



Nasolabial flaps: A series of 30 cases

KEYWORDS

nasolabial flap, oral malignancy, oral reconstruction

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Introduction

Oncological resections of oral cancer may not always be amenable to reconstruction using free flaps, even though they are ideal in many cases. In such cases we must turn to the local axial and random flaps. Nasolabial flap is one of the oldest techniques described to reconstruct soft tissue defects of the orofacial region. [1] The subcutaneous pedicle nasolabial flap was first described in the works of Susruta in 600BC [2]. Contemporary surgical descriptions began in 1830 when Dieffenbach used superiorly based nasolabial flaps to reconstruct nasal alae [4]. The first reported use of the nasolabial flap for the closure of an oral cavity defect by transbuccal transfer was by Theirsch [2]. Esser described the use of the inferiorly based nasolabial flap to close palatal fistulae [5]

The skin of the nasolabial fold has a superior and inferior blood supply allowing for a superiorly or inferiorly based flap. The facial artery is the arterial supply of the inferiorly based flap. The skin of the nasolabial fold is nourished by the superolabial and alar branches of the facial artery. As the facial artery courses over the dorsum of the nose, it becomes the angular artery. These branches form the distal arterial supply of the inferiorly based flap. [3] A study of the vascularization of the cheek has demonstrated that, although the lower three quarters of the nasolabial fold skin has a reliable subcutaneous vascular distribution, the distal third should be considered to have a random distribution [6]

Nasolabial flap can be transferred in three directions: Advancement flap: nasolabial flap moves in the direction of the long axis of the flap, mainly in cephalic direction. This kind of flap is called nasolabial V-Y advancement flap and is mostly used for infraorbital, medial canthus and lateral nasal reconstruction. Rotation flap: The pivot point is the base of the nasolabial flap and the lateral limit of the defect coincides with the medial margin of the flap. This flap has a sole indication: reconstruction of the upper lip lateral segment. Transposition flap: This type of nasolabial flap is a variant of rotation flaps. Nasolabial flap is lifted and rotated to reach the defect. If the distance between the nasolabial region and the recipient site is undermined to reach the flap from the donor to the recipient site by this route, this is called tunneled nasolabial flap and if the nasolabial flap is passed over the intervening segment of intact skin, then the term interpolated nasolabial flap is used. Reconstructed area should fall inside the rotation radius of nasolabial flap. [1]

Patients and Method

A prospective study of 30 patients (23 males and 7 females) was undertaken. The patients had to undergo resection for squamous cell carcinoma of the oral cavity and reconstruction was done using nasolabial flap. These patients were followed up for a period of 1 year to 2 years. Ipsilateral supraomohyoid neck dissection preserving facial artery was performed on all the patients. They also underwent post-op radiation therapy. The tumour site, distribution of the

disease and extent of the resection, immediate post op complications, flap health and the extent of hospital stay were collected. The patients were followed up routinely. Follow up data including flap health, donor site morbidities, recipient site, functional aspects like swallowing, speaking etc. were collected in each visit.

Results

The commonly occurring sites were buccal mucosa, tongue, floor of mouth, upper and lower lips upper and lower alveolus and anterior facial pillar (Table.1). Inferiorly based unilateral flaps were used in most of the cases.

The flaps were divided 3-4 weeks postoperatively in the outpatient department under local anesthesia. No flap necrosis or wound dehiscence was reported in any of the patients. Post-operative radiotherapy also did not affect the long term survival rate of the flap. The flaps were found to be healthy after the completion of the radiation therapy. The patients have good function also following the reconstruction. No complications like orocutaneous fistula or inclusion cysts were reported. 3 patients were concerned about the residual scar on the face.

Discussion

Any oncological resection in the orofacial region however small it may be, leaves behind a defect causing significant functional impairment. Nasolabial is one of the most versatile and easiest flaps to master in the region which can be used to reconstruct small to medium defects.

The anatomy of the nasolabial region is complex. The nasolabial crease runs from approximately 1 cm superior to the lateral alar rim to approximately 1 cm lateral to the corner of the mouth. Medial to the crease in the region of the corner of the mouth is the orbicularis oris muscle. Superior and lateral to the crease is the cheek. [3]

The flap can be based superiorly (retrograde flow) or inferiorly (anterograde flow). The skin of the nasolabial fold is nourished by multiple small branches from the alar branch of the superior labial artery, which is a branch of the facial artery and by the terminal branches of the facial artery, which is called the angular artery near the dorsum of the nose. Superolaterally the skin is nourished by the infraorbital artery, branch of ophthalmic artery and transverse facial artery. The inferiorly based flap has facial artery as its pedicle while the superiorly based flap with infraorbital and transverse facial artery as the pedicle. [7]

Inferiorly based flaps may be used to reconstruct defects of the hard and soft palate, tonsillar fossa, alveolus, floor of mouth and lower lip. Superiorly the flap can be used to close mucosal defects in the anterior hard palate, alveolus, maxillary antrum, nasal floor and septum, upper lip and orbit. [8]

Before flap harvest, the length requirement and the arc of rotation of the flap must be considered to prevent distal necrosis which occurs due to excessive length of the flap, from tension on the flap, or from constriction of the arterial supply or venous outflow. The arc of rotation has its pivot point inferiorly at the retromolar trigone, superiorly at the gingival labial sulcus, or anywhere in between depending on the reconstructive needs.[8] Intraoperatively the dimensions of the defect can be determined by using a piece of gauze and the same can be used to find out if the nasolabial flap will reach the defect with acceptable tension. By holding one end of the gauze at the base of the flap, the gauze can be rotated to simulate rotation of the flap. If the flap length is short and the base is adequately wide, a random pattern flap can be harvested. Harvesting of an axial pattern flap typically requires dissection to the level of the periosteum. Once the flap is harvested, the tension on the flap and the torsion on the arterial supply should be evaluated carefully before suturing the flap in place. [3] This helps in ensuring a healthy flap with good vascularity, which helped in the survival of the flap.

In our series all the patients had undergone ipsilateral supraomohyoid neck dissection. It was found in a study that the sacrifice of facial artery adversely affects the survival of nasolabial flaps.[7] Hence care was taken to preserve the facial artery while doing a level I lymph node clearance. This was also done so as to preserve the artery in case of a free flap reconstruction on a later date in the same region. Post-operatively patients were put on nasogastric tubes and feeding was done through the same. This was continued for roughly ten to fourteen days, till the intraoral wound healing was satisfactory. Routine intraoral cleaning using moist gauze was also undertaken on a daily basis during the patient's stay in the hospital to maintain a good intraoral hygiene, to prevent infection and wound dehiscence.

Post-operative radiotherapy was administered to all the patients as there were clear indications to do so from the histopathological reports. None of the patients received preoperative radiotherapy or chemotherapy. These steps proved beneficial as none of our patients reported back with any significant complications. Patients were able to do deglutition of solid food and liquid food once the wound was settled. Speech although was compromised but was comprehensible. Intraoperative planning and taking small but significant steps to maintain vascularity to flap can definitely make sure the long term survival of the flap. Although technically nasolabial flap is easy to master and perform, careful planning and strict adherence to the basic principles is essential for the success of the flap. In centers where free flaps are not technically feasible, nasolabial flaps provide a viable alternative for the reconstruction of defects in the orofacial region.

Location of the defect

Number of cases

Buccal mucosa

14

Lower lip

3

Upper lip

1

Alveolus

4

Anterior faucial pillar

1

Tongue

4

Floor of mouth

3

Table 1

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