

## Reconstruction of Large Lower Lip Defect with Bilateral Nasolabial Flap: A Report of Case Series

Case Report

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### Abstract

In the present era of medical advancement, the concept of a microvascular free flap technique has significantly gained popularity in the reconstruction of head and neck surgical defects. Therefore, the routine need for various local and regional flaps that were previously in use, has decreased to a considerable extent. However, a number of such local and regional flaps are quite useful and are still in practice, being used by the reconstructive surgeons. Nasolabial flap is a versatile, reliable, simple, easy to harvest local flap that can cover a variety of intra and extraoral defects. In this case series, we present the success and utility of bilateral nasolabial flap in reconstruction of two large lower lip defects and the restoration of function and aesthetics. The patients had been followed for one year, which was uneventful with no signs of recurrence.

**Keywords:** Squamous Cell Carcinoma; Lower Lip Defect; Bilateral Nasolabial Flap.

### Introduction

Nasolabial flap (NLF) appears to have been originally described in the works of Susruta in 600 BC [1]. It was there after used primarily in external reconstruction of nose for centuries. The transbuccal use of nasolabial flap for the closure of the oral cavity was first described by Thiersch [2].

There are various modalities that have been described for reconstructing the intra and extra-oral defects that cannot be managed by primary closure. They can be either pedicled or free flaps, however, sometimes these techniques are not feasible because either defect is too small or patient's age and medical status do not permit a lengthy anaesthetic and surgical procedure. In such circumstances nasolabial flap stands the only available option, that can serve the situation for repair of small or moderate-sized local

intra and extra-oral defects [3].

Very large defects of the lip are difficult to reconstruct. The main goal of a lip reconstruction is to re-establish aesthetics and oral competency that can allow normal function. Although several methods of lip reconstruction has been described in the literature, no technique has been proven to be the ideal one that suffices all requirements. Many authors advocate musculocutaneous tissue transfer to recreate the anatomical component of the lip, as they believe that the muscle must be transferred into the defect to maintain oral competence [4]. The technique of composite tissue transfer (e.g. Karapandzic flap) is interesting but its use is limited, as the quantity of orbicularis oris muscle is sparse and these procedures often lead to significant microstomia [5]. Limited quantity of muscle often get denervated during secondary commissuroplasties, which is performed to correct microstomia. Final result after many procedures often ends in patients with an immobile

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and insensate lower lip, along with notable perioral scarring. In this scenario, where there is a large defect, bilateral nasolabial flap can be considered as an option for reconstruction. Review of literature reveals that no case has been reported till date, which has utilised nasolabial flaps of both the sides, for the reconstruction of large lip defects. Therefore we aimed at utilising this technique, so as to evaluate the outcome with reference to the aesthetics, oral competency, function, innervation and complications. Through this article, we report the use of bilateral inferiorly based subcutaneous nasolabial flaps to reconstruct lower lip defects in two cases which are 30-60% of transverse dimension and up to 100% of the vertical dimension of the lip.

## Case Report

### Case 1

A 56-year-old male patient reported to our OPD, unit of oral and maxillofacial surgery with a chief complaint of growth in his lower lip since 6 months. Clinical examination revealed a well defined ulcero-proliferative growth extending from left commissure upto midline of lower lip (Figure 1) measuring 2x4 cm approximately (T2N0M0). Lower limit of the lesion was the mental crease. Incisional biopsy report confirmed that the lesion was well-differentiated squamous cell carcinoma.

Surgical procedure: Under general anesthesia, wide local excision of the lesion was performed with 1cm safe margin and ipsilateral neck dissection was done (Figure 2.a). For reconstruction, bilateral nasolabial flap was preferred as the defect size was large and it was not feasible to be reconstructed with NLF of one side.

Bilateral banner-shaped inferiorly based nasolabialflap was designed and outlined immediately superior and lateral to nasolabial crease on each side (Figure 2.b). The flaps were raised with sufficient subcutaneous tissue to ensure good vascular supply but thin enough, not to be too bulky and to remain superficial to facial muscles (Figure 2.c). The distal flap was tapered, so as to facilitate for primary closure of the donor site without distortion of the eyelid. Then both the flaps were transpositioned into the defect and closure was performed. Primary closure of the donor site was done due to the laxity of the skin. The subcutaneous layer was closed with 3.0 vicryl and the skin was closed with 4.0 prolene (Figure 2.d).

Patient was referred to radiotherapy after 4 weeks. 1-year postoperative follow-up showed satisfactory healing (Figure 3) and no signs of recurrence.

### Case 2

A 60-year-old male reported to our OPD, unit of oral and maxillofacial surgery with a chief complaint of growth in lower lip since 4 months. Clinical examination revealed a well defined ulcero-proliferative growth of about 2x2 cm approximately in the left half of lower lip (T1N0M0) (Figure 4) Lower limit of the lesion was vermilion border with maximum part of lower lip being indurated. Incisional biopsy report revealed well-differentiated squamous cell carcinoma. Surgical management was done in the same manner as the above-described case (Figure 5.a-d).

Patient was referred to radiotherapy after 3 weeks. A one-year postoperative follow-up showed satisfactory healing (Figure 6)

**Figure 1. Pre-op photograph of patient with lower lip lesion.**



**Figure 2. Clinical photographs showing intra-op procedure.**



- a) Surgical lower lip defect after excision of lesion. b) Designing of inferiorly based nasolabial flap  
c) Bilateral nasolabial flap lifted from donor site. d) Patient profile after completion of surgery

Figure 3. Post-operative photograph after 1 year follow-up.



Figure 4. Pre-op photograph of patient with lower lip lesion.



Figure 5. Clinical images showing intra-op procedure.



- a) Surgical lower lip defect after excision of lesion
- b) Designing of inferiorly based nasolabial flap
- c) Tunneling of nasolabial flap into the lower lip defect
- d) Patient profile after surgery

Figure 6. Post-operative photograph after 1 year follow-up.



and no signs of recurrence.

During follow-up, both the patients had considerable mouth opening and did not have any complaint regarding function and

aesthetics. Oral competency was reserved but the nervous status of the flap was inconclusive and shape of commissure was not so satisfactory as the result of Karapandzic flap.

## Discussion

Variety of techniques have been involved in the reconstruction of large defects of the lower lip. They can be (1) cheek advancement flaps [6] (2) rotation flaps using the residual lip [4] (3) double-cross lip flaps, or (4) bilateral nasolabial tissue. Free flaps also can be used [7] and they are mainly reserved for extensive defects. Free flaps are technically challenging with significant donor site morbidity. Also, they are time-consuming to perform and increase the time of hospital stay. Therefore so they are usually avoided, until the patient is concerned about aesthetics.

Nasolabial flap offers a reliable source for moderate to large size lower lip defect. Unilateral nasolabial flap is sufficient for a defect of about 2-3 cm, whereas bilateral flap could cover a defect of 5x5cm. Nasolabial flap is an axial flap but may be utilised as a random flap also. Abundant vascular supply allows for length to breadth ratio of 3:1. Vascular supply of the nasolabial flap is from the angular artery (branch of facial artery), the infraorbital artery, and the transverse facial artery [8]. Nasolabial flap is known to be the best available local flap due to its rich vascular anastomosis between all the feeding vessels. It is a versatile flap, since it can be utilised for the reconstruction of the cheek, buccal mucosa, anterior floor of mouth, lips, and nose. It can be raised as superiorly, inferiorly, lateral or medial based flap [1]. Nasolabial flaps are used in forms of advancement, transposition, rotation, interpolation and tunnelling [8]. Single-stage lip reconstruction is possible by rotation, transposition, and tunnelled variants.

Reconstruction of central or large lower lip defects and near-total reconstruction can be performed with the help of bilateral interpolated nasolabial flap [9]. In such type of situations, the left and right nasolabial flaps are sutured together in the midline, edge to edge or top to bottom according to the requirement. In our case, we used the interpolated bilateral nasolabial flap with top to bottom suturing. In lower lip reconstruction, nasolabial flap is considered dynamic because it represents a good alternative for attaining "slings" effect, while permitting good mouth opening for

maintaining oral hygiene, feeding and speech [10]. Another significant advantage of the nasolabial flap is that it has reduced donor-site morbidity, when compared to Karapandzic or Bernard-Burrow-Webster flaps, making it more acceptable to patients but a major limitation is that nasolabial flap does not give satisfactory esthetics at the oral commissure.

## Conclusion

With our experience, we conclude that bilateral nasolabial flap is a simple, effective and safe option for reconstruction of intermediate-to-large defects of the lower lip in the elderly without causing any significant donor site morbidity.

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