Eyelid Reconstruction: Everything Is Not Lost When All Is Lost

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Abstract Eyelid injuries are a common emergency room challenge in patients presenting with history of road traffic accidents. Overzealous debridement can result in tissue loss in which primary repair becomes impossible along with loss of critical landmarks especially in tissue as fragile as the eyelids. We present a 45-year-old male with avulsion injury of the right lower eyelid compounded by debridement at a primary health care facility. Nasolabial flap reconstruction was done with release of the bulbar conjunctiva to achieve aesthetic and functional endpoints. Adhering to the fundamental guidelines of repair of the eyelids as a primary and definitive surgery holds the crux to the best cosmetic and functional outcome.

Keywords Eyelid avulsion · Eyelid reconstruction · Nasolabial flap · Road traffic accident · Debridement

Introduction

Eyelid injuries are a common emergency room challenge in patients presenting with history of road traffic accidents. Overzealous debridement can result in tissue loss in which primary repair becomes impossible along with loss of critical landmarks especially in tissue as fragile as the eyelids. To achieve functional and aesthetic endpoints, basic principles of performing anatomical repair with minimal debridement need to be adhered. The eyelids are bestowed with abundant blood supply, and in the event of massive avulsion, the skin flaps still survive. The jigsaw puzzle needs to be put together under anaesthesia before authenticating complete loss.

Case History

A 45-year-old male presented with a history of road traffic accident and avulsion injury to the right side of the face. The patient was taken to a primary health centre where first aid in the form of wound toilet, debridement and suturing of lacerations was done. The patient was brought to our tertiary care centre for wound management 24 h after the injury. On presentation (Fig. 1), the patient was conscious, oriented and cooperative with a Glasgow Coma Scale of 15/15 with complete loss of the right lower eyelid (skin, tarsus and conjunctiva), bone deep and impregnated with dirt. Eye examination was normal in function and extraocular muscle activity. Sclera was exposed along with the inferior limbus of the cornea on the right side. Multiple lacerations were present over the upper eyelid with ecchymosis and oedema along with lacerations over the lateral canthus and right side of the forehead. CT scan revealed normal study of the bone and brain.

The patient was taken up for examination and reconstruction of the lower eyelid under anaesthesia. Dirt and debris were removed by irrigation and sharp debridement. Revision suturing of the lacerations was done in layers. The right lower eyelid 5 mm of the palpebral conjunctiva was remaining along with 5 mm of eyelid over the lateral canthus. Ipsilateral superiorly based nasolabial flap was designed and raised. Conjunctiva over the fornix was released to gain an extra centimetre of conjunctiva to cover the inner aspect of the flap. The flap was inset with 6-0 prolene suture, and the inner margin was sutured with the conjunctiva with 6-0 vicryl continuous suture. The donor site was closed in layers (Figs. 2 and 3).

Discussion

Eyelids are specialized tissues fulfilling the purpose of protecting the eye from drying and desiccation as well as

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Fig. 1 Patient photograph with eyes open; lateral view

mechanical trauma from dirt and foreign bodies and, in turn, the preservation of vision. Their position is critical to facial configuration and expression. The eyelids also contribute significantly to the facial features. They are important in the expression of emotion, as well as in facial recognition, and they indicate states of attention and emotion. As a result of intricate neurologic control mechanisms, the eyelids move in concert both with one another and with the globes.

The eyelids are endowed with excellent blood supply, which allows direct closure under tension and creation of large flaps without the threat of necrosis. The eyelids are supplied with blood by two arches on each upper and lower lid. The arches are formed by anastomosis of the lateral palpebral arteries and medial palpebral arteries, branching off from the lacrimal artery and ophthalmic artery, respectively [1].

Eyelid lacerations can be closed up to 72 h after the injury without a great impact on functional or aesthetic outcome. The

Fig. 2 Postoperative with eyes open; lateral view

Fig. 3 Postoperative with eyes closed; frontal view

three fundamental guidelines for eyelid repair are to (1) perform careful anatomic repairs, (2) preserve the maximum possible amount of tissue and (3) make liberal use of advancement flaps and postoperative skin grafts in case of risk of exposure keratitis [2].

The lower eyelid reconstruction can be carried out with the use of numerous flaps described by stalwarts like Mustarde flap [3], Imre flap, superiorly based tarsconjunctival flap of Hughes, Landolt and Kollner [4], Tripiet bipedicle upper eyelid flap [3] and nasolabial flap to the lower eyelid [5] as was carried out in the index case.

It is imperative to keep in mind that tissue loss always appears more substantial because of tissue oedema and contraction. Even dramatically disfigured eyelids can be repaired with careful re-approximation and knowledge of a few reconstruction options vindicating the designate in “eyelid reconstruction: everything is not lost when all is lost”.

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