MANAGEMENT OF TRACHOMATOUS CICATRICIAL ENTROPION OF THE UPPER EYE LID: OUR MODIFIED TECHNIQUE

Mohammad Naqaish Sadiq, Anant Pai

Department Ophthalmology, Sohar Hospital, Sultanate of Oman

Background: Management of trachomatous cicatricial entropion of the upper eye lid presents a difficult problem. Many surgical approaches have been developed to address it. We report the functional and cosmetic results of our modified surgical technique we have developed in the management of trachomatous cicatricial entropion of the upper eye lid. **Methods**: 45 lids of 43 patients having trachomatous cicatricial entropion of upper eye lids were operated by our modified surgical technique in which we combine bilamellar tarsal margin rotation procedure with blepharoplasty. The technique and results were evaluated in a follow up period of up to 40 months. **Results:** In all 45 upper eye lids, the normal eyelashes rotated away from the surface of the eye and were no longer in contact of the eye ball in all position of gaze. All eyes had adequate lid closure and regular lid margin. No eye had any overhanging baggy fold of skin at operation site. Three eyes had conjuctival granuloma which was excised under local anaesthesia Three eyes needed Diode laser ablation to treat isolated cilia posterior to normal lash line. Three eyes had mild over correction which regressed without any surgical intervention. One lid had segmental necrosis of distal part of eye lid which recovered spontaneously in following days. **Conclusion:** Our modified technique of combining bilamellar tarsal rotation procedure (BTR) with blepharoplasty appears to be an effective surgical technique in the management of the trachomatous cicatricial entropion of the upper eye lid. It achieves successful anatomical correction along with more acceptable cosmetic appearance.

Key words: trachomatous cicatricial entropion, bilamellar tarsal rotation, Blepharoplasty, Electrolysis, Cryotherapy

INTRODUCTION

Cicatricial Entropion of upper eye lid in association with trachoma is the leading cause of blindness worldwide and is only second to cataract as an over all cause of blindness.[1] About 5.5 million people are blind or at risk of blindness as a consequence of Trachoma.[2] Being situated in high trachoma endemic area a large part of Omani population has been effected by this disease. A National survey conducted in Oman in 1996-97 showed that 17.5% of population above 40 years of age was having trachomatous trichiasis and cicatricial entropion of the the upper eye lids.[3] Although similar rates of active disease are observed in male and female children, the later sequel of trachoma like trichiasis, entropion ,and corneal opacity are more common in women than men. Moreover scarring and consequent blindness increases with age and is commonly seen in older adults.[4] Repeated infection with Chlamydia trachomatis causes scarring of tarsal conjuctiva which pulls the lid margin towards eye and the lashes with it. There is posterior migration or conjunctivalization of meibomian glands and rounding of lid margin.[5] There is fibrosis, thickening and distortion of tarsal plate, spastic contraction of marginal fibers of Orbicularis Oculi, contraction of subconjuctival fibrous tissue, increase in weight of eye lid and laxity of skin and ptosis.[6,7]

Various surgical modalities are used to address this problem. Cryotherapy has been advocated and used for treatment of trichiasis but cryotherapy, electrolysis, argon or diode laser and electrosurgery all are known to produce further scarring and worsening the condition they are designed to treat, therefore all must be used with discretion and with due regard to underlying pathology.[5,8] Other surgical techniques described include tarsal wedge resection,[9] transverse tarsotomy[10], Lamellar division, Lid splitting with anterior lamella repositioning [11], Tarsal margin rotation with posterior lamella superadvancement [12] and 180 degree tarsal margin rotation with a posterior lamella advancement.[13] Various grafting techniques which involved sclera, nasal septum, mucous membrane, hard palate mucosal graft etc have been described to slow down cicatricial process and to maintain the surgical repositioning of the tissue [14,15]. These all add to the complexity of the surgery and graft viability is unpredictable due to poor vascularity of these scarred lids.[12] The fact that so many techniques exists suggests that none of them offers ultimate solution.

Bilalamellar tarsal rotation was the most common technique applied to correct the trachomatous cicatricial entropion of upper eye lid. This procedure is associated with crowding of the skin and an overhanging baggy fold of skin over the lid margin, which gave an unacceptable cosmetic appearance especially in unilateral cases. In an attempt to reduce the postoperative complications of this procedure, We decided to modify the technique of entropion correction by combining bilalamellar tarsal rotation with blepharoplasty in which very good cosmetic effect was achieved in addition to successful and adequate correction of upper lid entropion.

MATERIAL AND METHODS

This study was conducted at Sohar hospital, Sultanate of Oman. We selected the patients who had cicatricial entropion of upper eye lids due to trachomatus etiology. A total of 45 eyes of 43 patients were selected and operated by our modified technique. Cases of recurrent entropion, districhiasis and short lids due to distortion of tarsal plate as a result of scarring were excluded from the study.

All operations were done under local anaesthesia. Upper lid skin was marked 6 mm above eye lash margin comparing with that of other eye; and extending from lateral canthus to just lateral to the punctum medially. Upper limit of the skin to be excised was marked by just picking up the skin with forceps and allowing the lids just to meet on gentle closure. Skin flap was designed in a cat's ear fashion, central height of the flap being double than the medial and lateral part of the flap. Medial and lateral end of the skin marks were raised towards medial and lateral ends of upper eye brow and a cat's ear pattern was created to prevent clumping and hooding of the skin at time of suturing the skin (Fig-1). After marking, lid was infiltrated with 3-4 cc of local anesthetic solution made by mixing 10cc of 0.5% bupivacaine with 0.3cc of 1:1000 adrenalin. Incision was made with a No.15 blade and cat's ear pattern of skin excised with blunt end scissors, taking care not to damage orbicularis oculi muscle and underlying fat (Fig-2). Haemostasis was secured by cauterizing any bleeding point.

One drop of amethocan was instilled in the conjuctival sac and a lid guard placed on the conjunctival side of upper lid. Site of tarsal plate incision was measured 3mm from the lid margin to tarsal plate. While assistant holding

lid guard firmly a horizontal incision 3 mm above the lid margin was made through the orbicularis oculi to the full thickness of tarsal plate and conjunctiva. This was completed by scissors to involve both the medial and lateral ends of tarsal plate. Thus the lid throughout its entire thickness was divided into a 3 mm distal fragment and remaining proximal fragment (Fig-3).

Fig-1: Cat's Ear pattern

Fig-2: Excision of skin with blunt end scissors

Fig-3: Division of lid into distal and proximal fragments

Three 6/0 vicryl sutures with double arm spatula needles were taken. First needle of first suture was passed through a 1 mm bite of tarsal conjunctiva of proximal fragment and about half of thickness of tarsal plate near middle of eye lid, so that needle emerged through cut edge of tarsal plate of the proximal fragment. Second needle of the same suture was passed in same fashion about 4 mm apart from the first on the conjuctival side and it similarly emerged through cut edge of the tarsal plate. This suture was placed in the center of the lid and bulldog was applied on the two strands of the suture. Other two double armed needle sutures were placed in an identical manner on the either side of the first suture being 4 mm away from it and 4 mm from each other. Care was taken that lateral and medial suture must reach the lateral and medial end of the incision.

Now the two needles of central suture were passed through the orbicularis oculi and skin of distal lid fragment being anterior to the tarsal plate. It emerged through the skin just immediately anterior to the eye lash line and its width being equal to that in the proximal fragment (Fig-4). All the needles of other sutures were passed in the same manner, taking care that width of bite being same as that in proximal fragment.

Fig-4: Passing needles for suturing

Firstly the central suture was tied under appropriate tension with 3 single knots followed by medial and lateral sutures so as to produce slight overcorrection without notching and buckling of tarsal plate. Skin was mobilized easily. Skin edges were closed with 6/0 vicryl. The edges fitted nicely and snugly into already crafted cat's ear pattern and there was no hooding. Rest of skin was closed with interrupted suture 6 mm apart which also picked up underlying apponeurosis of the levater muscle to create the skin crease. All sutures were tied without tension (Fig. 5).

Fig-5: Sutures tied without tension

Gentamicin eye ointment and pressure eye pad applied for 24 hours. Next morning eye pad was removed and wound was examined and entropion correction was evaluated. Gentamicin ointment was continued for 2-3 weeks and sutures were removed on 10th day of surgery. Patients were followed up on 2nd week, one month and at 6 month interval. Follow up ranged from 1 to 40 months. Later follow up examination was conducted on appointment by telephone to each patient.

RESULTS

Out of 43 patients 10 were males whose age ranged from 55 to 77 years and 33 females whose age ranged from 48 to 65 years having cictricial entropion of upper eye lids who were operated by our modified technique. Two females had bilateral surgeries and total 18 right eyes and 27 left eyes were operated. A successful outcome was defined as one in which normal upper lid margin lash rotated away and were no longer in contact with the globe in all position, no clumping of redundant skin at the operation side, regular lid margin and a good cosmetic out look . This combined procedure was successful in all 45(100%) upper eye lids of 43 patients and produced functionally and cosmetically good results (Fig 6 and Fig. 7). Three (6.97%) eyes had conjunctival granuloma which was excised under local anaesthesia in OPD. Three (6.97%) eyes needed Diode Laser ablation to treat isolated cilia posterior to normal lash. One (2.32%) lid had segmental necrosis of distal part of eye lid which recovered spontaneously in following days.

Three (6.97%) eyes had mild over correction with everted lid margin looking quite red and inflamed during immediate postoperative period. But during following weeks these healed with a good cosmetic result without any surgical intervention. All (100%) eye had adequate lid closure, regular lid margin and no eye lid had a baggy overhanging fold of skin at the operation site. cosmetic appearance was quite acceptable even in unilateral cases.

DISCUSSION

Management of trachomatous cicatricial entropion of the upper eye lid presents a difficult problem. Many surgical approaches have been developed to address this problem with variable results.

Trabute in 1949 described a 180-degree tarsal margin rotation with a limited posterior lamella advancement.[13] Collin modified it with advancement of posterior lamella up to the inferior edge of the rotated tarsal margin.[9] It was observed that failure to recess the levator off from the anterior tarsal surface resulted in lagophthalmos[12]. Ballen devised Bialmellar tarsal rotation procedure in 1964 for the management of cicatricial entropion of upper lid. This was further elaborated in WHO manual as simple procedure for management of cicatricial entropion of upper lid,[16,17] in which lid is incised through all the layers parallel to lid margin and resutured so that lid margin is rotated away and eye lashes are no longer in contact with globe. The technique was adopted by many surgeons and was found to be most effective and a successful way of treating entropion. Early trial of surgery for upper lid entropion conducted in Oman showed BTR as an effective procedure to correct entropion.[18] Another controlled trial of surgery in Oman showed 77% success of the same procedure [19]. We have seen that although this procedure gives good anatomical correction of trachomatous cicatricial entropion but is associated with excessive clumping of skin which is already stretched due to several factors.[6] This overhanging fold of the crowded skin over the lid margin gives it a baggy appearance and in unilateral cases it looks cosmetically quite unacceptable.

In this study we combined the Bilamellar tarsal rotation (BTR) procedure with blepharoplasty in which before incising the tarsal plate a strip of skin of cat's ear pattern measured according to laxity of skin is excised and BTR procedure is completed later.

To our knowledge there has been no study which combines the two procedures to address both the functional and cosmetic aspect of of entropion surgery. Our cases showed good cosmetic appearance and no recurrence in follow up period. We stress the importance of precise marking of the skin to be excised, which can be easily lifted up with just closure of lids (to avoid post op defective closure). Surgical technique should be meticulous with adequate haemostasis. Care should be taken not to cut or disturb the fibers of Orbicularis Oculi, orbital fat and fibers of levater aponeurosis [9]. Tarsal incision should be made at distance of 3 mm or just greater than this from the lid margin to avoid interruption of marginal vascular arcade and post operative necrosis of distal fragment [14,15], where as too big distal fragment will result in gross over correction. Moreover it is important to tie the sutures under appropriate tension without buckling the tarsus and to have regular round lid margin. Although follow-up of some of our cases is relatively short, our modified technique of bilamellar tarsal rotation (BTR) procedure with blepharoplasty appears to be more effective functionally and more acceptable cosmetically in managing the trachomatous cicatricial entropion upper eye lid. We will report long term follow up in due course of time.

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Address for Correspondence:

Dr. Mohammad Naqaish Sadiq, Department of Ophthalmology, Rustaq General Hospital, PO Box 67, PC 329. Sultanate of Oman.

Email: naqaishsadiq@yahoo.com