



## A Study On Reconstruction Of Nasal Defects In Nagapattinam District

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### Abstract

**Background:** The nose is shaped like a pyramid. It is an osteocartilaginous structure, covered with soft tissues that include skin, subcutaneous tissue, muscle, and epithelium. The nose can be divided into three components: the bony vault (the frontal process of the maxilla and nasal bones), the upper cartilaginous vault (upper lateral cartilages), and the lower cartilaginous vault (medial and lateral crura, alar lobules, alae, nostril vestibules and sills, columella, and membranous septum)The nasal pyramid has two openings at its base, the external nares. These inlets for the nasal airway admit air into the nasal vestibules, delimited posteriorly by the internal flares, frequently referred to as the nasal valves. They control the airflow into the nasopharynx-tracheal airway.

**Aim Of Study:** To study the various methods of nasal reconstruction done in our department and to critically evaluate each technique.

**Methodology:** the study was conducted Department of surgery, at the Government medical college, Nagapattinam during the period of 3 months from June 2021 to September 2021 Out of the 26 patients, 20 were men and 6 were women, with ages ranging from 5 years to 77 years. Road traffic accidents accounted for 5 cases; post-human bite defects accounts for 3 cases; one case each was due to industrial accident and Gunshot injury. Post excision defects for malignant lesions were 5 in number and post benign tumor excision defects were 8 in number. 3 patients were with congenital defects. All the post-traumatic and post-infective cases underwent secondary reconstruction. All the post excision defects were reconstructed primarily. In one industrial accident patient underwent repair after tissue expander insertion for the cheek scarred skin. All the patients with basal cell carcinoma underwent excision with a margin of 5mm all around and the appropriate method of reconstruction was planned and executed. Reconstruction with pedicled vertical forehead flap was performed in 5 patients. 1 patient was reconstructed with an oblique forehead flap. Glabellar V-Y Advancement flap was done for 3 patients. Two cases underwent reconstruction with a scalping forehead flap. Seven cases underwent reconstruction with nasolabial flap. One patient underwent a delayed nasolabial flap. Four defects were resurfaced with full-thickness skin graft and the graft take was 100% in all cases. One patient underwent only SSG because of poor general condition later prosthesis was applied to him. 2 patients underwent primary closure.

**Results:** In our study, at 10months follow-up, the contour of the reconstructive nose were found to be satisfactory and retained the good shape of the nose and projection of the tip. There was no need for reconstruction of the support. All the pedicled flaps survived completely. The two nasolabial flaps needed thinning as a second-stage surgery. There is no recurrence of the tumor even after 2 years of follow-up in the patients who underwent tumor excision and cover.

**Conclusion:** Reconstruction of the nasal cover is of aesthetic importance concerning the color and the texture of the skin.

Axial pattern flap is preferable. The midline forehead flap is the workhorse in the reconstruction of small to moderate nasal cover defects, and the scalping forehead flap is ideal for subtotal nasal defects. Split skin graft can be used as a lining for forehead flap. Nasal support was not needed as a skin flap was itself tough and resulted in good contour. We don't consider aesthetic subunits or constraints for nasal reconstruction. The staged procedure is ideal to attain maximum benefits.

**Keywords:** Nasal injury, Reconstruction, Glabellar V-Y

## Introduction

The nose is the most prominent feature of the human face. Its central location and projection not only emphasize its overall aesthetic importance but also contribute to its frequent injury. Loss of nasal tissue may be caused by congenital malformations, infection, trauma, or neoplasm. A mutilated nose is a severe affliction that impedes normal social contact and creates great self-identity problems. [1] Although the reconstruction of the nose is the oldest form of facial reconstructive surgery, its complexity continues to intrigue and challenge facial reconstructive surgeons. The unique shape and configuration of the nose are often difficult to recreate. The central location of the nose about the eyes, lips, and forehead choose reconstructive techniques paramountly important to avoid deformity and dysfunction of these associated structures.[2] Adequate osteocutaneous support, internal nasal lining, and soft tissue coverage are the minimum requirements in reestablishing a functional nasal airway. The external skin covering, should be thin and of similar color aspect and texture as the facial skin.[3] When one looks at the nose, one does not observe it in isolation. Intuitively it is related in the observer's eye to the forehead, the brow or supra-orbital rims, the medial canthi, the eyes or orbits, the maxilla or "platform" of the nose, the lips, and the chin. The stature or height of the patient must also be considered. For example, the small, high sculpted nose on a taller person is as incongruous as a large nose on a person of small stature. [4] The topography of the face is characterized by a series of interconnecting lines and curves often defined by the underlying craniofacial skeleton. As emphasized by Sheen, the nose should flow naturally into these lines and curves. There is a natural, uninterrupted curve from the brow to the lateral aspect of the nose. It is defined by the supraorbital rim, the frontal process of

the maxilla, and the medial canthi. These relationships should be preserved with rhinoplasty techniques.[5] On a frontal view, the nasal configuration also shows a series of curves. The nose is narrow at its root, then becomes broader, showing a gentle convexity in the region of the hump to narrow again immediately above the tip of the nose. The dorsum of the nose should be adequate in width and height to prevent a hypertelorid appearance between the eyes; the lower the dorsum, the wider apart the eyes appear. The tip of the nose should be differentiated from the remainder of the nose and be well defined. The base of the nose is in the shape of a rounded triangle, and the nares are tear-shaped. [6] The anterior projection of the supra-orbital rim is also variable among individuals. With the recession of this structure, a normal-sized nose appears large.[7] Similarly, the Nose relates to the maxilla or the perinasal region. The underlying bony skeleton defines soft tissue contours. A small nose is often a component of nasomaxillary hypoplasia, and surgical correction entails the advancement of the entire nasomaxillary component.[8] A normal-sized nose appears large if the maxilla is hypo-plastic. A corrective rhinoplasty would yield only a flattened appearance to the face whereas augmentation of the hypoplastic maxilla would restore facial relationships. Vertical maxillary excess or the long face syndrome is associated with incisor show at rest, gingival exposure on smiling, and an obtuse nasolabial angle. Primary surgical attention should be directed towards correcting the underlying skeletal pathology, before considering rhinoplasty surgery. Maxillary advancement surgery also affects the nasal, especially the tip position.[9,10]

**Methodology:** The study was conducted Department of surgery, at the Government medical college, Nagapattinam during the period of 3 months from June 2021 to September 2021 Out of the 26

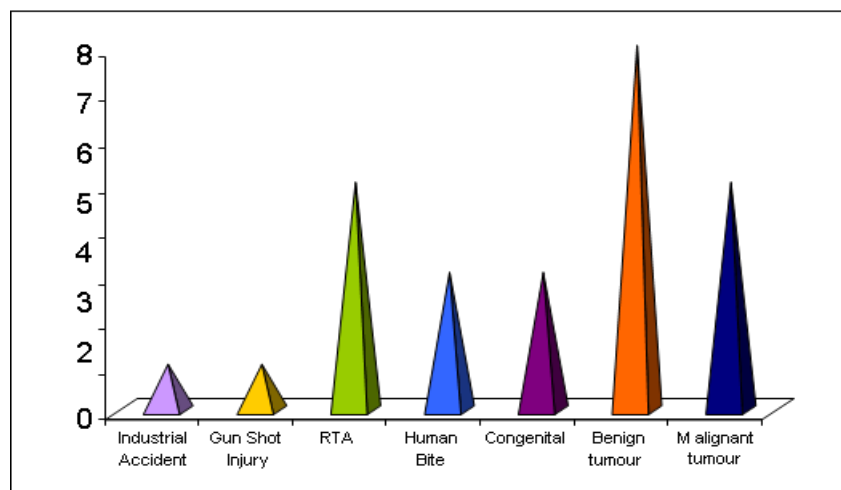
patients, 20 were men and 6 were women, with ages ranging from 5 years to 77 years. Road traffic accidents accounted for 5 cases; post-human bite defects accounts for 3 cases; one case each was due to industrial accident and Gunshot injury. Post excision defects for malignant lesions were 5 in number and post benign tumor excision defects were 8 in number. 3 patients were with congenital defects. All the post-traumatic and post-infective cases underwent secondary reconstruction. All the post excision defects were reconstructed primarily. In one industrial accident patient underwent repair after tissue expander insertion for the cheek scarred skin. All the patients with basal cell carcinoma underwent excision with a margin of 5mm all around and the appropriate method of reconstruction was planned and executed. Reconstruction with pedicled vertical forehead flap was performed in 5 patients. 1 patient was reconstructed with an oblique forehead flap. Glabellar V-Y Advancement flap was done for 3 patients. Two cases underwent reconstruction with a scalping forehead flap. Seven cases underwent reconstruction with nasolabial flap. One patient underwent a delayed nasolabial flap. Four defects were resurfaced with full-thickness skin graft and the graft take was 100% in all cases. One patient underwent only SSG because of poor general condition later prosthesis was applied to him. 2 patients underwent primary closure. Two patients had associated eye injury. Two patients had associated upper lip injury. Two patients had preoperative nostril stenosis which was cleared postoperatively. One patient has undergone tissue expander insertion before nasal reconstruction. One patient was re-operated, eight years after the first surgery. Ten

patients required only one operative stage. Ten patients had 2 stages of surgery. Three patients had 3 stages of surgery. Two patients had 4 stages of surgery. One patient had 5 stages of surgery. All the pedicled flaps survived completely. In our study, none of the patients underwent reconstruction for support because forehead flap, nasolabial flap, and scalping flap were all found bulky enough to give the contour. A midline forehead flap based on the supra-trochlear vessels was used in the majority of patients with dorsal and tip nasal defects which is comparable to other studies. Patients with subtotal defects were reconstructed with a scalping forehead flap. The maximum size of the defect was 43 x 39 mm and the minimum was 6x4 mm. None of our patients had any significant complications.

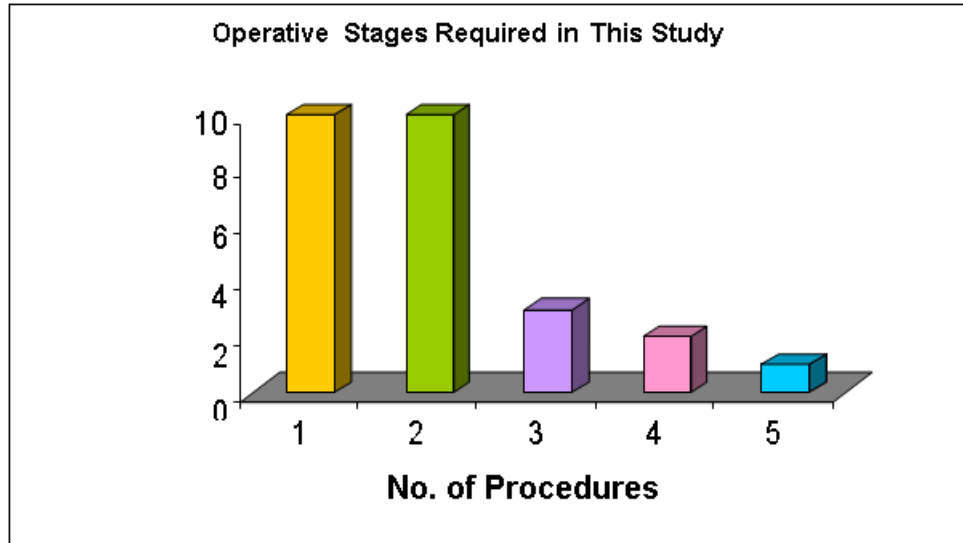
**Results**

The results were evaluated as follows: Regarding the color, small to moderate nasal defects were reconstructed quite well with the midline forehead flap. The forehead flap had the same color and a superb texture match with the facial skin. Scalping the forehead flap provided a good amount of tissue, but the donor site had to be grafted. In our study, at 30 months follow-up, the contour of the reconstructive nose was found to be satisfactory and retained the good shape of the nose and projection of the tip. There was no need for reconstruction of the support. All the pedicled flaps survived completely. The two nasolabial flaps needed thinning as a second-stage surgery. There is no recurrence of the tumor even after 2 years of follow-up in the patients who underwent tumor excision and cover.

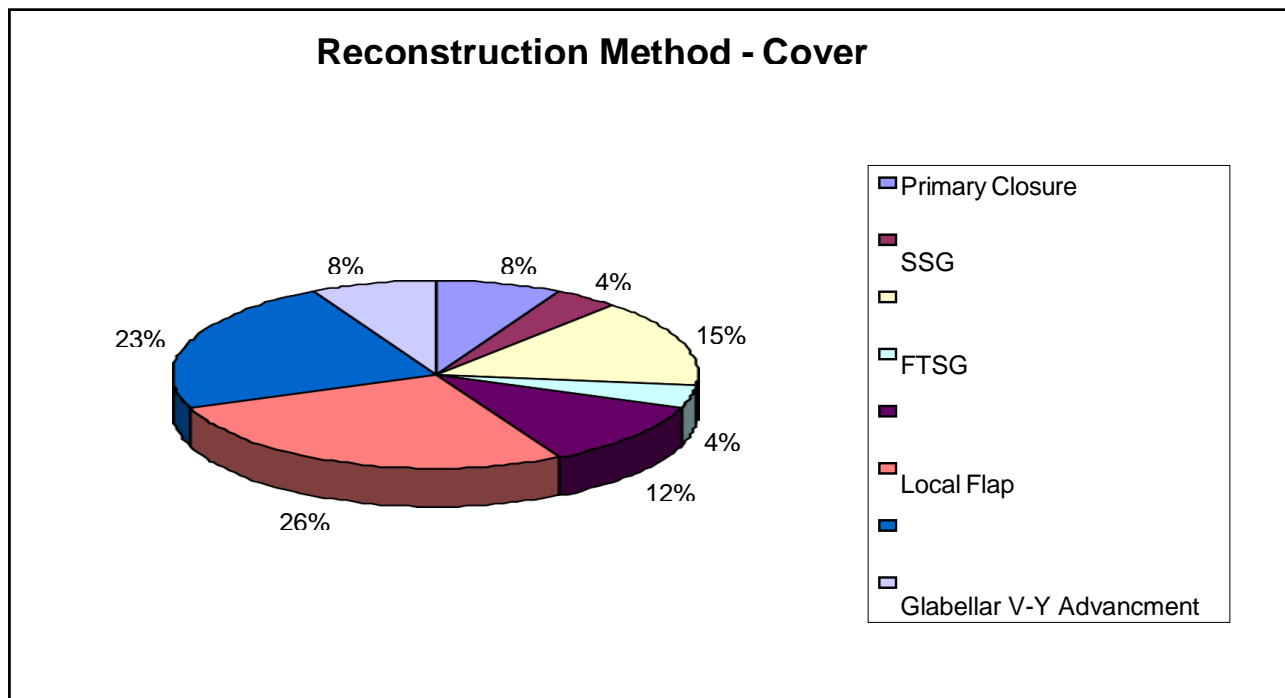
**GRAPH :1 ETIOLOGY**



**GRAPH:2 OPERATIVE STAGES REQUIRED**



**GRAPH :3 RECONSTRUCTION METHOD**



**Discussion**

Nasal reconstruction is always challenging for plastic surgeons. Its midfacial localization and the relationship between convexities and concavities of nasal subunits make it impossible to hide any sort of deformity without a proper reconstruction [11]. Nasal tissue defects can be caused by tumor removal, trauma, or by any other insult to the nasal pyramid, developing an irreversible sequela. Due to the special characteristics of the nasal pyramid surface, the

removal of the lesion or the debridement must be performed according to nasal subunits as introduced by Burget[12]. Afterward, the reconstructive technique or a combination of them must be selected according to the size and the localization of the defect created, and tissue availability to fulfill the procedure. An anatomical reconstruction must be completed as far as possible, trying to restore the nasal lining, the osteocartilaginous framework, and the skin cover. Careful attention must be paid to the thickness of the nasal skin, since it varies from thick

and densely adherent to the underlying cartilaginous structures in the lower half of the nose, to thin and loosely attached to the bony framework of the upper half of the nose.[13] Along the upper portion of the nose, the limiting factor in the soft tissue closure is the prominence of the nasal skeleton[14].In the lower portion of the nose, the immobility of the skin severely limits the reconstructive options. When performing aesthetic reconstruction of the nose, the facial reconstructive surgeon must take into account the concept of nasal subunits[15]. When a large portion of a given subunit has been lost replacing the entire subunit rather than simply patching the defect often produces a superior aesthetic result. This approach places the border of scars of flaps and grafts within the normal depressions and elevations of the nose, where they are least visible to the eyes.[16]The basic requirement for nasal reconstruction is threefold: the reconstruction of the outer skin, skeletal framework, and nasal lining. The goal of nasal reconstruction is the reconstruction of nasal function and aesthetic contour. When faced with a given nasal wound it is not necessary, nor is it wise to initiate treatment with a single reconstructive option in mind.[17]However, the surgical axiom of performing the simplest and the least complicated procedures that will produce the desired result should be maintained. Before an operation, the full understanding of the exact extent and location of the nasal defect as well as the cartilage and skeletal framework is to be ascertained. [18,19,20]

### Conclusion

Nasal defects commonly seen by plastic surgeons result from trauma, burn injury, or tumor resection. While nasal reconstruction is one of the oldest plastic surgery endeavors, techniques continue to evolve and be modified. Grafts and local flaps are used in smaller defects. Larger and complex defects are best reconstructed following the aesthetic unit principle. These defects also require the replacement of all lost tissues to provide nasal lining, skeletal support, and skin coverage. Careful analysis of the defect and reliance on these general guidelines will allow for less obvious nasal reconstruction and a more natural appearance and function. Reconstruction of the nasal cover is of aesthetic importance about the color and the texture of the skin. Axial pattern flap is preferable. The midline forehead flap is the workhorse in the reconstruction of small to moderate

nasal cover defects, and the scalping forehead flap is ideal for subtotal nasal defects. Split skin graft can be used as a lining for forehead flap. Nasal support was not needed as a skin flap was itself tough and resulted in good contour. We don't consider aesthetic subunits or constraints for nasal reconstruction. The staged procedure is ideal to attain maximum benefits. With careful attention to the reconstruction of all components of a nasal defect, a forehead flap can restore virtually any large nasal defect with excellent functional and cosmetic results. The skills that help optimize the process of nasal reconstruction are important to acquire. With careful planning and surgical finesse, forehead flaps can often result in nearly imperceptible restoration of the nose.

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