

Recurrent corneal erosion after buried-suture double-eyelid blepharoplasty using barbed thread

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Dear Editor,

Recurrent corneal erosion (RCE) is a common clinical condition characterized by repeated episodes of eye redness, pain, foreign-body sensation, photophobia, and tearing^[1]. The causes of RCE include trauma, chemical and thermal injuries, previous herpetic keratitis, epithelial basement membrane dystrophy, and systemic conditions like epidermolysis bullosa^[2-3]. Corneal erosion associated with buried-suture double-eyelid blepharoplasty is a unique form of RCE prevalent in Asian countries due to the popularity of double eye-lid blepharoplasty. Suture-related RCE can present with erosion of the bulbar conjunctiva, corneal epithelial abrasions, stromal erosion, and subepithelial fibrosis from chronic irritation^[4]. Management of suture-related RCE requires the identification of the exposed suture in the conjunctival fornices through slit-lamp examination and its removal. However, this case of buried suture-related RCE provided a unique challenge, as the suture used in the blepharoplasty was barbed and was not identified during slit-lamp examination. The diagnosis was confirmed by the alleviation of the symptoms after the barbed suture removal.

This is the first reported case of RCE caused by buried-suture double-eyelid blepharoplasty using barbed thread.

Ethical Approval The study was conducted in accordance with the principles of the Declaration of Helsinki. Written consent was obtained from the patient.

Case Presentation A 34-year-old Asian woman presented to the ophthalmology clinic, complaining of recurrent redness, pain, photophobia, and tearing for 4y. The symptoms were bilateral, but more severe in the left eye. The patient stated that she received buried-suture double-eyelid blepharoplasty 7 years ago. Three years later, she developed foreign body sensation in both eyes, followed by slowly progressing ocular pain, and decreased visual acuity in the left eye. She reported a history of repeated hospitalization and visits to the emergency clinic due to ocular pain. Blepharoplasty suture-related complications were suspected, yet no evidence of suture penetration or exposure was found. She was diagnosed with RCE, and bandage contact lenses were prescribed. Her symptoms were ameliorated by the contact lenses, but would recur after their removal.

On her first visit, slit-lamp examination revealed hook-like corneal epithelial lesions in the superior temporal region of the right eye (Figure 1A), and an oval epithelial defect with subepithelial stromal edema in the central region of the left eye (Figure 1B). Eyelid margins were erythematous and swollen. Examination of the everted conjunctival fornices revealed no suture knots or exposed threads. She was first instructed to use corticosteroid eyedrops, but the epithelial defect in the left eye rapidly progressed to prominent corneal erosion with stromal opacity within a week (Figure 1C). Despite lack of visible evidence, buried suture-related complications were highly suspected. She was then referred to the Department of Plastic and Reconstructive Surgery, and agreed to an exploratory surgery to remove the buried suture. The upper eyelid fold became indistinct after the surgery. After the threads were extracted, they were discovered to be barbed (Figure 2). The ocular symptoms subsided immediately after the removal of the sutures. Corticosteroid eyedrops were prescribed to alleviate the corneal scarring in the left eye. At a two-month follow-up, the epithelial lesions have healed completely in both

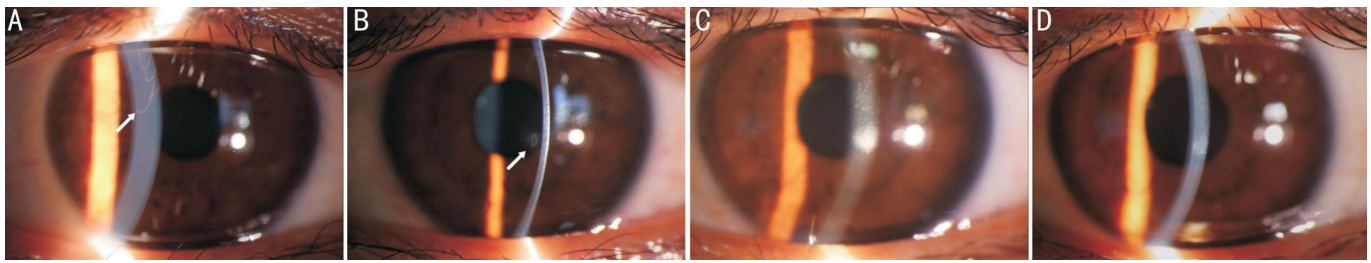


Figure 1 Slit-lamp images of the cornea A: Hook-like corneal epithelial lesions in the superior temporal region of the right eye (white arrow); B: Oval epithelial defect with subepithelial stromal edema in the central region of the left eye (white arrow); C: Corneal erosion with stromal opacities in the left eye; D: Healing of the corneal epithelium in the left eye with slight stromal opacity, 2mo after the barbed threads removal.

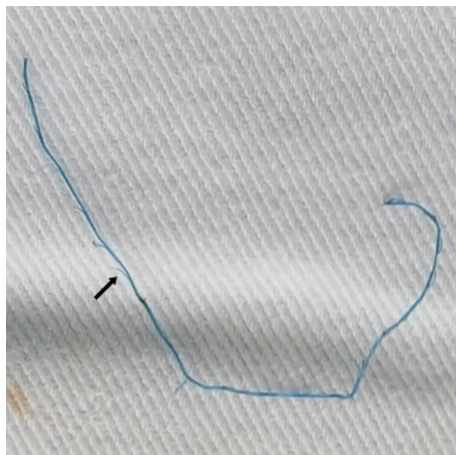


Figure 2 Barbed thread used in the patient's buried-suture double-eyelid blepharoplasty, which was removed during exploratory surgery The black arrow indicates a barb on the thread.

eyes, and the stromal opacities have substantially alleviated in the left eye (Figure 1D).

DISCUSSION

Previously reported cases of blepharoplasty-related RCE focused primarily on the clinical manifestations and the diagnosis, which usually includes the identification of the corneal and conjunctival lesions along with the corresponding exposed sutures. This case provides a unique diagnostic challenge, as the objects directly responsible for the corneal lesions were not the buried sutures, but the barbs on the threads, which were overlooked under slit-lamp microscopy. By presenting this case, we demonstrate that a negative slit-lamp examination does not necessarily exclude the possibility of buried suture-related complications.

The clinical courses of blepharoplasty-related corneal erosions vary with their etiologies. Corneal erosions developed early after blepharoplasty are often associated with suture malposition or direct intraoperative instrument trauma from scalpels, cautery and lasers, which might lead to severe and permanent vision loss^[5-6]. By contrast, RCE caused by retained suture or suture penetration usually presents years after the surgery, making it more often neglected. The diagnosis of suture-related RCE requires the identification of the corneal

or bulbar conjunctival lesions, usually in the upper temporal regions, and the corresponding exposed thread or suture knots in the conjunctival fornices^[7]. However, as it might be difficult to fully evert the upper eyelid after blepharoplasty, hidden sutures are often missed in practice. In such circumstances, thorough examination using cotton buds, glass rods, or eyelid retractors is recommended. The above diagnostic approach has proven useful in previously reported cases. However, in this case, the responsible barbs were not revealed, even after repeated slit-lamp examinations. Therefore, negative slit-lamp examinations do not necessarily rule out the possibility of buried suture-related complications, and clinicians should take a detailed history of the blepharoplasty, if possible, when suture-related complications were suspected.

The surgical techniques of double-eyelid blepharoplasty can be primarily classified into two categories: the incisional method, and the buried-suture method^[8]. The latter costs less, requires less recovery time, and can be easily adjusted. However, the buried suture method involves the implantation of a suture thread, which may lead to a number of suture-related complications, including RCE, corneal ulceration and even perforating eye injury^[7]. The usual choice of thread for the buried-suture blepharoplasty was silk or nylon threads, which would be visible under slit-lamp microscopy if there were suture penetration or exposure. However, in this case, the blepharoplasty was performed using barbed thread. The barbs, penetrating the orbital septum and the palpebral conjunctiva, were the main causes of the corneal lesions and the symptoms. Unlike silk or nylon threads, barbed threads do not require fixation with knots, offering a quicker, easier choice of suture with more evenly distributed suture tension. Barbed threads are thus widely used in plastic surgery and laparoscopic procedures^[9-10]. However, the use of unabsorbable barbed threads should be avoided in buried-suture double-eyelid blepharoplasty, as the retained barbs might penetrate the orbital septum and palpebral conjunctiva, causing damage to the bulbar conjunctiva and the cornea. Furthermore, the barbs can easily hide under conjunctival folds, and even retract when the upper eyelid is everted, making them much harder to be

identified during examination. In this case, the diagnosis was only confirmed after the barbed suture threads were surgically removed, which happens to be the most effective treatment for suture-related RCE. However, the use of bandage contact lenses is able to reduce corneal damage and ameliorate the symptoms^[11-12].

We believe that suture exposure needs to be suspected in cases of RCE with a history of double-eyelid blepharoplasty. When a thorough examination of the conjunctiva and fornix revealed no evidence of exposed suture knots, buried suture using barbed threads needs to be considered. Removal of the buried suture and examination of the thread may help to diagnose the barbed thread-related corneal erosion.

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