

The Need for Overcorrection When Using a Suborbital Cervicofacial Hike Flap

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Background: The senior author has previously described a deep-plane cervicofacial hike flap as a workhorse for reconstruction mid-cheek defects. One important modification commonly used involves overcorrection of the defect in order to reduce the incidence of ectropion. This report outlines the senior author's experience in surgical treating complex cheek defects with an overcorrected deep-plane cervicofacial hike flap.

Methods: The authors performed a retrospective review of the senior author's patients with cheek and eyelid reconstruction. The authors initially identified all patients who had undergone a deep-plane cervicofacial hike flap, then filtered those charts for patients who had overcorrection of their deformity in order to prevent ectropion.

Results: A total of 3 patients had an overcorrected flap. Overcorrection was accomplished either by cheek advancement with suture fixation to the deep temporal fascia, or by placement of drill holes and bone anchors. Lower eyelid malposition was avoided in all 3 patients. Patient satisfaction at long term follow-up was very high, and no revision surgery was needed.

Conclusion: If gravitational or cicatricial forces can potentially distort the eyelid in patients with cheek or eyelid reconstruction, it is necessary to overcorrect the cheek flap. This modification of the deep-plane cervicofacial flap is an important tool in reconstructing defects in this area.

Key Words: Cervicofacial flap, cheek, ectropion, lower lid

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Mustarde first described reconstruction of the cheek and lower eyelid with cheek tissues.¹ The widespread use of these flaps became limited by blood supply and the tendency for dog-ear formation; additionally, ectropion was a common occurrence.²

The deep-plane cervicofacial hike flap, as described by the senior author, provided a robust tissue flap that was capable of maintaining ideal cheek position.^{3,4} While this flap did improve flap survival and reduce dog-ear formation, the issue of ectropion formation was not completely addressed.

This review illustrates the senior author's specific experience with overcorrecting the deep-plane cervicofacial hike flap in order to reduce the occurrence of ectropion formation. We describe several patients who were successfully treated.

METHODS

We performed a retrospective review of the senior author's patients with cheek and eyelid reconstruction. We initially identified all patients who had undergone a deep-plane cervicofacial hike flap, then filtered those charts for patients who had overcorrection of their deformity in order to prevent ectropion.

The flap is first raised in the subcutaneous plane for 2 cm. At this point the plane deep to the superficial muscular aponeurotic system or platysma is entered. The facial nerve branches are protected by vertical scissor spreading. The orbicularis oculi and zygomaticus major muscles are identified, typically representing the limit of anterior dissection. The zygomatic retaining ligaments must be released in order to allow adequate flap mobility (Fig. 1). The flap is then overcorrected superiorly, and stabilized with either cheek advancement with suture fixation to the deep temporal fascia (Fig. 2), or by placement of drill holes and bone anchors (Fig. 3).

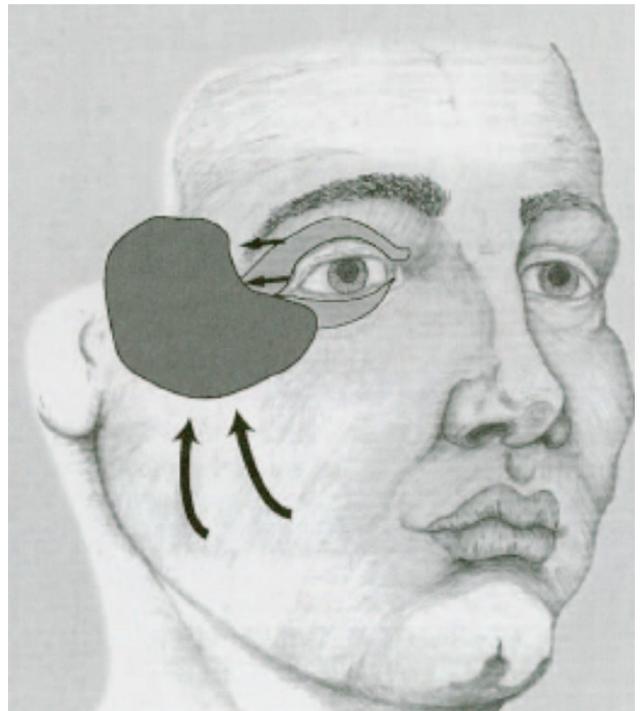


FIGURE 1. Schematic of area to be reconstructed with vectors of deep-plane cervicofacial hike flap.

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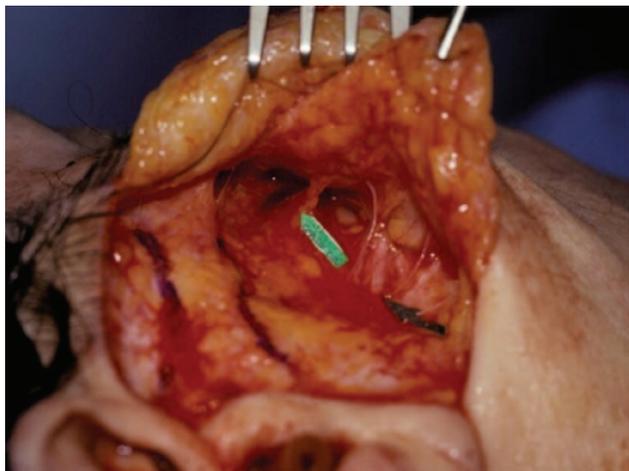


FIGURE 2. Deep-plane dissection shown that the zygomatic retaining ligament (green arrow) and the facial nerve (black arrow) are visualized.



FIGURE 4. Drill holes in the zygoma along the infraorbital rim are used to provide support to the medial flap.



FIGURE 3. A fascial sling along the lower eyelid from the medial canthus to the lateral orbital rim may be used to prevent lower lid ectropion.



FIGURE 5. (A) Preoperative image of patient with large cheek hemangioma. (B) Preoperative markings of hike flap. (C) Three days postop. (D) Long-term result.

RESULTS

A total of 3 patients had an overcorrected flap (Table 1). Lower eyelid malposition was avoided in all 3 patients. Patient satisfaction at long-term follow-up at 12 months was very high, and no revision surgery was needed (Fig. 4). The long-term esthetic and functional

outcomes provided by overcorrection were essential in terms of avoiding ectropion (Figs. 5 and 6).

DISCUSSION

Originally the deep-plane cervicofacial hike flap was designed as a solution for conventional flaps that did not have adequate blood supply or caused excessive dog-ear formation.^{3,5} Several authors after the original description have since used this flap with great success.⁶⁻⁸

TABLE 1. Patient Demographics

Gender	Age	Lesion	Follow-Up, mo	Lid-Malposition	Esthetic Outcome	Complications
F	62	Hemangioma	12	No	Good	None
F	55	Squamous cell carcinoma	12	No	Good	None
M	61	Burn contracture	12	No	Good	None

F, female; M, male.



FIGURE 6. (A) Preoperative markings and (B) 1-year postoperative results after cervical facial hike flap.

Nevertheless, ectropion formation remained a possibility given the susceptibility of the lower eyelid to various deforming forces.^{6,7,9} The effects of gravity, scar formation, contracture, or traction on the flap during healing can all lead to ectropion.¹⁰ There are certain patients more likely to develop ectropion, including those with decreased skin laxity, elderly patients, or those with larger defects.¹¹ When ectropion occurs as a result of surgery, it often does not correct and canthal-based surgery is necessary.⁹

The senior author began overcorrected the deep-plane cervicofacial hike flap in patients where postoperative ectropion was anticipated. The excessive vertical shift and fixation of the flap provided excellent support for the lower eyelid and anchoring of tissues.

None of the patients in this series developed postoperative ectropion. This is an excellent technique to consider when using deep-plane cervicofacial flaps for those patients who will be susceptible to ectropion development. This modification will decrease postoperative morbidity and increased patient satisfaction.

CONCLUSION

An overcorrected deep-plane cervicofacial hike flap is crucial to prevent distortion of the lower eyelid. Postoperative changes that can occur from cicatricial or gravitational forces can be prevented with overcorrection, making this a useful tool in managing patients with complex defects in this region.

REFERENCES

1. Mustarde JC. *Repair and Reconstruction in the Orbital Region*. Edinburgh: Churchill-Livingstone; 1980:111–129
2. Longaker MT, Glat PM, Zide BM. Deep-plane cervicofacial “hike”: anatomic bass with dog-ear blepharoplasty. *Plast Reconstr Surg* 1997;99:16–21
3. Kroll SS, Reece GP, Robb G, et al. Deep-plane cervicofacial rotation-advancement flap for reconstruction of large cheek defects. *Plast Reconstr Surg* 1994;94:88–93
4. Hamra S. The deep-plane rhytidectomy. *Plast Reconstr Surg* 1990;86:53–61
5. Bokhari WA, Wang SJ. Modified approach to the cervicofacial rotation flap in head and neck. *Open Otorhinolaryngol J* 2011;5:18–24
6. Cole EL, Sanchez ER, Ortiz DA, et al. Expanded indications for the deep plane cervicofacial flap: aesthetic reconstruction of large combined temporofrontal and brow defects. *Ann Plast Surg* 2015;74:543–548
7. Tan ST, MacKinnon CA. Deep plane cervicofacial flap: a useful and versatile technique in head and neck surgery. *Head Neck* 2006;28:46–55
8. Delay E, Lucas R, Jorquera F, et al. Composite cervicofacial flap for reconstruction of complex cheek defects. *Ann Plast Surg* 1999;43:347–353
9. Rapstine ED, Knaus WJ, Thornton JF. Simplifying cheek reconstruction: a review of over 400 cases. *Plast Reconstr Surg* 2012;129:1291–1299
10. Sugg KB, Cederna PS, Brown DL. The V-Y advancement flap is equivalent to the Mustardé flap for ectropion prevention in the reconstruction of moderate-size lid-cheek junction defects. *Plast Reconstr Surg* 2013;131:28e–36e
11. Michels KS, Czyn CN, Cahill KV, et al. Age-matched, case-controlled comparison of clinical indicators for development of entropion and ectropion. *J Ophthalmol* 2014;2014:231487