Complex Nasal Reconstruction Using Locoregional Flaps

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There is no perfect method of nasal reconstruction. All reconstruction types have advantages and disadvantages equally. Perhaps, the personalized medicine can be best illustrated by this surgical pathology. The present paper describes our experience with locoregional fasciocutaneous flaps together with cartilage grafts as surgical treatment for patients with nasofacial cutaneous tumors. After describing the general conditions for the 12 patients included in the study we presented the surgical management of an old woman with a nasal tumor (basal cell carcinoma) of 50/40/35 mm. Favorable results (from aesthetic and functional point of view) were obtained for most patients included in the study. There was only one recurrence, at 1 year postoperatively to the patient diagnosed with malignant melanoma. Considering the etiopathogenetic mechanisms of nasofacial cutaneous tumors and the other nasal reconstruction procedures, more extensive and multicenter studies are needed.

Keywords: Nasal Reconstruction, Locoregional Flaps, antibiotic therapy.

The beginnings of nasal reconstruction surgery are lost in the darkness of times. Thus, around 6th century BC, the indian doctor Sushruta describes the use of forehead flap for nasal reconstruction. In that period, the nose’s amputations as punishment for various crimes were frequent. Since then, this type of flap has been named indian.

Even if it has been practiced for a long time, the reconstruction of the nasal pyramid is still a difficult task and requires a meticulous replacement of the lost tissues. Function and aesthetic appearance of the affected region must be restored. In the last few years we have found that the number of tumoral disease increased. In our clinic, skin cancer is definitely the most frequent lesion, especially on the face. Nose and inner canthus are the most affected regions.

When malignancy is suspected, the removal of an adequate amount of tissue around the apparent limit of the tumor is mandatory. The amount of surrounding healthy tissue that needs to be removed varies from 3 to 5 mm in a basal cell carcinoma, is larger in the squamous cell carcinoma and could reach up to 3-5 cm in melanoma, depending on the initial diameter, type and anatomic location of the tumor. Modification of the surgical plan treatment regarding cosmetic considerations may have devastating consequences for recurrence and could even limit patient’s survival.

Experimental part

The aim of the paper is to present a series of patients with complex defects of the nasal region following oncological surgery. Locoregional fasciocutaneous flaps together with cartilage grafts were used, in combination with other local flaps.

Locoregional flaps principles have been strictly respected:

-Respect facial aesthetic region (forehead, eyelids, cheeks, nose, lips, mentum, and auricles) and aesthetic units;
-Skin with common characteristics: thickness, quantity of subcutaneous fat, degree of adherence to underlying fascia, color and texture and hair growth;
-Placing the scars in the aesthetic borders;
-With optimal design and execution, long term results can be very satisfactory;

Results and discussion

This study was performed on 12 patients admitted in the Department of Plastic and Reconstructive Surgery of the University Central Emergency Military Hospital from Bucharest, between 2016 and 2017. In all cases general anesthesia with orotracheal intubation (to ensure the upper airway) was used.

The nasal reconstruction using a paramedian forehead flap was the main surgical procedure used for the reconstruction of abscission defects in the nasal pyramid for all 12 patients. Maintenance of silicone tubes for 3 weeks postoperatively was established in the preoperative period and was aimed at avoiding the collapse of the nostrils. The pedicle of the frontal flap was sectioned after an average period of 3-6 weeks, depending on the postoperative evolution for each case. In all cases the frontal flap was normally infused, with a capillary pulse present, normally colored, with a local temperature similar to that of the surrounding skin. There was no case of partial or total necrosis of the flap.

Patients presented a quasi-normal respiratory function with permeable nostrils. Average hospitalization period was of 5 days.

From anatomopathological point of view were diagnosed 8 cases with basal cell carcinoma, 3 cases of spinocellular carcinoma and 1 case of malignant melanoma.
There was only one recurrence, at 1 year postoperatively to the patient diagnosed with malignant melanoma. The possible complications that can occur after nasal reconstruction are infection, partial necrosis, facial haematoma and nasal wound contraction.

Antibiotic therapy is very important in the management of postoperative surgical complications after nasal reconstruction surgery. The surgical team (plastic end ENT surgeons) considered that the antibiotic prophylaxis with 2g of Ceftiraxone (molecular formula: C_{18}H_{18}N_{8}O_{7}S_{3}) for seven days was a very important factor in postoperative evolution.

Reconstruction of the nasal defect was made respecting the anatomic and aesthetic three dimensional subunits starting from the inside of the nose and progressing outward, layer by layer.

We have presented below the surgical management (the 6 important steps) in the case of an old woman with a nasal tumor (basal cell carcinoma) involving nearly all parts of the nose. The patient came from a rural environment, with an occupational exposure to the sun.

We made a first evaluation after 2 weeks from surgery. After 6 weeks the forehead pedicle was divided.

The residual forehead defect was covered with a skin graft. Cheek advancement flap was designed to repair the cheek component of the defect.

We placed oval silicone tubes in her nostrils for 3 weeks.
Final result was evaluated at 6 month after reconstruction.

According to literature data, the management of nasal defects can be often challenging and the best reconstruction is still to be found.

Marcasciano et al., have evaluated a total of 310 patients who presented to the Department of Plastic and Reconstructive Surgery for postoncological nasal reconstruction between January 2011 and January 2016. Reconstruction with locoregional flaps was performed in all cases. Accurate evaluation of the patients clinical condition and local defect should be always considered in order to select the best surgical option [1].

Streit appreciated that the reconstruction of nasal, periorbital and auricular facial subunits as a whole using a locoregional or a free flap is very challenging and the results are not sometimes ideal. Combination of a free flap with a facial prosthesis may become a preferable approach for the reconstruction of complex craniofacial defects. Clinical outcomes of the reconstructions may be enhanced respecting the principle of aesthetic facial subunits [2].

Zelken et al., advocate the double forehead flap for large composite nasal defects in patients who are not suitable candidates for nasolabial flaps and those who may not tolerate free tissue transfer. The advantages of this method must be weighed against the drawbacks, which include prolonged donor-site healing and elimination of the contralateral forehead flap [3].

Panse et al., presented a case of complex facial reconstruction with a composite trauma to the nose resulting in near total loss of skin and lining along with complete loss of left eyebrow with exposed frontal bone and partial loss of the left eyelid. The authors combined a temporoparietal fascial flap for reconstruction of the eyebrows and covering the exposed frontal bone and prefabricated forehead flap with skin graft for nasal reconstruction [4].

Lee et al., concluded that the locoregional flaps remain a useful tool for head and neck reconstruction, and often provide unique characteristics not available with free flap reconstruction. At the same time, a sound understanding of vascular anatomy and recent basic science discoveries will significantly improve success of locoregional reconstruction [5].

Conclusions

Reconstruction of the nasal structures is one of the most challenging domain. Locoregional flaps procedures can offer a good option in reconstruction of the soft tissue defects of the nose. Forehead flap was the most common used flap (workhorse) in complex nose reconstruction. It’s a reliable flap with rich vascular supply. Locoregional flaps must be delivered to the recipient site tissues with common characteristics: thickness, quantity of subcutaneous fat, degree of adherence to underlying fascia, color and texture and hair growth. Donor site morbidity is minimal. Surgical technique is relatively simple only in the hands of an experienced surgeon. Being a short time procedure is considered a method of choice for old patients with collateral morbidities. If the procedure was well designed and executed, long term results can be satisfactory. We noted that most of patients with cancer pathology are careless with their health and delay to consult with a doctor. In some cases of advanced lesions, saving the vital structures is impossible and the post surgery results are disappointing. Antibiotic therapy is very important in the management of postoperative surgical complications after nasal reconstruction surgery. Considering the etiopathogenetic mechanisms of nasofacial cutaneous tumors and the other nasal reconstruction procedures, more extensive and multicenter studies are needed.

References


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