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Upper eyelid reconstruction with a horizontal V—Y myotarsocutaneous advancement flap

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Summary Upper eyelid tumours, particularly basal cell carcinomas, are relatively frequent. Surgical ablation of these lesions creates defects of variable complexity. Although several options are available for lower eyelid reconstruction, fewer surgical alternatives exist for upper eyelid reconstruction. Large defects of this region are usually reconstructed with two-step procedures. In 1997, Okada et al. described a horizontal V—Y myotarsocutaneous advancement flap for reconstruction of a large upper eyelid defect in a single operative time. However, no further studies were published regarding the use of this particular flap in upper eyelid reconstruction. In addition, this flap is not described in most plastic surgery textbooks.

The authors report here their experience of 16 cases of horizontal V—Y myotarsocutaneous advancement flaps used to reconstruct full-thickness defects of the upper eyelid after tumour excision. The tumour histological types were as follows: 12 basal cell carcinomas, 2 cases of squamous cell carcinomas, 1 case of sebaceous cell carcinoma and 1 of malignant melanoma.

This technique allowed closure of defects of up to 60% of the eyelid width. None of the flaps suffered necrosis. The mean operative time was 30 min. No additional procedures were necessary as good functional and cosmetic results were achieved in all cases. No recurrences were noted.

In this series, the horizontal V—Y myotarsocutaneous advancement flap proved to be a technically simple, reliable and expeditious option for reconstruction of full-thickness upper eyelid defects (as wide as 60% of the eyelid width) in a single operative procedure. In the future this technique may become the preferential option for such defects.

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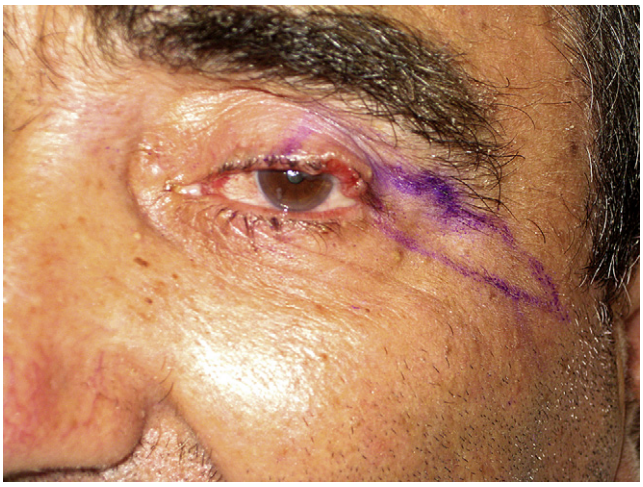

Figure 1 Case 1. Initial markings of surgical excision of a squamous cell carcinoma of the upper eyelid margin in a 60-year-old man. The V—Y myotarsocutaneous flap skin incisions are also marked, extending laterally into the crow's feet area.

By far, the most common cause of eyelid defects is excision of tumours.[1—3]Post upper eyelid tumour ablation, direct repair is possible of defects of up to 30% of eyelid width in younger patients, and up to 40% of the eyelid width in older patients who have eyelid skin laxity.[4] However, for larger defects, either local flaps or grafts are required. These options frequently fail to achieve an excellent cosmetic outcome as the thin and mobile skin of the upper eyelid is substantially different from that encountered in other body areas. Moreover, the relative scarcity of redundant tissue in the abutting regions of the upper eyelid can make mobilisation of significant amounts of tissue into this area a significant challenge[5] and often demands a two-step reconstructive procedure.[1]

In recent times, several authors have emphasised the use of several flaps intrinsic to the upper eyelid[6—10] so as to circumvent these problems. In 1997, Okada et al. described a horizontal V—Y myotarsocutaneous advancement flap for upper eyelid reconstruction, purportedly with several advantages over traditional surgical options.[7] However, in the literature review conducted by us, we failed to encounter further reports on the use of this particular type of flap. In fact, this flap is not even mentioned either in recent textbooks on facial plastic surgery and oculoplastic surgery or in newer articles on eyelid reconstruction.[1,11]

Patients and methods

From January 2000 through May 2009, 16 patients with locally advanced malignant tumours of the upper eyelid underwent surgical resection by the senior author. Most of these tumours (12) were basal cell carcinomas. There were also two cases of squamous cell carcinomas, one case of sebaceous cell carcinoma and one of malignant melanoma.

The resections had curative intent, resulting in upper eyelid full-thickness defects ranging from 40% to 60% of eyelid width. There were nine women and seven men. The patients ranged from 45 to 78 years, with a mean age value of 62.3. The follow-up varied from 2 months to 5 years, and was 25 months on average.

After excision, the surgical specimen was sent to the pathology laboratory and was assessed by both gross examination and microscopical observation of fresh-frozen sections. Only after the pathologist's concordance was the planned reconstruction undertaken.

The surgical defects were rectified with a horizontal V—Y myotarsocutaneous advancement flap similar to the one originally described in 1997 by Okada et al.[7] The flap was based on the lateral cantal region, with the medial portion corresponding to the height of the lateral border of the defect. The flap extended laterally into the crow's feet area where it ended in an acute angle. The superior border corresponded to the line of the superior palpebral fold. The inferior margin continued till the inferior limit of the eyelid's defect. The height-to-width ratio was approximately 1:3 to 1:4, resulting in a relatively long flap.

First, the superficial incisions were made till the level of the orbicular muscle in the upper eyelid and the subcutaneous tissue at the lateral cantal region. After upper eyelid eversion with a Desmarres retractor, an incision through the eyelid conjunctiva and tarsal plate was made at the level of the superior palpebral fold. At this stage, a V-shaped

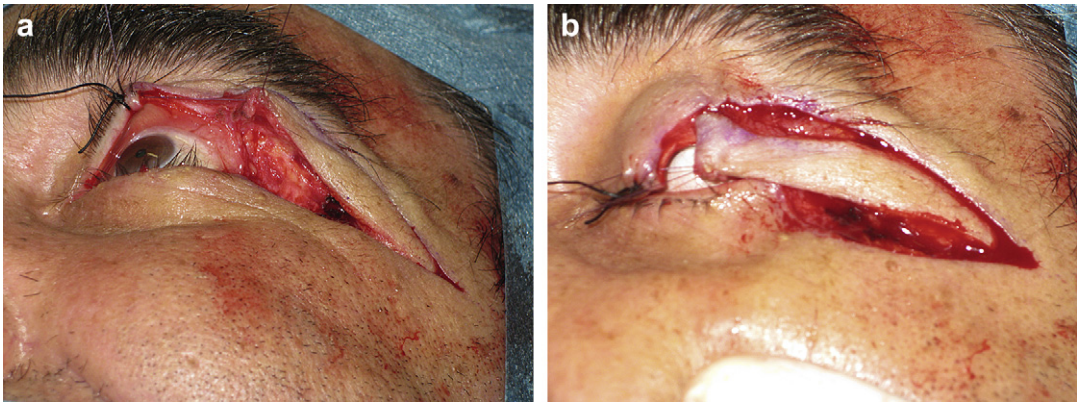

Figure 2 Case 1. (Left [Figure 2a]) The resulting defect represents approximately 40% of the original width of the eyelid. A horizontal V to Y myotarsocutaneous flap is raised based on the upper orbicular muscle and lateral orbital subcutaneous tissue. (Right [Figure 2b]) The flap is mobilised into the defect, allowing for closure.