



## Nasolabial Flap Reconstruction in Oral Cavity Cancer Defects

### KEYWORDS

Nasolabial flap, Oral cavity cancer, Reconstruction.

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**ABSTRACT** Background : Nasolabial is a versatile and technically simple flap to harvest that provides pliable skin for reconstruction of medium size intraoral defects

Methods : In this study we analysed the utility of this flap for the oral cavity cancer defect reconstruction done in 18 consecutive cases.

Results : There were 14 males and 4 females. The mean age of 54.75 years. The oral cavity subsites were as follows: tongue 09 (50%); floor of mouth 03 (16.66%); lower lip 04 (22.22%) and lower alveolus 02 (11.11%). The distal end of the flap was necrosed in 03 (16.66%) patients, and wound infection with gaping in 02 (11.11%) patients. Eight (44.44%) patients had pT1N0 disease; 07(38.88%) patients had pT2N0 disease; 02(11.11%) patients had pT2N1 disease; 01(5.55%) patient had pT3N1 disease. The mean follow up period was 15 months. One patient with floor of mouth cancer developed local recurrence.

Conclusion : The nasolabial flap is a versatile, reliable local flap for reconstruction of medium size oral cavity defects with good cosmetic outcomes and negligible donor site morbidity.

### Introduction:

Head and neck cancer resection lead to complex defects that are difficult to reconstruct. In addition to the anatomical defect, the functional loss, cosmetic disfigurement and the accompanying psychosocial effects can be devastating to the patient. The various reconstructive options range from simple primary closure, skin grafts, locoregional flaps, pedicled flaps to a more complex microvascular free flaps. Microvascular free flaps are the standard of care in the reconstruction of these complex composite resection defects. Microvascular free flap need a significant surgical expertise, they increase the operative time, increase the hospital stay and consequently the cost of the overall treatment. Pectoralis major myocutaneous flap is rather a bulky flap that makes it difficult to inset it inside the defect and adds an extra soft tissue bulk in the neck. It cannot be used for small to medium size intraoral surgical defects. In such cases nasolabial flap is an ideal reconstructive option. It is technically simple flap to harvest and provides pliable skin for small to medium size intraoral defects. The donor site can be closed primarily due to soft elastic nature of facial skin and the scar is barely visible over a period of time.

The redundant skin extending from the medial canthus of the eye to the inferior margin of the mandible (nasolabial sulcus and nasofacial groove) defines the donor site for the nasolabial flap. This area is relatively hairless except for the lower cheek in males, an important consideration in oral cavity reconstruction. The subdermal plexus is supplied by feeder vessels from the branches of the facial artery and provides the blood supply to the nasolabial muscle and skin. This allows for high viability and permits bold thinning

and shaping of the flap. It can be used for reconstruction of intraoral defects in the floor of the mouth [1,2], tongue, cheek, oral commissure [3], nose tip, nasal ala, and the lower eyelids [4]. The flap is based superiorly and inferiorly. An inferiorly based flap is useful in reconstruction of the lip, oral commissure, and anterior aspect of the floor of the mouth, marginal mandibulectomy defects while superiorly based flaps are utilized for reconstruction of the ala and tip of the nose, and the lower eyelids, cheeks and hard palate. In this study we analysed the utility of this flap for the oral cavity cancer defect reconstruction done in 18 consecutive cases.

### Patients and Methods:

This prospective study was conducted at Shrimati Kashibai Navale Medical College and General Hospital, Narhe, Pune, from December 2012 to December 2015 following the approval of institutional review board. Eighteen patients with biopsy proven early squamous cell carcinoma of oral cavity who presented to the outpatient department of surgery were included in the study. All these patients underwent a standard metastatic workup that included a chest X-ray, ultrasonography of abdomen and contrast enhanced computed tomography of head and neck. We recorded demographic data, including age, sex, tobacco and alcohol use, prior treatment, tumour site and stage, and the adjuvant treatment received. Surgical information collected included the levels of neck dissection, defect location, flap size, and time to harvest the flap. In addition, success of flap reconstruction and complications were recorded. The study analysis was done by collecting data from the case records and entering into the proforma of the study. All these patients were followed

up monthly to assess for recurrences and disease status. At the end of study, the entire data of these patients was analysed.

#### Surgical technique:

We describe the technique of inferiorly based nasolabial flap as it was the most common flap used in our study (Fig.01 and Fig. 02). The area of the flap extends from the angle of mouth and may extend superiorly to a level, 5mm below the inner canthus. The flap width and length are judged to fill the defect without tension and to permit donor site closure without tension, thus avoiding ectropion. The width of the base flap was usually 2cm and the maximum flap dimensions were 7cm in length x 3cm in width which could be maintained for most of the length. The flap is sharply raised superficially to the facial muscles from superior to inferior up to the selected point for passage of the flap through the cheek. This point should remain above the commissure at all times in cases of buccal mucosa reconstruction while in lip reconstruction it could go lower down below the commissure. A tunnel is bluntly created through the cheek to avoid facial nerve injury, and the flap is delivered trans-orally and sutured into the defect with 3-0 vicryl suture. The part of entry of the flap into the intraoral cavity near its base is de-epithelialized to allow healing between the flap & the cheek. The donor area is closed primarily with 4-0 prolene suture. The suture line should preferably be at the nasolabial fold for better cosmesis. Postoperatively flap division was done after 3 weeks under local anaesthesia. Neck dissection is done along with the primary tumour excision and margins were confirmed with intraoperative frozen section. We sacrificed the facial artery in all our neck dissection procedures.



**Fig. 01** Nasolabial flap raised from the donor area



**Fig. 02** Intraoral surgical defect of tongue being reconstructed with the flap

#### Results

In our study 18 consecutive cases of oral cavity cancer underwent nasolabial flap reconstruction from December 2012 to December 2015 (Table.01). There were 14 males and 4 females. The age ranged from 36 years to 74 years with a mean age of 54.75 years. The oral cavity subsites were as follows: tongue 09 (50%); floor of mouth 03 (16.66%); lower lip 04 (22.22%) and lower alveolus 02 (11.11%). The excisional defect size ranged from 3 cm x 2 cm to 6 cm x 3 cm. The mean harvest time was 15 minutes (range 10 min – 25 min). In all our cases the donor site was closed primarily. The hospital stay ranged from 7 days to 10 days in non complicated cases. The distal end of the flap was necrosed in 03 (16.66%) patients, and wound infection with gaping in 02 (11.11%) patients. Twelve patients (66.66%) underwent extended supraomohyoid neck dissection while 06 (33.33%) patients underwent supraomohyoid neck dissection. Marginal mandibulectomy was done in two patients with carcinoma of lower alveolus without gross mandible invasion. The patients who had distal tip flap loss were managed with flap debridement and dressings. These patients however had a long hospital stay and they were discharged on fifteenth post operative day after they resumed to normal oral intake.

On final histopathology report, 08 (44.44%) patients had pT1N0 disease; 07(38.88%) patients had pT2N0 disease; 02(11.11%) patients had pT2N1 disease; 01(5.55%) patient had pT3N1 disease. The margins were tumour free in all these excisions and the average lymph node retrieval was 15 nodes. Three patients (16.66%) had a node positive disease, however they did not have extracapsular extension. Out of these 18 patients, adjuvant treatment (chemoradiation) was given to 03(41.66%) patients. The follow up period ranged from 4 months to 30 months with a mean follow up period of 15 months. During the follow up period the donor site scar was barely visible. One patient with

floor of mouth cancer developed local recurrence after 7 months of primary treatment. It was treated with wide local excision with completion neck dissection (level V) and was referred for radiation. He completed chemoradiation and is disease free. Four patients after completion of treatment lost for follow up.

**Table.01 Patient and tumour characteristics and demographic data**

|                             |  |
|-----------------------------|--|
| Age                         | 36 yrs – 74 yrs; mean – 54.75 yrs  |
| Male : Female               | 14:4   |
| Defect size (cm)            | 3x2 cm to 6x3 cm   |
| Oral cavity cancer subsites | Tongue<br>09(50%)<br>Floor of mouth<br>03(16.66%)<br>Lower Lip<br>04(22.22%)<br>Lower alveolus<br>02(11.11%) |
| Type of Neck dissection     | Su praomohyoid neck dissection<br>06(33.33%)<br>Extended supraomohyoid neck dissection<br>12(66.66%)         |
| Type of mandibulectomy      | Marginal mandibulectomy<br>02(11.11%)  |
| pTNM stage                  | pT1No<br>08(44.44%)<br>pT2No<br>07(38.88%)<br>pT2N1<br>02 (11.11%)<br>pT3N1<br>01(5.55%)                     |
| Complications               | Distal tip flap loss<br>03(16.66%)<br>Wound infection<br>02(11.11%)  |
| Adjuvant treatment          | Adjuvant treatment required<br>03(16.66%)<br>No adjuvant treatment required<br>15(83.33%)                    |
| Follow up                   | 4 months – 30 months; mean - 15 months   |

## Discussion

The nasolabial flap is a robust and versatile flap that is well suited for single-stage reconstruction of oral cavity defects. It has excellent and reliable blood supply through facial artery and its branches. Division of the facial artery at the level of the mandible during neck dissection does not compromise the success rate of the flap [5,6]. All our patients underwent neck dissection with facial artery ligation and we did not encounter any total flap loss. The viability that exceeds 90% [5,6,7] and most authors agree that generally, intraoral defects up to 5 x 5cm can be closed by this technique [8,9,10]. In our study we could close the defect upto 6 cm in an elderly patient due to extensive skin laxity. Inferiorly based nasolabial flap is the most commonly used intraoral reconstruction [5,9,10]. In this study we performed 18 inferiorly based nasolabial flaps without any donor site morbidity except a scar. In three patients we had distal end of the flap necrosed, however none of our patients had total flap loss. Two patients with tongue excision had minimal ankyloglossia possibly because the defect was large however there were no late functional complications in terms of microstomia, trismus, oral incompetence, speech or swallowing disturbances. There is negligible site morbidity and wound complication rate varies from 5-17% [11,12]. Our study had wound complications rate of 11.11% which was similar to the reported series. Lower lip reconstruction was done in four of our patients with nasolabial flap and it had an advantage of reducing the incidence of microstomia without compromising oral competence and providing good cosmetic results.

## Conclusion:

The nasolabial flap is a versatile, reliable local flap for reconstruction of medium size oral cavity defects with good cosmetic outcomes and negligible donor site morbidity.

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