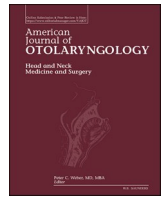




Contents lists available at ScienceDirect

American Journal of Otolaryngology–Head and Neck Medicine and Surgery

journal homepage: www.elsevier.com/locate/amjoto

Vertical Alar Lengthening technique in correcting short noses

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ARTICLE INFO

Keywords:

Rhinoplasty
Vertical Alar Lengthening technique
Short nose
Projection
Definition
Revision

ABSTRACT

Background: It is crucial that the nose length must be compatible with the face in order to obtain beautiful results that suits the face. Shorter and upturned noses appear as if the tip of the nose is cut from the front and gives a piggy appearance to the patient's face.

Objective: The aim of this study is to obtain longer noses with increased tip definition by effectively lengthening the medial and lateral crura's in patients with short nose and Asian noses.

Materials and methods: Vertical Alar Lengthening (VAL) technique was applied to 17 revision and 12 primary Asian noses. VAL technique consists of three steps. In the first step, the medial crus were lengthened by stealing from the lateral crus. Later, a lateral crural extension graft was applied to the shortened lateral crus, and the lateral crus was lengthened and sutured to the medial crus. In the final stage, a subdomal graft was placed and supported in the space formed underneath the alar tip between the mucosa and the new dome. They were followed in average 12 months (between 6 and 18 months).

Results: VAL technique was applied to 17 revision and 12 primer Asian noses. Suggested surgical technique move the tip forward and downward reduced its cephalic rotation and lengthened the nose. Targeted tip point, rotation and projection results were achieved in all patients. All patients had satisfactory esthetic results.

Conclusions: In revision cases and short nose deformities in Asian noses, the nasal tip point was extended forward and downward with the VAL technique, reducing its rotation and lengthening the nose.

1. Introduction

Short noses are described as Asian noses with a low dorsum and short columella with an indistinct nasal tip. Short nose correction is considered as aesthetic rhinoplasty techniques applied to correct these features [1].

It is nose compatible with the face; nose length has importance to obtain beautiful results that suit the face. Shorter and upturned noses appear as if the tip of the nose is cut from the front and gives an unnatural piggy appearance to the patient's face. Over-rotated and short noses due to surgery or previous surgery in short noses and Asian noses. Present with this unfairly face; in rhinoplasty operations, increasing the rotation of the tip excessively is associated with the shortening of the lateral and medial crus and the decrease in the definition of the nasal tip. Augmenting the nose of these patients and bringing them to the appropriate length and definition often involves great difficulties. Because in revision cases, the flexibility of the soft tissues is decreased due to fibrosis.

We defined the Vertical Alar Lengthening (VAL) technique to effectively lengthen the medial and lateral crus and to obtain natural-looking noses in short noses known as Asian noses, and very short and over-rotated noses in revision cases.

2. Material and methods

The present study was conducted prospectively at a tertiary referral center with informed consent of the patients and approval of the local ethics committee.

2.1. Technique

In this study, open rhinoplasty approach was applied to all patients under general anesthesia due to the severity of the cases. Traditional transcolumellar and bilateral infracartilaginous incisions were made and the skin and soft tissue coverage are elevated at the supra-perichondrial and subperiosteal levels over the cartilage and bony

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<https://doi.org/10.1016/j.amjoto.2023.103979>

Received 4 June 2023;

Available online 7 July 2023

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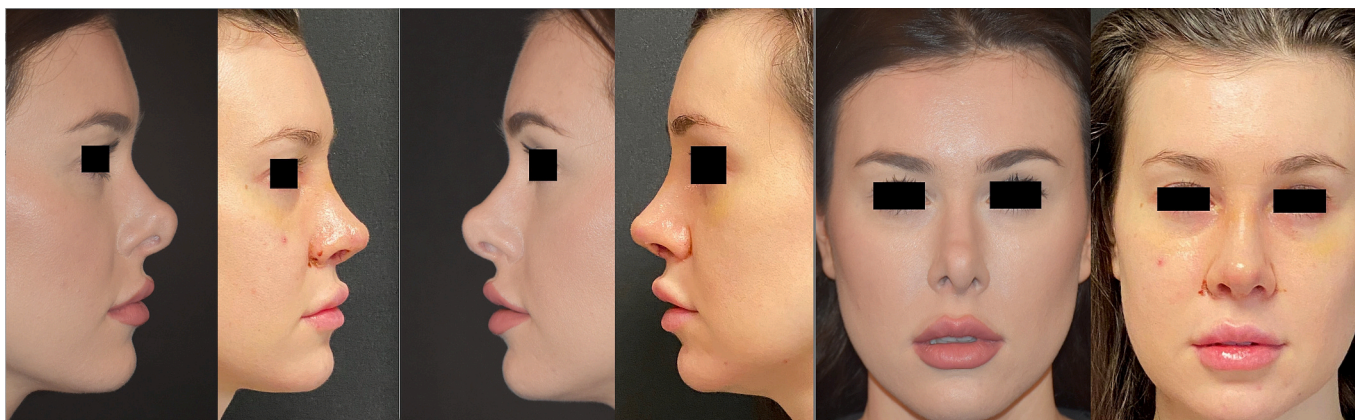


Fig. 1. Revision patient with a short nose in which the VAL technique was applied.



Fig. 2. Revision patient with a short nose in which the VAL technique was applied.



Fig. 3. Revision patient with a short nose in which the VAL technique was applied.

skeletons, respectively.

Our aim in these patients was to lengthen the nose by moving the tip of the nose forward and down. To achieve this caudal rotation of the tip, we applied our three-step technique as follows. First, the amount to be taken from the lateral crus (medial crural steal) was marked to increase the medial crus of the lower lateral cartilage. Subdomal mucosa was elevated. The lateral crus were cut vertically at the marked point and included in the medial crus. Thus, the medial crus were lengthened. Later, a lateral crural extension graft was applied to the shortened lateral crus, and the lateral crus was lengthened and fixed with two sutures at the end of the medial crus. In the last stage, a subdomal graft was placed and supported in the space formed between the mucosa and the new dome, thus extending the tip point forward and downward, increasing the definition and lengthening the nose. Incisions were closed with sutures. Finally, an intranasal silicone splint and external splint were placed. These splints were removed on 7th day after surgery,

respectively.

In eight patients with weak caudal septum, septal extension graft was used together with the VAL technique in the others. Septal cartilage was used in 12 patients with Asian nose and 3 revision cases, costal cartilage was used in 14 revision patients (Video 1) (Figs. 1–5).

3. Result

Between March 2021 and May 2023, VAL technique was applied in a total of 29 patients (17 revision and 12 primer Asian noses). The ages of the patients were between 22 and 53, consisting of twelve male and seventeen female patients. Of the seventeen revisions, six were secondary, seven were tertiary, three were fourth, and one was sixth. The reason for the patients' admission was that their noses were short disproportionately with their faces. A satisfactory level of projection increases and rotation adjustment was achieved in the patients.



Fig. 4. Asian patient with a short nose in which the VAL technique was applied.

4. Discussion

The length of the nose is known as the distance between the radix and pronasale. The diagnosis of short nose is generally defined as the nose length being shorter than one-third of the ideal whole face length, excessive appearance of the nostrils, long upper lip, over-rotated nasal tip and decreased nasal height [2,3].

The septal extension graft was first introduced in 1997 by Byrd et al. in an attempt to achieve nasal lengthening, tip projection, rotation and shape [4]. The septal extension graft is a tip of graft frequently used in rhinoplasty to provide adequate nasal tip projection and rotation. The graft is typically harvested from the patient's septal cartilage and is used to lengthen the nasal septum and support the nasal tip [5]. During the procedure, the septal extension graft is placed between the existing septum and the nasal tip cartilage, effectively extending the length of the

septum and providing additional support for the nasal tip. This can help to achieve a more balanced and aesthetically pleasing nasal profile [5,6].

Several studies have shown the effectiveness of the septal extension graft in improving nasal tip projection and rotation. In a study, 78.6 % of patients who underwent rhinoplasty with a septal extension graft achieved a satisfactory outcome, with improved nasal tip projection and rotation [7]. Similarly, in a study, the use of septal extension grafts was found to improve significantly nasal tip projection and rotation, with a high rate of patient satisfaction [5].

Woo et al. described a technique called hybrid septal extension graft, which is a modified septal extension for short nose correction. The hybrid septal lengthening graft is a modified septal lengthening graft that uses small septal cartilage with irradiated homologous costal cartilage [8]. Wei et al. increased the nose length by ~4 mm by using



Fig. 5. Asian patient with a short nose in which the VAL technique was applied.

costal cartilage in the short nose. They emphasized the importance of careful patient selection and surgical technique to achieve positive long-term results [9].

In revision cases; in patients who have undergone multiple surgeries and have a shortened nose, tip cartilages, like all tissues, are usually lost in fibrous tissues and granulation tissues, become hardened and lose their elasticity. Therefore, it is very difficult to shape the tip cartilages in revision patients. In short and over-rotated noses, it is necessary to advance the tip cartilages together with the septum forward and downward, as it is often not possible or very little to enlarge or lengthen the hardened, fibrous and lost flexibility of the tip cartilages.

In the short nose, grafts such as septal extension grafts, columellar strut grafts, shield grafts... were used to lengthen the nose. However, these techniques alone can provide limited benefit in patients whose tip cartilages are fibrous and shrunken.

Short noses are usually associated with over-rotated, low projection, and low tip definition. What needs to be done in these patients is to rotate caudally, lengthen the nose and increase the nasal tip projection and definition. In this article, it is possible to enlarge and advance the tip cartilages as much as the skin allows, with the VAL technique. With the VAL technique, the definition and projection of the nasal tip point is increased and the nose is lengthened. This technique can be applied with a septal extension graft if the patient's caudal septum is weak.

In patients with a shrunken nose tip, the nasal entrance is usually narrow. With the technique we apply, it can also contribute to respiratory function by increasing the volume of the nasal inlet, as it lengthens and strengthens the lateral and medial crus in patients with shrunken nasal tip.

In order to achieve this result, septal extension grafts have been used before, but in cases where the tip cartilages fibrosis, harden and shrink,

the desired level of advancement cannot be achieved because the extended septum cannot be delivered to the tip cartilages. The tip cartilages at the shrunken and fibrous nasal tip and generally the caudal septum are also weak and inadequate. Onlay or shield grafts, which will be placed before they are repaired, cannot provide sufficient projection increase and will increase the risk of collapse of the nasal entrance as it will increase the load of this region.

According to Seneldir et al., in the VAR technique described, patients with overdeveloped lateral crus, droopy noses, wide tips, and pinched tips are shortened and nasal tip is repositioned by shortening the lateral and medial crus [10]. In our technique, the nasal tip is repositioned by lengthening the medial and lateral crus and subdomal support in revision or Asian short nose patients. Therefore, lateral and medial crus for the desired nasal tip point; while shortened in VAR technique, it is lengthened in VAL technique.

5. Conclusion

The VAL technique is a useful method for lengthening tip cartilages, thus increasing the definition of the nasal tip and lengthening the nose in revision patients who have undergone multiple surgeries and whose nose is short and over-rotated, and in Asian noses defined as short noses. We think that this VAL technique will relieve surgeons' distress during surgery of the short noses.

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amjoto.2023.103979>.

Funding source, financial disclosures

None.

Funding

None.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or

national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed consent

For this type of study informed consent is not required.

Declaration of competing interest

None.

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