise, foreign body removal with a spud or needle on a LASIK flap also carries a similar risk, acting like a shearing force.

The postulated mechanism for an early flap adherence includes endothelial pumping, capillarity, fiber interlacing, intracorneal suction, intracorneal molecular attraction and ionic bonding[3]. Whatever the mechanism, the ease at which a flap can be lifted months after surgery for retreatment indicates that the flap actually never heals completely[4]. The human corneal stroma typically heals after LASIK in a limited and incomplete fashion; the center and paracentral stromal LASIK wounds have been reported to heal by producing a hypocellular primitive stromal scar. This is very weak in tensile strength, averaging 2.4% of normal, displaying no evidence of remodeling over time in specimens out to 6.5 years after surgery. In contrast, the more superficial flap margin stromal LASIK wound, which is adjacent to the surface epithelium was found to heal by producing a 10-fold stronger, peripheral hypercellular fibrotic stromal scar that reaches maximum tensile strength by approximately 3.5 years after surgery, averaging 28.1% of normal.

In conclusion, the fragile adherence of the corneal flap even years after a LASIK procedure merits a discussion between the ophthalmologist and the patient. It should be a part of all informed consent procedures during LASIK surgery.

**References**

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