Int Ophthalmol (2019) 39:1387–1390
https://doi.org/10.1007/s10792-018-0936-9

CASE REPORT

Recurrent corneal erosion caused by retained sutures in blepharoplasty

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Received: 6 July 2017 / Accepted: 23 April 2018 / Published online: 27 April 2018

Abstract
Purpose To present recurrent corneal erosion (RCE) caused by late suture exposure after blepharoplasty.
Methods Four patients who have unilateral RCE were found to have previous blepharoplasty. The RCE was associated with late suture exposure. The clinical courses, characteristics, methods to identify the suture exposure and treatment were presented.
Results The clinical presentations including local erosion of upper bulbar conjunctiva, corneal abrasion lines, local corneal epithelial defects with rough border, and subepithelial opacity were noticed in all four patients. RCE symptoms exaggerated in eye blinking and did not respond to artificial tears treatment. Erosion recurred soon after the removal of therapeutic contact lenses. They underwent blepharoplasty 1–10 years before RCE emerged, and the RCE lasted 1–8 months before suture exposure was found. RCE healed within 1 week after suture removal.
Conclusions Suture exposure may occur several years after blepharoplasty and could cause RCE. Thorough exploration of the fornix by double eyelid eversion can identify the hidden sutures in such patients.

Keywords Recurrent corneal erosion · Suture exposure · Eyelid eversion · Blepharoplasty

Introduction

Corneal erosion or abrasion may cause eye pain, tearing, photophobia, red eye, and decreased vision. The possible etiology includes a history of ocular injury, corneal dystrophy, corneal surgery, and wearing contact lens [1, 2]. Recurrent corneal erosion (RCE) may occur unilaterally in patients with minor ocular trauma [3] or bilaterally in patients with anterior basement membrane dystrophy [4]. However, late suture exposure induced RCE was rarely reported before. Here, we report four cases of unilateral RCE caused by late suture exposure in conjunctiva or fornix several years after blepharoplasty. The clinical presentations were different from typical RCE, and

This study was presented at the 31st Asia–Pacific Academy of Ophthalmology Congress, March 24–27, 2016, Taipei, Taiwan.

This study was approved by Institutional Review Board of the National Taiwan University Hospital and was conducted in accordance with the tenets of the Declaration of Helsinki.

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thorough examination of the fornix to identify all the possible foreign bodies was recommended.

Case presentations

Case 1

A 67-year-old woman presented with redness and foreign body sensation in the right eye for 2 weeks in September 2007. Artificial tears treatment was given in several clinics, but with limited effect. Several weeks later, she visited our department and biomicroscopy revealed upper conjunctival injection and some corneal linear abrasions (Fig. 1a, b). Repeated foreign body irritation was suspected, and history of double eyelid surgery in 1997 was noted. After a careful search of the upper conjunctiva by eyelid eversion with a cotton bud, a black stitch was found in the central fornix of the upper eyelid (Fig. 1c). The symptoms subsided soon after the suture was removed. The corneal erosion gradually resolved.

Case 2

A 22-year-old woman was diagnosed with RCE in the right eye since October 2012. She visited various clinics and was treated with artificial tears and therapeutic soft contact lens (TSCL). However, the symptoms recurred immediately after discontinuing TSCL. Local corneal scar was found in March 2013 and topical interferon gamma treatment was given due to the suspicion of corneal intraepithelial neoplasm. Since corneal erosion persisted, she visited our outpatient clinic in June 2013. Although she reported that she received blepharoplasty in 2012, no suture exposure was found by eyelid eversion initially. Biomicroscopy showed temporal conjunctival injection, a 2-mm corneal epithelial defect, and a subepithelial opacity with rough border in the temporal lower cornea (Fig. 2a). Because of increased irritation upon eyelid closure, double eyelid eversion was performed to explore the whole upper fornix using the round end of a glass rod deeply against the eyelid crease, with extra effort over the temporal area. A white suture knot was finally found in the temporal upper fornix (Fig. 2b). Then, she went back to her plastic surgeon for revision surgery. After revision surgery, the cornea erosion healed.

Case 3

A 28-year-old woman who received blepharoplasty in 2012 had right eye pain since August 2014. She visited several facilities where artificial tears were administered. Two months later, she visited our department complaining of persisted symptoms. Biomicroscopy revealed a 3-mm upper conjunctival maceration and a 2-mm superior corneal epithelial defect with rough border (Fig. 3a, b). Eyelid eversion was carried out, and suture exposure was found in the upper tarsal conjunctiva. After removal of the exposed suture, no eye pain or RCE recurred.

Case 4

A 61-year-old woman had foreign body sensation and blurred vision in her left eye in January 2016. Symptoms relieved with TSCL application but recurred after removal of the lens. She visited our department in May 2016. Biomicroscopy revealed an injected upper conjunctiva, and some corneal linear abrasions (Fig. 4a). She recalled having blepharoplasty for entropion in 2015. Eyelid eversion was

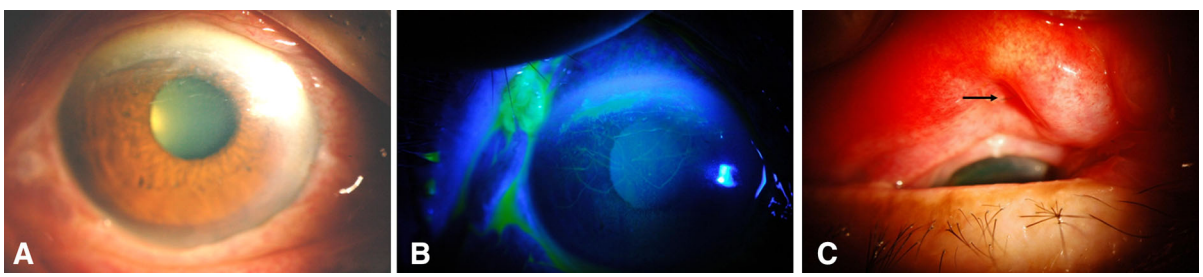

Fig. 1 Slit-lamp images of case 1. **a** Several corneal linear abrasions in the left eye. **b** An upper fluorescein-staining corneal epithelial defect and several abrasion lines. **c** A black suture (black arrow) in the upper fornix

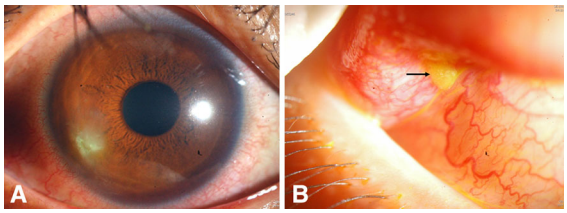

Fig. 2 Slit-lamp images of case 2. **a** A corneal epithelial defect and subepithelial fibrosis in the temporal lower cornea of the right eye. **b** A whitish suture (black arrow) in the temporal upper fornix

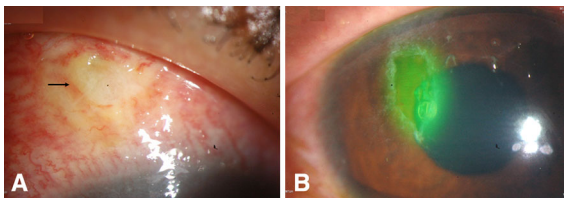

Fig. 3 Slit-lamp images of case 3. **a** An upper conjunctival maceration (black arrow) in the right eye. **b** A temporal oval corneal epithelial defect with rough border

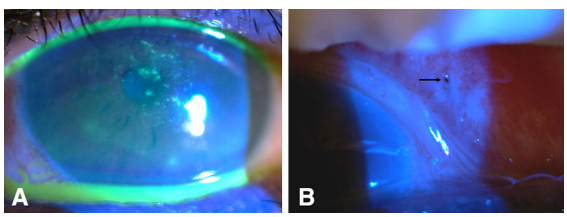

Fig. 4 Slit-lamp images of case 4. **a** Punctate and linear fluorescein-staining corneal epithelial defect in the left eye. **b** A black suture knot (black arrow) in the temporal upper tarsal conjunctiva

performed with a cotton bud, and a tiny suture knot was found in the upper tarsal conjunctiva (Fig. 4b). Foreign body sensation was immediately relieved after removal of the suture, and the corneal lesion healed within 1 week.

Discussion

Corneal erosions are frequently seen in clinical services, and trauma is one of the most common etiologies. It has been noted that corneal erosion developed early after blepharoplasty, which could be caused by antiseptic contamination, intraoperative instrument trauma, or malpositioned suture. However, blepharoplasty-induced RCE by late suture exposure was rarely reported. In this study, all four patients shared a similar history of previous blepharoplasty with duration ranging from 1 to 10 years. In addition to the symptoms included stinging, tearing, redness, and vague generalized discomfort in the affected eyes, some patients reported particular discomfort while blinking or sleeping, which could be related with Bell's phenomenon [5]. This accounted for the epithelial defect in the superior conjunctiva and cornea in three cases except case 2. There was an unusual presentation of temporal lower corneal erosion in case 2. To our understanding, suture exposure at temporal location could erode temporal inferior cornea in an upward rotated eye and further damage of the epithelium might be the consequence of rapid eye movement during sleep [6]. The symptoms might improve after TSCL application but recurred soon after removal. The typical presentations were local erosion of bulbar conjunctiva, corneal abrasion lines, local persistent corneal erosion with rough border, or subepithelial fibrosis due to chronic suture irritation.

The causes of the late suture exposure were not clear. As blepharoplasty could be performed by various methods, it could be broadly classified as open (incision) or closed suturing technique [7, 8]. Open technique is performed through the external incision and does not involve the palpebral conjunctiva. In the closed blepharoplasty, lid crease is created by buried suture through full thickness of lid, which could penetrate conjunctiva and cause suture exposure. Among four cases, cases 2 and 3 underwent closed blepharoplasty, but others lacked the information of surgical technique. The relatively long elapsing time may imply that suture migration or suture knot rotation may occur several years after the blepharoplasty. Because it might be difficult to evert the upper eyelids of blepharoplasty patients completely, clinicians may miss the hidden suture in practice. Fully examine the fornix by deep indentation over the eyelid crease with a glass rod with round ends or a cotton bud while doing eyelid eversion is recommended.

In conclusion, late suture exposure needs to be considered if local corneal erosion persists or recurs soon after removal of TSCL in patients with history of blepharoplasty. Thorough exploration of the upper conjunctiva and fornix by double eyelid eversion may help identify the suture exposure.

The patients have consented to the submission of the case report for submission to the journal.

Compliance with ethical standards

Conflict of interest The authors declare that they no conflict of interest.

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