

Lipograft in cicatricial ectropion



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AIM: Cicatricial ectropion is secondary to an excessive scar contraction after trauma, burns, skin conditions, scarring skin tumours, medication, allergies, blepharoplasty complications^{1,2}. The estimates for ectropion incidence following removal of eyelid lesions have been reported as varying from 2.5% to 7%³. A variety of surgical techniques can be applied to achieve the correct shape and position of lower lid⁴⁻⁷. Fat grafts in association with other technique are commonly used in orbital reconstruction in a variety of procedures⁸ including of the correction of cicatricial ectropion^{9,10}.

MATERIAL OF STUDY: The Authors propose the use of fat graft as only procedure for the correction of cicatricial lower eyelid ectropion. Two male patients with cicatricial ectropion were treated with this technique in two time and followed for 12 months.

RESULTS: Lipofilling for cicatricial eyelid ectropion give excellent outcomes, with release of the scar without recurrence,¹¹.

DISCUSSION: Autologous fat grafting has many clinical applications, and its use in Plastic Surgery is increasing: The key point is the presence into fat of Adipose stem cells (ASCs), that have been identified as an ideal source of cells for regenerative medicine, with potential and rapid improvement of healing process and complete recovery of tissue integrity after surgery to confirm the regenerative effect of fat graft.

CONCLUSION: Lipografting can be considered a safe and effective alternative procedure^{12,13}.

KEY WORDS: Defect of lower lid, Ectropion, Lipograft

Introduction

Surgical procedures for cicatricial ectropion correction include lateral canthopexy, lateral tarsorrhaphy, wedge excision, skin graft, local flaps, cartilage graft, fascia slings^{14,15}.

Combined procedures are often needed to correct shape and position of the lower lid.

Although standard surgery can grant significant functional and cosmetic improvements, these often are coupled to undesired surgical scars^{2,4}.

The treatment of burn scars with lipofilling has shown encouraging clinical results in terms of texture, color, softness, and quality of skin patterns. This clinical application has been widened to include treatment for scars resulting from postsurgical cicatricial ectropion⁹.

This "biological scar release" is the effect of Adipose stem cells (ASCs) therapy, which has been identified as an ideal source of cells for regenerative medicine, with potential to serve as soft tissue restoration for scars and

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wounds⁸. It triggers a deep interaction between fat, dermal and subdermal structures with a rapid improvement of healing process and complete recovery of tissue integrity after lipografting^{16,17}.

The Authors report their experience in the correction of two cases of cicatricial ectropion previous surgery, with exclusive use of fat grafting. The Coleman's Technique was employed to process the tissue and the procedure was repeated twice during a temporal gap of 3 months.

Materials and Methods

Two 76 and 86 y.o. male patients presented with a right and left eyelid cicatricial ectropion.

The former patient presented a second degree of ectropion, while the latter a third degree according to new classification of Rubin et al. (Table I).

All surgical treatments were performed after standard pre-operative workup. Two treatments with gaps of three months were performed.

The surgical procedure was performed under local anaesthesia and assisted sedation¹.

The periumbilical area and the hip were the preferred donor site for the good quantity and quality of dermal fat graft.

With the patient in supine position the donor area with was infiltrated with 250cc of saline solution (NaCl 0.9%), 0,5 cc Adrenalin 1/1000, 10 cc of lidocaine 2% and 10cc Naropine 7,5; the incision for the cannula was made with n.11 scalpel.

Adipose tissue was harvested trough the same incision by a blunt 2 mm cannula connected to a Luer-Lock syringe of 10 cc., 10 cc of lipoaspirate are enough.

The full syringe was placed into a sterile cup and washed with NaCl 0,9%, to remove the anaesthetic solution.

The Authors use the Coleman's Technique and centrifuge the fat (3000 rpm for 3 minutes)²⁴ to separate cellular blood components with infiltration solution, adipocytes with vascular stromal tissue and oil derived from the breakdown of fat cells¹⁹.

The adipose stromal fraction was transferred from a 10 cc syringe to a 1 ml syringe luer lock to allow a precise control of the amount of injected fat.

A small subciliar incision, with a scalpel blade n.11, was performed on the skin of lower eyelid near the external

canthus¹⁸ and fat was transferred under the eyelid scar and under the orbicularis muscle (Fig. 1), trough many radiating passages with retrograde technique using a Coleman's type 19-gauge blunt cannula, with one side port for harvesting the fat.

The graft is due with more careful and small "pearls" of adipose tissue is placed between the Skin and the orbicularis oculi muscle, where there is the scar, and posterior to the muscle, in the suborbicularis oculi fat compartment²².

The injection volume ranged between 0.5 e 2.5 cc, the objective is not only restore the volume loss, but use the ADSC for the release of the scar.

The access incisions were sutured with nylon 6/0. Ice and eye bandage were applied and the patient recommended not to press nor rub the region for the first 5 days. An elastic adhesive bandage was applied to the fat donor site to prevent hematomas and seromas.

After two hours the patient was discharged and 5 days after sutures and bandages were removed.

Results

An important scar improvement was observed after six months from the first procedure, with almost complete release of eyelid retraction, and an overall improvement of skin texture over the cicatricial tissue that became comparable with surrounding normal skin.

After the second fat graft, an important improvement was detected in scar tissue texture with release of eyelid retraction and reshaping of eyelid margin, the healed skin looking very similar to normal skin¹⁸.

Patient one (grade 2 ectropion) obtained a complete resolution (grade 0) (Fig. 2).

Patient two (grade 3 ectropion) obtained an enhancement to grade 1 (Fig. 3).

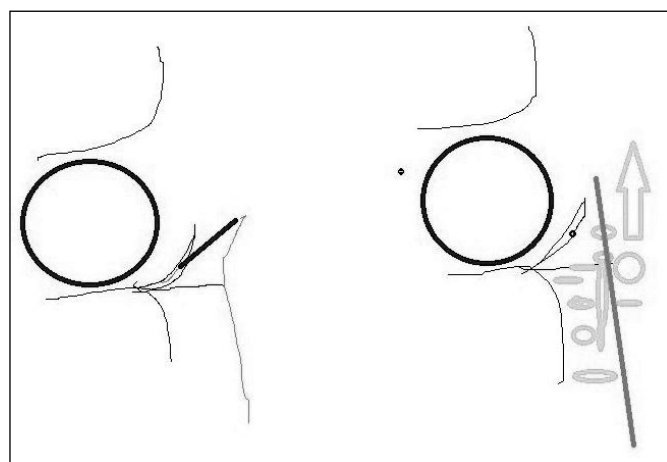


Fig. 1: Fat was graft under the eyelid scar and under the orbicularis muscle.

TABLE I - Classification of ectropion by cosmesis and functional consequences Grade according to Rubin and al. (2005)

- | | |
|---|--|
| 1 | Lower punctum 'just pointing upwards' away from the globe punctal ectropion (very mild ectropion but is symptomatic with epiphora) |
| 2 | Visible (partially everted lid) with scleral show |
| 3 | Conjunctival hyperaemia, gross mucosal thickening |
| 4 | As for three with the addition of exposure keratitis |

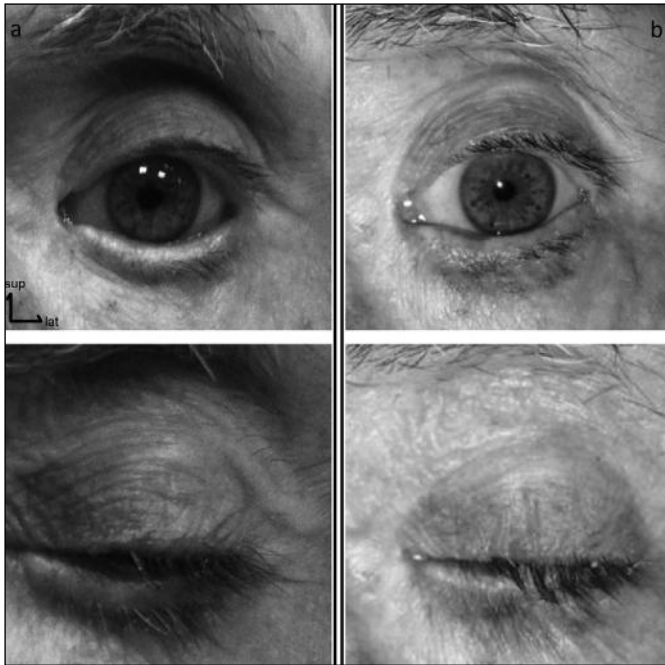


Fig. 2: Patient one, anterior view: a: preoperative pictures; b: one year follow-up.

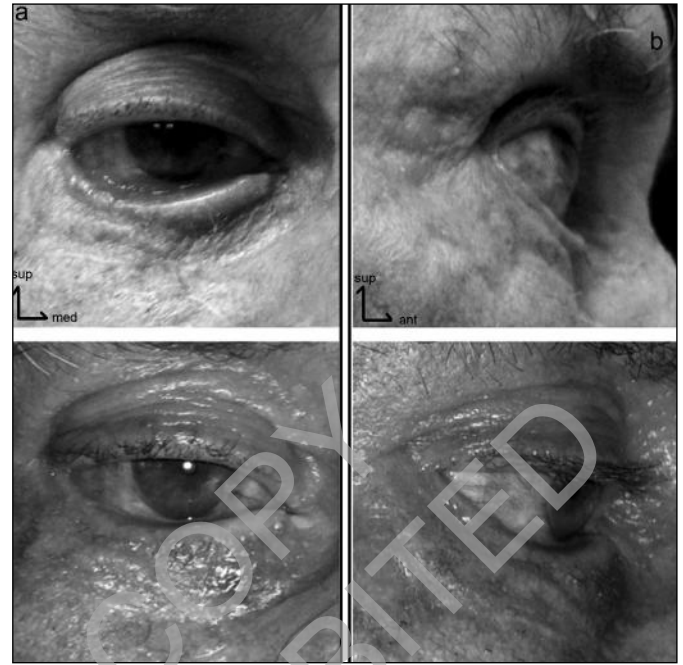


Fig. 3: Patient two, anterior and lateral view: a preoperative pictures; b: one year follow up.

In both patients the Authors observed a normal colour of conjunctiva, without dryness and scleral show after the second fat grafting procedure. One year follow up after surgery showed stable findings. No complications were observed, but a transient swelling and ecchymosis in the treated lid; the patients returned to normal activity 24h after the surgery.

Discussion

Eyelid trauma, as well as surgery or burns or radiotherapy, can produce a lid ectropion^{4,5}, that is the eversion of the eyelid margin with exposure of the conjunctiva and the cornea, anterior lamellar insufficiency, laxity of the lower eyelid (laxity of the lateral canthal tendon or disinsertion), and middle lamellar inflammation. These events contribute to the contracture of the orbital septum will cause the contraction pulling the lower eyelid down from its normal position.

Surgical procedures for correction of cicatricial ectropion include lateral canthopexy, lateral tarsorrhaphy, wedge excision, skin graft, local flaps, cartilage graft, fascial slings^{14,15}, and often combined procedures. Although standard surgery can grant significant functional and cosmetic improvements, these often are not complete because of secondary surgical scars^{2,4}.

All restoration's procedures active cicatricial mechanisms that can be hesitate in retraction above all when the tissue is thin and the trauma was orthogonal to Langerhans lines.

Autologous fat grafting has many clinical applications, and its use in Plastic Surgery is increasing²⁹.

Fat grafts are currently used in orbital reconstruction in a variety of procedures⁸ including of the correction of cicatricial ectropion^{9,10}.

The key point of fat graft is the presence into fat of Adipose stem cells (ASCs)^{16,23} that have been identified as an ideal source of cells for regenerative medicine, with potential to serve as soft tissue restoration for scars and wounds²¹. It suggests a deep interaction between fat and dermal subdermal structures with a rapid improvement of healing process and complete recovery of tissue integrity aftersurgery to confirm the regenerative effect of fat graft¹⁶.

The preliminary results of these case reports are very encouraging: a good restoration of the lid as well as absence of recurrence after one year without major surgeries.

Fat graft is a simple and low risk, safe, rapid and effective procedure¹³; it can be applied for the management of cicatricial eyelid ectropion in alternative to other procedures or can be used as preparation to surgery^{9, 10}. Treatment of eyelid cicatricial ectropion by lipofilling shows excellent outcomes in long term about with an important patient satisfaction.

Riassunto

L'Ectropion è una condizione caratterizzata dall'eversione della palpebra inferiore¹ con esposizione della congiuntiva e della cornea.

La forma acquisita, secondaria ad un'eccessiva contrazione cicatriziale post trauma, ustioni o cicatrici post chirurgiche, è la condizione più frequente ².

Diverse tecniche chirurgiche, spesso combinate tra di loro sono, state proposte per la correzione di tale condizione e ripristinare la corretta posizione della palpebra inferiore ⁴⁻⁶, tra queste la cantopessi, tarsoraffia laterale, innesti cutanei e di cartilagine, lembi locali. A volte, però, queste tecniche standard possono complicarsi in cicatrici chirurgiche secondarie

L'innesto adiposo è stato anche impiegato, in associazione con altre tecniche chirurgiche, nella correzione e ricostruzione della regione orbitaria ⁷⁻⁹.

In questo studio, gli Autori propongono l'impiego dell'innesto adiposo come unica procedura chirurgica innovativa per il ripristino e la correzione dell'ectropion cicatriziale della palpebra inferiore.

Sono stati trattati due pazienti con ectropion cicatriziale post chirurgico di grado lieve-moderato; il protocollo ha previsto due sessioni di innesto adiposo. Il follow-up è stato di 12 mesi.

I risultati ottenuti sono stati molto incoraggianti, con un completo rilascio della cicatrice nella palpebra inferiore e un completo ripristino della sua posizione e funzione; inoltre non si sono verificate recidive a lungo termine ¹⁰.

Il lipofilling può essere una valida alternativa nel trattamento dell'ectropion cicatriziale

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