Techniques for Repair of Lower Eyelid Involutional Entropion

Essay

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LCT	lateral canthal tendon
SMAS	superficial musculoaponeurotic system
ROOF	retro-orbicularis oculi fat
SOOF	suborbicularis oculi fat
MCT	medial canthal tendon
LCT	lateral canthal tendon
LPS	levator palpebra superioris
CN	cranial nerve
FES	Floppy eyelid syndrome
LES	lax eyelid syndrome
HLL	horizontal lid laxity
LLE	lower lid excursion

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Entropion is an inversion of eyelid margin. The keratinized skin of the eyelid margin and eyelashes rub against cornea and conjunctiva causing irritation of them. This irritation is considerable enough to cause many patients to seek medical intervention early ***(Nerad, 2005).***

Entropion is classified into four categories: congenital, acute spastic, cicatricial and involutional ***(Kersten et al., 1997).***

Involutional entropion is one of common entropion types that affect the lower eyelid more than the upper eyelid. Three anatomical factors play a role in determining development of involutional entropion: laxity of lower eyelid retractors, horizontal laxity of eyelid and overriding of preseptal orbicularis. Involutional entropion is clinically presented by: poor tone of the eyelid and ability to pull the eyelid more than six millimeters from the globe, little or no inferior movement of the lower eyelid on down gaze, inferior fornix is deeper than usual, a white subconjunctival line several millimeters below the inferior tarsal border and the lid can be returned by your finger to its normal position and it will remain there for a blink or two ***(Dresner and Karesh, 1993).***

Involutional entropion is encountered more obviously among older patients; this is explained by the observation of small eyes

appearance of older population which is caused by narrowing of eyelid aperture both vertically and horizontally. As retractors relax with age the position of the lower eyelid elevates a pit, which is referred as to upside-down ptosis. The horizontal length of the palpebral aperture decreases and the canthi become rounded as the canthal tendons lengthen ***(Nerad, 2005).***

For many years, enophthalmos was considered to be an etiological factor in involutional entropion. Recently this has been disproved, as presence of enophthalmos has been shown to be with no difference among age-matched patients with or without entropion ***(Nowinski, 1991).***

Many surgical procedures had been developed in attempt to repair involutional entropion or reducing its clinical implication, these had yielded three main categories in involutional entropion repair surgeries. These techniques used usually in combination to each other with or without another additional modalities in approaches or procedures related to repair of involutional entropion aiming to treat the three main anatomical factors in pathogenesis of involutional entropion ***(Collin, 2006).***

The procedures used in treatment of involutional entropion can be categorized into: procedures aiming to rotate eyelid from the globe by creating a cicatrical barrier with suturing or cautary,

procedures aiming to repair attenuated or dehisced lower lid retractors and combined procedures that entail both previous techniques with lateral canthoplasty and horizontal shortening ***(Katowitz et al., 2006).***

Cicatricial barrier procedures, using an absorbable sutures material from the conjunctival surface of lower lid out through the orbicularis, what we call fornix suture technique. Repair of retractors is a more physiologic approach that directly addresses underling pathologic condition by tightening lower lid retractors under direct visualization. This may be with either an external (subciliary) incision or internal (transconjunctival) approach ***(Ben Simon et al., 2005).***

Many combined procedures to address both vertical and horizontal factors incriminated in the pathology of involutional entropion had been developed over years ***(Khan, 2002).*** Among these procedures: transverse lid split and everting sutures (Wise procedure), or by applying horizontal lid shortening to the previous procedure (Quickert procedure), also plication of lower eyelid retractors (Jones procedure) was described ***(Caldato et al., 2000).***

Up to two hundreds procedures have been described in literatures for the correction of involutional entropion, suggesting

that no one technique is entirely satisfactory due to many factors involved in the pathogenesis ***(Elewa et al., 2007).***

Anatomy of the eyelid

The eyelids have several functions: they protect the globe and the cornea, they maintain the physiologic integrity and clarity of the ocular surface, and they produce and spread tears and help with tear elimination.

The eyelids act to protect the anterior surface of the globe from local injury. Additionally, they aid in regulation of light reaching the eye, they aid in tear film maintenance by distributing the protective and optically important tear film over the cornea during blinking, and they aid in tear flow by their pumping action on the conjunctival sac and lacrimal sac ***(Kronish, et al., 2001).***

The eyes or more precisely, periorbital tissues are paramount in facial beauty, exhibiting youth and a plethora of expressions. Unfortunately, this area is also one of the first to show aging from the effects of gravity, ultraviolet radiation, and animation ***(Cahill, et al., 2008).***

The eyelid grossly divided into two broad structures: anterior and posterior lamella. These, in turn, are further sub-divided into five structural planes: the skin and subcutaneous fascia, the eyelid protractors (orbicularis oculi, corrugator supercilii, and procerus), the orbital septum and fat, the retractors of the eyelids (levator muscle with its aponeurosis, Müller's muscle, capsulopalpebral fascia, and inferior tarsal muscle) and the tarsi and conjunctiva ***(Wobig and Dailey, 2004).***