

Routine Use of Alar Rim Grafts In Primary Rhinoplasty in the Middle Eastern Nose

Rasha Abdelkader, Sameh Nomani

Department of Plastic Surgery, Cairo University

ABSTRACT

The Middle Eastern nose has an number of specific nasal features that variably exist. The purpose of this study was to observe the degree of improvement of the aesthetics and functional as well as complications rate of the middle eastern primary rhinoplasty with the placement of alar contour grafts in the primary open setting. 12 male patients and 23 females with the criteria of the middle eastern nose all performed primary open rhinoplasty with insertion of alar coutour grafts. Subjective evaluation of patients was done as well as questionnaires. Digital photographs were documented and all were followed up for up to 2 years postoperatively. There was marked improvement noticed both aesthetically and functionally. It should be noted that there has been an increase in the number of patients seeking rhinoplasties in the middle-east over the past decade, with an observed increase in male frequency. Most of these patients only have their face visible in their daily interactions due to religious and cultural factors. Alar rim contour grafts have demonstrated a clear impact on the aesthetic and functional (external valve function) outcome in the primary open rhinoplasty in the middle-eastern nose. They have become a corner stone for the improvement of alar shape achieved in the procedure and have been shown to circumvent complication and avoid the clear long term worsening of the aesthetic parameters when not used.

Key words: Rhinoplasty, Alar grafts, coutour grafts, Alar rim grafts, tip countouring, primary rhinoplasty, secondary rhinoplasty

INTRODUCTION

The Middle Eastern nose has an number of specific nasal features, including boxy or bulbous nasal tip, nostril-tip imbalance, thick/sebaceous skin, wide dorsum with cartilaginous and bony humps, acute nasolabial and columellar-labial angles, weak/thin lower lateral cartilage relative to the skin envelope, a droopy/hyper dynamic nasal tip, as well as having a wide alar base (alar flaring).^(1-6,7) All those features exist in variability.

In order to achieve a more predictable outcome during rhinoplasty surgery while using conventional methods including routine cephalic trimming of the lower lateral cartilages, transdomalsuturing, lateralcrural spanning sutures, as well as alar base reduction; augmented by the thick sebaceous poorly contractile soft tissue envelope afforded by the ethnicity, weakens the pillar structure and amplifies the challenge while working towards achieving an aesthetically pleasing tip-lobular complex.⁽⁶⁾

To achieve a more flawless configuration of the alar base to tip depending on a more broadened understanding of the aesthetics of the

nose has lead to an accentuated usage and need of the alar rim grafts.⁽⁶⁻¹¹⁾

The purpose of this study was to observe the degree of improvement of the aesthetics and functional as well as complications rate of the middle eastern primary rhinoplasty with the placement of alar contour grafts in the primary open setting.

PATIENT AND METHODS

The current study was a retrospective case series that was conducted on thirty five patients, (12 males and 23 females). It was performed in kasr Al Aini University, and private practice of the authors. The period of current study was from January 2012 to August 2014 with a follow up period ranging from 18 to 24 months. Age of patients ranged from 18 years to 44 years. Patients included were all primary cases, with the focal criteria of a middle-eastern nose.

All patients were evaluated preoperatively:

Air way evaluated either subjectively using *a questionnaire* in which each patient rated breathing quality from 1 (poor) to 10 (excellent). Or objectively using **Differential nostrillar air**

entry, Cottle test, Nasal strip, and Nasal speculum examination. (The evaluation is also repeated 6 months and 2 years post-operative)

External appearance evaluation documenting the present traits of the middle-eastern nose, as well as presence of apparent alar collapse.

Digital Photography was done for all cases before surgery, 6 months and up to 2 years postoperatively in anterior, lateral, and cranio-caudal views.

The surgical approach was conducted through an open technique in all cases.

Surgical technique

To avoid unnecessary twisting or displacement of the grafts it was preferred to insert them towards the end of the surgical procedure.⁽¹²⁾ In this study, it was preferred to use ear cartilage as it was believed that the natural curvature of the choncal cartilage provided a well simulated alar contour convexity, in addition, in middle eastern noses, a lot of cartilage was needed for grafting including; columellar strut, spreader grafts, nasal tip different grafts in all cases, as well as dorsum grafts in some cases.

The ideal thickness of the alar contour graft was 0.5 mm. The length ranged from 15mm to 20mm and the width from 2mm to 4 mm (the range of values varied according to nasal size and the patient's gender).⁽⁴⁾ The grafts were always tapered anteriorly to reduce show. It is stressed out here that alar contour grafts are not part of the natural anatomical configuration of the nose and it is important they remain visually invisible.⁽⁹⁾

The lateral end of the rim incision was exposed, and then a blunt tipped scissor is used to dissect a pocket with the index finger of the non-dominant hand everting and controlling the alar rim. The pocket is made deep and just capacious enough to accommodate the graft comfortably while cradling it tightly enough to avoid any displacement or migration, the graft should not extend anterior to the medial crurato prevent tip widening and visibility. Subsequently any excess cartilage graft should be trimmed medially.⁽⁹⁾

Closure was then done carefully using 5-0 vicryl after first closing the collumellar skin.

Alar base reduction for flaring was then done in 23 cases.

The **FOLLOW UP** period was extending up to **2 years post-operative**. These patients were then evaluated with regards to the alar aesthetic outcome and functional aspect as well.

Complications such as alar notching, collapse retraction and asymmetry were noted and documented.

RESULTS

The study was executed on 35 patients. They were twelve males and twenty three females. (Fig 1). Their age ranged from 18 to 44 years old. All cases were carrying traits of middle-eastern noses; they underwent open rhinoplasties adding alar rim grafts as a routine step in all cases.

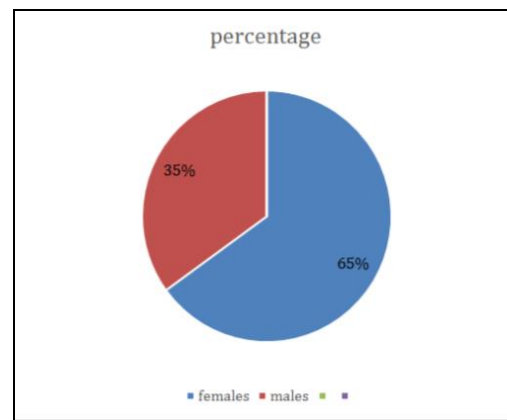


Fig. 1: Sex distribution in the study

Clinical analysis of cases preoperatively regarding airway assessment as well as their external appearance revealed:

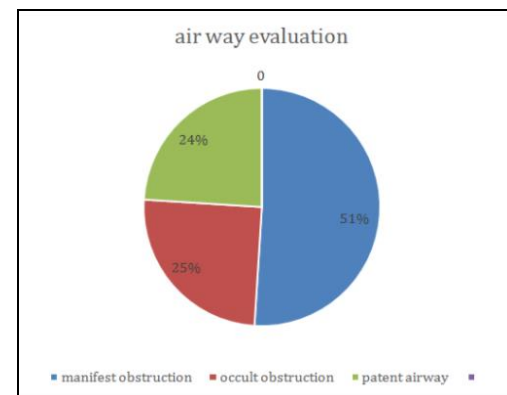


Fig.2: Demonstrating pre-operative airway evaluation

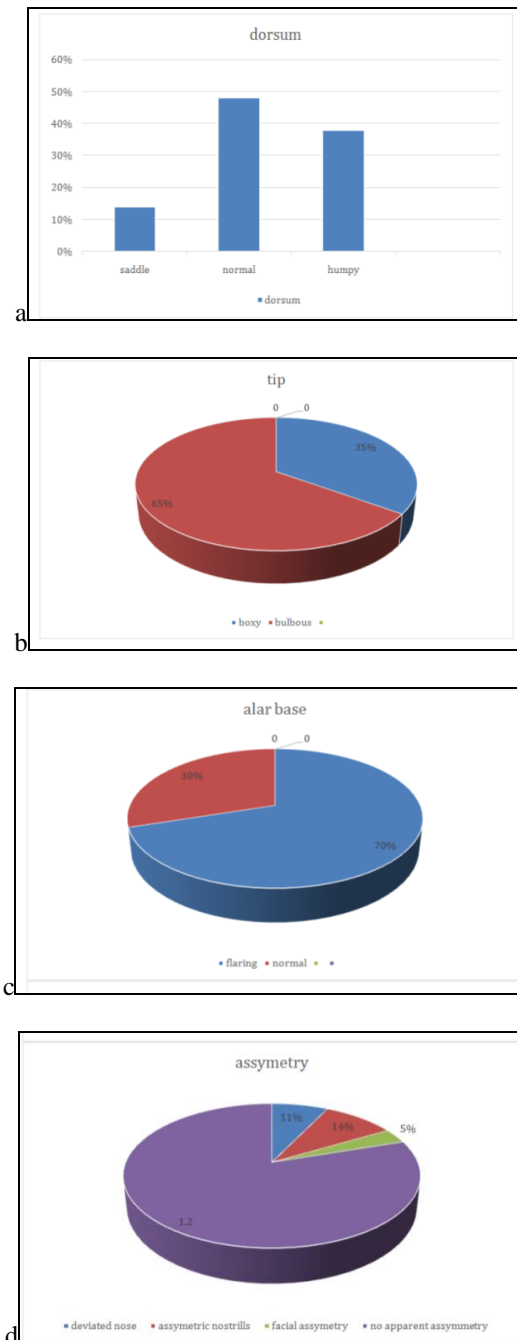


Fig. 3 a,b,c,d: Analysis of preoperative external appearance noses evaluation.

Although all study cases had a stigma of weak cartilaginous frame on the lower third of their noses, no single case showed alar collapse preoperatively.

Assessment of cases during their follow up post-operatively revealed the following:

External Appearance

Subjective evaluation of their external appearance showed 57% excellent results, 28% fair results, and 15% were unsatisfied (Fig. 4). While objective evaluation of their appearance regarding alar aesthetics and appearance revealed no alar retraction, notching, or collapse. Post-operative follow up of the airway improvement was also done, however no objective method was used to differentiate external and internal valve affection. (Fig. 5). Four cases out of twenty three who had alar base reduction demonstrated some residual flattening of the alae. While three cases presented during their follow up with asymmetric nostril openings. The statistical data regarding the need for further revision is not yet available pending more follow up.

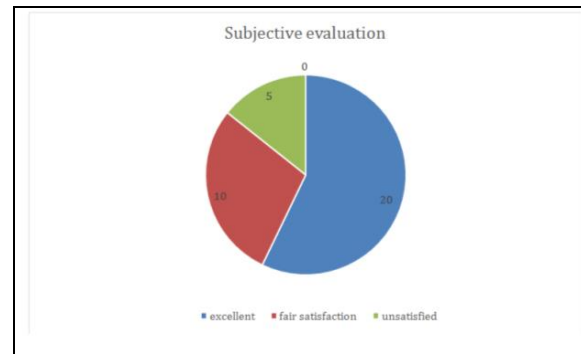


Fig. 4: Degree of satisfaction of patients regarding their appearance post- operative

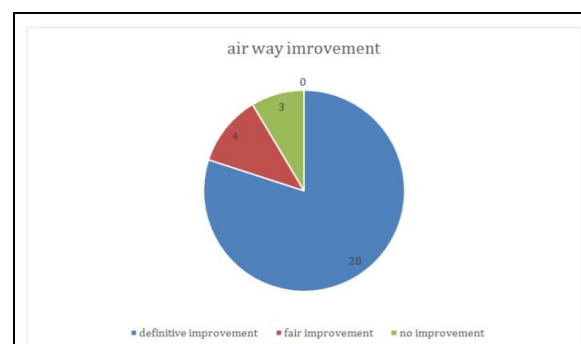


Fig. 5: Airway improvement after surgery

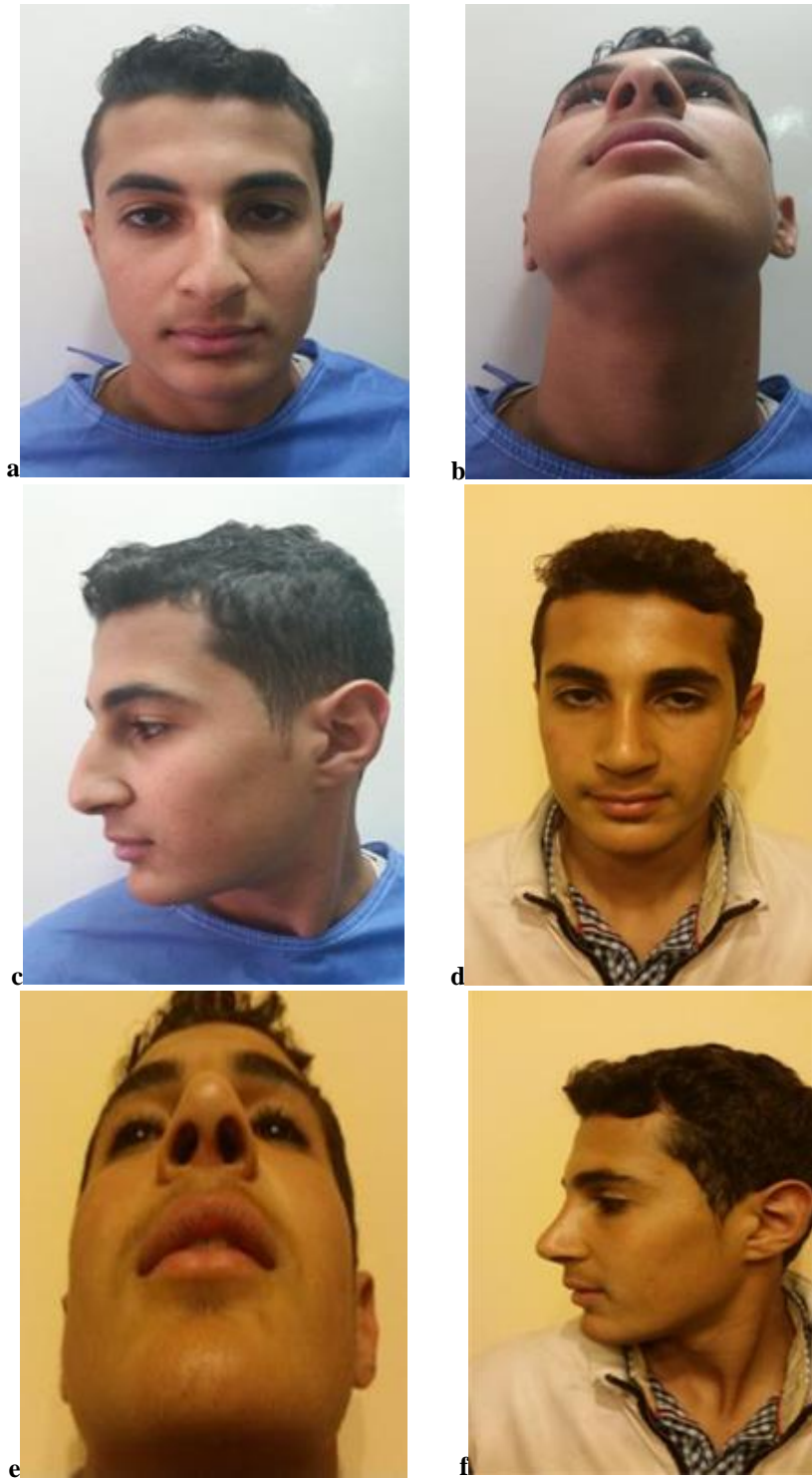
Clinical Cases:



Case 1: a & b: Preoperative Photos (lateral & basal view): female patient 23 years old, humpy dorsum, bulbous tip, hanging columella, and hypoplastic chin. c & d: Post operative Photos (lateral & basal view): Patient received dorsal hump resection, medial and lateral osteotomies, spreader grafts ,alar contour grafts , tip grafts and alar wedge resection. Chin augmentation (fat grafting)



Case 2: a, b & c Preoperative Photos (anterior basal & lateral view): male patient, 21 years old, deviated nose, bulbous tip, and alar flaring. d, e & f Post operative Photos: (anterior basal & lateral view): Patient received medial and lateral osteotomies, spreader grafts, alar contour grafts , tip grafts and alar wedge resection.



Case 3: a, b & c Pre operative Photos (anterior basal & lateral view): Male patient, 24 years old, deviated nose, bulbous tip, humpy dorsum, and alar flaring. d, e & f: Post operative Photos (anterior basal & lateral view): Patient received dorsal hump resection, medial and lateral osteotomies, spreader grafts, alar contour grafts.

DISCUSSION

It should be noted that there has been an increase in the number of patients seeking rhinoplasties in the middle-east over the past decade,⁽³⁾ with an observed increase in male frequency. The features presenting a mixture of traits combining the African American nose and the Caucasian nose.⁽²⁻⁸⁾

The most challenging aspect of these rhinoplasties is to surgically manipulate the tip-bobule complex so as to achieve predictable results. Primary deformities of the tip and supratip area are formidable problems initially, and secondary deformities resulting from inappropriate surgical manipulations are even more difficult to correct. In addition, the total effects of surgical maneuvers on the nasal tip may not become evident for many years after rhinoplasty. Prerequisites to a successful outcome are a thorough understanding of the static and dynamic anatomy of the alar cartilages.⁽⁴⁻¹²⁾

Having that said, the combination of specific nasal traits, including thick/sebaceous skin (excess fibro-fatty tissue), ill-defined nasal tip, weak/thin lower lateral cartilage relative to the skin envelope, nostril-tip imbalance, acute nasolabial and columellar-labial angles, and a droopy/hyperdynamic nasal tip,⁽⁷⁾ as well as wide alar base (alar flaring). All augment the need of routine placement of an alar rim graft in the primary setting, regardless of the strength of the ala and the perceived preoperative shape.

It is in fact believed that the thick sebaceous skin masks the underlying weakness observed intraoperatively of the lower lateral cartilage in the north African (middle eastern) patient as well as giving a false impression of alar strength as believed due to the inherit soft tissue strength. The increased trend towards the open technique also resulted in alar notching and retraction due to associated scarring.

With a reduction in the postoperative complications with the routine insertion of alar grafts ;and the unpredictable post operative alar deformities that resulted in a number of cases without a clear preoperative or intraoperative indication as to which cases might end up an irregularity involving the alar rim ; the routine use of this technique has evolved in the primary open rhinoplasty setting.^(11,12)

In these cases the graft works as a pillar to support the length of the vestibule. The stretch of the soft tissue envelope helps improve the scarring results and avoid complications in the aesthetic outcome of the nostril sill. The weakening caused by the manipulation and rendering the cartilaginous framework in order to achieve a desired result and soft tissue dissection all account for irregularities in the healing process.^(10,11)

Therefore the framework supports the firm structure of the cartilaginous graft as well as the overlying skin /soft tissue cover after middle crural reconstruction.⁽¹²⁾

The retraction or notching thus caused by the unpredictable nature of scar healing and increased incidence of fibroses in the ethnic darker race of the infra cartilaginous incision or due to excessive unneeded suturing is thus avoided.⁽¹⁰⁻¹²⁾

The routine use of alar rim grafts however doesn't include those few cases where the cartilaginous framework strength and soft tissue do not need extra support. In those patients alar rim grafts do not add value to the outcome. However diagnoses tends to be subjective to experience and such case are uncommon.⁽¹²⁾

There are multiple models that have been described for defining and correcting alar abnormalities over the past decade.

Guyuron et al. recently published a paper that detailed the dynamics and frequency of the use of the alar rim grafts. They found that a majority of patients who undergo rhinoplasty would benefit from alar rim grafts; the placement of an alar rim graft results in elongation of the short nostril, correction of the alar concavity, widening of the nostril, and slight caudal transposition of the alar rim. They concluded that it should be used in the majority of cases of primary and secondary rhinoplasty patients to correct the existing retraction or prevent retraction in at-risk patients.⁽⁵⁾

Similar surgical steps as outlined by Guyuron have been followed by Rohrich et al., reinforcing the application of his theoretical principles and suggested outcomes, in addition, they used this rim grafts as a routine in all primary rhinoplasties they performed in their study, they based their results on a control study with a different group of cases performed by the same surgeon not using the alar grafts.⁽⁵⁻¹²⁾

In a recent study it was also the concept of alar rim grafting and lateral crural malposition was tested thoroughly. It was concluded that if the lateral crus could be repositioned with less cephalic rotation and supported by using an alar rim graft, many of the problems associated with abnormally shaped lateral crura would be resolved⁽¹³⁾.

Although essentially the ideal outcome of any rhinoplasty procedure is to create a flawless alar contour where the surgeon resorts to grafting of the ala repositioning of the crura of the a combination to improve the cosmetic and functional outcome, terminologies may differ.

Considering the ethnic study and characteristics of the Middle-Eastern nose it should be noted that in almost 90 percent of cases an alar base excision was performed. Hence it is believed that alar rim grafting contributed to improved aesthetic outcome as regards alar flattening caused by the resection: this was believed to draw attention to the grafts broadened accomplishment in safeguarding the complication secondary to alar base resection.

All these factors necessitate the routine use of rim grafts in the race demonstrating improved aesthetics outcome all data collected have shown a reduction in the rate of complications and need for further revisional surgery, as well as higher patient and surgeon satisfaction. there were no contraindications for the placement of the graft. the lack of a control group for comparison performed by the same surgeon added to the limitations. nevertheless the overall reduction in alar rim deformity and complications as well as a higher patient satisfaction and aesthetic evaluation all point to the benefits of routinely using an alar rim graft in the primary open setting to improve both functional and aesthetic outcome as well as safeguard against uncalled for complications of the alar rim.

CONCLUSION

Alar rim contour grafts have demonstrated a clear impact on the aesthetic and functional (external valve function) outcome in the primary open rhinoplasty in the middle-eastern nose. They have become a corner stone for the improvement of alar shape achieved in the procedure and have been shown to circumvent complication and avoid

the clear long term worsening of the aesthetic parameters when not used.

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