

RECONSTRUCTION OF NASAL ALAR DEFECT; USE OF NASOLABIAL SKIN FLAP

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ABSTRACT... Objective: To assess the outcome of nasolabial flap for ala plasty in patients with alar defect. **Design:** Descriptive study. **Setting:** Department of E.N.T, Head & Neck Surgery Postgraduate Medical Institute (PGMI) Lady Reading Hospital (LRH) Peshawar. **Period:** January 2006 to December 2007. **Material & Methods:** In this study we included 35 patients. A detailed history and thorough physical examination regarding general condition of the patient and specifically E.N.T of the patient with emphasis on the alar soft tissue deformity, both from cosmetic and functional aspect was recorded on preformed proforma. Pre-operative and post-operative photographs were taken after taking written consent from all the patients. All procedures were carried out under local infiltrative anesthesia and were covered by intravenous prophylactic antibiotics. These patients were followed at one month, six month and one year intervals. **Result:** Our study included 35 patients of nasal ala plasty with superiorly based nasolabial flap. Out of 35 patients 26 (74.29%) were males and 9 (25.71%) were female with female to male ratio of 1:2.8. Males dominated nasal deformity as males are more exposed to trauma. Average age in males was 47 years (range 24-70 years) and in females it was 48.5 years (range 27-70 years). The patients presented with nasal alar deformity in the age range from 25 to 70 years, while 19 patients (54.28%) presented during 31 to 50 years of age. Trauma was dominated (n=28, 80%) among the causative factors for alar soft tissue loss in these 35 patients. Twenty-eight (80.00%) patients were fully satisfied both cosmetically and functionally, 04 patients (11.42%) were partially satisfied only cosmetically and 03 patients (8.57%) were not satisfied with their nasal cosmetic improvement and functional results. **Conclusions:** Nasal ala plasty with superiorly based nasolabial flap provide good cosmetic result with minimal complications.

Key words: Ala, Nose, Flap, Nasolabial.

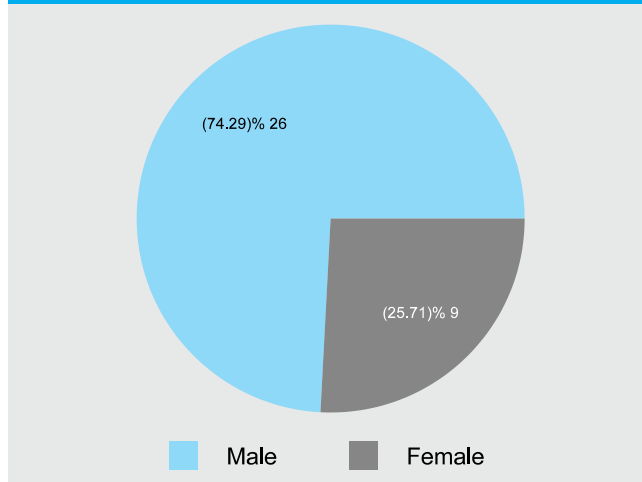
INTRODUCTION

Nose is the most prominent aesthetic structure of a face¹. This makes it more vulnerable to traumatic injuries in day to day life and skin tumours are also comparatively common on nose². Alar soft tissue loss of nose can be due to sharp and blunt accidental trauma, surgical trauma, human and animal bites, small alar tumors, and Leishmaniasis infection². Though external nasal appearance is not much of functional importance, it occupies a place of beauty in one's personality since any deformity of the nose spoils the facial beauty and lead to a big psychological trauma to the patient and his family and a major therapeutic challenge to any individual clinician³. Majority of patients with alar defect of nose seek advice for cosmetic correction^{4,5}. Rhino-plasty can bring sense of pride for patient and gratitude to the surgeon. Therefore attempts at nasal restoration were made with cheek flap even thousands of years ago by

Indian surgeon where it was a custom to cut part or all of nose of people involved in adultery⁶. Surgical correction of external nasal deformity is carried out to improve nasal aesthetic appearance, respiratory function, and mental well being and confidence⁷. The reconstruction of full thickness nasal alar defect is challenging owing to the distal nose's triple layer structure and shape of alar free margin which are very important for normal breathing and cosmetic result^{8,9}. Various local and distant flaps have been described for this purpose. The nasolabial flap is one of the best most frequently used flaps in one stage partial thickness reconstruction of alar defect because of its rich blood supply, minimal donor site morbidity and excellent texture and colour match¹⁰. The nasolabial flap can also be folded to produce one stage reconstruction of three dimensional full thickness defect of alar region¹¹. In this study we evaluated the result of nasolabial flap to reconstruct ala of nose. Particular note was made by

short & long term complication and patient's satisfaction both in terms of cosmetics and functional result.

Fig-1. Gender wise distribution of patients (n=35)



MATERIAL & METHODS

This descriptive study was conducted at the Department of E.N.T, Head & Neck Surgery Postgraduate Medical Institute (PGMI) Lady Reading hospital (LRH) Peshawar from January 2006 to December 2007. All Patients with alar defect of the nose were admitted to our unit either through O.P.D or casualty. It included 35 patients who underwent ala plasty. Patients with nasal alar defect due to trauma and tumor excision were included in this study. Those patients with previous history of nasal alar surgery, infected cases and defect involving more than alar subunit of nose were excluded from this study. Approval of hospital ethical committee was taken before studying the cases. A detailed history was taken from these patients especially concentrating on the nasal alar defect. Physical examination with emphasis on the alar deformity both from cosmetic and functional aspect was carried out. Pre operative photographs were taken in frontal, lateral and basal views. Procedure was explained to the patient and informed consent obtained to take and publish photographs.

PROCEDURE

All procedures were carried out under local infiltrative anesthesia with 2% xylocain with adrenalin in a concentration of (1:200000) and were covered by intravenous prophylactic antibiotics. The antibiotics were inj. augmentin (amoxiclav) 1.2 gm intravenously twice a

day for maximum 02 days to prevent infection of the flap. The superiorly based Nasolabial flap is outlined adjacent to the defect, elevated and then transposed into the defect. Special attention was given not to include hair bearing facial skin in flap designing. The nasolabial flap was developed as a random flap based on the sub-dermal vascular supply. A 2:1 length to width ratio was maintained. The flap was designed to avoid resultant distortion of surrounding structures by widely undermining the skin of cheek. The final suture line of donor site was placed in the nasolabial crease. Suture materials used were 5/0 vicryl and prolene. Removal of a burrows triangle at the inferior extremity of the incision may be necessary to avoid a dog ear. Folded nasolabial flap was used for reconstruction of full thickness defect of nasal alar region. Patients were discharged after 72 hours and were advised to come after 5-7 days for stitches removal and nasolabial flap repair assessment. Patients were advised to avoid excessive sun exposure, touching, scratching or pulling the flap for at least six weeks. These patients were followed at one month, six month and one year intervals.

RESULTS

Our study included 35 patients of nasal ala plasty with superiorly based nasolabial flap. Out of 35 patients 26 (74.29%) were males and 9 (25.71%) were female with female to male ratio of 1:2.8 (Figure No. 1). Males dominated nasal deformity as males are more exposed to trauma. Average age in males was 47 years (range 24-70 years) and in females it was 48.5 years (range 27-70 years). The patients presented with nasal alar deformity in the age range from 25 to 70 years, while 19 patients (54.28%) presented during 31 to 50 years of age (Table-I). Trauma was dominated (n=28, 80%) among the causative factors for alar soft tissue loss in these 35 patients (Table-II). Out of these 35 patients 20 cases (57.15%) had partial thickness nasal alar defect (Skin only) and 15 cases (42.85%) had full thickness nasal alar defect (skin, cartilage and inner lining). All the 35 cases of nasal deformity were classified as unilateral alar loss 30 cases (85.70%) and bilateral alar loss 05 cases (14.30%). All the 35 patients (100%) wanted repair of the alar defect to improve aesthetic appearance of the nose as they were not satisfied with the appearance of their nose. Their motivation and expectation were thoroughly

considered and only then the procedure was carried-out. Reconstruction of nasal alar defect was done in all of 35 patients with superiorly based nasolabial flap. Twenty-eight (80.00%) patients were fully satisfied both cosmetically and functionally, 04 patients (11.42%) were partially satisfied only cosmetically and 03 patients (8.57%) were not satisfied with their nasal cosmetic improvement and functional results (Table-III).

Table-I. Age-Wise Distribution of the Patients (N=35)

Age ranges	No. of patients	%age
25-30 years	06	(17.15%)
31-40 years	10	(28.57%)
41-50 years	09	(25.71%)
51-60 years	08	(22.85%)
61 - 70 years	02	(05.72%)
Total	35	100%

Table-II. Causative Factors (N=35)

Cause	No. of patients	%age
Trauma	28	(80.00%)
Tumour excision	05	(14.28%)
Leishmania scar	02	(05.71%)
Total	35	100%

Among the partially satisfied patients, the first patient had partial necrosis of tip of nasolabial flap, second patient had hypertrophic scar at nasofacial suture line, third patient had hyper pigmentation on the nasofacial suture line and the fourth patient felt nasal air way obstruction due to newly formed alar collapse (Table-IV). No other complication was seen in the remaining patients during follow up of one year.

DISCUSSION

Nasal reconstruction is always challenging for rhinoplastic surgeon. Its mid facial location and the relationship between convexities and concavities of nasal subunits make it impossible to hide any sort of deformity without a proper reconstruction.

Table-III. Patient's Satisfaction (N=35)

Satisfaction level	No. of patients	%age
Fully satisfied (Both cosmetically and functionally)	28	(80%)
Partially satisfied (Only cosmetically)	04	(11.42%)
Not satisfied (Both cosmetically and functionally)	03	(08.57%)
Total	35	100%

Table-IV. Complications of nasolabial flap (N=35)

Complication	No. of patients	%age
Nasolabial flap necroiss	01	2.85%
Hypertrophic scar at nasofacial suture line	01	2.85%
Hyperpigmentation at nasofacial suture line	01	2.85%
Air way obstruction	01	2.85%
Bulkiness of nasal ala	01	2.85%
Alar retrusion	02	5.71%

Reconstructive technique or a combination of them must be selected according to the size and location of the defect created and tissue availability^{12,13}. An anatomical reconstruction must be completed as far as possible trying to restore the nasal lining, osteo-cartilaginous framework and skin cover¹⁴. Our study based only on nasal alar deformity, the reconstruction of it is even more difficult owing to its triple layer structure. Various local and distal flaps have been described for this purpose. e.g Free style facial artery perforator flap¹¹, Lateral nasal artery pedicle flap¹⁵, Microvascular reconstruction of nasal ala by using a reversed superficial temporal artery auricular flap^{14,16}, Cheek to nose interpolation flap, and Frontonasal flap as described by El-Marakby HH¹⁷. Male patients were dominated in our study because they are more prone to trauma as also mentioned by Ahmad in his study¹³. Main causative factor is trauma in our study which has been mentioned by various authors in both national

and international study^{2,13}. We have not selected these procedures as they are technically difficult, staged and have operative risk, significant investment of surgeon and patient time and extra ordinary cost. We used superiorly based nasolabial flap for alar reconstruction in all 35 patients having success rate of 80% which is comparable to the study of Lazaridis N. Nasolabial flap is a traditional flap with all of the mentioned advantages and its good cosmetic and functional results¹⁸. Also this flap can be prefabricated with cartilage strips and skin graft¹⁹. We repaired the ala by using this flap as a single stage procedure but this flap can be used in many ways. Fujiwara M used this flap as a bilobed nasolabial flap in his case report while Spear SL and his colleagues give a twist to nasolabial flap to repair ala^{20,18} Iowa F describe in detail the difficulties, consideration and conclusion for using this flap as a folded flap alone, with conchal cartilage strut sandwich and with mucoperiosteal graft from hard palate²¹. Similarly Jvanovic M and his colleagues used bilobed nasolabial flap in their 16 patients series with excellent result¹⁰. We used both subjective and objective scale for patients satisfaction after alar reconstruction which is almost 80% in our study. It can be compared with study by Burget where cosmetic and functional outcome for each repair were graded from good to excellent by patient and surgeon²². Similarly Ikeda and colleagues also used nasolabial flap for reconstruction of nasal defect obtaining 87.22% success rate. The problem with nasolabial flap reconstruction of the ala were described by Mureau MA and et all are musosal crusting, obstructed nasal airway, defective olfaction and phonation, colour mismatched, hair growth, hypertrophic scar, small ostium nasi and minor alar rim retrusion²³. We got only 5.71 % problems in the form of bulky nasal ala, alar retrusion, nasolabial flap tip necrosis, hypertrophic scar and hyperpigmentation at nasofacial suture line and airway obstruction which is comparable to the study conducted by Hamdy H. However the study of Burket and Jvanovic revealed almost no complication with this flap^{22,10}. In the study of Sterreli et al one patient had got partial flap necrosis and two had got hypertrophic scar out of 10 cases¹⁹.

CONCLUSIONS

We concluded that superiorly based nasolabial flap is a

good procedure for reconstruction of partial and full thickness defect of alar region of nose to produce good aesthetic results.

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