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Case Report Open Access

Reconstruction of the Nose by the Forehead Flap and a Modified Mucosal Flap – A Case Report

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Abstract

The reconstruction of large nasal defects after tumor resection is a challenging procedure, this case report describes a patient with a basal cell carcinoma of the nose. The tumor was excised with a safe margin and subtotal nasal reconstruction was performed by paramedian forehead flap while nasal lining and septum were reconstructed by a modified sublabial mucosa flap together with medpor implant. Although numerous surgical techniques have been described for reconstruction of nasal septum and lining but no single procedure is recognized as being reliable in all cases. Modified mucosal flap of upper lip and medpor implant is a versatile surgical technique which can be used for reconstruction of the nasal septum and lining with minimal morbidity.

Keywords: Reconstruction; Forehead flap; Nasal septum

Introduction

Reconstruction of the nose is a challenging procedure which requires experience, creativity in addition to the considerations of size and site of the nasal defect. The forehead flap is well known as the gold standard for nasal soft tissue reconstruction due to its size, location, rich vascularity, skin color, texture and thickness [1]. Reconstruction of nose involve three components: coverage, lining and structural support [2,3]. The options for reconstruction of lining are mucosal flaps, skin grafts, local flaps, prefabricated forehead flap, three-stage forehead flap, forehead flap turnover, and free tissue transfer. Nasal coverage can be performed by secondary intention, skin grafting, local skin flaps, and interpolated flaps. Structural support requires autogenous cartilage or synthetic implant. Achievement of optimal esthetic result which respects skin color, texture, thickness of nose and maintenance of nasal airway function are the primary goals of nasal reconstruction.

The aim of this case report is to show how nasal septum and lining can be reconstructed by medpor implant and covered by a modified mucosal flap of upper lip.

Case Report

A 56 years-old female patient presented to maxillofacial surgery consultation clinic at general Al-Ramadi hospital-Iraq, with a basal cell carcinoma of the nose involving the left nasal wall and nasal septum. The tumor was excised with 1cm safe margin with confirmation of negative surgical margin. The resection of tumor involves the left lateral cartilages and part of nasal septum (Figure 1).

In second stage the patient was prepared for reconstruction operation under general anesthesia. The best method to cover the nasal defect and restore the contour is the paramedian forehead flap. After excising the tumor, a mold of the nasal defect was designed with ribbon gauze, in order to help marking the flap. The paramedian forehead flap is an axial flap based upon the supratrochlear and supraorbital left artery.

Figure 1: The patient with subtotal resection of nose.

After marking the flap, the surgical field is infiltrated widely to facilitate definition of the surgical planes and minimize blood loss. Flap elevation begins distally and is elevated thickly to the level of the galea till about 1 cm above the brow; the dissection is carried subperiosteally and continued over the orbital rim. After elevation, the flap was rotated and inset to cover nasal defect resurfacing the lateral nasal wall and part of right nasal wall.

In order to repair the nasal septum, the nasal cartilage is replaced by a contoured and trimmed medpor synthetic implant (polyethylene, Medpor; Porex Technologies) and covered by a modified mucosal flap of upper lip which give optimal esthetic and functional results with

minimum morbidity (Figure 2). Medially based Finger-shaped flap was created in labial mucosa extending from lateral incisor to first molar. The flap was dissected in submucosal plane and elevated and pass through an oronasal tunnel made in labial vestibule to nasal cavity. The flap was rotated and used to resurface the nasal septum with robust tissue while the donor site is closed primarily. This interpolated flap has random blood supply and can be elevated bilaterally. Two plastic tubes were inserted in both nostrils and fixed by sutures to maintain the vestibule patency (Figure 3). After 3 weeks, the pedicle of paramedian forehead flap was divided with appropriate debulking and contouring the recipient site, the pedicle was replaced.

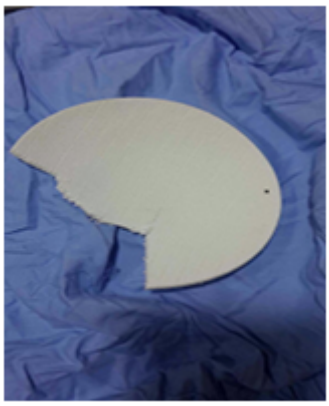

Figure 2: The Medpor synthetic implant (polyethylene).

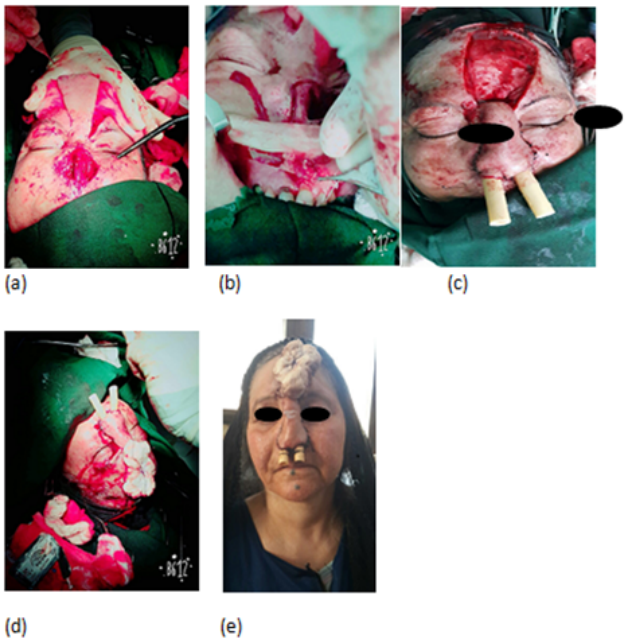

Figure 3: Stages of reconstruction of nose **(a)** Elevation of forehead flap **(b)** Elevation of finger-shape mucosal flap from upper lip **(c)** Inset of forehead flap and placement of plastic tubes in nostrils **(d and e)** Patient view at end of operation and 2 days postoperatively.

Discussion

Although the paramedian forehead flap regards the workhorse in the reconstruction of the nose, nasal septum and lining has been reconstructed by various techniques with variable results and success rates depending on the size, extension and location of defect [4-6]. These techniques include skin grafts, local skin flaps, septal flap, folded forehead flap and free flap. In subtotal nasal reconstruction, skin grafts may undergo incomplete take and contraction which lead to failure of reconstruction. Local skin flaps and folded forehead flap are bulky and obstruct the nose. Septal flap is insufficient in subtotal nasal defects and involves several stages [7]. Free flap is bulky multiple staged flap with keratinized epithelium in addition to donor site morbidity.

Reconstruction of lining and septum is almost the most critical factor in subtotal nasal defects because poorly nasal lining and septum can distort the good external nasal coverage. The key in the reconstruction of optimal nasal lining and septum is achieved by using a thin well vascularized flap with minimal scar at the donor site [8].

There are previous clinical cases of using sublabial mucosa in reconstruction of nasal septum [7-11]. Tardy was the first surgeon who publish article about the using of sublabial mucosa in repair of septal perforation. The uses of flap was limited to septal perforation (not subtotal nasal defects) and using autogenous cartilage for septum support.

The present case describes a modified surgical technique for the reconstruction of nasal lining and septal deficiency involving the interposition of medpor implant between two mucosal flaps from upper lip together with elevation of forehead flap. The flap can be used after resection of nasal tumor and also in septal perforation due to other causes.

The mucosal flap of upper lip can be elevated bilaterally and extend to cover the left and right side of nasal septum and any deficient area which is reconstructed by medpor. The flap is easy to be elevated with minimal donor site scar. It is one stage procedure and no need for flap division later. The flap can be used to resurface part of nasal lining together with forehead flap. We found no significant complication such as nasal obstruction, flap necrosis after nasal reconstruction using oral mucosa.

Conclusion

Numerous surgical techniques have been described for reconstruction of nasal septum and lining but no single procedure is recognized as being reliable in all cases. Modified mucosal flap of upper lip and medpor implant is a versatile surgical technique which can be used in reconstruction the nasal septum with minimal morbidity.

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