



RARE CASE OF BLEPHAROPTOSIS DUE TO DELAYED PRESENTATION OF TRAUMATIC LPS MUSCLE INJURY

Plastic Surgery

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ABSTRACT

Our case depicts an unusual case of isolated traumatic avulsion of levator palpebrae superioris (LPS) and its delayed presentation in a nine year-old female child. To the author's knowledge, isolated and complete traumatic levator palpebrae superioris avulsion is relatively uncommon. Open injury to LPS requires swift and meticulous surgical repair. The surgical repair in this child corrected the present problems of ptosis and improved her vision.

KEYWORDS

Blepharoptosis, Eyelid, Eye injury, LPS injury

INTRODUCTION:

Traumatic ptosis often occurs from injury to levator due to palpebral laceration or orbital fracture caused by traffic accident or falls^(1,2) Blunt injuries are most common, whereas sharp injuries are rare.^(1,4)

Here we describe a case of pediatric isolated LPS injury with delayed presentation, which we treated surgically via the anterior approach to rectify blepharoptosis.

Case Presentation:

A nine- year old female child, was brought by her mother to our outpatient department. The patient presented to our outpatient department after one year of trauma with complaints of reduced palpebral aperture of right eye, drooping of right upper eyelid, inability to elevate the upper eyelid and medial epicanthal fold. She had an alleged history of fall from bullock cart sustaining facial trauma one year ago. According to her records, computed tomography (CT) of brain series from the same day showed extra dural haemorrhage (EDH) with pneumocephalus along with comminuted and minimally displaced fractures of left parietal bone, lateral wall of orbit, and occipital bone, with scalp hematoma and foreign bodies. After initial patient stabilization, the right eyelid contused lacerated wound primary repair and canalicular repair was done after five days of trauma. Facial fractures were managed conservatively.

On examination, the palpebral aperture was measured to be 2mm on straight gaze, upward gaze and tight eye closure.(Figure 1) A loss of lid crease was noted and a complete horizontal scar along the upper part of right upper eyelid was seen. Parents also wished to revise the scars over face.



Figure 1 – Right eyelid ptosis with eyes open and eyes closed

With written informed assent of her parents, her right upper eyelid was explored via lid crease incision under general anaesthesia. (Figure 2a) A solution of 1:500000 adrenaline was used for infiltration. On dissection, the LPS muscle was noted to be longitudinally avulsed. The LPS muscle and its attached aponeurosis were identified after anterior traction which demonstrated it was fixed to the posterior orbit, indicating that the orbital portion of LPS was intact. The injury was thus clearly identified as avulsion of the LPS muscle belly distal to Whitnall's ligament. (Figure 2b) Wound was irrigated and a minimal amount of non viable tissue was excised. The superior and inferior border of the avulsed LPS muscle belly were revised and sutured with interrupted buried sutures using polyglactin 5-0. We also did medial canthopexy to release the contracture band along with scar revision of right cheek, forehead and scalp via w-plasty. The skin incision was closed in layers. (Figure 2c) An eyepatch dressing was done. Chloramphenicol eye ointment was advised for 5 days. All sutures were removed on post operative day 7 and eyelid scar massage was advised after 3 weeks.



Figure 2a – Pre operative marking, 2b – Intra operative cut LPS muscle, 2c – Closure in layers

At one month's follow up, improvement in levator function of upper eye lid was confirmed. The palpebral fissure now measured 6mm with margin to reflex distance 1(MRD1) measuring 2 mm on straight gaze. Eye closure was normal. There was some conjunctival excess noted in the superior fornix which was managed conservatively with dexamethasone and methyl cellulose eye drops.



Figure 3 – Six months post operative pictures showing the right upper eyelid movement and amelioration of ptosis

At six months follow up (Figure 3), we noticed further improvement in her eye opening. (supplementary video 1) Her conjunctival excess settled and did not require any further intervention. We wished to reposition the lateral canthus inferiorly but the parents did not seek any further intervention currently.

All surgical procedures followed were in accordance with the Declaration of Helsinki, and the patient's guardian supplied informed assent for publication of the case photo.

DISCUSSION:

Blepharoptosis is commonly classified classically as either congenital or acquired. Acquired ptosis can have a myogenic, neurogenic (peripheral or central lesion of the sympathetic or oculomotor nerve), aponeurotic, mechanical, or traumatic cause.^(1,4,7,9) In a study on the relative incidence of blepharoptosis subtypes, traumatic ptosis was found to be the second most common cause.⁽⁶⁾ Jacobs SM et al advocated for a systematic approach to subgrouping traumatic ptosis according to etiology to allow for better tailoring of prognosis and treatment.⁽⁷⁾ They divided traumatic ptosis as neurogenic, myogenic, aponeurotic, mechanical and mixed types. Despite being the second most common type of blepharoptosis, specific research on traumatic ptosis is sparse.

Reports of sharp traumatic ptosis after fall are rare.⁽¹²⁾ Nishioka T. et al reported the first case of traumatic ptosis resulting from a scratch caused by human hand.⁽⁹⁾ McCulley TJ et al reported 3 cases of isolated neurogenic blepharoptosis, resulting from traumatic anterior upper eyelid displacement, all of which resolved in 2 weeks.⁽¹⁰⁾

Revision surgery for post-traumatic eyelid repair is usually delayed until scar tissue has sufficiently softened, which typically occurs between 6 months to a year after the initial injury.⁽⁵⁾ In non-traumatic cases, the levator muscle can be found beneath the pre-aponeurotic fat pockets situated below the orbital septum. However, in traumatic cases, fibrosis and atrophy of pre-aponeurotic fat pockets as well as deformation of the orbital septum may complicate surgical intervention. Therefore, surgeons must exercise caution when performing secondary procedures due to increased difficulty levels associated with such operations.⁽¹¹⁾

There are many techniques described for surgery for ptosis. Betharia and Kumar described an approach to traumatic blepharoptosis repair involving LPS resection to achieve optimal cosmetic positioning of the upper lid.⁽¹²⁾ Browning SD et al described an anterior approach involving a lid-crease incision.⁽¹³⁾ Normally, LPS is identifiable by its uniquely vertical muscle fibres, contraction upon vertical movements of the eyelid, and posterior course proximal to the superior transverse ligament.⁽¹³⁾

Common complications in secondary surgeries are bleeding due to fibrosis, conjunctival button hole formation, troubled localization and mobilization of levator muscle, notching of the eyelid and entropion.⁽¹²⁾ In secondary surgeries, further fibrosis can be avoided by using cauterization cautiously. By limiting the resection at 18 mm in secondary surgeries, entropion may also be avoided.⁽¹²⁾

We propose that determining the type of traumatic ptosis is paramount

as it directs subsequent management. In cases of neurogenic post traumatic, it is prudent to wait for a period of 2-3 months for evaluating spontaneous recovery. In post traumatic aponeurotic avulsion or myogenic tear ptosis cases, repairing the affected muscles promptly after inflammation has subsided can result in improved outcome. We advise revising the necrotic muscle edges after using absorbable sutures.

We summarize our basic principles as follows-

- Identify the type of traumatic ptosis.
- Good functional and aesthetic outcomes can be achieved with primary surgical repair in aponeurotic and myogenic traumatic ptosis.
- Revision surgery for post-traumatic eyelid is performed after at least 6 months after adequate wound healing.
- Always rule out damage to lacrimal drainage apparatus.
- LPS forms the upper eyelid skin crease and is identified by its vertical fibres.
- LPS resection should be limited to 18mm to avoid complications.

CONCLUSION

Our case study emphasizes an uncommon eye injury and the principles of its treatment. Surgical restoration through an anterior approach can result in excellent functional and cosmetic outcome.

Supplementary video

1. Video of eye closing and opening before and after LPS repair surgery

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