Comparison between surgical outcome of levator apponeurosis resection and levator apponeurosis tucking by non absorpable sutures in cases of unilateral congenital ptosis

Thesis

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Amira Akmal Sobhy

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List of Abbreviations

Abbr.	Full-term
CPEO	**:** Chronic progressive external ophthalmoplegia
CSF	**:** Cerebrospinal fluid
GPC	**:** Giant pupillary conjunctivitis
LEMS	**:** Lambet-Eaton myathenic syndrome
LF	**:** Levator function
LPS	**:** Levator palpeprae superiosis
LPTL	**:** Lower-positioned transverse ligament
MCT	**:** Medial canthal tendon
MG	**:** Myasthenia gravis
MRD	**:** Marginal reflex distance
OPMD	**:** Oculopharyngeal muscular dystrophy
PTFE	**:** Polytetrafluoroethylene
RAPD	**:** Relative afferent pupillary defect
SOFS	**:** Superior orbital fissure syndrome
STL	**:** Superior transverse ligament of whitnall
ZMC	**:** Zygomatico-maxillary complex

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Introduction

Blepharoptosis can be classified according to various criteria such as age of onset (congenital or acquired), etiology, severity, and levator function. Acquired blepharoptosis may be further subdivided into myogenic, neurogenic, aponeurotic, myathenia, mechanical, or traumatic. On the basis of severity, it may be minimal or mild drooping (1-2 mm), moderate (3-4 mm), or severe (>4 mm) .When considering levator function, it can be poor (0-4 mm), moderate (5-10 mm), or good (>10 mm) (1)

The surgical correction of blepharoptosis must thus be individualized on the basis of degree of ptosis, levator function, and the need for concomitant blepharoplasty or brow surgery. Fundamental understanding of the underlying anatomical cause of the blepharoptosis can considerably aid in selecting the appropriate surgical procedure (2)

The specific surgical method for repairing blepharoptosis is selected according to the degree of eyelid droopiness and the preoperative levator function

Ptosis cases with levator function of 4 mm or more are usually repaired by levator resection (3) whereas sling surgery is used in cases of levator function under 4 mm (4).

The transconjunctival approach is mainly used in cases of mild to moderate ptosis with a good response to the phenylephrine test(5)

The transcutaneous approach can be applied to all types of ptosis except for the myogenic type, in which sling surgery may be best suitable

Levator resection is the most common procedure that can be used in children who have congenital ptosis or in adults who have acquired ptosis. The amount of levator resected is determined preoperatively by the levator function and the level of ptosis. Dissection is often extensive and involves dissecting the levator from the underlying Muller's muscle and the conjunctiva, as well as disruption of the medial and lateral horns of the levator (6)

Meltzer *et al*(7) modified this by combining the simplicity of a single suture technique with the flexibility of an adjustable suture and reported excellent results in their retrospective series of 51 patients.

The small incision approach was then formally described by Lucarelli and Lemke; however, their dissection technique is similar to the traditional approach with less dissection and smaller incision (8)

Disadvantages of levator resection include corneal exposure, eyelid level too high or too low,conjunctival prolapse, contour abnormality,lash ptosis,entropion,lash eversion and ectropion , poor corneal skin crease (9)

Nocturnal lagophthalmos and superficial punctuate erosion were the most common complications after levator resection (10)

This study will describe a technique of anterior approach to levator apponeurosis tucking by non absorbable suture without resection of conjunctiva and Muller's muscle.

Aim of the Work

To compare the surgical outcome of levator aponeurosis resection and levator aponeurosis tucking done by non absorbable sutures in cases of unilateral congenital blepharoptosis.

I. Applied anatomy of the eyelid

The eyelids are mobile, flexible, multilamellar structures that cover and protect the anterior surface of the globe. They also provide vital chemical elements to the precorneal tear film, and help distribute these layers evenly over the surface of the eye. Any esthetic reconstructive surgery on the eyelids requires a thorough knowledge of eyelid anatomy. (11)

The Palpebral Fissure

Eyelid topography is influenced by age, sex, race, ethnicity, and surrounding facial anatomy, particularly that of the eyebrow. In most individuals, the lateral canthus sits 2 mm higher than the medial canthus. The adult interpalpebral distance measures 28-30 mm horizontally and 9-12 mm at its greatest vertical extent centrally. The upper eyelid margin rests approximately 1-2mm below the superior limbus and is gently curved, with the highest point nasal to the center of the pupil. These relationships should be kept in mind during ptosis repair or eyelid reconstructions. (12,13)

The upper eyelid crease is an important surgical landmark, as it is often an incision site. It is a horizontal indentation caused by attachments of superficial levator aponeurotic fibers into subcutaneous tissue. (14) It rides parallel to the lid margin and lies 8-11 mm above the eyelid

margin in women and 7-8 mm in men. This crease should be reformed during ptosis or blepharoplastic surgery to maintain normal cosmetic appearance, and to prevent downward displacement of preaponeurotic fat or overhanging of eyelid skin. (13)

Eyelid Skin and Margin

The eyelid skin is the thinnest in the body, mainly owing to its attenuated dermis. The thinness of the skin allows eyelid incisions to heal rapidly and helps keep scarring to a minimum. (15)

The upper eyelid margin has approximately 100 eyelashes. Several sebaceous Zeiss glands empty into each lash follicle, and Moll sweat glands are located between the follicles. Posterior to the lash line on the eyelid margin is the easily noticeable line of meibomian glands, which emanate from the edge of the tarsus. (15)

Between the lash line and the meibomian line lies a faint grey line, which is more pronounced in young individuals. This represents the edge of the muscle of Riolan, a striated muscle in the same plane as, but distinct from, the orbicularis oculi. (5) The grey line serves as an important surgical landmark, separating the eyelid vertically into the anterior lamella (skin and orbicularis) and the posterior lamella (tarsus, retractors, and conjunctiva) as shown in Figure (1). (16)