

A Case Report of Unilateral Peripheral Necrotizing Keratitis Following Lasik

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Abstract

Corneal infiltrates are a relatively uncommon complication of refractive surgery and can cause serious consequences which may result in vision loss. We report a case of unilateral peripheral necrotizing keratitis at the edge of the flap presenting 3 days after femto-LASIK. A 23 year old male underwent femto-LASIK for myopia. On 3rd post-operative day, patient came to clinic with complaints watering in left eye. On Slit lamp examination right eye was normal but in left eye thick opacification noted at the edge of the corneal flap from 2 to 5 o'clock involving stroma, flap and cornea beyond flap edge and AS-OCT showed hyper-reflectivity at the interface. An intensive treatment started with topical steroids, antibiotics and lubricating eye drops. On last visit which was after 2 weeks of surgery, corneal infiltrates were resolved and transparency of cornea was achieved.

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Introduction

Femtosecond laser assisted in situ keratomileusis (femto-LASIK) is a safe procedure to correct errors of refraction like myopia, hypermetropia and astigmatism. Corneal infiltrates are a relatively uncommon complication of refractive surgery and can cause serious consequences which may result in vision loss. Sterile corneal infiltrates must be distinguished from the other infectious etiologies to facilitate proper management. Infectious etiologies like bacterial keratitis and fungal keratitis should be identified and managed. Diffuse lamellar keratitis (DLK) is the most common form of the sterile inflammation after LASIK. We report a case of unilateral peripheral necrotizing keratitis at the edge of the flap presenting 3 days after femto-LASIK.

Case report

A 23 year old male underwent femto-LASIK for refractive error of -4D sphere -0.5D cylinder at 50 in right eye and -3.5D sphere -0.5D cylinder at 130 in left eye at Sankara Eye Hospital, Guntur. WaveLight FS200 femtosecond laser system (Alcon Laboratories Inc., Fort Worth, TX) was used for creation of flap. Pulse energy was 0.8 μ J and the spot and line separation for the bed cut was 8 μ m. For a side cut, spot separation of 5 μ m and line separation of 3 μ m were used. Flap thickness was 100 μ m with side cut angle of 70° and hinge angle of 50°. Wavelight EX500 excimer laser (Alcon Laboratories Inc., Fort Worth, TX) was used for the ablation. The procedure was uneventful. Three days after surgery patient came with the complaints of watering in left eye since the day of the surgery. Patient denied any history of trauma or foreign body exposure. His uncorrected visual acuity (UCVA) was 6/6 in both eyes. On Slit lamp examination right eye was normal but in left eye thick opacification noted at the edge of the corneal flap from 2 to 5 o'clock involving stroma, flap and cornea beyond flap edge (Figure 1a). There was no conjunctival congestion and ciliary flush. Epithelium was intact and anterior chamber reaction was absent. Anterior segment optical coherence tomography (AS-OCT) showed hyper reflectivity and thickening in left eye stroma, flap and cornea beyond the flap (Figure 1b). We started topical dexamethasone 1mg+



Figure 1a: Slit lamp image showing thick opacification at the edge of corneal flap from 2 to 5 o'clock hours



Figure 1b: Anterior segment optical coherence tomography (AS-OCT) showing hyper reflection in stroma, flap and cornea beyond flap edge.

moxifloxacin 5mg 8 times a day, artificial tears 4 times a day in left eye. As the presentation was atypical, the lesions appearing immunological at the same time infectious etiology could not be ruled out with 100 percent certainty, we stepped up to a stronger steroid and added topical fortified vancomycin (50mg/mL). For uninvolved eye we continued topical loteprednol and moxifloxacin eye drop. 5 days after initiation of treatment, patient came for the second post-operative follow up. Watering was reduced

and patient was symptomatically better. On slit lamp examination we noted area of opacification was smaller as compared to the last visit and there were no inflammatory cells. AS-OCT also showed reduced reflectivity and edema in left stromal bed. So we tapered topical steroids to 6 times a day and frequency of fortified vancomycin reduced to 6 times a day. On last postoperative visit, which was after 2 weeks of surgery, patient was asymptomatic and his UCVA was maintained 6/6 in both eyes. Slit lamp examination of left eye showed complete resolution of opacification and corneal transparency was achieved. (Figure 2a) AS OCT showed minimal hyper reflectivity in stromal bed. (Figure 2b) So fortified vancomycin was stopped and steroids eye drops tapered gradually.



Figure 2a: Slit lamp photo showing resolution of opacification



Figure 2b: AS OCT showing decreased hyper-reflectivity

Discussion

Corneal infiltrates are relatively uncommon complication of LASIK and it represent nonspecific accumulation of inflammatory cells. Infectious keratitis is probably the most important complication and it can be vision threatening.

In 2005 Lifshitz et.al. first reported a case of peripheral sterile corneal infiltrates after LASIK.¹ In 2012 Bucci and McCormick reported a case of peripheral necrotizing keratitis after LASIK.² Here we report a case of unilateral peripheral necrotizing keratitis after LASIK.

Singhal et.al.³ reported a case of bilateral peripheral infiltrative keratitis in which a thick band of infiltrate developed between flap margin and limbus which extends from 2 o'clock to 9 o'clock in both the eyes without involving flap edge. They successfully treated infiltrate with topical prednisolone acetate 1% eyedrop.

Ambrosio et.al.⁴ reported 2 cases of bilateral, marginal sterile corneal infiltrates in early postoperative period after LASIK. Flap lifting and irrigation was done and topical corticosteroids and fortified antibiotics were started in the both eyes of both the patients. Both patients responded well to the treatment.

The exact mechanism of sterile corneal infiltrates is unknown. Previous studies has suggested various risk factors like use of non-steroidal anti-inflammatory drugs without concomitant use of topical steroids,⁵ topical anesthetic abuse⁶ and immunological reactions.⁷ In addition, some studies reported association of peripheral sterile corneal infiltrates with chronic meibomian gland dysfunction and chronic blepharitis, systemic inflammatory and autoimmune diseases.

In our case we did not use topical non-steroidal anti-inflammatory drugs pre or post operatively. There was no evidence of chronic meibomitis or chronic blepharitis. Our patient showed no serological or clinical signs of autoimmune disease. Absence of conjunctival congestion and ciliary flush, absence of epithelial defect, absence of anterior chamber reaction, and response to topical steroids in our case suggest sterile infiltrate. Our case differed from other case reports in being unilateral case.

In conclusion, we report a case unilateral peripheral necrotizing keratitis after LASIK. Differentiation from infectious keratitis is essential for the proper management. Appropriate management results in faster resolution of infiltrates without affecting final visual outcome.

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