Lateral Forehead Flap: A Reliable Flap in Difficult Conditions

Avinash A, Manik S, Vipul N.

Department of Cosmetic and Plastic Surgery, Artemis Hospital, India

Abstract

Introduction: Complex orofacial defects pose a difficult problem for reconstructive surgeons. History of previous surgery or radiation adds to the difficulty of reconstruction. In the era of microsurgery, use of locoregional flaps, alone or in combination may prove to be the only practical solution in certain situations.

Patients and Methods: Two cases of oral carcinoma were resected and the defects were reconstructed using the lateral forehead flap with the pectoralis myocutaneous flap. In one of the cases 5th rib was harvested with PMMC flap for reconstruction of the mandibular defect.

Result: In both the cases the donor defect was covered with split skin graft. All flaps survived and functional outcome was satisfactory. Aesthetic outcome of the donor defect was also acceptable.

Conclusion: Lateral forehead flap is a reliable flap with an acceptable outcome in patients with previous history of radiation and surgery.

Introduction

Complex orofacial defects have always posed a challenge for reconstructive surgeons. The aim of reconstruction in these cases is to achieve adequate, stable mucosal and skin coverage with minimal contour deformity. Sometimes these cases have been previously operated or irradiated which adds to the problems in decision making. Microsurgical tissue transfer is considered the first options in such cases, but these have inherent limitations such as paucity of donor vessels, long operative duration and intensive monitoring. In such cases regional flaps may present a reasonable option. The Pectoralis major myocutaneous flap (PMMC flap), DP flap, Submental flap and forehead flap have been described for such reconstructions [1]. For a larger tissue requirement a double pedicled flap may be used [2]. If one flap is inadequate, a combination of flaps may be used. We present two such cases where we used the lateral forehead and PMMC flap for coverage of complex defects. As both the flaps are raised from opposite directions the final suture line of flap inset is not superimposing on each other which safeguards the possibility of orocutaneous fistula in case there is dehiscence of one of the flaps.

Case Presentation

Case 1

A 41-years old male presented with 12 cm × 10 cm large fungating mass involving the left lower lip and adjacent for which wide excision with neck dissection and segmental mandibulectomy was done. PMMC flap with rib and lateral forehead flap was used for reconstruction. PMMC flap with rib was raised in standard fashion with skin paddle of 4 cm × 6 cm and 5 cm segment of the 5th rib. Bony fixation was done with plate and screws.

Lateral forehead flap based on left STA was raised in standard fashion for skin cover. Lower margin of flap was taken at the upper border of eyebrows. The junction of forehead and hair bearing scalp was taken as upper limit of flap. The donor defect was covered with split skin graft (Figure 1).

Final detachment and insetting of flap was done after 4 weeks. At 6 weeks follow up he was eating and swallowing soft diet without difficulty and was referred for further radiotherapy.

Case 2

47 years male was presented with ulcerative lesion over right side of chin for last 4-5 months. He had history of Chemotherapy and surgery with radiotherapy 4 years ago. He was a known case aortic valve replacement on medication. Wide local excision with segmental mandibulectomy was...
done. PMMC and lateral forehead flap was used for reconstruction.

PMMC flap was raised in standard fashion with skin paddle of 7 cm x 8 cm to fill the mucosal defect.

Lateral forehead based on right STA was raised for skin cover. Forehead flap was delayed after 6 weeks of surgery and final detachment and insetting was done in 7th week. He was eating and swallowing comfortably (Figure 2).

Patient was planned for radiotherapy and further refinements of the flap were planned after that.

Discussion

Reconstruction of composite orofacial defect is a challenging problem. This is especially true in recurrent or post radiotherapy patients where have very limited options. In modern times free flaps are considered to be the flap of choice with locoregional flaps as the second option. But free flaps have their own limitations. Patient with recurrent head and neck cancer have compromised general physical status associated with co morbidities which makes long duration surgery a risky option. In previously operated or irradiated head and neck cases, the surgeon may encounter lack of vessels for microvascular anastomosis. Free flaps require vigorous post op monitoring and occasionally may require re exploration. Above all, free flaps are associated with four times greater risk of complications in case of previous history of radiation [3].

Locoregional flaps provide a feasible option in these cases. The operative time is much less and intensive post operative monitoring is not required. These flaps are based on reliable vascular supply which lowers the overall risk. The colour match is also better with these flaps.

In our cases we have used lateral forehead and PMMC flap to cover the defect.

The lateral forehead flap is based on the anterior division of STA and inclusion of zygomatic branch further improves vascularity of the flap [4]. Several authors have described the use of lateral forehead flap for oral mucosal lining as well as for skin cover. Flap detachment and insetting is done after a gap of 3-4 weeks depending on the size of flap, area of contact and condition of tissues [5,6].

In one of our cases second stage was delayed as the area of inset was less and the flap involved previously irradiated and scarred.

A major disadvantage of forehead flap is the patch effect of the skin graft over the forehead. To reduce the cosmetic impact we harvested the whole of the forehead skin as single unit to camouflage the scar. Further a 45 degree beveling was used on the edges of the flap to avoid the abrupt contour change.

The relative inelasticity of flap is another feature of the forehead flap which makes it difficult to contour. It does become supple with time usually. It is a very sturdy flap which may be used to cover any part of ipsilaterial face [7].

In both of our cases PMMC flap was used for the mucosal lining. This flap has been used for reconstruction of lower face for long. Many variations of this flap have been described to reconstruct different defects. PMMC with rib has been documented for complex defects involving mandibular reconstruction. Usually 5th rib is harvested for this purpose [8].

A dual flap combining lateral forehead and PMMC flap is a useful approach in similar cases. Both of these flaps are robust which makes the final outcome dependable. Also as the flaps are being harvested from the opposite directions the flap inset and suture line are not superimposing on each other. This provides a safeguard against...
development of orocutaneous fistula in case one of the flaps suffers breakdown of the suture line.

**Conclusion**

Reconstruction using the above mentioned technique is a useful, effective and a reliable method. In patients with recurrent oral cancer who have undergone prior surgery and radiotherapy this may be the only practical solution. We reiterate the usefulness of the lateral forehead flap.

**References**


