RECONSTRUCTIVE RHINOPLASTY

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ABSTRACT

Objective *To assess the results of reconstructive rhinoplasty.*

Study design *Observational study.*

Place & Duration of study *Department of plastic surgery, Pakistan Institute of Medical Sciences (PIMS), Islamabad from January 2002 to December 2003.*

Patients and Methods *All the patients with acquired nasal defect due to trauma, accident, assault, infection or tumour excision were included. Patients having cleft lip nasal deformity were excluded from the study. The different surgical options used for reconstruction included skin grafts, composite grafts, median/paramedian forehead flap, nasolabial flap, scalping forehead flap and arm flap. All the operations were performed under general anaesthesia except with small defects using grafts/local flaps. The skeletal support was achieved by using a composite graft, conchal cartilage graft, or bone graft from the rib/iliac crest. The flaps were monitored closely for first 48 hours. Stitches were removed from 6-9 days. Flap division and insetting was done after 2-3 weeks. Follow up of the patients was done monthly for first 3 months and six month interval onwards. The aesthetic result was assessed objectively as well as subjectively.*

Results *Twenty one patients were admitted for treatment of acquired nasal defects. Male to female ratio was 1:1.1. The mean age in males was 40.3 years, and in females 35.9 years. The most common cause was assault (47.6%) followed by accident (23.8%). The different options used for reconstruction included skin grafts, median/paramedian forehead flaps, scalping forehead flap, arm flap. Only one flap was lost. There was no case of postoperative infection. In 2 cases, flap debulking was performed to improve the nasal contour.*

Conclusions *Reconstruction of nasal defect is a challenging task. Median or paramedian forehead flap is the most suitable option. The emphasis should be paid to the reconstructive as well as aesthetic component of the reconstruction rhinoplasty.*

Key words *Rhinoplasty, Skin flaps, Graft, Aesthetic surgery.*

INTRODUCTION:

Nose is the most projecting feature of the face.[1] Mutilation of the nose to any degree is bound to affect the personality of the victim. A good contour, texture and colour match is the basic requirements for nasal reconstruction.[2] Anatomically, the nose is made of thin, pliable, vascular lining; sculptured alar tip cartilages and bone and cartilage braces that buttress the dorsum and sidewalls; and a thin vascular canopy of skin that matches the face in colour, texture, and hair bearing quality.[3] If all or part of the nose is missing, the requirements for reconstruction will depend on the extent of cover, support and lining loss. The goals of restoration are ideally restoration of function and a normal and attractive nasal appearance, while also avoiding obstruction due to soft tissue collapse or excess bulk or constricting scar.[3] In this series, we present our series of reconstructive rhinoplasty.

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PATIENTS AND METHODS:

The study was conducted at the department of plastic surgery, Pakistan Institute of Medical Sciences, Islamabad, Pakistan from January 2002 to December 2003. Only those patients with acquired nasal defect due to trauma, accident, assault, infection or tumour excision were included. Patients having cleft lip nasal deformity were excluded from the study. The different surgical options used for reconstruction included skin grafts, composite grafts, median/paramedian forehead flap, nasolabial flap, scalping forehead flap and arm flap. All the operations were performed under general anaesthesia except with small defects using grafts/local flaps. The flaps were tailor made for reconstruction of nasal subunits. The inner lining was provided in different ways; with a folded forehead flap, a turn down flap of skin adjacent to the border of the defect, prefabrication with a skin graft. The skeletal support was achieved by using a composite graft, conchal cartilage graft, or bone graft from the rib/iliac crest. The flaps were monitored closely for first 48 hours for ischaemia, venous congestion or tight suturing. Stitches were removed from 6-9 days. Flap division and insetting was done after 2-3 weeks. Follow up of the patients was done monthly for first 3 months and six month interval onwards. The aesthetic result was assessed objectively as well as subjectively.

RESULTS :

Twenty one patients were admitted for treatment of acquired nasal defects. Male to female ratio was 1:1.1. The mean age in males was 40.3 years (range 24-51 years), and in females it was 35.9 years (range 27-51 years). The most common cause was assault (47.6%) followed by accident (23.8%) (Table 1). The different options used for reconstruction included skin grafts, median/paramedian forehead flaps, scalping forehead flap, arm flap (Table 2). Only one flap was lost. There was no case of postoperative infection. In 2 cases, flap debulking was performed to improve the nasal contour.

Table 1: Causes (n=21)

Cause	Male	Female	%
Assault	4	6	47.6
Accident	3	2	23.8
Skin cancer	2	2	19.0
Post infection	1	NIL	4.8
Post burn	NIL	1	4.8

DISCUSSION:

The nose is an aesthetic unit of the face, and the smaller parts are called regional or topographic subunits. The nose is a central facial unit seen in primary gaze with fixed outlines and landmarks. Reconstruction must be accurate because the opposite or contra lateral side of each subunit (e.g., ala, hemitip), is available for immediate visual comparison. If part

Table 2: Operative Procedures

Operation	Male	Female	%
Median/Paramedian forehead flap	4	7	52.4
Scalp flap	2	NIL	9.5
Nasolabial flap	1	1	9.5
Local flap	2	1	14.3
Arm flap	NIL	1	4.8
Skin grafts	1	1	9.5

or all of the nose is missing, the basic elements that make a nose must be provided, deficiencies minimized, and the jarring abnormality mitigated so the repair does not draw attention to itself. The goal of the reconstruction must be to restore the expected regional skin quality, subunit outline, and three-dimensional contour as it was before injury. [3] The first nose reconstruction was done by Sushruta in 600BC.[4] In 15th century, two Sicilian surgeons applied flaps and grafts artistically to form a nose. In 1597, Tagliacozzi published details of the arm flap technique.[5] In 1793, physicians of the British East India Company witnessed the use of forehead flap.[6] During World War I, Gillies defined the principles that still guide the use of flaps and grafts for nasal reconstruction.[7]

The choice of method of tissue transfer has been based on wound vascularity and defect depth. Skin grafts resurface well-vascularised superficial defects when only skin and a small amount of subcutaneous tissue are missing. Skin flaps resupply bulk to deep defects and cover a poorly vascularised recipient site or a wound with vital or support structures exposed or missing. Donor sites above the clavicle seen best suited for facial repair because cervicofacial skin has a better colour and texture match than distant tissue.

Well vascularised and lying adjacent to the nose, the forehead is acknowledged as the best donor site for nasal reconstruction because of its superb colour and texture match. The classic median forehead flap carries midline tissue of paired supraorbital and supratrochlear vessels.[8] The flap may be elevated safely either on a single supratrochlear vessel or on an extension of the angular artery at the root of the nose.[9] The main disadvantage of this flap is the lack of adequate length to resurface the distal part especially in low-lying hairline. An obliquely designed flap can, however, reach to the base of columella. Tissue expansion of this flap also increases the amount of local tissue availability for transfer to the recipient site. The donor site can be closed primarily resulting a midline scar. The scalping forehead flap can be employed for nasal reconstruction especially in patients with short forehead.[10] This requires a skin graft for donor site closure and creates a heavy hanging pedicle. This option may be employed, when tissue expansion can not be afforded

by the patient, providing an alternate, especially in our setup where patients from a low socio-economic status seek the nose reconstruction. The alar defects can be reconstructed with a nasolabial flap in one or two stages.[11] It provides a good colour match with primary closure of the donor area.

A large series of 77 cases in 9 years was carried out by Ikram et al, in which 47% of the patients underwent nasal reconstruction with the median/paramedian forehead flap.[1] In 6 patients, arm flap was used whereas we used arm flap in one patient who had a very low hairline. The flap was lost in 48 hours and was replaced with forehead flap. The reason may be a small pedicle. No flap was infected in our setup. In majority of the cases, we used forehead flap. The donor site was closed primarily in most of these cases, and only in 1 case, small area (<2cm) was left which healed with secondary intention.

CONCLUSION:

Reconstruction of nasal defect is a challenging task. Median or paramedian forehead flap is the most suitable option. The emphasis should be paid to the reconstructive as well as aesthetic component of the reconstruction rhinoplasty.

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