

Spontaneous Recovery of Levator Palpebrae Superioris Function Following Complete Traumatic Transection

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Abstract

Purpose: To report an unusual case of spontaneous recovery of levator palpebrae superioris (LPS) function following complete traumatic transection.

Observations: 14 year old male sustained a sharp injury to his right upper eyelid from a box cutter. On examination under anesthesia, there was full thickness horizontal laceration of the upper eyelid at the level of upper eyelid crease including complete transection of the LPS aponeurosis, as well as globe rupture through the upper part of the cornea. The full-thickness corneal laceration was repaired and the skin of the upper eyelid was superficially repaired without touching the LPS. Four months later, there was excellent levator function on the right side with marginal reflex distance of 1.5 mm on the same side.

Conclusions and Importance: Spontaneous recovery of fully transected LPS tendon, although unusual, is possible without primary repair. Primary closure of the skin only might be sufficient as a primary procedure to repair upper eyelid injury involving the LPS aponeurosis, particularly when there is coexisting globe rupture. A secondary repair on the LPS could be deferred to a later stage should there be a significant ptosis.

Keywords: *Levator Palpebrae Superioris; Levator Function; Marginal Reflex Distance*

Introduction

Traumatic eyelid injuries pose a big challenge to the surgeon and each case is unique and presents in different complexity. The patient should have a detailed examination before the commence of treatment including anterior and posterior segments, peri-ocular tissues, Levator integrity and function [1]. In general, open globe injury should be repaired first, followed by treatment of orbit and peri-ocular tissues. Treatment of eyelid injury should follow basic rules. If the Levator is traumatically disinserted or transected it should be repaired at the initial surgery. The skin edges should be well apposed without gap or tension [2]. To the best of our knowledge, there are no reports in the literature of treating eyelid injuries involving total transection of levator palpebrae superioris (LPS) by only suturing the skin edges of the eyelid without levator tendon repair.

Case Report

A 13-year-old male presented to emergency department at the Hospital for Sick Children. Earlier that day, he sustained injury to his face and right upper eyelid from a box-cutter type knife which was initially suspected to involve only eyelid and facial skin. However, during examination in the operating room, he was found to have a penetrating eye injury. Examination revealed a horizontal skin laceration starting from the nasal bridge and extending and creating a full thickness laceration through the right upper eyelid just above the tarsal plate and ending in the temporal area (Figure 1). Examination of the right eye revealed a linear horizontal wound involving the cornea and temporal sclera approximately 9 - 10 mm in length, a flat anterior chamber with lens opacification. In the operating room, the corneal laceration was closed with nylon sutures and the scleral and conjunctival lacerations were closed with absorbable sutures. The cutaneous laceration of the upper eyelid was superficially repaired with absorbable sutures without suturing deeper eyelid tissue or the levator palpebrae superioris aponeurosis. Two months later he underwent cataract removal and intra-ocular lens implantation with anterior vitrectomy in the right eye. On examination four months later, there was excellent levator function on the right, with one millimeter of ptosis compared to the left eyelid (Figure 2 and 3). The upper eyelid tarsal plate was found to be intact without scar, corresponding to

the supratarsal full-thickness transection (Figure 4). The cornea healed well with upper para-limbal scar not involving the visual axis, the intra-ocular lens well positioned without secondary opacification (Figure 5). The refraction was $-5.00 + 1.25 \times 20$ with best corrected visual acuity of 20/50 on the right and $-0.75 + 1.25 \times 90$ with uncorrected visual acuity of 20/20 on the left.



Figure 1: Horizontal scar from nasal bridge through right full-thickness upper eyelid to temporal area.



Figure 2: Normal post-traumatic right levator function (15 mm).



Figure 3: Right mild ptosis (1 mm) compared to the left.

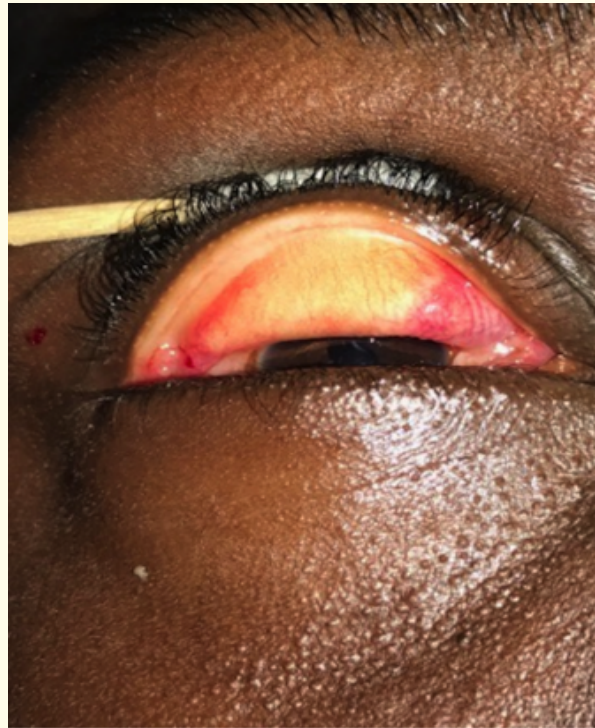


Figure 4: No visible scar on the upper tarsal plate (right eye).

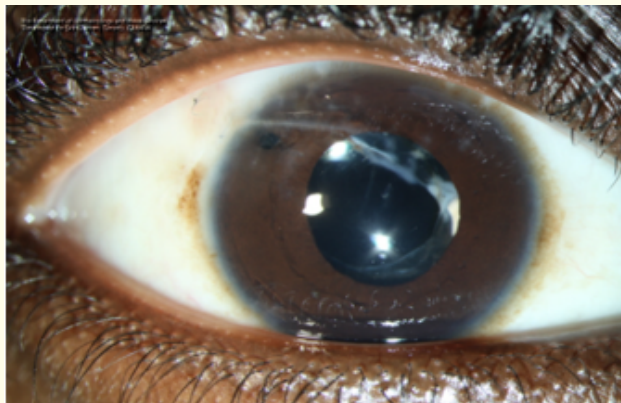


Figure 5: Upper para-limbal corneal scar, well positioned posterior chamber intra-ocular lens (IOL) with clear visual axis (right eye).

Discussion

As a general rule of thumb, eyelid lacerations involving the levator muscle or aponeurosis should follow the principle of repairing the levator at the time of initial surgery, followed by skin edges approximation, if feasible [2]. Some may elect to defer this repair until a time at which the globe rupture is fully healed. In our case, there was a complete transection of the LPS muscle on initial presentation and a decision was made to close only the skin edges at the initial time of surgery. Four and a half months later the LPS recovered very well with good levator function and no significant ptosis.

Conclusions

Our case shows that primary closure of eyelid skin only in eyelid injuries involving total LPS tendon transection could be sufficient in some cases, particularly if there is a coexisting globe rupture. A secondary ptosis repair could be considered if there is still residual ptosis.

Patient Consent

The patient mother provided written consent for publication of this report and her child identifying photos.

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Conflicts of Interest

The following authors have no financial disclosure: A.I, D.D.

Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

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