



RECONSTRUCTION USING NASOLABIAL FLAP FOLLOWING ONCOSURGERY - ITS COSMETIC & FUNCTIONAL OUTCOME

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ABSTRACT The versatility of nasolabial flaps has been acknowledged for their application in treating a range of facial, nasal, lip, and oral cavity deformities, as well as intraoral defects resulting from the excision of benign and malignant tumours. Small-to-medium-sized defects have been covered using nasolabial flaps, which typically need a second stage of surgery to divide the flap. To research the results of nasolabial flap reconstruction for head and neck abnormalities, an examination of 30 instances was conducted. Out of these, 18 cases had BCC (Basal cell carcinoma), 11 had SCC (Squamous cell carcinoma) and 1 case had Melanoma. Treatment options for oral tumours ranging from stage I to IVa included neck dissection, nasolabial flap repair, and primary wide local excision.

KEYWORDS : Nasolabial flap , Local head and neck flaps , Reconstructive techniques , Head and Neck malignancies, Oral malignancies (BCC, SCC)

INTRODUCTION :

An Indian surgeon named Sushruta described a soft tissue flap circa 600 BC that is quite comparable to the "Nasolabial flap" that is used today . For oral cavity or facial reconstructions, the skin reservoir lateral to the nasolabial fold can be utilised. Although the terms Nasolabial Flap (NLF) and melolabial flap are often used interchangeably, dermatologists tend to use the latter word and surgeons the former.

Soft tissue flaps are necessary to replace lost soft tissue following traumatic injury or surgical excision. One of the earliest methods for replacing soft tissue abnormalities in the orofacial region is the nasolabial flap (NLF) cover.

Three methods of transfer are available for nasolabial flaps in facial reconstruction: advancement, rotation, and transposition. Several nasolabial flap modalities were identified, including propeller types, freestyle perforator based, superiorly or inferiorly based, V-Y advancement, and interpolated flap. Nasal tissue can be separated into three categories: internal lining (nasal mucosa and vestibular skin), framework (bones and cartilage), and cover (skin, subcutaneous tissue, and muscle). A detailed assessment of the defect and the condition of the surrounding tissue is essential to a successful nose restoration. The location, size, and depth of the defect are the most important factors to look into .Reconstructing the nose is a difficult plastic surgery procedure. The nose is the face's most noticeable and attractive feature . From an aesthetic perspective, the nasal wall is divided into nine parts, according to Burget & Menick .(1)

Contrary to appearances, the nasolabial area anatomy is remarkably intricate. From 1 cm superior and somewhat lateral to the nose's ala to 1 cm lateral to the oral commissure, the nasolabial crease extends linearly. Muscle fibres from the zygomaticus major have been shown in a number of publications and anatomic studies to insert in the dermis of this crease. This area receives its circulatory supply from the angular artery superiorly and the facial artery inferiorly perforating branches. In order to maintain thinness, this flap is most frequently harvested without the specified vessel underneath, albeit axial pattern flaps can extend significantly in length. The primary anatomic marker for the flap's linear orientation is the nasolabial crease.(2)

For nose reconstruction, the nasolabial flap is the best option. Its easy harbouring and very small scar after local anaesthesia surgery make it the most popular flap for reconstructing nose deformities. Different adjustments are made to nasolabial flaps in order to get the optimum outcome .(3)

Nasolabial flaps can be classified into:

1. Interpolation flap-2 stage is lifted over the area of normal skin.
2. Superiorly based nasolabial flap.

3. Inferiorly based nasolabial flap.

4. Nasolabial island flaps:

- V-Y-advancement flap.
- Freestyle perforator-based nasolabial flap.
- Nasolabial propeller flap

The ipsilateral infraorbital, cheek and lower eyelid (advancement flap), upper lip (rotation flap), philtrum (tunnelized flap), commissure, lower lip, and chin (transposition flap) have all been reported to be reconstructed with NLF. Contralateral NLF could be considered for midline defects when ipsilateral flap is not available for reconstruction. When the deformity affects the alar rim, nasolabial flap per se might be utilised to cover the skin and the nasal lining. Only superiorly based NLFs, as specifically named, are utilised in nasal reconstruction. These flaps included the folded NLF or bipaddled version, which, in cases when the alar rim is intact, is used for full-thickness restoration of alar defects . When nasal tip and columella are intended to be restored using the same nasal ligament flap, the bifid NLF, a vertically split nasolabial flap, is utilised in nasal reconstruction. For full thickness alar defects involving the removal of the lateral alar groove, the twisted NLF is a medially based nasolabial turn over flap for lining with a distal extension providing the cover with 90° twist of the NLF in between these two portions.

Donor site often is closed with direct closure. The width of the flap is determined by the laxity of the tissues in the nasolabial region so it is more useful flap in the elderly patients.

Challenges faced at the Recipient site include the possibility of flap necrosis, flap infection, wound dehiscence, trap door scar, and deformity, all of which require appropriate management. When flap necrosis develops, debride the flap, provide several dressings, and allow the incision to heal owing to internal injury. Using sufficient broad spectrum medicines and sterile bandages, infection can be controlled.

MATERIALS AND METHODS :

This study was conducted at McGann District Hospital, Shivamogga institute of Medical Sciences, Shivamogga, Karnataka from January 2018 to December 2023 after obtaining the approval from the Institutional Ethics Committee. A total of 30 patients who were between the age group 35-66 years , of both the genders, presenting with malignancies of the oral cavity and face over the past 5 years were analysed after obtaining an informed consent . Strict confidentiality was maintained with respect to the patients identity. However patients with large defects more than one subunit, chronic smokers, patients with post burn nasal defects and chronic co-morbidities were excluded from the study.

SURGICAL TECHNIQUE:

Depending on the patient's overall health, either general anaesthesia or

local anaesthesia along with intravenous sedation may be used. Patient is positioned in the supine position, head at 20–30° with the head in the midline or turned to the opposite side. For basal-cell carcinoma, the tumours were removed with 4–5 mm lateral safety margins, and for squamous-cell carcinoma, 10 mm. The flap design was created using the defect's foil pattern template. An injection of 1:200 000 epinephrine to help dissect the flap and control bleeding. The nasal defect pattern guided the design of the flaps. All patients had their nasolabial fold identified prior to surgery; in certain cases, the normal nasal tissue between the defects and the flap is removed in a one-stage nasal reconstruction. To guarantee a suitable rotational arc from the donor to the recipient site, a template was placed right next to the nasolabial fold. A distal resection of the dog ear was described.

The flap was carefully and brutally dissected to the base of the flap after being raised to the level of the mid-cheek. The flap was advanced onto the nose, carrying the distal extension to cover the defect. Hemostasis was done with electrocautery.

After that, the flap was curved and moulded to fit the defect. This permits the flap to be slightly pressed in. When reconstructing the nasal tip using the nasolabial flap, this is the most crucial stage. Care was taken to secure wound-edge closure with eversion when attaching the flap to the recipient site using sutures. The flap design was never extended over the level of the alar lobule in order to reduce noticeable donor-site scarring.

The flap donor sites were meticulously closed using several layers of deep dermal stitch, skin sutures over the subcutaneous drain, and dressing.

POST-OPERATIVE CARE:

Patients were treated in the general surgery department, with cases either being discharged from the hospital on the day of the procedure or the day following it. In the outpatient clinic, a more thorough assessment of the surgical result was carried out. For seven days, all patients were administered antibiotics, anti-edematous medications, and analgesics.

It was advised to all patients to stay away from flap trauma. The viability of the flap was assessed at 6, 12, and 24 hours after surgery (colour – temperature). wound care following surgery, saline cleansing, and twice-daily application of antibiotic ointment for a week. Seven to ten days after surgery, the sutures were taken out. Clinical examination and postoperative photos were used to evaluate the results every week for the first month and every three months after that. The flap reconstruction's aesthetic look, the patient's satisfaction with the overall improvement, and any procedure-related problems were taken into consideration while evaluating the postoperative result. On a scale of 1 to 4, patients were asked to rate their degree of satisfaction. 1° was assigned to poor outcomes, 2° to fair, 3° to good, and 4° to excellent results.



Fig 1: Carcinoma of lower lip (right side); a: Pre-Op image; b: Pre-Op marking for excision; c: Raising the NL flap; d: Post-Op Day 1; e: Post-Op Day 3; f: follow up image after 3 months.

RESULTS : This study was done in McGann Hospital, Shivamogga Institute of Medical Sciences, Shivamogga, Karnataka on 30 patients with oral cavity malignancy and malignancy of face undergoing primary excision resulting in many nasal defects. After assessing the location, extent, and size of the flaws, nasolabial flap reconstruction was carried out. The measured nasal flaws guided the design of the chosen flap technique.

In our study it was found that The mean age of the study participants was 50 years, with a SD of 10 years of which 56.6% were males, while 43.3% were female. While analysing the comorbidities, it was noted

that Diabetes and hypertension were the most commonly seen accounting for 36.6% and 20% of patients, respectively.

The malignancies encountered in the study population were basal-cell carcinoma (60%), followed by squamous-cell carcinoma (37%).

Upon analysing the site of the reconstruction it was seen that The most frequent lesion site was lower lip (53%), followed by nose (27%) & upper lip (20%).

More than two-thirds of patients had lesions sized less than 2 cm. Lesions sized more than 2 cm represented 26.7% of the studied patients. Regarding the depth of lesions, most of the lesions were skin only (53.3%), while 26.7% were skin+cartilage, and 20.0% were full-thickness lesions.

The most frequent flap type was inferiorly based flap (60%), followed by superiorly based flap (23%), and freestyle perforator nasolabial island flap was the least frequent one (17%). The inferiorly based flap can be used for both lower lip and upper lip defects, superiorly based flap is used for upper lip defects and the perforator flap is most common & ideally used for nasal defects.

All cases had good Cosmetic & functional results. Partial distal flap necrosis of the superiorly based flap was seen in two (5%) cases, requiring excision and subsequently healed by secondary intention.

Partial wound dehiscence was seen in three (7.5%) cases, which healed by secondary intention.

Alar distortion was encountered in two (5%) cases and the patient refused any further interference. Tip deformity was seen in one (2.5%) patient.

Trap-door scar was noted in four (10%) patients which was managed by multiple Z plasty after 6 months.

Donor-site hypertrophic scar was seen in five (12.5%) patients and it was managed medically. 1 patient developed oro-cutaneous fistula (2.5%). 15 cases had upper lip defect. In 2 cases, superiorly based flap was done for nasal defect, 13 cases done were on inferiorly based flaps for lower lip defect.



Fig 2: Carcinoma over ala of left side of nose; a & b: Pre-Op images; c: Raising of lesion & raising of NL flap; d: following closure of defect after 3 months.

DISCUSSION: In order to replace the soft tissue loss following surgical excision/trauma, soft tissue flaps are used. Hence, the orofacial region defects can be replaced using NLF cover, due to its abundant blood supply & high survival rate.

Rajak.et.al(4) used the nasolabial perforator propeller flap to repair eyelid defects & achieved good results in all patients, except for 1 case of self healing edema & 1 case requiring a second revision. Gibreel.et.al(5) used a nasolabial v-y advancement flap to repair the lower eyelid with 1 post-operative complication of ectropion. Horta.et.al(6) reported 4 cases of intra-oral reconstruction with facial perforating flaps, resulting in slight impairment in chewing solid food post-operatively.

According to our study, nasolabial flap which was used for reconstruction of oro-facial defects provided good overall functional & cosmetic outcome, except for 2 cases developed alar distortion & 1 patient developed nasal tip deformity. Hence, we can consider Nasolabial Flap as the best workhorse for midface defect reconstruction.

CONCLUSION: The nasolabial flap is well suited flap for the reconstruction of oro- facial Structures & results in good overall cosmetic & functional outcome. Thus we can conclude that it is a workhorse for oral, midface and perioral defect reconstruction as it provides simple, reliable & aesthetic outcome.

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