



Versatility of Extended Lateral Forehead Flap in Coverage of Full Thickness Facial Burns- A Case Report

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Abstract

Lateral forehead flap a versatile flap based on the superficial temporal artery is a perfect match for restoration of the facial defect, we present here a case where in this flap was used to cover the full thickness defect of the left cheek with loss of the left alveolar sulcus associated with ectropion of the left lower lid due to burns giving an adequate tissue cover and contour of the face.

Keywords: Facial Defect; Superficial Temporal Artery; forehead Flap

Introduction

Finding an ideal donor with perfect skin match for reconstruction of facial defect creates a tough problem for the operating surgeon. Recently reconstructive ladder or escalator is advocated where in the reconstructive solution has to be individualized to each patient and not based on any rigid approach. In the era of microsurgery we chose to go with forehead flap as it's a dependable and gives

anatomical likeness in case of reconstruction. Forehead flap is a versatile flap used here for primary closure of the full thickness cheek defect of the left side of the face. It is the best donor site for facial reconstruction procedures due to colour match and texture. Success and popularity of this flap is due to adequate blood supply and local availability of a constant feeder vessel [1].

Case Report



Figure 1: Pre operative defect on the left side of face involving full thickness cheek with inner mucosa, upper gingival sulcus with associated ectropion.

A 35 year old female patient presented with a full thickness defect of the left lateral cheek resulting from accidental flame burn four months back. Patient had lost consciousness and fell face first on a charcoal stove. The patient was taken to the nearest local hospital and required ventilator support for 4 days and treated conservatively for burns and referred to another hospital post extubation, for the defect but due to lack of expertise at the local hospitals, patient was referred to us for further management. Patient was assessed and had exposed maxilla, Zygoma on the left with loss of full thickness buccal mucosa, left upper outer gingival lining, left upper lip and left commissure. Decision was taken to use a lateral forehead flap [LFF] to cover the complex defect. Patient underwent relevant investigation preoperatively precise marking of the defect was marked and location of the superficial temporal artery [STA] with hand held Doppler on the left side was marked. A 20 *10 centimetres (cm) forehead flap was elevated ligating bilateral supra orbital and supra trochlear artery and contralateral frontal branch of superficial temporal artery, keeping the pedicle of the left STA secure. The left exposed maxillary and Zygomatic bone was chiselled to remove the dead and dried outer table to give us a vascularised recipient area over which the flap would survive and

gain blood supply from. To reconstruct gingival sulcus, inner buccal mucosa, skin cover and ectropion release on the left side of face (Figure 1).

Operative Technique

The flap was raised based on left superficial temporal artery after marking it with a hand held doppler. The extended lateral forehead flap comprises whole of forehead just below the hairline superiorly and 1.5 cm above the eyebrow inferiorly, 1 cm lateral to the outer end of eyebrow and medially 1 cm in front of tragus. Tumescence was injected along the margins of flap and after a waiting period of 5-7 minutes incision was commenced from lateral end to base. The marginal incision is bevelled to give smooth transition from graft to surrounding skin. Flap elevated above the peri cranial layer/ sub fascial plane just superficial to the perisoteum of the frontal bone and the flap rotated over the lateral Zygomatic arch on the defect of the face; the flap was tailored to fit the defect of the face by turning the flap on itself to substitute the loss of buccal mucosa and creating an upper lip. The lower lip and upper lip gingival sulcus was formed by turning the forehead flap on itself and interdental wiring with stainless steel wire was used to hold the suture in place to form new gingival sulcus.



Figure 2: Intra operative image showing flap inset.

The forehead donor defect was covered with a single split thickness graft replacing the entire unit of forehead with a uniform graft. The flap was divided at 21 days and inset at the lower border to form a part of the missing lower lip. The patient was discharged uneventfully after the flap division and second inset. The patient was given RT Feeding for 21 days before the flap division to avoid tension on the sutures forming the inner lining of the cheek (Figure 2).

Discussion

The cheeks represent the largest surface area of the face and frame the central facial units. Reconstruction of defects involving the full thickness of the cheek implies reconstruction of all layers, while maintaining reasonable contour. [2] The extended lateral forehead flap is acknowledged as the ideal donor for midface reconstruction due to its colour and texture match, vascularity,

and ability to resurface all or part of the reconstructed area. The flap is usually designed as an aesthetic unit and comprises the hairless skin of the forehead between the scalp and the eyebrows and extends laterally to the preauricular and temporal hair-bearing skin. The inferior border of the flap should lie immediately above the eyebrow, primarily to include the inferior branch of the superficial temporal artery but also to improve the donor site deformity by the use of a skin graft as a forehead aesthetic unit [3]. There are certain drawback with using lateral forehead flap like it requires two stage procedure, loss of eyebrow elevation, loss of forehead sensation, hairline distortion and resurfacing the donor area with split thickness graft can give a displeasing final result. However the advantages far outweigh the drawback like: [4].

The flap is easy to master, it has similar colour and texture to the face which follows the principle of replacing like with like.

The versatility of the flap helps us use it in diverse situations like malignancy trauma and it does not require any microsurgical expertise. The flap is less bulky and thus gives an ideal contour for oral and surface reconstruction. Faster harvest time make it useful in patients with morbid conditions. As the flap has a very robust blood supply, it is a reliable flap in case of possible future radiotherapy requirement in malignant cases and can be used as a salvage flap when primary reconstruction due to free flap fails. The patient complained of drooling of saliva which is a cause for

social embarrassment and inability to contain liquids in the mouth and was not able to articulate certain words which required closure of the mouth preoperatively due to the large left facial defect. The patient was able to drink liquids, there was no dribbling of saliva and she could articulate plosive consonants in the postoperative period. We echo here the same idea that Sir Harold Gillies and D. Ralph Millard had about the forehead flap “ The tint of forehead skin so exactly matches that of the face and nose that is must be the first choice” [5] (Figure 3).



Figure 3: Lateral forehead flap giving adequate contour and coverage of the defect.

Conclusion

Lateral forehead flap has a robust blood supply with less bulk on harvest makes it an ideal flap for a defect created after debridement of post burn raw area on the left side of the face. A single forehead flap is folded over itself to provide inner and outer lining. The advantage of the flap is that it is a reliable reconstructive option to give cover to defects as far as the para mandibular region.

Declaration Of Patient Consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published, and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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