

ANATOMICAL STUDY ON THE PROPELLER MYOCUTANEOUS FLAP OF THE UPPER LID: CLINICAL APPLICATION.

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Abstract

Background: The reconstruction of the upper eyelid and the periorbital region in patients subjected to demolition for oncological or traumatological pathology. The aims of this technique is to guarantee protection to the eyeball, maintain the visual field and restore the function of the eyelid. In this article, the authors describe the use of a propeller myocutaneous flap based on supraorbital artery branches for the reconstruction of the upper eyelid or periorbital region.

Materials and methods: We enrolled 4 patients (Caucasian), between 2018 and 2019, and subjected to reconstructive surgery with the propeller myocutaneous flap of the periorbital region at the Plastic Surgery unit of the University of Messina. The vascularization of the flap was demonstrated through an anatomical study conducted on cadavers at the dissection laboratories of the University of Bordeaux.

Results: The authors have shown that the myocutaneous flap represents a valid alternative for loss of substance (LOS) coverage and reconstruction of the upper eyelid or periorbital region, allowing the achievement of a good aesthetic and functional result of the eyelid.

Follow-up: Patients followed up at 3-6-12 months. No complications were reported (flap retraction, periocular region deformity, donor site morbidity). Furthermore, at the last visit, the scars were almost invisible.

Conclusions The use of the propeller myocutaneous flap of the upper eyelid is a valid reconstructive alternative to the standard techniques described so far for the reconstruction of the periorbital region.

Keyword: upper eyelid, propeller, myocutaneous flap, flap, orbicularis oculi.

Materials and methods

Between 2018 and 2019, 4 patients (3 male and 1 female) were treated with myocutaneous flap propeller following demolition due to the presence of an epithelioma of the upper eyelid or of the periocular region:

- 45-year-old female patient with epithelioma of the lateral portion of the upper eyelid of the right eye
- 65-year-old female patient with epithelioma of the medial portion of the upper eyelid left eye
- 68-year-old male patient with epithelioma of the medial portion of the upper right eyelid
- 55-year-old male patient with epithelioma of the medial portion of the upper eyelid left eye

Anatomical dissection

The authors studied the vascularization of the propeller myocutaneous flap of the upper eyelid through the study of anatomical dissections of the ocular region on the cadavers at

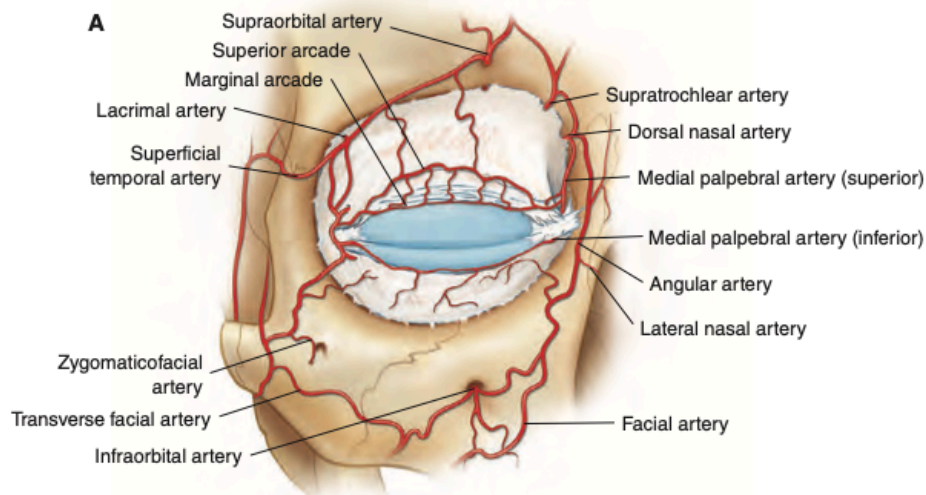
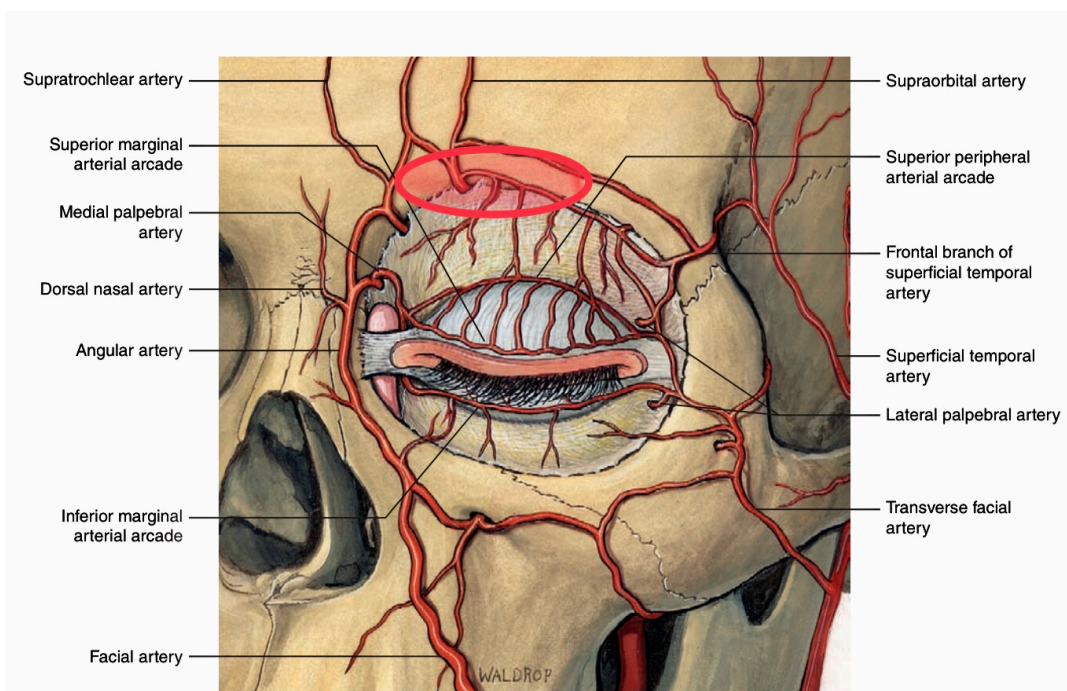


fig 1, Eyelid & Periorbital Surgery: Second Edition Edited by Mark A. Codner, MD, FACS Clinical Assistant Professor, Department of Plastic Surgery, Emory University School of Medicine; Mark Codner MD Plastic Surgery, Atlanta, Georgia Clinton D. McCord, Jr., MD, FACS Clinical Associate Professor, Department of Plastic Surgery, Emory University School of Medicine, Atlanta, Georgia With illustrations by Bill Winn, BS, MS Amanda Yarberry Behr, MA, CMI Brenda Bunch, MAMS. Pag: 32

the "Laboratory of Human Anatomy of Bordeaux 2nd University" by performing an injection of red latex which allowed to highlight the arterial vascular network (fig. 1, fig. 2). The anatomical model made it possible to confirm that vascularization is based on branches of the supraorbital artery(Fig. 1) indicating the direction where the functional vectors acting in the periorbatory district. This was fundamental to be able to reproduce the reconstructive technique with propeller myocutaneous flap of the upper eyelid in patients.

fig 2; Atlas of Clinical and Surgical orbital anatomy, Second Edittion, Elsevier Jonathna J. Dutton- Illustrations by Thomas G. Waldrop



Surgical technique

Before the intervention the authors marking and planning the part to be demolished and the part to be reconstructed through the myocutaneous flap. The design of the myocutaneous flap must be designed so as to completely cover the LOS; the maximum extension of the flap that can be sculpted varies according to the degree of laxity of the donor site (i.e. the upper eyelid). The authors preferred to use local anesthetic (Mepivacaine 2% with Epinephrine 1: 100000 and Ropivacaine at 7.5mg) injected according to the pre-marking lines. The authors performed the removal of the neof ormation (Fig. 3) according to the lines of tension. The incision lines used for the preparation of the flap are similar to the incisions that can be made to the basic lines of blepharoplasty (Fig 4). The authors proceeded to sculpt the flap by taking together with the skin a portion of the orbicular muscle flushed by a branch of the supraorbital artery (Fig 5, Fig 6), a fundamental step for include in the mycutaneous flap a safe vascularization.

The myocutaneous flap was created by including a part of the presettal component of the orbital muscle, a flap mobilization was performed and it was rotated 180 ° then it was transferred to the loss of substance. (In the case of neof ormations of the medial portion,

FIG 3



FIG 4



FIG 5



FIG 6



FIG 7



the myocutaneous flap can be used by making a forward movement towards the internal cantus.) We proceeded to anchor the rotated flap in the recipient site with a few 5-0 Vicryl sutures while the skin was sutured with Prolene 5-0 (Fig. 7). The incisions that allowed to sculpt the flap on the upper eyelid were sutured with a 6-0 prolene. At the end of the intervention, an antiseptic was applied. Patients were operated on Day Surgery and then discharged in the afternoon (less than 24h of hospital stay).

SURGICAL TECHNIQUE:

- 1) Preoperative surgical marking (considering the extent of the loss of substance and the laxity of the eyelid)
- 2) Injected with local anesthesia
- 3) Tumor removing
- 4) Flap sculpting
- 5) Hemostasis and flap rotation
- 6) Subcutaneous suture of flap with 5-0 Vicryl
- 7) Cutaneous suture of flap and skin of upper eyelid with 6-0 or 5-0 Prolene

Results

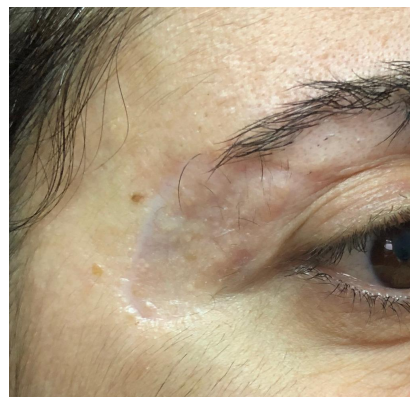
At 12 months the aesthetic and functional result of all 4 patients was more than satisfactory. Patients did not experience eyelid deficit, pathological pain and scarring or visual field deficiency.

Case reports

Clinical case No. 1

45-year-old woman with sclerodermiform basal of the super-external palpebral region with involvement of the eyebrow tail. According to the authors, the standard techniques did not allow reconstruction with an optimal aesthetic and functional result. Therefore we have set up the propeller myocutaneous flap as described above. The functional aesthetic result, from our point of view, is good having maintained a skin texture superimposable on the skin of the surrounding anatomical region. The patient was followed up with 3-6-12 months of follow-up.

During the last check-up, the patient did not complain of pains, motor or sensory deficits in the region, nor visual field deficits. The scar appeared of excellent quality, mobile and painless on palpation.



Clinical case No. 2

65-year-old female patient with epithelioma of the medial portion of the upper eyelid (left eye). The propeller myocutaneous flap of the preseptal portion of the upper eyelid orbicularis, in this case, was not transferred through a rotation of 180 to fill the LOS but underwent an advancement (fig 8).

The result after 6 days after stitch removal is visible in fig. V. In our opinion, an excellent aesthetic result was obtained, moreover, the functionality of the upper eyelid remained completely maintained.

FIG 8



Clinical case No. 3

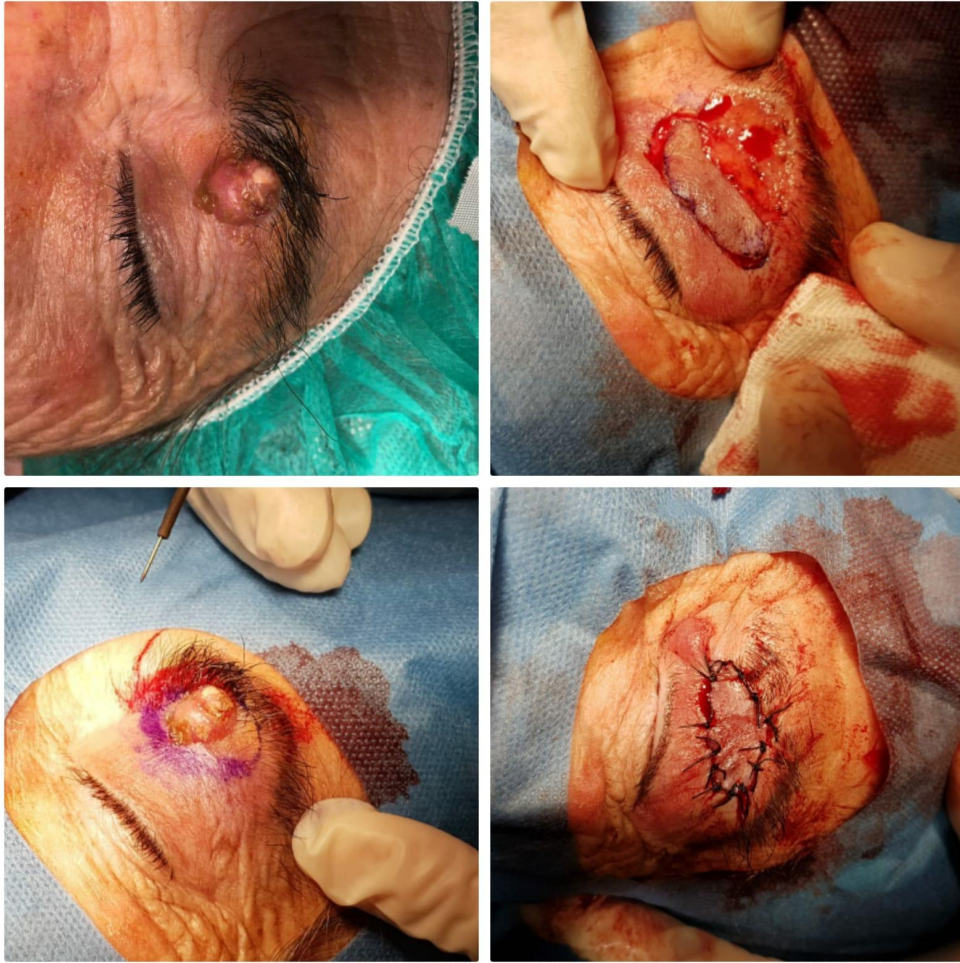
68-year-old male patient with epithelioma of the medial portion of the upper right eye lid. The myocutaneous flap of the preseptal portion of the orbicularis muscle of the upper

eyelid was marked together with the neoformation. After removal, the flap was carved as in fig. C. The myocutaneous flap through a 90 ° rotation was transferred to fill the LOS in this case present in the internal canthus. The patient was followed up for 3-6-9-12 months. He never complained about functional problems of the eyelid, nor of the internal singing. The 12-month scars appeared of excellent quality.



Clinical case No. 4

55-year-old male patient with epithelioma of the medial portion of the upper eyelid left eye. The neoformation of this patient was placed between the medial portion of the eyebrow and the medial portion of the upper eyelid. The authors proceeded to remove the newly formed, hitting the flap that was transferred through a medial advance. The flap was sutured to cover the LOS. In our opinion, the aesthetic result at 12 months was excellent, the patient never complained of eyelid function problems.



Duscussion

The propeller myocutaneous flap described by us can be used both for the coverage of lateral los of the eyelid by performing a 180 ° rotation in the middle lateral direction (as in the case described above, fig. 9) or it can be rotated in the middle-medial direction for the coverage of LOS of the medial region of the eyelid, of the glabella or of the head of the eyebrow (Fig 10), therefore for the whole periorbital region.

Conflict of interest/Funding:

None

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