The orbicularis oculi myocutaneus flap in the repair of the medial canthal region. A new strategy for canthal resurfacing


Plastic and Hand Surgery Unit, University Hospital, Messina, Italy

Received 6 August 2003; accepted 3 March 2004

KEYWORDS
Eyelid; Inner canthus; Myocutaneous flaps; Orbicularis oculi

Summary
The aim of this study was to review the surgical anatomy and the variants of the orbicularis oculi myocutaneous flap (OOMF) for reconstruction of inner canthus defects. Anatomic studies in fresh heads were carried out to demonstrate its blood and nerve supply. Four cases of epitheliomas of the inner canthus were treated with surgical excision and reconstructed with medially based island and nonisland OOMF. A 36-months follow-up showed no deformities of the flap, good colour matching and satisfaction scars. The flap is recommended for small to medium size defects of the inner canthus in patient with skin excess in the eyelid.

Repair of defects in the inner canthal area often represent a challenge. Recently Porfiris et al.1 and Tezel et al.2 presented their studies on the use of upper eyelid island orbicularis oculi myocutaneous flap (UEIOMF) in the repair of the periorbital region.

In this paper, the authors review the surgical anatomy and the variants of this flap and report their experience in reconstruction of the inner canthus.

Patients and methods
Four fresh cadaver heads have been used for dissection of the flap in order to demonstrate its blood and nerve supply, its relationship with the surrounding tissues and arc of rotation.

Blood supply was shown coming from the marginal and the peripheral arcades originating from the medial palpebral artery, branching from the ophthalmic artery. Venous drainage follows the arterial network. Nerves to the orbicularis oculi muscle come from the frontal and zygomatic branches of the facial nerve, entering the muscle into its undersurface (Fig. 1).

Four patients (mean age 60 years, two men and two women) selected for medium size (no more than 2.5 cm diameter) epitheliomas of the inner canthus (Fig. 2) were treated with surgical excision and in the light of histologically proven excision, the corresponding losses of substance were reconstructed with a medially based island (two cases) and nonisland (two cases) orbicularis oculi myocutaneous flap (OOMF).

The skin flap was marked on the upper eyelid
(homolateral in three cases, contralateral in one case) equal or slightly larger in size than the defect, usually in the central or lateral 1/3 where enough muscle can be elevated with the skin. Laxity of the eyelid skin was evaluated with the conventional pinch test to perform a tensionless wound closure, the lower margin of the flap being positioned in the palpebral sulcus, 8–10 mm above the eyelid margin. The skin and muscle were incised together, taking care not to damage the vascular arcade, and the eyelid skin margins were undermined to expose the muscle and to cut its upper and lower borders (Fig. 3).

In case of island flaps, a tunnel was dissected subcutaneously to insert the flap into the defect, taking care not to damage the lacrimal apparatus. The flap was sutured in situ with nonabsorbable interrupted stitches, the donor site was closed as in a blepharoplasty, cutting each dog ear away (Fig. 4). Cold compresses were used in the post-op, the sutures being removed after seven days.

Results

Average follow-up is 36 months. Healing was uneventful; no cases of oedema, other than transient (up to 10 days), were detected. No deformities of the flap nor abnormal scarring were seen, but well-concealed, soft, flat scars together with good matching of the flaps were recorded (Fig. 5).

Discussion

Choosing the best reconstruction of the inner canthus is a challenge demanding complete excision and like-with like restoration.1,3 Healing by secondary intention may be used in case of small (less than 1.5 cm) loss of substance but can lead to displacement of the canthus.3

Although acceptable, skin graft reconstruction may result in shrinking of the graft and poor colour match. Moreover, in some cases, it cannot be used if the periosteum is also excised.

Flaps can be raised in various types:1,3 island, V-Y advancement,4 transposition. They may be too thick, resulting in a bulky reconstruction, particularly in the case of trap-door. The like-with-like principle in this area could be accomplished using the eyelid skin, which is thin and pliable like the skin in the medial canthal area.

The method is recommended because of the
excellent viability of the flap, of its versatility, its
match being ideal for soft-tissue reconstruction in
the periorbital region and several authors\textsuperscript{1–3} have
pointed out its advantages.

The flap is planned exactly to the defect, and the
subcutaneous pedicle avoids dog ears in the donor
site. The flap raising technique is simpler, taking
care to avoid pedicle damage.

The one disadvantage is patient selection, as the
size of the flap depends strictly on the amount of
excess eyelid skin. This flap is most suitable in older
patients, with skin excess. Flap congestion during
the first week post-op, resolves completely in the
following days.

We did not record any depression of the skin
during the first 2–3 post-op months, which has been
noted by Porfiris et al.\textsuperscript{1} after reconstruction of
periorbital zones beyond the eyelids. They specifi-
cally cite the side of the nose: the defects being
larger and involving the lateral nasal region, multi-
flap reconstructions may avoid this problem.\textsuperscript{5}

References

1. Porfiris E, Kalokerinos D, Christopoulos A, Damilakos P,
    Georgiou P. Upper eyelid island orbicularis oculi myocuta-
    neous flap for periorbital reconstruction. Ophthal Plast
2. Tezel E, Sonmez A, Numanoglu A. Medial pedicled orbicularis
    oculi flap for medial canthal resurfacing. Ann Plast Surg
3. Jelks GW, Glat PM, Jelks EB, Longaker MT. Medial canthal
    reconstruction using a medially based upper eyelid myocuta-
4. Mustarde JC. V–Y glabellar skin flaps to the medial canthus
    Grabb’s encyclopedia of flaps, 2nd ed. Philadelphia: Lippin-
    cott-Raven; 1998.
    Reconstruction of the medial canthal region with the triple