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Modification of the Cutaneous Muscular Flap Approach for Lower Blepharoplasty[1]

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Abstract. A modification of the cutaneous muscular flap approach for the treatment of baggy, wrinkled lower eyelids is presented. According to its anatomy, the pretarsal muscle is left intact when the flap is raised. This muscle is not directly related to fat bags and left in its place contributes in maintaining the normal lid physiology and avoids the complications seen with the original procedure.

Key words: Lower blepharoplasty — cutaneous muscular flap approach

For several years we tried different approaches to correct the baggy, wrinkled lower eyelid [1-3, 8, 9, 16, 17, 19, 20]. Of them, the muscular cutaneous flap technique was chosen because in our hands it gives better results than others. This procedure permits us to go directly to the septum orbitale and permits the easy identification of protruding fat bags and its adequate treatment as well as that of the relaxed skin and muscle in an open sky fashion.

This technique was proposed by Reidy in 1960 [17] and again by Beare in 1967 [1] who named it "the Mc Indoe-Beare technique."

As originally described by Reidy [17]:

> . . . below the lateral canthus the subciliary incision is carried through the orbicularis oculi muscle down to periosteum on the zygomatic bone. The

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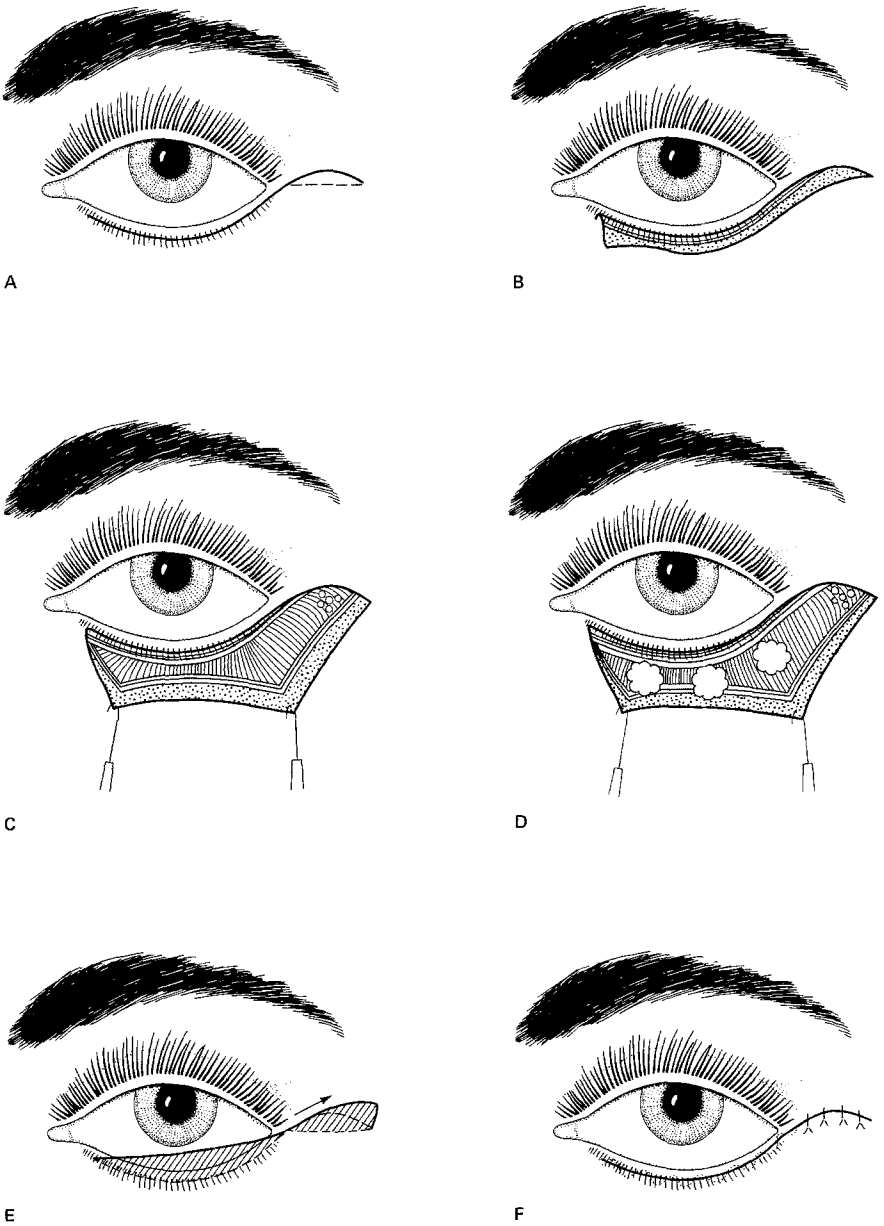

Fig. 1. **A** Design of the incision. **B** Stippled area indicates subcutaneous undermining. The upper pretarsal muscular fibers are seen. **C** After the skin has been undermined from the whole pretarsal muscle, the undermining follows behind the preseptal and orbital part of the orbicularis oculi, and over the septum. **D** After adequate visualization of protrusion of fat bags, the septum is opened at this place and the excess fat is trimmed as usual. **E** The cutaneous muscular flap is reapplied and trimmed, and a stitch is placed at the laterocanthal point exerting lateral traction on the flap. **F** Closure by separate stitches in the laterocanthal area and intracuticular running suture in the subciliary wound

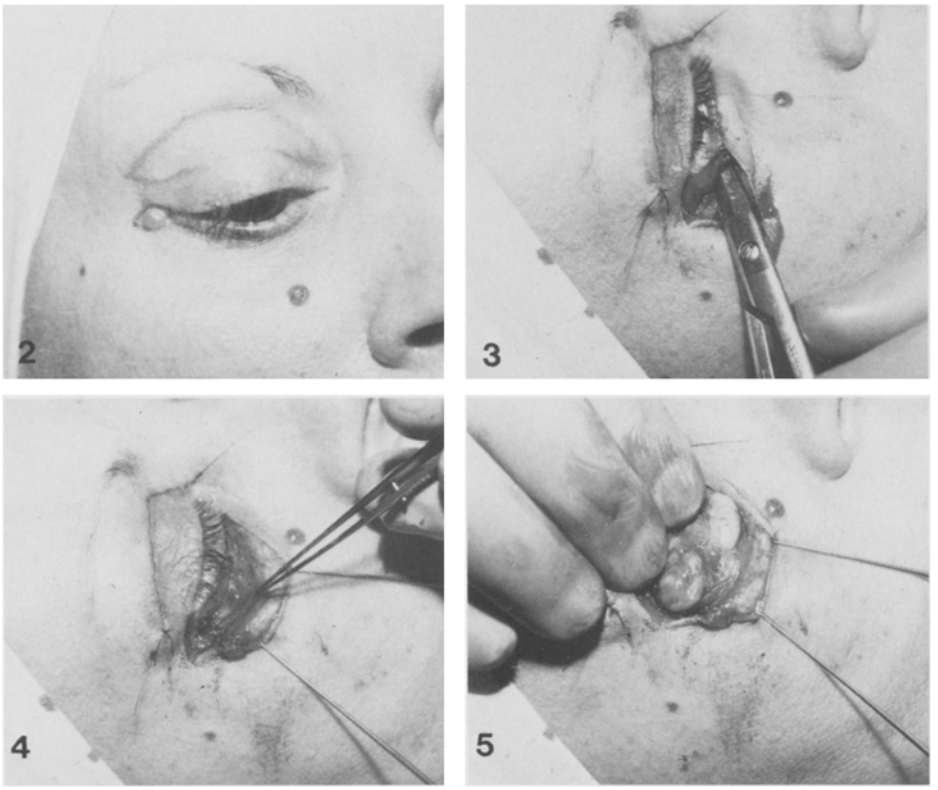

Fig. 2. Design of incisions for upper and lower blepharoplasty. **Fig. 3.** The point of the scissors indicates the pretarsal muscle. **Fig. 4.** Forceps out the preseptal muscle attached to the flap. Note the bare skin at the marginal part of the reflected flap. **Fig. 5.** The fat bags are clearly seen by this method

> lower eyelid is undermined in a plane between orbicularis oculi superficially and orbital septum deeply. The subciliary incision is now made through skin and muscle. This flap is reflected downwards, exposing the membranous orbital septum. A transverse incision through this septum over the bulging fat exposes the latter . . . and the excess can be excised.

The flap is then reapplied, excess skin and muscle are trimmed, and the wound is sutured.

The Mc Indoe–Beare technique is essentially identical, with minor changes in the line of incision, the gradual removal of fat, and a further trimming of muscle before the flap is sutured.

According to the author, edema, ecchymosis, and ectropion are less likely to occur with this approach. Nevertheless, I and my colleagues, have seen these as well as other complications such as subconjunctival hemorrhage, lacrimation, and chemosis in some of our patients, as well as in patients operated on by others using the same technique, complications which could not be attributed to technical failures.

Fig. 6. Similarity of the procedure with usual blepharoplasty. We resect a strip of muscle to deepen the sulcus. **Fig. 7.** The upper fat bags between the pretarsal and preseptal muscles

To avoid these distressing complications in an otherwise safe technique I try to find the causes of these symptoms so as to prevent them and introduced minor changes in the procedure mentioned above.

Surgical Technique

The subciliary incision on the skin is very close to the cilia (Fig. 1A). At the lateral canthus it is extended outward by almost 1 cm slightly concave downward over a horizontal crease (this is to excise an oval-shaped segment of the skin of the crow's feet area in markedly wrinkled lids, but in some patients this is not necessary and we extend the laterocanthal incision more horizontal over a natural crease) (Fig. 2). We start undermining the skin from this subciliary and laterocanthal incision downward for 3–4 mm (Fig. 1B) (stippled area), leaving intact the pretarsal muscle (Fig. 3). When it is clearly seen along the whole length of the wound, the muscle is divulsed along the direction of its fibers, and the undermining follows behind the preseptal and orbital part of the orbicularis oculi. (Fig. 1C). At the outermost parts of these fibers it is necessary to sever some of them in order to reflect easily the flap downward. The septum is thus exposed, a cut is then made on it where the fat bags protrude (Fig. 5), the fat is exteriorized, and any excess is trimmed as usual (Fig. 1D). Hemostasis is carefully done and the flap is reapplied without tension. The patient opens the mouth and looks up and a trimming of skin and muscle below the ciliary line is undertaken (Fig. 1E). An overlapping of the preseptal muscle over the pretarsal one which needs further trimming will be noticed. At this moment also the pretarsal muscle is trimmed if it is hypertrophied [13]. Then a stitch is placed below the lateral canthus holding the flap and exerting slight lateral traction on it. The laterocanthal segment of the flap is then spread to correct the dog ear and trimmed. 6/O silk interrupted stitches are placed at this area to close the wound and 4/O nylon intracuticular stitches are placed below the cilia (Fig. 1F). Steri-strips are applied over the lid and occasionally a slight bandage.

Fig. 8. A and B Preoperative; **C and D** postoperative

Discussion

Based on anatomic findings reported by Jones [10] and Olivares et al. [15], we learned about some features of the orbicularis oculi which compelled us to treat this muscle with more respect.

According to Jones, the palpebral part of the orbicularis has two subdivisions: (1) the pretarsal muscle and (2) the preseptal muscle. The pretarsal muscle, overlying the tarsus, is firmly attached to it; at the lateral commissure it joins the upper pretarsal muscle (reminding us about its "orbicular" action) to form a common tendon which inserts into the lateral orbital tubercle; along its upper border, this tendon has a firm connection with the levator palpebralis muscle.

Olivares et al. [15] have demonstrated in 1969, as also stated by Von Misses in 1882, that the nerve supply approaches the lid in the pretarsal area, between the orbicularis and the tarsus, and coursing over this plane reaches the palpebral edge to form a marginal plexus from which the skin, the muscle, cilia, and

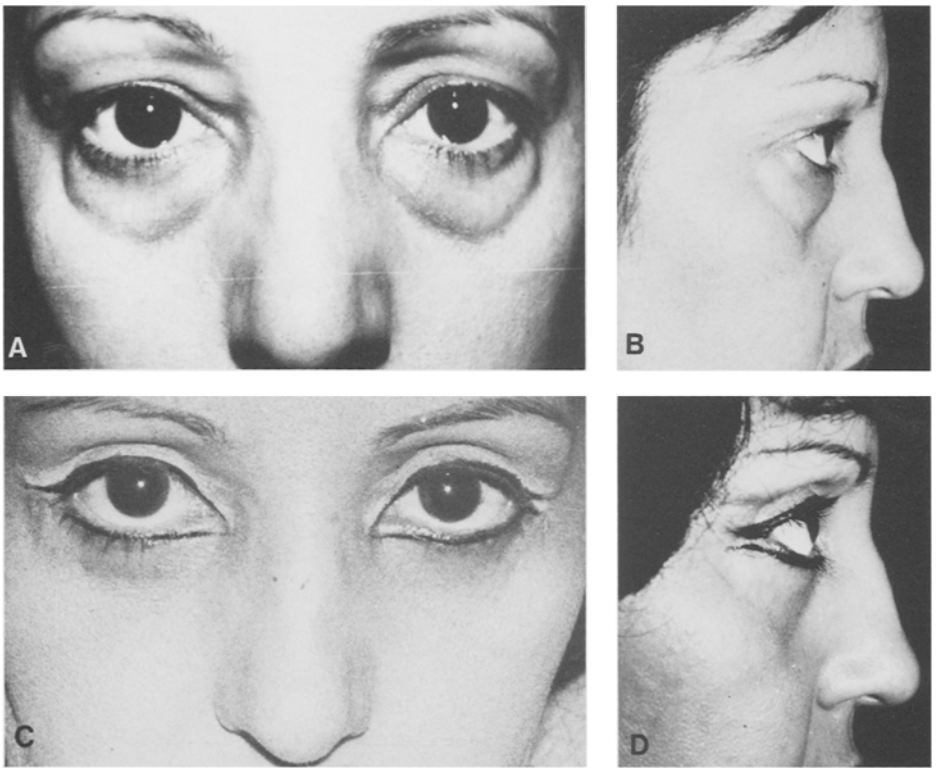

Fig. 9. A and B Preoperative; **C and D** postoperative

conjunctival layer are supplied. To reach the conjunctiva the nerve endings perforate the tarsal plate together with blood vessels.

Is therefore the subciliary and laterocanthal incision through the muscle, or the raising of the flap over an artificial plane, responsible for the damage to these structures? Is this injury the cause of the symptoms described with the original technique?

We expressed in previous works [11, 12, 18] that the eyes and the smile are the outstanding features of dynamic facial beauty and fully agree with Hector Marino who writes: ". . . the more diverse emotions are evidenced by almost imperceptible changes on the oculopalpebral relationships" [14].

Therefore, it is our belief that by preserving intact the pretarsal muscle, as we do in the upper lid (Figs. 6 and 7), and by going to the septum behind the preseptal one where the fat bags protrude we can undoubtedly find the maximal relaxation of the muscle, which will be safer, leaving an intact muscular ring around the palpebral fissurae which contributes to maintaining the delicate expressive functions of the lid as well as avoiding the complications described.

In this way we follow, in part, the actual orientation in making the incision lower, as in the elderly, but at the muscular level, placing the cutaneous scar in a more hidden position.

This modification permits us to maintain the advantages of this approach without its drawbacks.

With this technique we have operated on 18 cases in the last year and the results have been satisfactory to both the surgeons and the patients (Figs. 8 and 9).

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