Case Report

Traumatic loss of total lower lip and chin: The anterolateral thigh flap provides an optimal solution

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Abstract

Background: Young female presented 15 days after traumatic avulsion of total lower lip and chin. Considering the functional and aesthetic needs of the lower lip and chin, it is indeed challenging for the reconstructive surgeon to provide aesthetically appealing lower facial subunit with maintenance of good oral seal and competence. The authors present this case of total lower lip and chin loss reconstructed as a single aesthetic unit with free anterolateral thigh flap followed by secondarily defining the aesthetic subunits into lower lip and chin by selective liposuction.

Method: Free anterolateral thigh flap was harvested. The fascia lata, harvested separately, was divided to form slings over which distal part of the flap, designated to form the lower lip, was hung over and inset into the remnant gingivolabial sulcus mucosa. This folded distal part of the flap formed the lining and cover of the lower lip.

Result: After resurfacing with free ALT flap, she was able to attain lip seal and resume oral feeds within 3-4 days. She presented six weeks after the first surgery with severely reduced mouth opening. This was due to excessively tight perioral slings. Slings were released and flap was selectively debulked using liposuction so as to define the lower lip and chin subunits.

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Conclusion: Free anterolateral thigh flap is an extremely versatile option in the armamentarium of free flaps available. Primary thinning and good colour match along with negligible donor site morbidity makes it meritorious over the radial forearm flap.

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Introduction

A young female patient, presented 15 days after a machinery injury with traumatic avulsion of total lower lip and chin.

Reconstruction had been attempted elsewhere with bilateral cheek advancement flaps as evidenced by transverse scars running laterally from each commissure (Figure 1). She was unable to take anything orally and there was continuous drooling of saliva.

She was started on Ryles’ tube-feeding and a staged reconstruction was planned. The goals of reconstruction were the creation of a lower lip and chin, and to provide oral competence.

Figure 1. Traumatic avulsion of total lower lip and chin.
Method

Firstly, a thorough debridement was done and the defect was covered with a free anterolateral thigh flap –ALT flap. Anastomoses were done with left sided facial vessels in the neck. Fascia lata was harvested separately and slings were made to provide oral competence, to prevent sagging of the flap and fold the distal part of flap on itself to form cover and lining of the lower lip and create a sulcus. One sling was passed submucosally periorally around the upper lip and its ends sutured to orbicularis oris in the midline and to each other.

One sling was passed submucosally from each commissure upwards and looped around the respective zygomatic arch with tension adjustment to hold the entire flap in place without any sagging. The distal part of flap was hung over these slings thereby folding it to form cover and lining of lower lip. The Flap was inset to the lower labiogingival sulcus mucosal remnant. After three days, the patient resumed oral feeds without any drooling (Figure 2). On follow-up, after six weeks, she was noted to have a significantly reduced mouth opening, due to the tight slings. Under local anaesthesia, the peri-oral sling was divided and the mouth opening improved to 3.5 cm. Selective flap debulking was done with liposuction in the same sitting. The distal part of the flap forming the lip was untouched while the proximal part of the flap forming the chin was thinned significantly. Subdermal vicryl sutures were taken intra-orally to simulate the labiomentals crease (Figure 3). One year later, she maintained good mouth opening, satisfactory lip seal at rest, complete oral competence and a reasonably normal appearance of the lower lip and chin in terms of tissue match and contour (Figure 4(a) and (b)). Lower labiogingival sulcus and bulk of lower lip are maintained.

Discussion

Functionally completing the oral sphincter and aesthetically enhancing the appearance of the lower face, represent the challenges in total lower lip reconstruction while also forming the basis of its reconstruction. Extensive defects like total lower lip loss are difficult to reconstruct with local tissues. The Karapandzic flap is one of the good options for reconstructing lower lip defects of upto 80%. The extended Karapandzic flaps advance local cheek tissue medially to reconstruct near total lower lip
defects. Here the cheek tissue comes together to form the central part of lower lip thereby providing sensate and competent sphincter in a single stage.\textsuperscript{1}

In this patient, the option of any local flap was ruled out due to transverse cheek scars extending from the commisures laterally onto the cheeks.

Free radial forearm flap is currently the gold standard flap for total lower lip defects due to its thin, pliable skin, long vascular pedicle, ease of harvest and vascularised palmaris longus sling.\textsuperscript{2} The static slings, anchored to the malar periosteum, were inadequate in providing competence and some amount of drooling of saliva continued.

The concept of dynamic slings provided better sphincteric function and was achieved by various methods like depressor anguli oris muscle transfer,\textsuperscript{3} anterior half of masseter transfer\textsuperscript{4} or anchoring the palmaris sling to upper lip orbicularis oris muscle.\textsuperscript{5} Free ALT flap allows adequate tissue for
defects involving lower lip and chin, allows primary thinning of the flap, allows a two-team approach, provides fascia lata for slings and with a concealed donor site scar making it meritorious over the radial forearm flap. In our case the free ALT flap provided a good colour match and primary thinning allowed the distal part of the flap to be folded to form the lower lip. Both static and dynamic slings were designed and anchored, however, the latter had to be released due to excessive tension. One reason for this maybe the fact that fascia lata slings used here were non-vascularised. Despite this, the patient maintained good oral sphincteric action and lip seal at rest.

Conclusion

The versatility of free anterolateral thigh flap allows for satisfactory restoration of a competent oral sphincter and an aesthetically appealing lower facial subunit.

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Conflicts of interest

None.

Ethical approval

Not required

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