

Anterior Lamellar Recession for Management of Upper Eyelid Cicatricial Entropion

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Abstract: Purpose: To report the efficacy of anterior lamellar recession for correcting upper lid cicatricial entropion (UCE). **Patients and methods:** Retrospective, 2-year, single-center, consecutive case series of patients with primary upper eyelid cicatricial entropion undergoing the above procedure. Success was defined as no recurrence of the entropion or trichiasis and patient satisfaction at least 2 years postoperatively. **Results:** Mean follow-up time was 26.17 months (range, 24 – 30 months), and the success rate was 92.6% (25 of 27 eyelids). **Conclusions:** anterior lamellar recession is an effective procedure for treating upper lid cicatricial entropion.

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1. Introduction

Cicatricial entropion is characterized by tarsoconjunctival scarring and shortening with resultant ciliocorneal contact and associated keratopathy (Chi *et al.*, 2016). Cicatricial entropion remains one of the more challenging eyelid disorders to manage. In developing countries, cicatricial entropion and associated trichiasis are frequently seen in patients with trachoma, the leading cause of infectious blindness worldwide (Wu *et al.*, 2010). Despite of the diversity of the techniques available for correction of UCE, none of them offers a definitive solution with a significant recurrence rate (21-71%) reported in most surgical series (Roth *et al.*, 2011). Many of these procedures involve directly incising the conjunctiva and/or violating the tarsus. This may induce conjunctival inflammation and further cicatrization, which can lead to surgical failure (Elder *et al.*, 1996). Anterior lamellar recession (ALR) is a well-known conventional surgical method for the correction of a mild to moderate upper-lid entropion. It carries the advantage of avoiding the posterior lamella, as well as maintaining the integrity of Meibomian glands which could avoid iatrogenic dry eye (Bi *et al.*, 2009). Although ALR is an established treatment modality, there are few reports about its use in recurrent upper eyelid cicatricial entropion specially in cases that are associated with lid margin irregularity and retraction.

2. Patients and Methods

A retrospective chart review was performed on 17 patients (27 eyelids) who had undergone ALR for primary cicatricial entropion of the upper eyelid at the Department of Ophthalmology, Fayoum University,

during a 3-year period (2014 to 2017). Only patients with a follow-up period of at least 2 years were included in the final analysis. Data collected included age and gender, indications for surgery, previous surgeries, follow-up period, outcome, complications, recurrence and onset of recurrence, repeat surgeries and their outcome. Success was defined as the absence of eyelash-ocular surface contact in all directions of gaze and complete eye closure at least 2 years postoperatively.

Surgical Technique

Anterior lamellar repositioning

The technique used is similar to that described by Ross *et al.* 2011, but without grey line incision.

The inferior incision was placed 2-3 mm below the intended eyelid-crease across the entire lid and shaped slightly upwards and outwards into the lateral canthus. The second incision was made at a variable distance away from the second line, according to the amount of redundant skin to be excised. The levator and Müller's muscle were dissected free from the conjunctiva. This allowed us to advance the posterior lamella inferiorly. Dissection continued between the tarsus and the pretarsal anterior lamella using Westcott scissors to expose the anterior tarsal surface peeling the whole anterior lid margin with aberrant lashes and keratinization away from the tarsus. The anterior lamella was completely dissociated from the tarsus with creation of a bipedicle flap. Double-armed 5/0 vicryl sutures are placed partial thickness through the tarsal plate and emerge through the anterior lamella close to the upper eyelid margin. The bare eyelid margin is allowed to epithelialize.

3. Results

A total of 26 upper eyelids in 17 patients (9 females; 8males) with a mean age of 53.5 years (range 31–74 years) who had a follow-up period of at least 2 years were studied.

Complete correction of entropion (the absence of eyelash–ocular surface contact in all directions of gaze) was achieved for 25 (92.6%) of the 27 eyelids. Two (7.40%) of the 27 eyelids, they were considered as failure, developed a residual or recurrent symptom during follow-up and the 2 eyelids were treated by electrolysis. One patient developed central lid margin a vascular necrosis one week postoperatively. It healed conservatively with consequent localized madarosis and a central notch. However, this did not alter the lid margin position or cause recurrent entropion. No cases of eyelid retraction, pyogenic granuloma, eyelid retraction, or overcorrection were encountered.

4. Discussion

There are many surgical techniques that have been described for correction of upper eyelid cicatricial entropion. Previous studies have shown the WHO endorsed bilamellar tarsal rotation (BLTR) technique to have recurrence rates of between 18.4% and 55% (Barr *et al.*, 2014). BLTR carry the disadvantage of violating the tarsal plate and inducing tarsal loss. This can trigger conjunctival inflammation and further cicatrization, which can lead to surgical failure. Since there is surgically induced tarsal loss in most cases of cicatricial entropion, BLTR procedure cannot easily be repeated when necessary (Wu *et al.*, 2010).

The ALR procedure has several advantages. First, it retains the integrity of the Meibomian glands and theoretically avoids iatrogenic dry eye, which is especially important in this condition (Edler *et al.*, 1996; Bi *et al.*, 2009). Second, the surgery is performed on structures anterior to the tarsal plate, thereby avoiding the conjunctiva and tarsal plate which is beneficial in recurrent cases. Finally, upper lid crease approach allows for more accurate and meticulous dissection especially at the lid margin without losing the tissue plane or inadvertently cutting through the tarsal plate. In addition, it provides direct access to the levator muscle with no need for extra incision (Bi *et al.*, 2009; Roth *et al.*, 2011; Cruz *et al.*, 2015).

The procedure for ALR adopted in this study was similar to the technique described by Bi *et al.* and Ross *et al.* with a few modifications (Bi *et al.*, 2009; Roth *et al.*, 2011). Instead of dissection at two sites, i.e. the grey line and superior lid fold as described by others (Bi *et al.*, 2009; Koreen *et al.*, 2009; Roth *et al.*, 2011), the dissection is performed only through the upper lid crease incision and down to the lid margin as

the lid margin is usually distorted in UCE with no identifiable grey line (Tomlinson *et al.*, 2011). This approach allows for more accurate and meticulous dissection especially at the lid margin without losing the tissue plane or inadvertently cutting through the tarsal plate. Dissection may continue beyond the lash follicles, peeling the entire anterior lid margin from the tarsus in cases of metaplastic lashes and keratinization (Cruz *et al.*, 2015). ALR without complete lid split will not solve the underlying cicatricial force at the eyelid margin because the lid margin structures are tightly bound in this area (Rhatigan *et al.*, 1997; Collin, 2006). The anterior lamella must be completely separated and recessed on the posterior lamella without tension to have a potentially effective long-term result (Ti *et al.*, 2001; Bi *et al.*, 2009; Roth *et al.*, 2011). Combining the procedure with lid retractor dissection successfully prevented a further aggravation of upper lid retraction and achieved good PFH. Collin recommended dissecting the fibrous tissue and Muller's muscle off the upper border of the tarsal plate and conjunctiva to advance the posterior lamella and compensate for the degree of the lid retraction. He recommended that it be part of any upper lid entropion operation (Collin, 2006). Bi *et al.* combined lid retractor lengthening with ALR for cases with preoperative lid retraction and severe UCE (Bi *et al.*, 2009). Similarly, Ross *et al.*, 2011 and Leatherbarrow, 2011 advised dissecting the upper lid retractors off the tarsus in UCE surgery to allow advancing the posterior lamella inferiorly, and protecting the cornea (Aghai *et al.*, 2016). Barr *et al.* assumed that missing lid retraction and not performing levator recession could be a cause for the high recurrence rate observed (21%) following ALR (Barr *et al.*, 2014).

Skin closure, with bites through the levator muscle, maintain an upward vector of traction on the anterior lamella and help lid margin eversion (Roth *et al.*, 2011; Aghai *et al.*, 2016).

Complications after modified ALR were few. We experienced one patient that developed lid margin a vascular necrosis. This complication can be attributed for disruption of both marginal and peripheral arcades during the procedure.

Weaknesses of this study include the retrospective design, limited numbers, and lack of a comparison or control group. In addition, the vast majority of patients in this study had entropion secondary to trachoma. A prospective, randomized study comparing the method described in this manuscript to others in the literature would be valuable.

We believe satisfactory correction of UCE can be achieved ALR with formal retractor dissection off the tarsus and crease forming sutures.

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