

Experience With Simultaneous Release of Upper and Lower Eyelids in Post-Burn Ectropion

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We present our 2 years experience of performing simultaneous release of both upper and lower eyelids in post-burn ectropion in 29 patients (followed-up for 2 to 20 months). Over-correction was achieved in all the cases. Only 4 patients needed secondary release later on. It has been observed that simultaneous upper and lower eyelid release is equally effective when compared to the classical approach of single eyelid release at one operative session. It reduces patient's morbidity and is also more cost-effective.

Key Words: Eyelid, Ectropion, Burns

Eyelids provide protective cover to the eyeball. Although infection or mechanical trauma can damage the eyelids, burn injury has the potential of prolonged morbidity and permanent deformity. Despite advances in the management of acute burns, eyelid contractures almost always develop in second and third degree facial burns. The ectropion may be mild, noticed only when the patient attempts to close the eyes, to severe, that may make the lid excursion impossible. This can result in corneal exposure, ulceration, secondary infection and, in severe cases, loss of vision¹.

The eyelid contractures need release and reconstruction for functional as well as aesthetic restoration. Although the available literature recommends release and grafting of upper and lower eyelids at separate sessions¹, we have been performing release of all the involved lids at one stage. We are of the opinion that reducing the number of surgical procedures can help reduce the morbidity, hospital stay and thereby the financial burden. In this paper we present our experience along with a literature review.

Patients and Methods

The study was carried out at the Department of Plastic Surgery and Burns, Mayo Hospital Lahore from January 1, 1997 to December 31, 1998. All patients with post-burn ectropion involving both upper and lower eyelids on the same side, unilaterally or bilaterally, were considered for the study. These included the acute cases admitted to the Burn unit as well as those patients presenting to the outpatient clinic with mature eyelid contractures. The patients with involvement of only one eyelid, either unilateral or bilateral, were excluded from the study.

In all cases, adrenaline 1:100,000 was infiltrated locally at the time of release of ectropion. Release was carried out with an incision 3-5 mm away from the grey line carried laterally beyond the canthal regions. Using retraction with fine skin hooks and stay sutures, the surgical defect was enlarged with the help of scalpel and small curved scissors so as to achieve over-correction. The

lower eyelid defect was covered with full-thickness skin graft, while the upper lid defect was reconstructed using either retroauricular full-thickness skin graft or thick split-thickness skin graft. The grafts were sutured in place using 4/0 or 5/0 silk. Heavy bolster dressings were applied in each case to prevent graft wrinkling and to ensure that the over-correction is maintained. First post-operative dressing was changed after 72 hours. Sutures were removed at 5-6 days. After healing of skin grafts the patients were advised to carry out firm massage over the treated eyelids 5-6 times daily.

Patients were followed-up at 1 month, 3 months and 6 months. The functional and aesthetic results were graded as "excellent" (good functional as well as aesthetic outcome), "good" (complete eye closure possible but with reduced lid excursion) and "poor" (recurrence of ectropion within 3 months).

Results

Over the period of 2 years, a total of 47 cases of post-burn ectropion were offered treatment. Out of these, 29 patients met the selection criteria for the study. These included 15 males and 14 females; 9 patients had ectropion of all four eyelids whereas in 20 patients upper and lower lids of the same side were involved (table: I). The follow-up ranged from 2 to 20 months (mean 9.8 months). Eleven cases of ectropion followed chemical burns, all being homicidal attempts. Rest of the cases were accidental, resulting from flame burns (table: II). Tarsorrhaphy to protect the eyeball was performed in 2 cases of chemical burns where there was partial loss of eyelids. Wedge excision to correct eyelid redundancy was done in one case.

Table: I Distribution Of Eyelid Involvement

	Male	Female	Total	%age
Unilateral Upper and Lower Lid Ectropion	11	9	20	68.9
Bilateral Upper and Lower Lid Ectropion	4	5	9	31.1

Table: II Aetiology

	n=
Post acid burn (homicidal)	11
Post thermal burn (accidental)	18
Total	29

Functionally and aesthetically, the majority of results were rated as 'excellent' to 'good' (TABLE: III).

Table III Aesthetic And Functional Evaluation

	n=	%age
EXCELLENT	18	62.0
GOOD	7	24.1
POOR	4	13.8

Complications are listed in table: IV. There was partial loss of graft in 3 patients, all being cases of chemical burns. Four cases developed recurrence of ectropion and had to undergo secondary surgery. Three patients developed epicanthal folds. Hypertrophy of the grafted skin and the scar around the graft were not so uncommon, and was more pronounced in chemical burn cases. In most of the cases it settled down with regular olive oil massage. However, hypertrophy and the associated limited eyelid excursion persisted in 5 cases.

Table: IV Complications

	n=
Partial graft loss	3
Recurrence of ectropion	4
Epicanthal folds	3
Scar Hypertrophy	5

Figure 1. (a) shows the pre-operative view of a patient with chemical facial burns involving all the four eyelids. Figure 1. (b) Is the 3 months post-operative picture of the same patient after simultaneous release and skin grafting of all the eyelids.



Fig. 1. (a) post chemical burn ectropion of all four eyelids (pre-operative view)



Fig. 1. (b) 3 months post-operative view of the patient in 1. (a) After release and skin grafting of all the lids



Fig. 2. (a) Pre-operative view of a patient with post flame burn ectropion

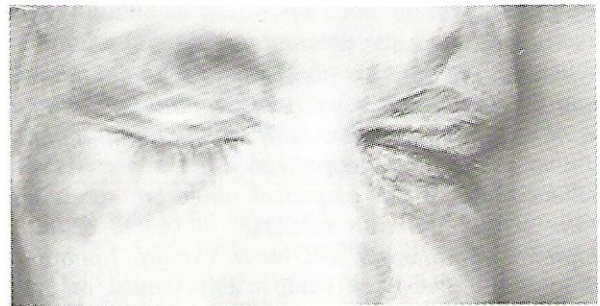


Fig. 2. (b) 6 months post-operative view of the patient in 2. (a) After simultaneous bilateral upper and lower eyelid release.

Figure 2. (a) Is the pre-operative view of a patient with post flame burn ectropion. Figure 2. (b) shows the same patient 6 months after simultaneous bilateral upper and lower eyelid release.

Discussion:

The significance of early, adequate and durable release of post-burn ectropion cannot be over-emphasized. Sorenson² has observed that superficial eyelid burns managed conservatively heal within 14 days with a good functional and cosmetic result. In deep burns, however, there is a strong tendency of scarring resulting in contractures that lead to poor lid excursion and inadequate eye closure^{3,4}. It is important to realize that damage to the eyeball in majority of these cases is due to contraction of the eyelids and the resulting exposure keratitis, and is not caused by the injury itself¹. In deep burns of the eyelids, no attempt at surgical debridement should be undertaken. Eschar separation can be facilitated by constant moist dressings, following which the granulating wound should be covered by an allograft⁵. The best replacement for the lost skin is an autogenous skin graft that resembles closely in terms of texture, colour and thickness to the skin being replaced⁶. While releasing ectropion it is important to overcorrect so as to allow for the subsequent secondary graft contraction. Full-thickness skin graft from the post-auricular area has proved to be an excellent choice as the skin is thin, pliable with excellent colour and texture match and with minimal tendency to contract secondarily. We have been using

retroauricular full-thickness graft wherever possible; however if skin from this site is not available, thick split-thickness graft has proved to be a useful alternative for upper lid. Thick grafts should be avoided on the upper eyelid as they compromise lid mobility. In case of lower lid, however, it is best to use full-thickness graft only⁷; if retroauricular skin is scarred, supraclavicular area or upper inner arm donor site can be used.

Available literature strongly suggests that it is best to perform release and grafting of the upper and lower eyelids at separate sessions in order to obtain maximum correction and better long-term results¹. It is also advocated that upper eyelids should be operated upon first and lower lids be corrected as soon as the upper lid grafts are well established. The surgeons who recommend one lid release at one time believe that over-correction achieved at the time of operation is difficult to maintain in the post-operative period if both upper and lower lids are released simultaneously. In our outpatient clinic we see a large number of patients with moderate to severe degree of ectropion of both upper and lower eyelids. Majority of these patients have been inadequately treated or totally neglected during early post burn period. A good number of these patients also have exposure keratitis and corneal opacities. Expediency in their management is of paramount importance to salvage their vision. We have routinely managed these patients with simultaneous release of both upper and lower eyelids as required. It is our observation that by keeping the graft fully stretched using bolster dressings, the over-correction is ensured and long term results are quite satisfactory. Continuous pressure over the healed wound is the mainstay of prevention and treatment of hypertrophied scars^{4,8}. The exact mode of action of pressure therapy is unknown but it is thought that pressure may cause degeneration of selected cells via local hypoxia and physically flatten collagen whorls⁹. Recurrence of ectropion is not so rare even after adequate release and reconstruction. It is frequently observed in patients of chemical burns. In our series all four patients who developed recurrence of ectropion were cases of chemical burns. We expect that the number of cases requiring secondary release would increase, as the patients are followed-up further.

Tarsorrhaphy has been proposed for preventing complications of eyelid damage and subsequent wound contraction⁵. It is especially indicated in cases of partial loss of eyelids in order to protect the eyeball. When corneal damage has already occurred, tarsorrhaphy becomes mandatory to prevent further complications^{10,11,12}. Tarsorrhaphy was needed in two cases in our study.

On the basis of our study, we have come to the conclusion that in cases of post-burn ectropion, especially those with long standing and severe contractures, all the involved lids should be released and over-corrected at one stage. Once the grafts are healed, the patients should be stressed upon to start performing massage over the eyelids so that the scars soften up and the tendency of ectropion recurrence is minimized. The patients should be followed up closely for a minimum of one year and secondary release be performed as and when indicated. Simultaneous eyelid release definitely reduces the morbidity and also addresses the problem of huge expenses incurred during multiple admissions and operations.

References:

1. Muir, I.F.K. and Barclay, T.L. in Burns and their treatment. Third Edition. Butterworths - 1987, pp 115-117
2. Sorenson, B. Closure of the burn wound. *World J Surg* 2:107, 1978
3. Deitch, E.A., Wheelahan, T.M., Rose, M.P. et al. Hypertrophic burn scars: analysis of variables. *J Trauma* 23:895, 1983
4. McDonald, S. and Deitch, E.A. Hypertrophic skin grafts in burn patients: a prospective analysis of variables. *J Trauma* 27:147, 1987
5. Artz, C.P., Moncrief, J.A., Pruitt, B.A. Burns of the face; in Burns - a team approach, pp 314-315
6. Dzeiwulski, P. Burn wound healing. *J Burns* 18:473, 1992
7. Carraway, J.H., in Grabb and Smith's Plastic Surgery. Fifth Edition. Lippincott-Raven - 1997, p 532
8. Larson, D.L., Abston, S., Evans, E.B. et al. Techniques for decreasing scar formation and contracture in the burned patient. *J Trauma* 11:807, 1971
9. Kischer, C.W. and Sheltar, M.R. Microvasculature in hypertrophic scars and the effect of pressure. *J Trauma* 19:757, 1979
10. Converse, J.M. and Smith, B. Repair of severe burn ectropion of the eyelids. *Plast Reconstr Surg* 23:21, 1959
11. Silverstein, P. and Peterson, H.D. Treatment of eyelid deformities due to burns. *Plast Reconstr Surg* 51:38, 1973
12. Vail, D. Treatment of burns of the eyes. *Am J Surg* 83:615-16, 1952.