

## Management of a Case of Severe Upper and Lower Eyelid Cicatricial Ectropion Presenting 11 Years Post Thermal Burn Injury

Sunday Nnamdi Okonkwo<sup>1\*</sup>

<sup>1</sup>Department of Ophthalmology, University of Calabar and University of Calabar Teaching Hospital Calabar, Cross River State, Nigeria

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\*Corresponding author: Sunday Nnamdi Okonkwo

### Abstract

### Case Report

Eyelid reconstruction in burned patients with cicatricial ectropion are difficult to manage and repeat operations are not uncommon. Early surgical intervention when needed is necessary to prevent cornea exposure and ulceration that could lead to blindness. Herein a case of very severe post thermal burn cicatricial ectropion of the left upper and lower eyelids that presented 11 years post thermal injury is reported and possible factors responsible for poor eyelid function post reconstruction highlighted.

**Keywords:** Ectropion, cicatricial, eyelid, thermal burn.

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## INTRODUCTION

Facial burns are common sequelae of thermal injuries and periorbital burns have been shown to occur in up to 20% of all facial burns [1].

Generally burns and particularly facial burns are devastating injuries scarring patients both physically and psychologically for life [2].

The anatomy of the eyelids makes it highly susceptible to cicatricial changes following burns leading to eyelid malpositions and subsequent lagophthalmos [3]. Most ocular sequelae in periorbital thermal burns occur secondary to development of eyelid deformities after the initial burn injury [1]. Eyelid burns cause contractures that can lead to cicatricial ectropion, exposure keratitis, corneal ulceration, perforation and blindness. Burns of the periorbital region offer particular challenges to ophthalmic and facial surgeons in terms of satisfactory operative reconstruction [3].

In this paper we report our experience in the management of a case of post thermal burns severe cicatricial ectropion involving both upper and lower eyelids of same eye that presented 11 years post injury and highlight possible factors responsible for poor eyelid function post reconstruction.

## CASE PRESENTATION

A 42 year old man presented to our center with inability to close his left eyelids and loss of vision on the left eye of 11 years duration. This occurred following burns injuries he sustained on his face in his place of work during an accidental fire outbreak.

On clinical examination the patient had healed burn scars involving mainly the left half of the face and head, the neck, shoulders and chest. The right eye was essentially normal with VA of 6/6 while the left eye was light perception. The left eye lids including the medial and lateral canthi were completely everted and immobile with the upper lid margin stretched beyond the usual position of the eyebrow and lower lid stretched to lower part of mid face. There was complete loss of the left eyebrow and eyelashes as well as hyperemia of the tarsal, forniceal and bulbar conjunctiva. The cornea was perforated and conjunctivalized with prolapsing uvea tissues covered by conjunctival membrane. The anterior chamber was completely flat (Figure 1A). A diagnosis of severe cicatricial ectropion of the left eyelids with corneal perforation was made and surgical correction of the ectropion with full thickness graft under general anesthesia was planned.



**Figure 1: (A) Picture of patient at presentation showing severe cicatricial ectropion with complete eversion of the left upper and lower eyelids (B) Appearance of patient after ectropion release and full thickness skin graft to upper and lower eyelids**

Basic hematological and biochemical test done on him were normal. Routine cleaning and draping was done including cleaning of proposed graft tissue donor site (inner upper arm of both upper limbs). Ectropion was released via blunt dissection through skin incision made 5mm from the eyelid margins along the entire horizontal length of the eyelids. The orbicularis oculi muscle fibers was found to be largely replaced by scar tissues. Resultant extreme laxity of the eyelids was corrected by wedge resection of about half of the horizontal length of the eyelids. The resultant anterior lamellar eyelid defect in the upper and lower eye lids were then determined and covered with full thickness skin graft (Figure 1B). Graft was harvested from the inner upper arm of both upper limbs and was anchored on recipient site with 5/0 vicryl suture. Medial, central and lateral temporary suture tarsorrhaphy was done with 4/0 silk to prevent post operative exposure and to counteract contracture forces. Antibiotic ointment and light pressure dressing was applied and left for 5 days. Post up medications included tablets augmentin 625mg twice daily for 10 days, tabs ibuprofen 400mg twice daily for 5 days, tabs vitamin C 200mg thrice daily for 2 weeks. Topical ciprofloxacin and lubricant 4 times daily after removal of dressing. Bandage dressing was removed after 5 days and the graft tissue was sitting well on recipient bed. There was no purulent discharge and post operative edema was minimal. Tarsorrhaphy sutures was removed at 6 weeks and topical lubricants and antibiotics continued. By the 6<sup>th</sup> month follow up, there was recurrence (but to lesser degree) of the lower eyelid ectropion and eyelid function was still largely poor. However patient was happy with outcome of the surgery as according to him he is looking better and less scary than before. He was unable to foot the bill for a repeat surgery which was advised to correct the residual ectropion of the lower eyelid and was subsequently lost in follow up.



**Figure 2: Patient at 6 months post surgery with better appearance and mild residual ectropion**

## DISCUSSION

Cicatricial ectropion which occurs in approximately 60% of eyelid burns is the most common late sequelae of periorbital burns [4]. The anatomy of the eyelids makes it easily susceptible to cicatricial ectropion for two reasons. First is that the skin of the eyelid is among the thinnest in the body with the epidermal and minimal dermal layers having little to no underlying subdermal fat, making healing following burn injury in the periorbital region susceptible to significant contracture [3]. Secondly, in the vertical plane, the eyelid is loosely attached to the periosteum

by thin palpebral fascia. Thus burn injuries involving the eyelid tissues are totally at the mercy of distractive forces of wound contraction and scar [2].

Ocular involvement following periorbital thermal burns range from 7.5% to 27% of patients admitted to burn units [1]. The loss of an eye primarily from thermal burn injury is very unusual, occurring in less than 5% of the time because of protective mechanisms such as the blink reflex, Bell's phenomenon and protective movements of the head and arms to avoid the source of the burn that serve to protect the globe [5]. Secondly, loss of an eye can occur as seen in this patient from corneal exposure due to eyelid contracture and eye lid ectropion. The effects of corneal exposure include corneal ulcerations, corneal perforation, cataracts, glaucoma, scarring of the cornea, and ultimately loss of vision [4]. Early management by surgical intervention where required and by non surgical measures such as the use of artificial tears and moist gauze covering of the eyes to prevent drying of the cornea is critical in eyelid burn patient. Our patient presented for treatment eleven years post thermal injury with severe complete ectropion of the upper and lower eyelids. This long delay due to poverty resulted in loss of vision on the left eye.

The usual donor site for harvesting full thickness skin graft for periocular area are upper eyelid, preauricular, postauricular, neck, clavicular, supraclavicular and inner brachial area [6]. Although best color match are often achieved with full thickness skin graft (FTSG) harvested from facial skin, the decision was made to use graft from the inner brachium due to the large size of graft required. Besides, the left pre and post auricular and supraclavicular areas of the patient were burnt.

Although, wedge resection of the upper and lower eyelids was done to correct the marked horizontal lid laxity following ectropion release, if not really necessary it should not be performed. This is because in the presence of severe eyelid burns causing progressive ischemic scarring, any further interruption of the marginal arcade vessels by wedge resection or lateral tarsal strip procedure may increase the risk of eyelid necrosis [1].

The poor eyelid function in this case after the ectropion release is probably due to damage to the orbicularis and levator palpebral superioris muscles from the initial burns injury. Also dehiscence of the aponeurosis of the levator palpebral superioris and lower lid retractors from excessive stretching of the eyelids due to distractive forces of wound contraction could be contributory.

Recurrent contracture of the eyelids and ectropion as seen in this patient is not uncommon. For instance, Mandrekas *et al.*, [2] reported doing a total of

5 surgeries on a patient with severe ectropion to correct multiple recurrence following initial surgery. A number of factors such as timing of surgery, severity of ectropion and type of graft are considered to influence the outcome of surgical correction of post burn cicatricial ectropion. Proper timing for eyelid reconstruction and choice between split thickness skin grafting (STSG) and FTSG is debatable. Currently accepted timing for eyelid reconstruction post burn is often to wait for emergence of eyelid contracture which may take two to three weeks from the time of initial injury. However, evidence exists to suggest early intervention (< 7 days) is beneficial in reducing complications such as cornea ulcers, exposure keratitis and purulent keratitis. Regardless of whether surgery is undertaken early or delayed to allow initial healing, multiple surgeries may be required in both scenarios [3]. With regard to choice of graft type between STSG and FTSG, sufficient number of studies reported good results and significantly less reoccurrence rate of cicatricial ectropion with FTSG due to its presence of more dermis and subsequent less contraction. Where it is a challenge to obtain FTSG, a STSG can be used [7]. Apart from choice of graft and timing of surgery, a significant but often undermined determinant of outcome of eyelid reconstruction for post thermal burn cicatricial ectropion is the severity and level of damage and distortion of periocular structures following the initial injury. In this patient the left eyelids were completely everted and immobile, stretched significantly away from its anatomic position by contracture forces. Also the orbicularis oculi fibers were almost totally replaced by scar tissues. It is therefore not surprising that good eyelid function was not achieved following reconstructive intervention.

## CONCLUSION

Eyelid reconstruction in burned patients with cicatricial ectropion are difficult to manage and repeat operations are not uncommon. Early surgical intervention when needed is necessary to prevent cornea exposure and ulceration that could lead to blindness. Functional outcome of the eyelids after reconstructive intervention depend to a large extent on the severity and level of damage and distortion of periocular structures following the initial injury.

## REFERENCES

1. Malhotra, R., Sheikh, I., & Dheansa, B. (2009). The management of eyelid burns. *Survey of ophthalmology*, 54(3), 356-371.
2. Mandrekas, A. D., Zambacos, G. J., & Anastasopoulos, A. (2002). Treatment of bilateral severe eyelid burns with skin grafts: an odyssey. *Burns*, 28(1), 80-86.
3. Reed, D. S., Plaster, A. L., Mehta, A., Hill, M. D., Zanganeh, T. S., Soeken, T. A., ... & Davies, B. W. (2020). Acute And Sub-Acute Reconstruction Of Periorbital Thermal Burns Involving The Anterior Lamella Of The Eyelid With Simultaneous

- Fullthickness Skin Grafting And Amniotic Membrane Grafting. *Annals of Burns and Fire Disasters*, 33(4), 323-328.
4. Liu, H., Wang, K., Wang, Q., Sun, S., & Ji, Y. (2011). A modified surgical technique in the management of eyelid burns: a case series. *Journal of medical case reports*, 5(1), 1-4.
  5. Hollsten, D. A., & White, W. L. (1994, January). Management of periorbital burns. In *Seminars in ophthalmology* (Vol. 9, No. 3, pp. 152-164). Taylor & Francis.
  6. Rathore, D. S., Chickadasarahilli, S., Crossman, R., Mehta, P., & Ahluwalia, H. S. (2014). Full thickness skin grafts in periocular reconstructions: long-term outcomes. *Ophthalmic Plastic & Reconstructive Surgery*, 30(6), 517-520.
  7. Jovanovic, N., Dizdarevic, A., Dizdarevic, N., Haracic, A., & Gafurovic, L. (2018). Case report of Wolfe grafting for the management of bilateral cicatricial eyelid ectropion following severe burn injuries. *Annals of Medicine and Surgery*, 34, 58-61.