

CASE REPORTS

Nose Defects Reconstruction with Forehead Flap – Case Report

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ABSTRACT

Objectives: Nasal reconstruction has been one of the most challenging procedures in reconstructive plastic surgery. Small nasal defects may be closed by primary suture or covered by small local flaps or skin graft. But in large nasal defects, we need to find a bigger source of color and texture matching tissue that will ensure functional and aesthetical outcomes.

Material and Methods: We chose a case report of one patient admitted in our clinic in 2012, who represented a daring task for us. Best suited for paramedian forehead flap reconstruction, the patient underwent a procedure in 2 steps, which led to a very satisfying nose both for the patient and for the surgeon.

Conclusions: In order to achieve a good coverage with the smallest donor site defect, we used a flap based only on the left supratrochlear artery, which gave us the possibility to rotate the flap without distorting the vessels. In such cases, the best option, aesthetically and functionally, for the patient still remains the paramedian flap, modified from the original version, and adapted to every case.

INTRODUCTION

The nose is particularly vulnerable to cutaneous malignancies (1). Like a magician, the plastic surgeon must recreate the nasal contour from missing puzzle pieces. He must enlarge defects to the limit point in which they can be rebuilt with minimum deformities and scars and more than satisfying outcomes. In order to achieve the best aesthetic results, the surgeon must have a tridimensional vision, must evaluate exactly the dimensions of the resulting defect, the damaged structures, and also he must have significantly good knowledge about the local nasal anatomy and about the anatomy

and tissue characteristics of the surrounding areas, in this case, of the frontal region.

As Gillies and Millard stated: “The tint of forehead skin so exactly matches that of the face and nose that a forehead flap must be the first choice for reconstruction of a nasal defect.”

The first nasal reconstruction using forehead flaps was described in 600 B.C. by Sushruta Samita. Since ancient times, specialists realized that the forehead is an excellent donor site for nasal defects, with good match for color and texture (2). Its versatility is due to its vascular support. Based on the supraorbital or supra-trochlear arteries (first described by Dieffenbach, in 1845), the paramedian forehead flap

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is an axial flap designed on the medial side of the eyebrow, centered on a single supratrochlear/supraorbital artery. The traditional median forehead flap employs a central broad pedicle with both supratrochlear vessels (3). □

CASE REPORT

The paramedian forehead flap is still one of the most used techniques for reconstruction of large nasal defects with close to natural resurfacing of the nose. In the Clinic of Plastic Surgery from the Clinical Emergency Hospital, in Bucharest, from January to December 2012, from a total of 36 patients admitted with nasal trauma, tumor or deformities, one patient underwent reconstructive nose surgery with forehead flap.

M.B, a male 46 years-old patient, presented himself in our clinic with a basal cell carcinoma involving the right ala, right lateral wall and the lateral aspect of the inferior third of dorsum nasi. The tumor had a history of 4 years, without any pain or breathing disorders involved.

The patient underwent general anesthesia. The tumor was excised with margins within safety borders, at about 4-5 mm further from the tumor. The post-excisional defect was closely measured, both in horizontal plane and in depth, and part of the lateral upper and lower cartilages were removed. Also the right alar cartilage was excised, in order to obtain free-cancer tissue.

In general, nasal defects larger than 2.5 cm in length along the horizontal or transverse plane are best closed with a forehead flap (4). Because the mid-forehead represents a maximum tissue reservoir for reconstructing large, full-thickness defects of the nose (5,6), a paramedian forehead flap seemed to be the best method to cover the defect and restore the nasal contour.

An important indication for using the paramedian forehead flap was the nasal defect with exposed bone and cartilage.

After excising the tumor, a mold of the defect was created, with a gauze, in order to help marking the flap. The paramedian forehead flap is based upon the supratrochlear left artery, which crosses the supero-medial orbit approximately 1.7 to 2.2 cm lateral to the midline (6). Usually, the flap is created based on the contralateral artery, in order to maintain a good rotation angle, without harming the blood vessels.

Doppler location of the left supratrochlear artery localizing its exact position allowed us to harvest the flap with accuracy, and provided us a good rotation angle, preventing too much bulking in the glabellar region. The artery crosses the orbital rim sandwiched between corrugator and frontalis muscles, further passing over the brow above the periosteum, and being protected by the corrugator muscle. The base of the flap is thus elevated over the periosteum. In the mid third of the forehead, the artery passes more superficial to the frontalis muscle and it is directly visualized during flap thinning. The flap was lifted while dissecting in a sub-galeal plane for about 8 cm vertically and 5-6 cm horizontally, based on the defect's dimension at which we added 3-4 mm for healing contractures.

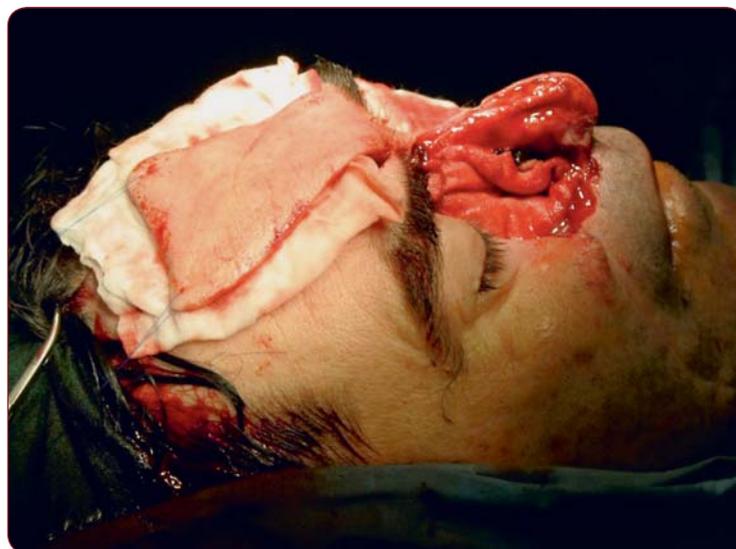


FIGURE 1. Post-excisional defect and flap design.



FIGURE 2. Nasal defect coverage with paramedian forehead flap.

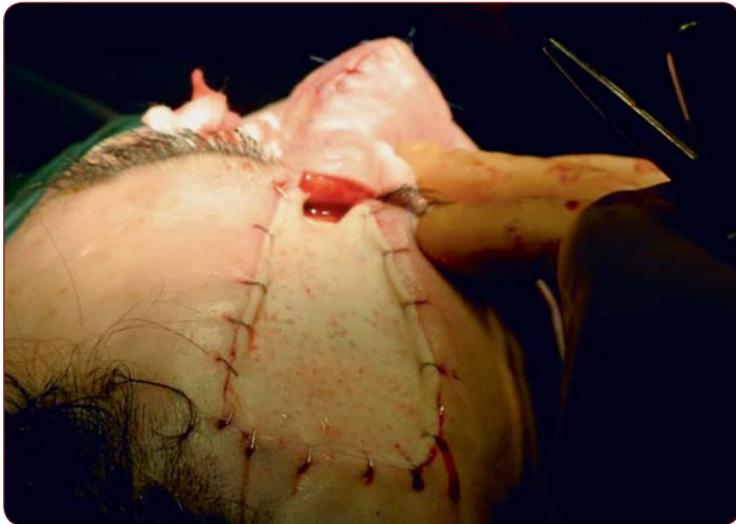


FIGURE 3. Skin graft on the donor site.

Because of the pedicle's thin base, we were able to rotate the flap without any tension and to cover the nasal defect, resurfacing the nose from tip point to dorsum nasi, lateral nasal wall and right ala. We molded the flap on the nasal framework and we recreated the nasolabial groove and the medial canthus.

Because of its length parameters, the donor site was covered with free skin graft, stapled on site.

After 3 weeks, the pedicle was divided, with appropriate debulking and contouring the recipient site. At this time the pedicle can be replaced, but not higher than the eyebrow line.

After 1 year postoperative, patient considered it was no need for revision rhinoplasty, the outcomes being very satisfying both for the patient and for the surgeon.

Fortunately, in this case there were no pitfalls, but the paramedian flap used especially in smoking or diabetic patient may present necrosis in some areas or even failure of integrating on to the recipient site. In this case the patient was instructed to maintain a good local hygiene and used an antibiotic for 5 to 7 days after each procedure. □

DISCUSSION

In such case, with large nasal defect, surgeons used to consider first the functional aspect of the procedure. Nowadays, the main goal is to achieve a functional nose with good aesthetic outcomes. A soft tissue defect can be covered only with a skin graft, but the texture and the contour will not resemble to the natural aspect of the nose. Other local flaps do not provide sufficient soft tissue (skin and subcutaneous tissue) to cover large defects.

Also, for nasal reconstruction, it is necessary to use skin compatible with the color and texture of the natural nose.

So in this patient's case the only formula for nose reconstruction was the paramedian forehead flap.

In order to achieve a good coverage with the smallest donor site defect, we used a flap based only on the left supratrochlear artery, which gave us the possibility to rotate the flap without distorting the vessels. The donor site was, though, closed with skin graft, but in 6 months postoperative the differences between the graft and local forehead skin was very subtle. Also, after dividing the pedicle, there was no bulking in the glabellar region, and the contour of this region was regained as normal as possible and the distance between the eyebrows was not modified.

In such cases, the best option, aesthetically and functionally, for the patient still remains the paramedian flap, modified from the original version, and adapted to and every case.

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