A Dilemma in Nasal Soft-Tissue Reconstruction: The Converse Flap Revisited
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ABSTRACT

Objectives
1. Present a case of difficult nasal dorsal reconstruction due to loss of supratrochlear and supraorbital vascular pedicles.
2. Review the Converse flap and detail current indications for its use.

Methods
Case report

Results
One patient identified in the authors' institution presenting with a large soft tissue defect of the nasal dorsum and sidewalls secondary to Mohs micrographic surgery. A modified Converse flap was used to reconstruct the wound due to its limited morbidity and close skin color, thickness, and texture matches. Reconstruction of large nasal soft-tissue defects in the absence of the supratrochlear and supraorbital vessels, however, is a more complicated endeavor, and one infrequently addressed in the literature. The purpose of this report is to revisit the Converse scalping forehead flap technique in nasal reconstruction, and demonstrate its usefulness and indication in the vessel-depleted forehead.

METHODS AND MATERIALS

Report of one case in the authors' institution requiring a modified Converse scalping forehead flap reconstruction of a large dorsal nasal defect.

INTRODUCTION

Non-melanoma skin cancer is the most common malignancy in Caucasians. Timely reconstruction of skin cancer defects is important, especially in lesions with concerning histopathologic features necessitating adjunctive therapy. Closure of nasal soft-tissue defects following excision of cutaneous malignancies is a difficult endeavor due to the lack of tissue laxity compared to other areas of the face, its convex nature, and its intimate relationship with the brow and eyelid as well as aesthetic considerations due to its prominence in the central face. The paramedian forehead flap, based off of the supratrochlear vascular bundle, is recognized as the ideal form of reconstruction of large nasal cutaneous defects due to its limited morbidity and close skin color, thickness, and texture matches. Reconstruction of large nasal soft-tissue defects in the absence of the supratrochlear and supraorbital vessels, however, is a more complicated endeavor, and one infrequently addressed in the literature. The purpose of this report is to revisit the Converse scalping forehead flap technique in nasal reconstruction, and demonstrate its usefulness and indication in the vessel-depleted forehead.

CASE REPORT

A 70-year-old male presented to the Facial Plastic Surgery Division of the Department of Otolaryngology – Head and Neck Surgery following Mohs micrographic surgery for resection of a squamous cell carcinoma of the nasal dorsum. Due to extensive perineural and vascular invasion, a large soft-tissue defect was created with sacrifice of the supratrochlear vascular bundles bilaterally. As adjunct radiotherapy was planned due to the concerning histopathologic features, a forehead flap based off of the supraorbital vessels was advocated urgently. Intraoperatively, the supraorbital vessels were not able to be identified by Doppler. The decision was made to pursue scalping flap reconstruction based on the right superficial temporal vessels (Figure 1). The flap was modified from Converse's original description by limiting distal inferior skin elevation as no nasal tip soft-tissue reconstruction was necessary. Sharp dissection was carried out through the galea, and the scalp flap tissue was then elevated in the loose areolar plane toward the vascular pedicle. The elevation continues past the temporal line in order to maximize flap rotation without kinking the pedicle. Sharp dissection is carried out through the galea, and the scalp flap tissue is then elevated in the loose areolar plane toward the vascular pedicle. The elevation continues past the temporal line in order to maximize flap rotation without kinking the pedicle. Sharp dissection is carried out through the galea, and the scalp flap tissue is then elevated in the loose areolar plane toward the vascular pedicle. The elevation continues past the temporal line in order to maximize flap rotation without kinking the pedicle. Sharp dissection is carried out through the galea, and the scalp flap tissue is then elevated in the loose areolar plane toward the vascular pedicle. The elevation continues past the temporal line in order to maximize flap rotation without kinking the pedicle. Sharp dissection is carried out through the galea, and the scalp flap tissue is then elevated in the loose areolar plane toward the vascular pedicle. The elevation continues past the temporal line in order to maximize flap rotation without kinking the pedicle. Sharp dissection is carried out through the galea, and the scalp flap tissue is then elevated in the loose areolar plane toward the vascular pedicle. The elevation continues past the temporal line in order to maximize flap rotation without kinking the pedicle. Sharp dissection is carried out through the galea, and the scalp flap tissue is then elevated in the loose areolar plane toward the vascular pedicle. The elevation continues past the temporal line in order to maximize flap rotation without kinking the pedicle. Sharp dissection is carried out through the galea, and the scalp flap tissue is then elevated in the loose areolar plane toward the vascular pedicle. The elevation continues past the temporal line in order to maximize flap rotation without kinking the pedicle. Sharp dissection is carried out through the galea, and the scalp flap tissue is then elevated in the loose areolar plane toward the vascular pedicle. The elevation continues past the temporal line in order to maximize flap rotation without kinking the pedicle. Sharp dissection is carried out through the galea, and the scalp flap tissue is then elevated in the loose areolar plane toward the vascular pedicle. The elevation continues past the temporal line in order to maximize flap rotation without kinking the pedicle.

Operative Details

1. The scalping flap is planned based off of the anterior and zygomatic branches of the superficial temporal vessels.
2. The upper limb of the flap is drawn curvilinearly into the hair-bearing scalp. As the nasal soft-tissue defect in this case was high on the nasal dorsum, the flap was modified to include an inferior limb, parallel to the superior dissection thus eliminating the need for further forehead dissection and disruption. The patient's alopecia, the flap was drawn to include only the soft tissues superior to the upper margin of the frontalis so as to avoid dissection and distortion of the muscle during flap elevation.
3. Sharp dissection is carried out through the galea, and the scalp flap tissue is then elevated in the loose areolar plane toward the vascular pedicle. The elevation continues past the temporal line in order to maximize flap rotation without kinking the pedicle.
4. The distant aspect of the flap is inset into the wound and the secondary forehead defect is approximated with retention sutures to prevent wound retraction and forego the need for temporary split-thickness skin grafting. Transverse galeotomies can also be made to relieve tension further. Non-adherent dressings are placed over the secondary defect to prevent wound desiccation.
5. Delayed inset is planned 3 weeks post-operatively. The flap is sectioned and inset into the superior aspect of the original nasal dorsal wound. The remainder of the flap is then replaced into the secondary defect and primarily closed.

RESULTS

One patient required a modification of the Converse scalping flap for dorsal nasal soft-tissue reconstruction secondary to prior sacrifice of the supraorbital vessels and absent supratrochlear vasculature. The procedure was tolerated well with adequate aesthetic result and without incurring undue delay in necessary adjuvant therapy. No operative complications were encountered, and the use of skin grafting was avoided.

DISCUSSION

The Converse scalping flap was first described in 1942 in an effort to provide an option in subtotal and total nasal reconstruction. Unfortunately, due to its need for a greater extent of dissection, and its more complicated secondary defects, it has found less clinical use in the modern era of nasal reconstruction and has been reported seldomly in the current literature. Classically, the scalping forehead flap included elevation of distal lateral forehead skin in a subcutaneous plane with contiguous elevation of the majority of the remaining forehead and anterior scalp deep to the frontalis and glabellar soft tissue defect. This allowed a large degree of rotation and extended the length of soft tissue for coverage of large lower nasal defects. Similarly, the forehead flap described by McGregor in 1963, also based off of the superficial temporal vessels, involved dissection deep to the frontalis, but was mainly utilized in the reconstruction of cheek and intranasal defects. The flap described here has several modifications from the classic Converse flap, borrowing from principles of McGregor's transverse forehead flap. First, an inferolateral subcutaneous dissection to harvest the donor skin was not done due to the fact that additional length in flap was not required. In addition, the flap described here utilized an inferior limb of dissection staying superior to the frontalis muscle in order to prevent dissection of the muscle and avoid possible consequences to the mobile forehead and brow. Unlike McGregor's transverse forehead flap, our modification of the Converse flap still retains the original premise of dissection onto the scalp in order to capture the axial blood supply of the superficial temporal vessel and the direct communicating branches with the contralateral artery, while avoiding areas vascularized by the distal branches of the ophthalmic arteries in the paramedian forehead. As evidenced in the patient described here, the ability to maintain an axial flap with only 1 angiome removed portends a higher likelihood of complete flap success compared to a flap traversing multiple areas of choke vessels.

CONCLUSIONS

The Converse scalp flap is still a useful tool in the armamentarium of the reconstructive surgeon. Its use is well-established in large nasal defects, but should be especially considered in the reconstruction of nasal defects in the vessel-depleted forehead.

REFERENCES


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