

*Research Article***Nasal Alar Full Thickness Defects as Reconstructed by Folded Nasolabial Flap.****Ahmed M. Mohammed, Nasser Z. and Ahmed A. Mohamed Abdullah**

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Abstract

Introduction: The reconstruction of full-thickness alar wounds often requires multiple challenging surgical procedures. These procedures, although often functionally and aesthetically successful, are often staged, and they therefore introduce operative risks, significant investments of surgeon and patient time, and extraordinary costs. **Aim of the work:** to evaluate the use of the folded nasolabial flap for reconstruction of nasal alar full thickness defects. **Patients and methods:** Ten patients had post-ablative or post-traumatic nasal alar full thickness defects included in this study for surgical reconstruction by folded nasolabial flap. Patients were admitted to The Plastic Surgery department of Minia University Hospital from October 2018 till June 2019. The flap designed as a superiorly based nasolabial flap immediately, after flap elevation primary thinning was done and the distal end of the flap folded upon itself. The flap donor site was primarily closed. **Results:** This procedure was successful in 9 patients by complete survival of the flaps without evidence of necrosis or narrowing of airways, Only one case had bulky flap and alar retraction and needed redo by flap debulking and septal cartilage graft insertion. **Conclusion:** In distinction to the multiple operative procedures required to replace the missing tissues of the ala, this folded nasolabial flap offers a single-stage alar reconstruction.

Keywords: nasal alar, skin tumor, nasolabial flap.

Introduction

Alar reconstruction remains one of the most challenging aspects of facial plastic surgery. Considerations of complex skin contours, cutaneous color, and texture take on unique nuances when trying to achieve a functional airway overlying a 3-dimensional structural framework. (Carucci, 2005)

One of the oldest classic methods used in nasal alar reconstructions is the nasolabial flap. Since its first use in nasal reconstructions, various modifications of this flap have been reported like to be applied in folded or non-folded forms. (Durgun et al., 2015)

Patients & Methods

This study is a prospective clinical study included ten patients had post-ablative or post-traumatic nasal alar full thickness defects for surgical reconstruction by folded nasolabial flap. Patients were admitted to The Plastic Surgery department of Minia

University Hospital from October 2018 till June 2019.

Inclusion criteria: Age: 4-70 years old, Gender: males & females (7:3), Unilateral full thickness alar defects, Post ablative and post traumatic alar defects, Defect dimensions between (2-4 cm)

Exclusion criteria: Non full thickness defects, Pathology in nasolabial region interfering with flap harvesting, Previous local flaps in the area, Bilateral alar defects, Patients below the age of 4 years, Patients above the age of 70 years, Post inflammatory defects, Defects less than 2 cm and more than 4cm

Flap Design: First we measure the potential defect size and its depth. The flap designed as a superiorly based nasolabial flap immediately lateral to the nasolabial fold, such that the medial edge of the flap laid within the fold. The width of the flap designed to be equal the width of the primary surgical defect. The Length of the flap designed to be longer than the length of

the primary surgical defect (measured from the apex of the primary nasal defect to the imagined position of the nascent alar rim) to allow folding the distal end of the flap intraoperative without any distortion. The flap tapered inferiorly for good closure of the donor defect.

Nine cases done under general anesthesia and one only case done under local anesthesia. In case of the malignant skin tumors complete excision of the tumor was done with adequate safety margins (safety margins of BCC 0.5cm and 1cm for SCC).

Surgical Technique: The flap elevation started distally in the plane between the subcutaneous fat and the underlying muscles. Primary thinning of the flap was done, preserving the subdermal vascular plexus to avoid flap bulkiness. The distal end of the flap folded upon itself by single vicryl suture 4/0 (to reconstruct outside the skin and the inner lining). The flap transposed with a skin pedicle to the recipient defect, As the distal flap was sutured to the lining side of the defect, the proximal flap was sutured to form the external surface of the ala. The donor site of the flap closed primary. We didn't insert cartilage graft in our technique Except in only one case we inserted septal cartilage graft (in a second stage) to overcome minimal alar retraction which occurred one month post operatively.

Immediately post-operative, the flap clinically monitored for any color or temperature changes and capillary refill time. Patients received antibiotic (Augmentin for 5 days), anti-edematous and analgesics. Sutures were removed after 5-7 days postoperatively. Further evaluation of post-operative outcome was performed in the outpatient clinic.

Results were evaluated for flap viability, esthetic and functional outcome by clinical examination, by photos both pre and postoperative by researcher and supervisors. Histopathology report revised in case of skin tumors for confirming free safety margins after excision and reconstruction. Patients were followed up for a period ranged from 2 months to 6 months with a mean follow up period 4 months.

Results

The patient's range of age was from 4 years to 70 years (mean age was 47.8 years. There was 7 male (70%) and 3 females (30%), Six of them were smokers and 3 were diabetics. The etiology of alar defects was post-traumatic in 1 patient and post-ablative in 9 patients. one case had isolated alar defect, 6 cases had alar extension to nasal sidewall, one case had alar extension to upper lip, one case had alar extension to dorsum of the nose and one case had alar extension to peri-alar region.

Flaps totally survived in 9 cases (90%), Only one case (10%) had partial loss in the distal part of the flap which has been improved by conservative management without any surgical intervention. Complications recorded in two cases one had bulky flap and alar retraction and one had partial flap loss. Neither infection nor complete flap loss was encountered.

Figure (1) Only one case (10%) had bulky flap and alar retraction and needed redo by flap debulking and septal cartilage graft insertion. **Figure (2):** the other nine cases (90%) had excellent esthetic and functional outcome with good color, texture and bulk of the flap and symmetry in comparison with the normal alar.

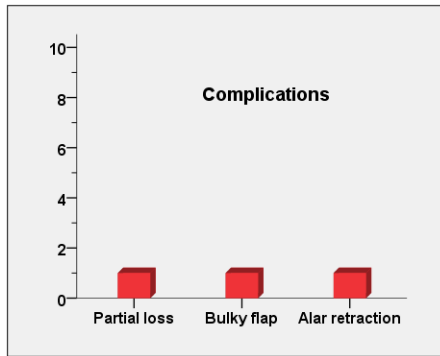


Figure (1): Post operative complication.

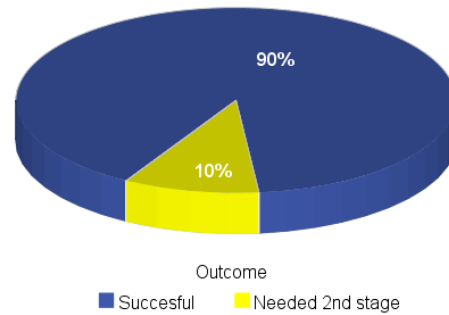


Figure (2): outcome of overall surgery

Discussion

The folded superiorly based nasolabial flap was first described by (Pers, 1967) and later by (Herbert, 1978). Their flap was based on the superior labial artery and was used to reconstruct full-thickness defects of the nasal alae. In these original techniques, the authors used an additional cheek flap to close the donor defect of the raised nasolabial flap. This resulted in additional scarring in the cheek region. (Spear et al., 1987) modified the technique by raising a long island flap based on the subcutaneous tissue containing the connections of various vascular systems. These long flaps allowed primary closure. After flap elevation the flap is turned over medially like the page of a book, As the proximal flap is sutured to the lining side of the defect, the distal portion of the flap then folded on itself to form the external surface of the ala. He reported using of this flap in 4 patients.

In the present study, we were prospectively clinically evaluating the superiorly based folded nasolabial flap in alar full thickness defects reconstruction in 10 patients, 7 males (70%) and 3 females (30%), their ages ranging from 4-70 years old which an average age 47.8 years.

(Spear et al., 1987) reported a that 2 out of 4 patients (50%) needed revisional surgery to reduce the bulk of the ala. In our study we didn't need revisional surgery except one case out of 10 (10%) because primary thinning of the flap was done after flap

elevation in the same session. In other hand we applied the same author's technique except, after flap elevation we didn't turn over the flap medially, but we folded the distal end of the flap upon itself by single vicryl suture. Then the folded flap transposed with a skin pedicle to the alar defect, the distal flap is sutured to the form the lining of the defect and the proximal flap is sutured to form the external surface of the ala. We didn't notice any difference in results or getting complications like functional problems including the collapse of the external nasal valve and esthetic problems such as retraction in the alar wing or asymmetry.

(Iwao, 2005) Reported that the cartilage graft produced less support to the alar rim than the folded nasolabial flap. In our study we came to the same result that the folding technique gives great support to the alar rim, 9 out of 10 (90%) of our cases didn't need cartilage graft.

Conclusion

The folded nasolabial flap is a very good option for the reconstruction of full-thickness alar defects involving the alar margin. Because of good vascularization, minimal donor site morbidity, adequate framework support without cartilage graft, and single-session reconstruction. This surgical technique is simple, secure method enabling full tissue and color harmony. The overall success of the flap and the cosmetic result were excellent specially in diabetics and smokers.

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