

## Case Report

# Total upper eyelid reconstruction by single staged malar-cheek flap

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### ABSTRACT

We report a case of total upper eyelid reconstruction by a new technique after excision of an eyelid tumour. The eyelid was reconstructed by a horizontal, laterally based flap from just under the lower eyelid combined with a chondro-mucosal graft from the nasal septum. Surgical outcome was an excellent aesthetically reconstructed eyelid, which was mobile and properly gliding on the globe to achieve complete eye closure.

### KEY WORDS

Eyelid tumour; sebaceous carcinoma; upper eyelid reconstruction

### INTRODUCTION

Total loss of upper eyelid, usually seen after oncological resections, is quite rare but devastating for the patient. It exposes the globe, especially the cornea to desiccation, ulceration and infection. Not only is the vision threatened, the eyelid loss is aesthetically grotesque.

The goal is to restore a thin, freely mobile and non-irritating upper lid that will protect the globe and the vision.<sup>[1]</sup> Such an extensive loss precludes many techniques of upper eyelid reconstruction and restricts the options. Here, we describe a new method to meet such reconstructive requirements in a patient with total upper eyelid loss.

### CASE REPORT

The present case report is about a 55 year old female patient who presented with a recurrent swelling of the left upper eyelid of 8 months duration, involving most of the upper eyelid [Figure 1]. She had undergone excision of a small nodule near the lid margin of the same eyelid a year back by an ophthalmologist. After about 4 months following excisional surgery, she noticed recurrence of the swelling in the lid which grew rapidly this time to presenting dimensions in 8 months. There were no palpable involvement of parotid or cervical lymph nodes.

A review of her previous slides and fine-needle aspiration cytology from the present lesion showed evidence of sebaceous carcinoma. Magnetic resonance imaging scan showed a large lesion involving almost the whole of the lid except for approximately 4 mm of eyelid skin below the supra-orbital rim.

She underwent total excision of left upper eyelid, including the lacrimal punctum, to ensure oncological clearance [Figure 2]. A minor fringe of the levator muscle

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could be preserved just below the supra-orbital margin. Reconstruction was carried out first by harvesting a chondro-mucosal nasal septal graft through left perialar access incision. After nasal mucosa was stitched to the conjunctiva, the levator muscle fringe was mobilised and sutured to cartilage graft by 6-0 prolene. A 1.5 cm wide, laterally based flap was marked in the malar-cheek region, just below the left lower eyelid [Figure 2]. The flap was raised with peripheral fibres of orbicularis muscle and transposed to complete a single staged eyelid reconstruction. There was no need to carry out a tarsorrhaphy. The donor defect was resurfaced by a full thickness skin graft harvested from left supraclavicular region.

Histopathology of excised specimen confirmed the diagnosis of sebaceous carcinoma with complete clearance at margins. Patient recovered uneventfully and has normal eyelid closure at 2 weeks post-operative

[Figure 3a and b]. At 6 months follow-up she is tumour free, with excellent symmetry and movement of reconstructed eyelid [Figure 4a and b].

## DISCUSSION

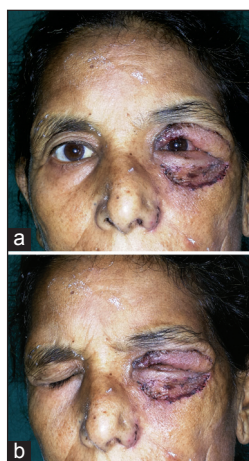
Though there are numerous techniques described for reconstruction of upper eyelid defects,<sup>[1-10]</sup> only limited options, from above, are applicable for reconstruction of subtotal/total loss (>80%). The method selected should provide for a smooth, gliding, non-irritating mucus lining against bulbar conjunctiva and cornea, along with adequate support. The skin cover to the upper eyelid needs to be thin and pliable to allow unhindered movements for vision. These requirements further curtail the reconstructive options in extensive upper eyelid losses. Extenuating circumstances lead to exemplary solutions, such as techniques described



**Figure 1:** A 55-year-old patient with a large sebaceous carcinoma of left upper eyelid. The malar-cheek flap for proposed reconstruction has been marked



**Figure 2:** Patient after excision of the total upper eyelid and raising of the malar-cheek flap



**Figure 3:** (a and b) Post-operative views at 2 weeks post-surgery. The oedema in the lids is noticeable



**Figure 4:** Post-operative views after 6 months of surgery. (a) Excellent aesthetic result with symmetrical palpebral opening, (b) Patient achieving complete eye closure

by Koshima *et al.*,<sup>[6]</sup> Thai *et al.*<sup>[7]</sup> and Scuderi *et al.*<sup>[8]</sup> While the dorsalis pedis free flap has been used for simultaneous upper and lower eyelid reconstruction in extensive losses resulting from burn injury, it is only applicable where no local skin is available.<sup>[7]</sup> The technique of nasal chondro-mucosal flap described by Scuderi *et al.*<sup>[8]</sup> or the ear helix flap described by Koshima *et al.*<sup>[6]</sup> appear difficult to execute and therefore, are not very popular.

Almost a century back a supra-brow skin flap (Fricke's flap) was described for reconstructing large anterior lamellar defects of upper eyelid.<sup>[2]</sup> It can be combined with a chondro-mucosal graft to reconstruct large full thickness defects of the upper eyelid. This procedure is fraught with several limitations, both functional and aesthetic. The forehead skin is much thicker and less pliable than required and primary closure of the donor site invariably leads to the upward shift of the eyebrow. Furthermore, there is potential of injuring the frontal branch of the facial nerve above the lateral eyebrow in the vicinity of Pitanguy's line.<sup>[9]</sup> Besides, it is again a two stage procedure. There has been a resurgence of interest in forehead skin with a few publications.<sup>[10-12]</sup> Gu *et al.*<sup>[10]</sup> describe an interesting study in rabbits where the upper eyelid is reconstructed with an expanded pre-laminated forehead flap, along with a cartilage graft. They feel the capsule of the expanded flap serves as a conjunctival lining and obviates its reconstruction. However, these results await validation in humans. Use of islanded superficial temporal artery flap and forehead flap (both native and expanded) have also recently been described for simultaneous reconstruction of total upper and lower eyelid loss.<sup>[11,12]</sup> deSousa *et al.*<sup>[11]</sup> in their study have reported that all such reconstructed lids were stiff with 100% lagophthalmos and ptosis or lid retraction in 50% cases.

Mustarde's lower lid switch with cheek advancement is a popular option.<sup>[1]</sup> But, it is considered more suitable for losses up to 75%. It also requires a second stage for final flap inset. The Cutler-Beard lower eyelid advancement (bridge flap) is another useful technique.<sup>[3]</sup> However, it requires the presence of vertical eyelid remnants on the sides of both canthi to allow suturing. This is also a two staged procedure and it was not suitable for our patient who had 100% loss of upper eyelid.

A unipedicled or bipedicled flap from the lower eyelid lined by just buccal mucosa has been employed by van

der Meulen (like a reverse Tripiier flap),<sup>[4]</sup> but without cartilaginous support the reconstructed eyelid curls at the margin and doesn't drape the globe well. The vascularity of the unipedicled lower eyelid flap is also questionable as the author himself reports the solitary attempt which was unsuccessful.<sup>[4]</sup>

The use of a robust, laterally based malar-cheek flap in our case came as an expeditious solution for all the limitations such as lagophthalmos, ptosis, lid retraction or ectropion mentioned above with forehead flaps. It provided for an excellent aesthetic and functional reconstruction in the face of a major challenge. The skin in the malar-cheek region is thinner than the supra-brow area (Fricke's flap) and in elderly (when eyelid tumours are more common) the descent of malar fat pad makes the skin even more pliable. This flap, due to its width, direction of movement and inset, eminently matches the "overhang" of the contralateral upper eyelid [Figure 4a] and results in a symmetrical palpebral aperture. Further improvement in aesthetic result is possible by excising the full thickness graft of donor site at a later date as the tissues soften. It is also a single staged procedure which is very easy to execute. The only possible limitations of this technique could be the flap thickness in chubby individuals and the lack of eyelashes.

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