



Management of Mechanical Blepharoptosis in Neoplasm Eyelid Tumor

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Abstract:

Introduction: The purpose of this case is to demonstrate one-step surgical management of mechanical blepharoptosis after upper eyelid tumor excision. **Case Report:** A 37-year-old man presented with right ptosis secondary to mass in the right upper eyelid. We performed debulking of the tumor mass, pathological examination, and a reconstruction of the upper eyelid. The upper eyelid reconstruction was performed by doing transverse skin resection of the upper eyelid and lateral canthal attachment of both upper and lower tarsal plates to the periosteum. Two weeks after surgery, his right eye was comparable to left eye, with neither lagophthalmus nor trichiasis with marked improvement in cosmetic appearance. **Conclusion:** The repair of blepharoptosis is a very challenging. Correct diagnosis, planning, as well as understanding of eyelid anatomy, experience, and good surgical technique are essential for this oculoplastic surgical procedure. In this case, the palpebral reconstruction was done in one-step procedure, using the contralateral eye as model, given excellent surgical outcome. Postoperatively, the patient's appearance and social interaction improved markedly.

Key words: Blepharoptosis, Eyelid Diseases, Neoplasms, Orbit, Trichiasis.

Introduction

Mechanical blepharoptosis is a condition in which an eyelid or orbital mass pulls down the upper eyelid, resulting in infero-displacement [1,2]. It occurs as a result of excessive weight, usually from a neoplasm on the upper eyelid [3]. The stretched skin may limit the field of vision and produce a feeling of heaviness and tired appearance [4]. Hemangioma, chalazion, neurofibroma, and dermoid cyst on the eyelid are the most common causes of mechanical blepharoptosis [1-5].

The prevalence and incidence of blepharoptosis worldwide are unknown. Neither ethnicity nor gender is known as a predilection [3]. A study conducted in 1995 by Sridharan showed 46 subjects had blepharoptosis and 11% are caused by mechanical blepharoptosis [6]. In a study at Jakarta, Indonesia, in 2003-2006, among 132 blepharoptosis patients, mechanical blepharoptosis was seen in 2% [7]. Mechanical blepharoptosis surgery is often indicated if blepharoptosis severely

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Received: September 9, 2015 | **Accepted:** December 9, 2015 | **Published Online:** January 10, 2016

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Conflict of interest: None declared | **Source of funding:** Nil | **DOI:** <http://dx.doi.org/10.17659/01.2016.0003>

obstructs the visual field or interferes with activities of daily life. This case presentation is aimed to demonstrate a one-step surgical procedure in management of mechanical blepharoptosis with unidentifiable levator function at the initial diagnosis due to eyelid tumor.

Case Report

A 37-year-old man first came to the ophthalmology clinic with chief complaint of a mass in the upper right eyelid since one year which caused the upper eyelid to drop. The mass got progressively bigger, then worsened the eyelid drop. No blurred vision nor diplopia was found. On the ophthalmology examination, his uncorrected visual acuity of the right eye was 6/7.5. There was a 3.5x2.5x1.5 mm well-defined nodular mass in the upper eyelid leading to floppy, distended and inferodisplacement of the eyelid [Fig.1]. Tumor mass was soft, mobile, and painless. The right eye had severe ptosis and levator function of the right eye could not be assessed due to the tumor mass. The movement of the eyeball was mildly restricted to the temporal site due to chemosis in the temporal region of the conjunctiva bulbi. There was no relative afferent pupil defect (RAPD). The sensibility of cornea in both eyes were good. Anterior segment and fundus examination of the right eye was within normal limit. His uncorrected visual acuity of the left eye was 6/6. The anterior segment and fundus examination of the fellow eye was unremarkable.



Fig.1: Initial presentation of the patient.

His CT scan revealed right lacrimal glandular mass pressing right ocular bulbus and right medial rectus lateralis to the side medial orbital. There was no mass infiltration to the intracranial area. Debulking of the tumor mass and pathological examination were planned by the oncology division and upper eyelid reconstruction was planned by plastic reconstructive division. Before the debulking of tumor mass was performed, a horizontal skin incision was made in accordance with the lid crease height of 5 mm, measured from the upper eyelid crease to the horizontal palpebral fissure (the fellow eye served as a model) [Fig.2A]. Blunt dissection was done to separate the encapsulated and nodulated tumor mass. An extirpation of tumor mass along with the capsule was performed to ensure that the mass was completely taken out [Fig.2B]. Thereafter, the reconstruction of the palpebra followed. First, identification the anatomy of upper eyelid was performed. We found that the tumor mass did not infiltrate aponeurosis fat pad and levator. Then, we determined excess skin by making marker line. The intended excision area of the right eye was marked. The left eye served as a model. Then, the horizontal palpebra fissure was measured. The lower margin



Fig.2:(A) A horizontal incision was made in accordance with the lid crease height of 5 mm, measured from the upper eyelid crease to the horizontal palpebral fissure (the fellow eye served as a model). **(B)** An extirpation of tumor mass along with the capsule was performed to ensure that the mass was completely taken out.

was made in accordance to the distance of the skin crease from the eyelid margin of the left eye. Three dots marked as the medial, central, and lateral points of the cornea to the normal eyebrow. The distance from the skin crease to these three dots was noted from the fellow eye to mark the upper margin of the intended excision [Fig.3A,3B]. Following the transverse skin excision of the upper eyelid, the lateral orbital rim was exposed. Then, lateral tarsus was fixated to the periosteum and lateral canthopexy was performed [Fig.4A,4B]. Then, upper eyelid skin was closed together with making skin crease [Fig.5A,5B].

Two weeks after surgery, size of right eye was comparable to normal eye. His right eye fissura palpebra horizontal was 24 mm, fissura palpebra vertical was 9 mm, and marginal reflex distance was 3 mm. The measurements of left eye were fissura palpebra horizontal: 24 mm, fissura palpebra vertical: 10 mm, and marginal reflex distance of 4 mm. There was no lagophthalmus nor trichiasis. His cosmetic appearance was markedly improved [Fig.6].



Fig.3:(A) Clinical appearance. **(B)** Schematic illustration: Intended excision marked, width of normal upper eyelid measured, lower margin marked according to the distance of skin crease from the eyelid margin in normal eye. Three dots marked the medial, central, and lateral points of the cornea to normal eyebrow. The distance from the skin crease to these 3 dots was noted from the fellow eye to mark the upper margin of the intended excision.

Discussion

Most mechanical blepharoptosis patients present with dropping eyelid, giving a sleepy or tired appearance showing facial disfigurement looks. The patients may complain of blurred vision, increased tearing and diminished upper visual fields, causing difficulties in doing daily living activities. In addition, mechanical blepharoptosis can also influence cosmetical appearance which further disturbs the



Fig.4:(A) Clinical appearance. **(B)** Schematic illustration: Following the transverse skin excision of the upper eyelid, the lateral orbital rim (#) was exposed.

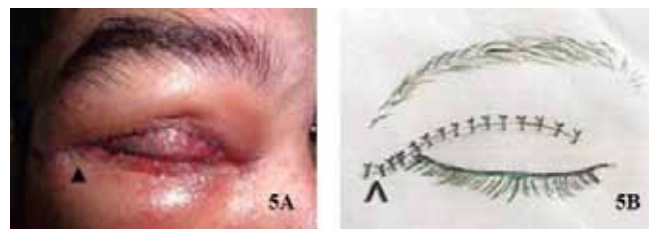


Fig.5:(A) Clinical appearance. **(B)** Schematic illustration: The lateral tarsus was fixated to the periosteum and lateral canthopexy (^) was performed. Next, facial upper eyelid skin was closed.



Fig.6: Clinical appearance **(A)** before the surgery **(B)** two weeks after surgery.

social life, therefore affecting patient's quality of life [1-5,8].

Eyelid neoplasms either benign or malignant, are thought to be the most common cause, it is also crucial to ask about the onset of the tumor, size, progression, characteristics which includes the edges, pain, texture and mobility. Ophthalmology examination includes visual acuity, palpation of the eyelids and the orbital rim, and careful check of anterior and posterior segment. To evaluate the severity of ptosis, various eyelid measurements should be taken in the primary position of the head. If the droopy lid obscures the lid margin, the examiner should lift the brows to observe the lid level for measurement. The examiner should note the palpebrae fissure height (PF), marginal reflex distance (MRD), levator function, upper eyelid crease position, margin limbal distance (MLD), and Bell's phenomenon in affected eyelid comparing it to normal eyelid position [1-5,8,9].

Blepharoptosis repair is a challenging oculoplastic surgical procedure that requires correct diagnosis, thoughtful planning, thorough experience, good surgical technique, and also understanding of eyelid anatomy [1-5,8,9]. For reconstructive purposes, the eyelid may be divided into three lamella: the anterior lamella which consists of the skin and orbicularis oculi muscle, the medial lamella which consists of orbital septum, levator muscle and Muller muscle and the posterior lamella which consists of the tarsus and the conjunctiva [10-12]. Ptosis surgery can be divided in three approaches: external or transcutaneous (levator advancement, levator resection); internal or transconjunctival (mullerectomy, conjunctivo-mullerectomy, tarso-conjunctivo-mullerectomy); and frontalis suspension technique. The surgeon needs two parameters for patient surgical plan: levator function and degree of ptosis by MRD measurements. Minimal blepharoptosis is usually using conjunctivo-mullerectomy, but tarso-

conjunctivoplasty, and levator surgery are also viable options. With moderate blepharoptosis, levator aponeurosis surgery is usually applied. Levator function and surgeon's preference assign the surgical option with severe blepharoptosis: Whitnall's sling (attachment of Whitnall's ligament to tarsus), supramaximal levator resection with or without tarsectomy, and frontalis suspension surgery are the most recommended techniques [1-5,8,9,13-18].

In this case, upper eyelid reconstruction was performed by doing transverse skin resection of the upper eyelid, and lateral canthal attachment of both upper and lower tarsal plates to the periosteum was possible due to small-size of tumor with distinct edge and not infiltrating to the levator muscle. Nevertheless, in big infiltrative tumor such as neurofibromas, the method of full-thickness pentagonal wedge excision is required. Other authors recommend supratarsal, transverse or transverse-oblique, full-thickness wedge resection of the affected upper eyelid with immediate reconstruction of the lateral canthus and levator apparatus resulting in functional and aesthetic benefit despite the progressive and debilitating nature of the disease [20-22].

The successful criteria of ptosis surgery can be assessed both in objective and subjective ways. Objectively, the MRD of the affected eye should be compared to the normal one. Most investigators have considered eyelid margin position within 1-2 mm of the desired height (or within 1-2 mm of symmetry) to represent a successful result. While the subjective criteria should include the evaluation of patient's appearance, satisfaction and the level of self-confidence in the social life after the surgery [13,23,24]. In this case, two weeks after surgery, size of right eye was comparable with the normal eye. There was no lagophthalmus nor trichiasis. His cosmetic appearance improved markedly and patient regained his self-confidence.

The most common complication of blepharoptosis surgery is undercorrection. Other potential complications include overcorrection, unsatisfactory or asymmetric eyelid contour, scarring, infection, and lagophthalmos with resultant exposure keratitis. Lagophthalmos following ptosis surgery is most common in patients with decreased levator function [1,2,4]. In this case, complication of ptosis surgery could be avoided since the tumor mass had a distinct edge and there was no involvement of levator aponeurosis. Besides, contralateral eye served as a model, upper eyelid reconstruction was performed by doing transverse skin resection of the upper eyelid, and lateral canthal attachment of both upper and lower tarsal plates to the periosteum.

Conclusion

The management of blepharoptosis is a very challenging. Correct diagnosis, planning, understanding of eyelid anatomy, experience, and good surgical technique are essential for this oculoplastic surgical procedure. Ocular, medical, and surgical history of the patient will determine whether the surgery is appropriate for individual.

The surgery of mechanical blepharoptosis usually cannot be done in one-step procedure due to the difficulty in measuring the levator action. However, in this case, using the contralateral eye as a model, palpebral reconstruction was performed by doing transverse skin resection of the upper eyelid, and lateral canthal attachment of both upper and lower tarsal plates to the periosteum.

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