Nasal Reconstruction with Forehead Flap: Our Experience

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Abstract Face represents complete personality of a man or woman and on the middle of face nose is situated. So nose is seen first and can not escape from the eyes of others. Nose gives beauty to face. Therefore cosmetically it is very important part of a person especially for woman. There are many situations when due to disease or trauma nasal defect arises, which requires nasal correction or reconstruction of nose. During cancer diagnosis camps at Government Hospitals and even at more remote places we came across few patients suffering from cancer of nose. These patients were operated and the nasal defect thus arisen were repaired with midline Forehead flaps. Rhinoplasty is a very costly technique in India and the surgeons doing Rhinoplasty can be counted on fingers here. Our technique is although very old but it is cost effective and can be performed even at remote places in Local anaesthesia with sedation. This is a retrospective multi-centric study representing a series of six cases of nasal reconstruction after Nasal cancer surgery in a period from Jan 2009 to April 2011 at Government and Private

Hospitals. These Hospitals are of the level of secondary Referral centres. Six patients were analysed according to the age, sex, anatomical location of lesion on the nose. All patients were male, age ranging from 56 to 72 years. Five out of six patients were of basal cell carcinoma and one was suffering from squamous cell carcinoma. All patients were operated and nasal reconstruction was done with midline forehead flap with good aesthetic result.

Keywords Nasal defect · Midline forehead flap · Nasal reconstruction

Introduction

History of nasal reconstruction is more than 2,500 years old when nearly in 700BC, Ancient Indian surgeon named Sushruta who first time in the history of plastic surgery performed nasal reconstruction with forehead flap [1]. In 15th century Antonio-Branca of Italy used this forehead flap for nasal reconstruction [2]. First English description of this forehead flap nasoplasty was published in 1793 in Madras Gazette [3].

From 1930 onwards [1] made the procedure popular in Europe. Afterward Millard [4] made median forehead flap with lateral extension to repair the alar region. Later on tremendous work was done since 1970 to improve it.

Anatomical consideration of use of forehead flap for nasal reconstruction, Nasal skin thickness and the color of it is very similar to forehead skin. Secondly forehead has very rich blood supply from many vessels [5], like angular, supratrochlear, supraorbital, and superficial temporal arteries. There is very strong anastomosing network among these vessels in forehead and this is the basis of success of nasal repair with forehead flap.

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Shumrick and Smith [3] described the detail of Anatomical network of forehead skin and the frontalis muscle.

Aims and Objective

Nasal reconstruction is required in many situations. Forehead flap rhinoplasty is very old and cost effective. Our aim is to describe our experience of doing it successfully at remote area in post-cancer surgery patients to give them good aesthetic look and better rehabilitation.

Method

After clearance from the concerned authorities and taking informed consent from patients, analytic study was done of six patients operated during Jan 2009 to April 2011.

Patients

All six patients were male with age group ranging from 56 to 72 years, with mean age of 63.33 years. A detailed history of all patients was taken and a thorough clinical examination was performed and necessary laboratory tests were done. Patients suffering from diabetes, hypertension cad, etc. who failed to get medical fitness were already excluded from study. After selection of patients a preoperative counselling was done with each patient regarding surgical resection of the growth and possible size of nasal defect it would produce requiring nasal reconstruction from forehead flap.

With patient's acceptance of the prognosis pre-anaesthetic fitness was obtained although GA was required only in one patient, rest all five patients were operated in local 2 % xylocaine infiltration along with sedation either Intramuscular or in Intravenous infusion form depending upon patient's pain threshold.

Measurement of required length and width of forehead skin (Figs. 1, 2) proper marking of forehead skin of required length and width with a surgical sterilized marker was done so as the proximal end of the flap would reach the lower most part of the nasal defect to be stitched easily without tension.

Surgical Procedure

Patient was put in supine position with head end raised to 30 degree. Local infiltration of 2 % xylocaine with 1:1,00,000 adrenalin concentration was used to infiltrate around the lesion and the forehead skin to be dissected was

Fig. 1 A 63 year old pt suffering from basal cell carcinoma of ala of nose with some part of *lateral side wall*

Fig. 2 Surgical marking of forehead skin for the size of forehead flap to be taken

done. Analgesic and sedative drugs were used according to the individual need of patient. In all patients the dissection of growth—excision of growth and repair of the nasal defect was done in single stage.

At first the nasal growth was excised taking a margin of healthy tissue around it, so as to avoid any recurrence. Afterward the previously marked forehead skin was incised to the depth of periosteum and below up to the level of middle of both eyebrows then the flap was rotated and transposed to reach the nasal defect where it was stitched to cover the defect with 3-0 to 5-0 Vicryl according to situation (Fig. 3).

In three patients the nasal defect was more than 2×2.5 cm size there the inner nasal layer was also created by raising the mucoperichondrial flap from the septum of the same side with base downward near columella and it was stitched to inner side of the defect. The wounds dressed with sofratulle and nostrils light packed where required. In small sized nasal defects formation of the inner nasal layer was not required. After nasal reconstruction the donor site repaired with 3-0 Vicryl. Proper dressing was done at donor site also and patient given broadspectrum antibiotics and antiinflammatory drugs.

Fig. 3 Nasal growth excised and nasal defect is repaired with forehead flap

Next day patients were discharged with proper medical advice to continue the drugs and daily dressing.

Fore head stitches removed on tenth day (Fig. 4). After three to four weeks when it was confirmed that graft has been completely united, the pedicle is cut and the gap over glabella is stitched and closed (Fig. 5).

Results and Discussion

In all six cases the forehead graft was very well taken up. Inner nasal layer was required to make only in three cases with bigger nasal defect. As the whole thickness forehead flap was taken in each case there was no need to give further support of cartilage or bone in our series. All patients were followed for next 6 months to 1 year, for any graft failure, graft retraction, color changes or any functional problem of nose like breathing difficulty nasal crusting or so. But we did not come across any such problem in any patients even after 1 year.

Fig. 4 Photograph of patient on tenth day when there is good vascularity all over the graft

Fig. 5 Photograph on 28th day when the graft has been well taken and the pedicle of forehead flap detached and gap stitched

All patients were fully satisfied in terms of cure of their disease and good aesthetic look. The forehead donor site scar was negligible after 6 months in all cases (Fig. 6). There was no any functional disruption in patients. Color and texture of nose found normal after 6 months.

Many Authors prefer the use of paramedian forehead flap [1] with advantage of full length supratrochlear vessel in the pedicle which gives very good vascularity to the graft. We used midline forehead flaps in average sized defects successfully because midline forehead skin also gets very good blood supply from anastomosing branches from many vessels from all sides' viz. branches of supra-trochlear vessels of both sides, branches of supraorbital vessels and temporal vessels. At the same times the nose it self, dorsum of nose, alar region, nasal tip also has good blood supply the parts to be repaired [1].

Main advantage of midline forehead flap taking was that the approximation of donor site was tension free and easy. Only in one case undermining of skin was required to approximate the margins. Secondly perhaps mid line forehead scar is more acceptable cosmetically.

Fig. 6 Condition of the patient after six month when the color and texture of grafted skin has become exactly normal

Conclusion

It is concluded that small and average sized nasal defects can be very successfully repaired with midline forehead flaps. If the case selection is correct, the preoperative evaluation is accurate, the preoperative counselling of patients is organized properly, exact measurement of the length and width of the graft to be required known before surgery then the outcome is best.

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