Nasal Base Narrowing: The Alar Flap Advancement Technique

Ahmed Soliman Ismail, MD

Abstract

Objective. To evaluate the role of creating an alar-based advancement flap in narrowing the nasal base and correcting excessive alar flare.

Study Design. Case series with chart review.

Setting. This is a retrospective record review study.

Subjects and Methods. The study included 35 cases presenting with a wide nasal base and excessive alar flaring. The surgical procedure combined the alar base reduction with alar flare excision by creating a single laterally based alar flap. Any caudal septal deformities and any nasal tip modification procedures were corrected before the nasal base narrowing. The mean follow-up period was 23 months.

Results. The mean alar flap narrowing was 6.3 mm, whereas the mean width of sill narrowing was 2.9 mm. This single laterally based advancement alar flap resulted in a more conservative external excision, thus avoiding alar wedge overresection or blunting of the alar-facial crease. No cases of postoperative bleeding, infection, or keloid were encountered, and the external alar wedge excision healed with no apparent scar that was hidden in the depth of the alar-facial crease. The risk of notching of the alar rim at the sill incision is reduced by adopting a 2-layer closure of the vestibular floor.

Conclusion. The alar base advancement flap is an effective technique in narrowing both the nasal base and excessive alar flare. It adopts a single skin excision to correct the 2 deformities while commonly feared complications were avoided.

Keywords
nasal base narrowing, alar sliding graft, rhinoplasty

Received March 22, 2010; revised July 29, 2010; accepted August 16, 2010.

The concept of narrowing the nasal alar base goes back to the late 1890s, when Wier described the external wedge excision technique in correction of the unattractive excessive alar flare after reduction rhinoplasty. In the early years of the 20th century, Joseph and Milstein described narrowing of the alar base using the internal excision technique from the nostril base and vestibular floor. This technique had been adopted by many authors in the following years; however, since the early 1980s, many authors have returned back to the external cutaneous excision in a trial of avoiding the risk of notching of the alar rims after vestibular skin excision.

In 2007, Foda described the combined alar base excision technique for nasal base narrowing in cases of wide alar base with excessive nasal flare. This technique is the basis for the present study, which describes the alar flap advancement technique in narrowing the nasal base in cases with a wide base and alar flaring using a procedure combining the alar base reduction with alar excision by creating a single laterally based alar advancement flap.

Methods

This study employed a retrospective record analysis of all rhinoplasty patients performed by the author at the Department of Otolaryngology—Head and Neck Surgery, Faculty of Medicine, University of Alexandria, Egypt. All patients who underwent this alar flap advancement technique were selected, and all of the inclusion and exclusion criteria have been evaluated. Institutional review board approval from the ethics committee was obtained. Before deciding to narrow the nasal base, the caudal septum should be carefully examined to exclude any degree of deflection, deviation, or dislocation. Such caudal septal deformities may lead to nasal base distortion such as loss of tip projection or unequal nostrils with an asymmetric amount of alar flare. Then, the nasal tip position and definition is assessed accurately as change in the degree of nasal tip rotation, width, or projection will have a direct impact on the amount of nasal flare. This is why the assessment and work on the nasal width should be done only after all the tip modification procedures have been performed.

Faculty of Medicine, University of Alexandria, Alexandria, Egypt

This article was accepted and presented at the annual meeting of the American Academy of Otolaryngology—Head and Neck Surgery in San Diego, California, October 2009.

Corresponding Author:
Ahmed Soliman Ismail, MD, Faculty of Medicine, University of Alexandria, Alexandria, Egypt
Email: ahm2005@gmail.com
For an exact assessment of the nasal base, a clear distinction of the width of the alar base from the degree of alar flare should be made. The width of the alar base is the distance measured from one alar crease to the other, which should be equal to the intercanthal distance. The alar flare is the maximum degree of alar convexity above the alar crease. A wide nasal base could be the result of a truly wide alar base with wide nostrils, excessive flaring of nasal alae with normal alar base width, or a combination of both.

Different surgical procedures have been described to narrow the nasal base according to the real cause. In cases of a truly wide nasal base with wide nostrils, internal incisions from the nostril floor will result in narrowing of the nostrils and a true decrease in the width of the nasal base. In cases of excessive nasal flare, external alar excisions will result in a decrease in alar flare with no true decrease in the width of the alar base. However, this decrease in the lateral flare will result in an apparently narrower base as a result of the decrease in the widest diameter of the nasal base. Finally, in cases of a wide alar base in association with an excessive alar flare, effective nasal base narrowing can be achieved only by combining the internal vestibular floor excision with an external alar wedge excision.

An important point to assess prior to surgical intervention is any difference in the level of insertion of the alar lobule into the upper lip, which may lead to an oblique base with asymmetric flare. The thickness of nasal skin and the presence of previous scars are also important factors to consider.

**Surgical Technique**

As change in alar flare may result from tip modification techniques, nasal base narrowing should be the last maneuver in rhinoplasty. Only after the closure of all rhinoplasty incisions can one judge the amount of alar base narrowing properly.

Before the injection of the local anesthetic, a caliper is used to measure the distance from the midcolumellar point to the alar crease of both sides to detect any difference in the width of the nasal sill, which may require excision of a different amount of the nasal sills. The amount of sill excision is marked using 2 vertical parallel lines that extend into the skin of the nostril.

The facial groove is marked, and the marking extends along the crease between the nasal sill and the upper lip until it meets the medial line of the previously marked nasal sill resection. The same markings are done on the other nostril, taking into consideration any difference in the nasal sill width between the two sides in the amount of sill skin excised. When marking is complete, a minimum amount of 1% lidocaine hydrochloride in 1:100 000 IU of epinephrine is injected so as not to cause distortion or ballooning of the tissues to be excised.

A No. 11 blade is used to perform the incision on the medial line of the marked sill skin. This is followed by a No. 15 blade to detach the alar lobule from the face at the alar crease. Cauterization of any bleeding point is meticulously performed using the fine microdissection needle (Colorado needle; Stryker, Portage, Michigan) to achieve complete hemostasis. The anteroinferior now laterally based free alar flap is rotated downward and medially, and the amount of nasal sill skin is remeasured. A stay suture is made to fix the edge of the lateral line of the marked sill skin to the medial corner of the defect. This is achieved by using a 5/0 polypropylene suture (Prolene; Ethicon, Somerville, New Jersey). The level of this corner can be adjusted to reposition the insertion of the alar lobule into the upper lip to correct any preexisting asymmetry in the level of the alae.

The same technique is performed on the other nostril, adjusting both the level and the height of the ear lobule and the size, shape, and width of the nasal sill at the same time. After adjusting the shape and width of the nasal sill on both sides, the excess nasal sill skin is excised, and both edges are sutured.
with 5/0 polyglactin sutures (Vicryl; Ethicon). An average of 2.9 mm of skin is excised for sill narrowing.

Only after closing the vestibular floor defect can the surgeon more accurately assess the amount of external alar excision needed (Figure 3). On average, a 6.3-mm wedge excision from the lateral edge of the mobilized lateral alar flap was found to be enough to eliminate the excessive alar flare in the study cases. The medially rotated alar flap is now part of the nasal floor skin, and by controlling the thickness of the skin excision, the surgeon can adjust any minor asymmetry between the level of nasal sill insertion on both sides. A deep anchoring 5/0 polypropylene suture is put at the lateral angle of the nose to stabilize the lateral alar flap.

The sill excision is closed in 2 layers using 5/0 Polyglactin 910 subcutaneous bunching sutures to help evert the skin edges. The skin is then closed using 6/0 polypropylene sutures for the part outside the nostril rim and 5/0 polyglactin 910 sutures inside the nostril. The alar crease incision is closed in 2 layers using 2 deep 5/0 polyglactin 910 anchoring sutures to relieve tension at the skin edges, which are then approximated with a few interrupted 6/0 polypropylene sutures (Figure 4). An antibiotic cream is applied to the incision lines, and all of the polypropylene sutures are removed on the fifth postoperative day.

**Results**

Over the past 5 years, I have performed a total of 159 rhinoplasty cases. Thirty-five (22%) of these cases have presented with a wide nasal base and excessive alar flaring. The mean width of external skin excised was 6.3 mm (range, 3.5-10 mm), whereas the mean width of sill skin excised was 2.9 mm (range, 1.9-7 mm).

This single laterally based advancement alar flap resulted in a more conservative external resection, thus avoiding alar wedge over resection or blunting of the alar-facial crease (Figure 5). No cases of postoperative bleeding, infection, or keloid formation were encountered. The external alar wedge excision healed with no apparent scar and was well hidden in the depth of the alar-facial crease. The notching of the alar rim at the sill incision is reduced by adopting a 2-layer closure of the vestibular floor. Microdermabrasion was performed on all patients to eliminate apparent suture track marks, especially at the alar-facial crease, as the excessively oily skin type is a typical presentation among Egyptians. No cases of vestibular skin notching were encountered in the present group due to the double-layer closure technique at the vestibular floor.

**Comment**

Despite numerous articles on alar base narrowing, the management of cases with a wide nasal base and alar flaring remains limited to either using a cinching sutures to pull both alae together or the use of combined alar base excision to remove parts of the alar lobule and the vestibular floor.10 Using the cinching suture technique, the external incisions are avoided, but many limitations are associated with this technique for wide noses with excessive rounding because it may lead to bunching of the nasal floor with excessive rounding of the alae. Many authors have described modifications to this technique by combining it with excisions of vestibular floor skin or the alar floor.8,9 This technique cannot be used when asymmetry of nasal flare is present, as it can be used only for symmetric medialization of the alae. This is why, despite the numerous modifications in suturing materials and the techniques used, the long-term effect of the cinching sutures remains questionable. In the present study, a single incision in the sill skin and elevation of the laterally based alar flap is performed.

When medially advanced (Figure 3), this flap pulls the nasal ala medially, narrowing the nasal floor width while decreasing the alar flare at the same time. Contrary to Foda’s technique,10 the alar flap advancement is done on both sides prior to sill skin excision. The sill skin is fixed in its new position with a stay suture to compare and adjust the nasal sill width on both sides and then the sill skin is excised. This ensures the precision and equality of nasal ala size and shape on both sides before excision of the excess sill width. The attention is then directed to the alar flare and thickness of lateral alar skin.
measuring indicated that the alar flare is still beyond acceptable, meticulous excision of alar skin is performed, taking into consideration any asymmetry or inequality of nasal sill level between both sides. This could be adjusted by the amount and thickness of skin removed from both sides.

In the present study, the mean amount of external skin excised was 6.3 mm (range, 3.5-10 mm). This was found to be much less than the average amount of skin excised in previous literature. In the present study, starting with the nasal sill narrowing allowed a more accurate judgment of the amount of external alar excision needed, thus preventing overresection of alar skin. This is usually the main cause of obliteration and blunting of the natural alar-facial crease. This obliteration did not occur in the present study, even in cases with a very wide nasal sill and excessive nasal flare, as after completing the internal excision, the amount of external alar excision was found to be much less than originally calculated. Using this technique helped in preserving the natural alar-facial crease.

Although the results of the alar base excision are rewarding, many surgeons hesitate in conducting such a procedure for fear of obvious scarring and/or unnatural results. Microdermabrasion was used on all of our cases (100%), as an oily texture is the standard in the Egyptian nasal skin, to eliminate suture marks of the external alar excision.

Notching of the nasal sill rim, which may occur at the site of the sill excision, was overcome by adding a deep layer of 5/0 Poliglactin 910 sutures. These deep sutures help to elevate the subcutaneous tissue of the vestibular floor, which elevated the suture line and took the tension off the skin edges, thus decreasing the risk of postoperative notching.

Conclusion
This study, although based on the work published by Foda in 2007, adds to the precision and satisfactory results by bilateral elevation and medially rotating the alar flap prior to any sill excision. This is helped by two 5/0 Prolene stay sutures that fix the alar flaps in their new position. This minor addition has helped in obtaining a better and more symmetric alar base narrowing, even in excessively asymmetric cases. In the author’s estimate, the combined alar base excision technique with the laterally based alar flap is a meticulous technique that, when mastered, provides rewarding and satisfactory results to both the patient and the surgeon.
Author Contributions
Ahmed Soliman Ismail, collection of data, surgical intervention, writing article, review of literature.

Disclosures
Sponsorships: None.
Funding source: None.

References