

Forehead Flap for Nasal Reconstruction

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Abstract

Cancers and granulomatous diseases cause wide spread destruction of nose and reconstruction is a challenge to the surgeon. majority of the surgical defects after BCC excision can be reconstructed by full thickness skin grafts, bilobed and rhomboid local flaps but excision of SCC and large BCC lead to large surgical defects which need regional or distant flaps for reconstruction like median forehead flaps.

Keywords: Carcinoma, face, reconstruction, median forehead flap.

INTRODUCTION

Nose is an important aesthetic unit of the face. Cancers and granulomatous diseases cause wide spread destruction of nose and reconstruction is a challenge to the surgeon. Basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) are common cutaneous cancers of the nose. Although, majority of the surgical defects after BCC excision can be reconstructed by full thickness skin grafts, bilobed and rhomboid local flaps but excision of SCC and large BCC lead to large surgical defects which need regional or distant flaps for reconstruction.¹⁻³

Paramedian forehead flap is commonly used in reconstruction of nose due to its easy handling and maneuverability however; midline or median forehead flaps are used for larger area.⁴ In this article, we discuss anatomy and surgical techniques for median forehead flap.

Anatomy

Forehead flaps are based on one or both supratrochlear and supraorbital arteries. The minor blood supply is provided by angular and dorsal nasal vessels. The origin of the supratrochlear artery is consistently found to be 1.7 to 2.2 cm lateral to the midline and usually corresponds to the vertical tangent of the medial border of the brow and supraorbital artery is approximately 1.5 cm lateral to supratrochlear artery (Fig. 1).

Surgical Technique

This flap is based on one or both supratrochlear artery. The flaps are usually dissected under local anesthesia. A template

should be made before dissecting any flap and this step is very important in forehead flap as rotation can compromise length and blood supply of flap. The base of the pedicle is placed in the glabellar region centered over the supratrochlear artery and or supraorbital artery on the same side of the nasal defect. The vessels can be outlined by Doppler or palpation intraoperatively. The flap can be vertical or oblique as per the required length however, hairline should be excluded in vertical flap. The flaps are usually dissected above the frontalis muscle distally but muscle is included proximally and incision depth is upto periosteum.

Paramedian Forehead Flap

Paramedian forehead flap is based on the supratrochlear artery and pedicle is usually 0.5 to 1 cm wide and based on the medial end of the supraorbital margin. The distal part can be wide however, should not be more than 3 cm for better closure. The small pedicle gives better maneuverability and blood supply is not compromised. If width of the flap is same as pedicle then it is known as 'Finger flap' and used for small distal nasal defects or lower eye lid reconstruction. The distal part can be trimmed with fine scissors for merging with nasal skin or can be taken later on for final inset.

Median Forehead Flap

Median forehead flap is dissected between the medial ends of supraorbital margins. This flap can have single or bilateral supratrochlear arteries in the pedicle. The wide pedicle can lead to wide distal part and hence this flap is suitable for

large nasal and associated cheek defects (Fig. 2). In selected cases the distal part can be 4 to 5 cm wide and in some cases distal end can be shaped like two wings (hence also known as Seagull flap) for reconstruction of nasal dorsum and both ala. The primary closure of scalp defect can be difficult but undermining of adjoining scalp with ‘banana peel technique’, i.e. dissection above aponeurosis gives adequate tissue and thick silk suture are applied. Any residual defect should be kept moist and gets healed by secondary intention or if the defect is large, then it can be grafted. The resulting scar is almost invisible (Fig. 3).

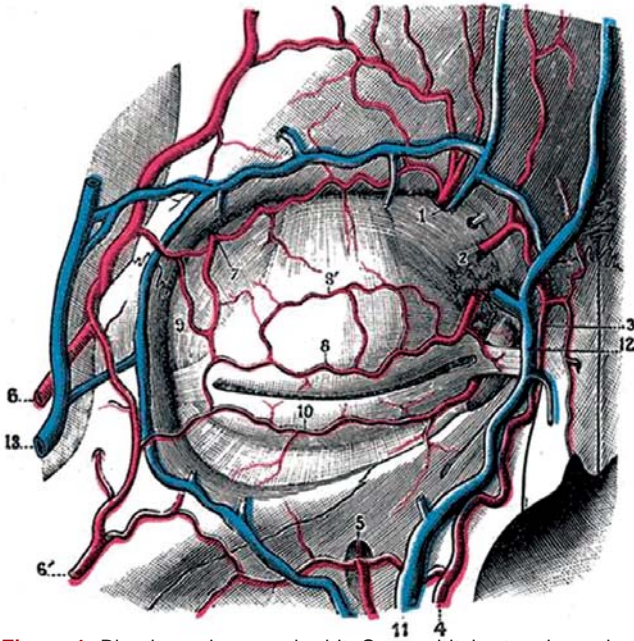


Figure 1: Blood supply around orbit. Supraorbital artery is marked '1' and supratrochlear artery is '2'



Figure 2: Large BCC involving nose and cheek

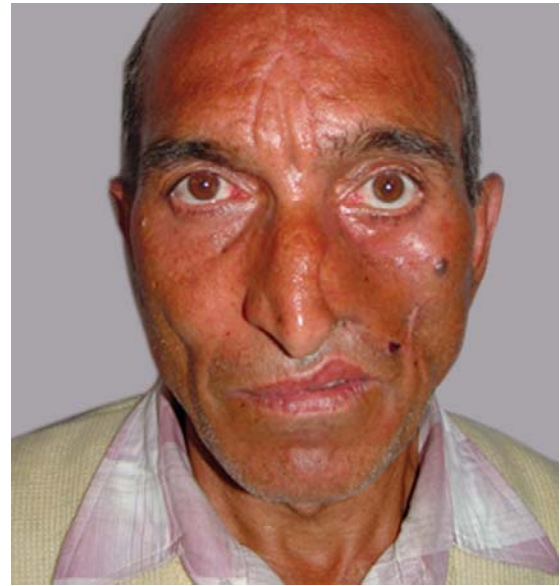


Figure 3: The donor forehead site showing almost invisible scar

Forehead flap needs two surgical sittings which is its main drawback. The flap delay is done after 2 to 3 weeks. We tie a suture in the pedicle of the flap to see the survival of the flap for atleast 4 to 6 hours. The median forehead flap is excised just near the reconstructed area and remnant flap is replaced to original site so as to avoid narrowing of eyebrow distance. The flap is trimmed to merge with nasal skin and final results are cosmetically quite good (Fig. 4).

There are few rare complications which include sepsis and necrosis. These are avoided with gentle care of flap,



Figure 4: The final result of forehead flap

antibiotics, plenty of fluid intake, wide pedicle covered with petroleum gauze, skin graft or suturing both skin ends, and avoidance of excess torsion at the base.

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