

Nasal Profile Hump Reduction Using the Let-Down Technique

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Abstract

In rhinoplasty, the nasal dorsum represents an important aspect for form and function. Surgical management should be performed accurately to avoid complications. The goal for dorsal preservation is to preserve the keystone area intact above the nasal bones and its relationship with the upper lateral cartilages. Unlike other rhinoplasty techniques, the lowering of the nasal dorsum requires dorsal modification prior to the surgery of the tip since it modifies the tip position by rotating it. Unlike the push-down technique, that places the nasal bones inside the nasal cavity, producing obstruction of the airway, the let-down technique improves the airway and releases the valve area, making it a functional-friendly technique.

Keywords

- ▶ let down
- ▶ push down
- ▶ keystone area

Rhinoplasty is the most commonly performed facial plastic surgery procedure in Latin American Countries.^{1,2}

Experience with rhinoplasty over time has shown that detailed anatomic analysis of the nose is an essential first step in achieving a successful outcome. Failure to recognize a particular anatomical feature preoperatively will often lead to a lesser ideal long-term result.^{3,4}

Hump

A low radix with a small hump or pseudohump is a common finding in the mestizo patients; radix grafts are commonly used to deal with it in the small concavity that it is seen in these patients. Augmenting the radix can soften an “angry” look; normal height in this area restores a high profile and separates or frames the eyes creating a more esthetically pleasing look.⁵ Augmentation of the radix by using an autologous cartilage graft with a precise-pocket approach, as described by Becker and Pastorek,⁶ can raise the apparent nasal starting point and thereby contribute to the illusion of nasal length.⁷

The use of crushed cartilage provides a more malleable material that adapts naturally to the radix,^{8,9} providing a longstanding esthetic effect. Several studies have determined that cartilages, lightly or moderately crushed, maintain their viability and chondrocytic proliferation in remodeling of nasal contours, filling defects, and/or camouflaging irregularities of the nasal dorsum.

In persons of Mexican descent, the face is generally broad, with prominent malar eminence; the signs of facial aging tend to originate from volume loss from the deep-fat pads, rather than the dermal layers, as in Caucasian patients.¹⁰ There is commonly found an altered facial volume or deficits in the midface in young patients that may be caused by nasal chronic obstructive diseases, these cases can benefit by performing a rhinoseptoplasty made by a “let-down” technique, which has the positive side effect, the midface filler, specifically the malar region (▶ Fig. 1).

As previously described by the author, the influence of the let-down technique on midface allows a statistically significant increase in the malar contour by the mobilization of soft tissues adjacent to the nasal pyramid, and thus filling favorably and naturally this area, giving patients a better facial balance.¹¹

The goal of a dorsal-preservation technique is to keep intact the K-area above the septum and the entire osseocartilaginous vault. The dorsal hump can be eliminated and no irregularities or discontinuity should be found either by the patient or the surgeon.¹²

Dorsal preservation techniques are especially indicated in the following noses:

- The straight nose with a moderate-kyphotic hump.
- The deviated nose with high dorsum.
- The tension nose that often has elongated vertical nostrils and narrow internal nasal valves that tend to collapse.¹³



Fig. 1 Case 3: young patient with disproportion in the middle third of the face, and high dorsum. Let-down technique was used with improvement of the middle third by displacement of the soft tissues.

So as described earlier, anatomically, the mestizo nose often fulfills the dorsal-preservation techniques' indications, as well as the Caucasian type noses will do most of the time.¹⁴

It is imperative for the surgeon to recognize that every incision, reduction, and destabilizing step must be countered by a reinforcing supportive maneuver. An incision that is not reconstituted is left to unpredictable postoperative changes. Cartilage that is already weak prior to surgical manipulation is prone to postoperative deformity. A stable nasal base is the most important force preventing recurrent ptosis of the lower third of the nose.¹¹

The analysis of a patient undergoing nasal surgery should not only be of the nose; it is important to consider its race, to make an integral facial analysis and to determine the positive and negative facial characteristics to adequately diagnose the condition and take into account the technique to be used, which in addition to correcting the main problem, will give additional contributions to optimize the results.¹⁵

In addition to having the anatomical-functional concepts, the nose should be viewed as a comprehensive structure both functionally and esthetically. It is important to consider that the concepts of form and function must not be separated; an esthetically pleasant nose is most likely to have an adequate functional state.¹⁶

Over the years, a myriad of techniques and approaches for septorhinoplasty have been described, some based on minimally invasive surgery, which could complicate the task of the surgeon, his field of vision, and his action by working on a limited space.¹⁷ These argue that there is less trauma to the intranasal structures and the support mechanisms, and, therefore, a lower number of complications.¹⁸ Textbooks describe each step of nasal surgery individually, with localized incisions and minimal dissection. For example, septoplasty through a hemitransfixion (HT) incision, the nasal dorsum through an inter- or transcartilaginous incision, the nasal lobe with a marginal incision through "delivery," advocating that it causes less-surgical trauma.¹⁹

On the other hand, the external rhinoplasty, as described, is an aggressive surgery that implies unnecessary healing, reduction of tip support, extended operative time, excessive postoperative tip swelling,²⁰ and leaves an external scar on the columella, but allows for adequate anatomical visualization, and its modification under simple-direct viewing. It compromises the support mechanisms of the tip, which must be reconstructed upon completing the procedure.^{21,22}

Approaching the nasal dorsum, in particular, has become a very precise maneuver that requires a comprehensive knowledge of the anatomy, as well as a properly trained surgeon, to minimize complications.

The approach that the author utilizes is based on basic surgical techniques, knowledge of anatomy, and the surgeon's experience; the endonasal approach is a technique that combines various incisions, producing a complete, comprehensive, functional technique with enduring results that authors have found to be useful for most of the primary patients. Concerning the dorsum, it is important to differentiate the push-down technique from the let-down technique. It basically involves the fact that the nasal bones will go inside the nasal cavity, causing obstruction, while in the other, the nasal bones will rest at the maxillary plane, thus preserving the integrity of the bony pyramid and improving function.

Surgical Technique

General anesthesia is used, with the administration prior to induction of anesthesia, with 3 mg intravenous (IV) midazolam and 1 mg/kg propranolol. Induction was with propofol 2 mg/kg, phentanyl 5 mcg/kg, and cisatracurium 100 mcg/kg. Maintenance with oxygen and sevoflurane at required dosification to maintain an arterial systolic pressure was between 50 and 60 mm of Hg.

The area is infiltrated with 3 to 5 cc of lidocaine 2%+epinephrine (1:100,000), in the conventional areas (nerves: external nasal, infraorbital, supratrochlear, supraorbital, and nasopalatine), as well as the intercartilaginous (IC) area, cul-de-sac, and the transition from columellar skin to nasal mucosa. The caudal border of the upper lateral cartilage (ULC) is identified and its scroll, with the help of a four-prong retractor, and the application of digital pressure upon the lateral crus of the inferior lateral cartilage (ILC) to identify the cephalic border. A simple-skin hook is placed in the cul-de-sac, applying medial traction to give the appropriate tension to the tissues, and perform its dissection. A left IC incision is made, followed by a HT incision, and the incisions are replicated on the right. The IC incision is situated on a horizontal plane, having first located the site where the caudal border of the upper lateral cartilage (ULC) and the cephalic border of the inferior lateral cartilage (ILC) meet. The IC incision of the skin is performed from a lateral to medial direction, beginning on the external border of the ULC, and upon reaching the cul-de-sac, the scalpel is inserted by applying pressure toward the nasal midline, with the following two objectives: (1) deepening the incision so as to reach the dorsal cartilaginous plane and avoid the risk of continuing to cut and (2) injuring the skin of the columella, maintaining absolute control of the length of the IC incision.



Fig. 2 T-shaped incisions bilaterally. IC incision and hemitransfixion. IC, intercartilaginous.

The hemitransfixion incision is performed from below upward, joining both incisions (HT and IC) in a “T” shape (→Fig. 2). The same procedure is performed on the right side, beginning at the height of the anterior nasal spine and extending to meet the IC in a “T” shape.

Access to the septal tunnels is made, all the way to the keystone area, and any deflection or spur is corrected/resected. Removal of the perpendicular plate of the ethmoid along with the cartilage attached to it, all the way to the keystone area, is performed to avoid resistance once the let-down maneuver is performed. The ventral border of the septum will be resected later according to the amount of the bone that is resected to achieve the desired dorsal height. Therefore, repositioning, fixating, and placing of transeptal sutures will be delayed until the bony pyramid mobilization is achieved.

Once the approach is completed, the author proceeds to manage the dorsum, with a let-down technique as described by Cottle.

The site of the intranasal incision at the transition from nasal vestibular skin to mucosa is just superior to the attachment of the head of the inferior turbinate. The incision is made perpendicularly to the skin, and dissection is carried on until bony

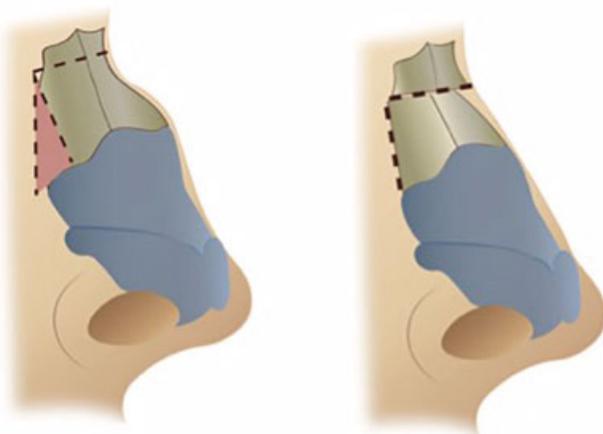


Fig. 3 Bony wedges from the maxillary process resected and a transverse percutaneous osteotomy performed.

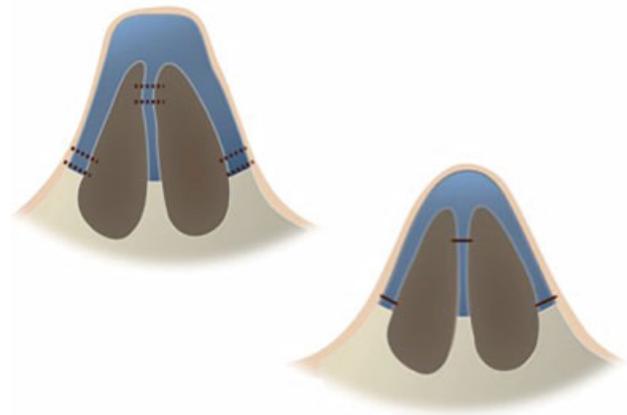


Fig. 4 Resection of maxillary process and septum at the keystone area.

contact is made. The pyriform aperture is exposed on both the internal and external sides. A subperiosteal undermining is performed on both the internal and external surfaces of the frontal processes of the maxillary bone. The undermining proceeds first onto the deep aspect of the maxillary process. On the endonasal surface, the exposure continues upward to the lachrymal bossae and the head of the middle turbinate.

Then, bony wedges of the frontal process of the maxilla are resected using a small bone forceps or a Webster's needle holder on both sides at the level of the facial plane, keeping Webster's triangle intact. The amount of bone resected will be assessed prior to the surgery and according to the height of the hump. Once the bony wedges are resected, the lateral osteotomies are continued following a low-down-low pattern toward the nasion (→Fig. 3).

Next a percutaneous perpendicular transection of the nasal spine is done according to Gola's technique.¹⁷ A 2-mm



Fig. 5 A triangle is left at the cul-de-sac to heal by second intention.

osteotome is pushed through the skin at the nasion and a transverse root osteotomy of the nose is completed.

Septal Work

Once the dorsum is lowered, the ventral portion of the septal cartilage be carefully resected to match the new height of the dorsum, and then fixated again to the nasal spine using a 3–0 polydioxanone suture (►Fig. 4).

Modifications of the dorsum must be the first step before any nasal tip surgery is done because dorsal lowering can dramatically alter many of the extrinsic tip characteristics.

In patients with low radix, a septal graft can be used to fill in the residual small concavity; in these cases, a precise pocket is fashioned and the space is filled in with morcelized cartilage.

Prior to working on the contour of the nasal tip lobule, the first step of tip modification is stabilization of the base or pedestal of the nose. This maneuver is critical to avoid postoperative loss of nasal tip projection.

A septal extension graft is indicated in patients with acute nasolabial angles, under projected tips and retrusive caudal nasal septum with an inadequate alacolumellar relationship. Depending on need, the shape and orientation of the caudal extension graft can be altered to provide different effects on tip position. The graft is placed in an overlapping fashion.²³

Utilizing a marginal approach, tip refinement is done, through a conservative lateral crus reduction, leaving 8 to 10 mm of lateral crus laterally and, approximately, 5 to 7 mm medially at the domes.

Morcelized cartilage is used at the end of the procedure to fill in small defects and is used in nasal tip and supratip area.



Fig. 6 Case 1: young female with a moderate bony hump and slight deviation of the nose, underwent rhinoplasty using the let-down technique. Preoperative (A,C,E) and postoperative (B,D,F) views.

The suture of the M-plasty is performed with double-armed chromic catgut 4-0 with a 12 mm cutting needle, one or two stitches of suture in the IC incision, and three or four in the HT. To preserve the foundation of the M-plasty flaps, it is very important that the corners of the M-plasty are not taken to the cutaneous angles formed by the incisions, but rather that they be approximated without tension, leaving an area that will heal by secondary intention (►Fig. 5).

Discussion

This technique provides in a controlled manner an option to keep the integrity of the nasal dorsum and has been used by the author over the past 15 years (►Fig. 6).

It is the anatomy and the esthetic principles that determine the type of approach for rhinoplasty.²⁴

Because of the diversity of presenting deformities, a broad range of surgical techniques is required for the treatment; in particular of the Hispanic nose, surgeons must be prepared to appropriately modify the procedures for individual patients.

A major argument in favor of an endonasal approach is the reduction of surgical dissection, resulting in less edema which facilitates wound healing in turn producing more predictable results.¹⁷ It has been suggested that minimal dissection with the endonasal approach creates an ideal envelope for securing implanted grafts decreasing the risk of graft movement and altering the nasal anatomy.²⁵



Fig. 7 Case 2: patient with a high dorsum with bony and cartilage components, let-down technique was used to lower the dorsum along with the radix.

Because this technique is about a reduction of the dorsal height, “en bloc” should be performed prior to the tip work, since it will, when properly performed, increase tip rotation and nostril enlargement which will have to be addressed at the end of the procedure (►Fig. 7).

According to Burke and Cook, the main disadvantage of the endonasal approach compared with the external (open) approach is reduced visualization with limited surgical access.²⁶ Therefore, the main difference between an external (open) approach and the endonasal approach is surgical exposure. Despite the current controversy between the endonasal and external approaches, the literature lacks objective results proving the superiority of one surgical approach or technique over the other including which one has the fewest complications. There is no consensus about the best approach regarding structural support, the ideal nasal esthetics, and the best way to stabilize the internal or external nasal valve. As surgeons, the authors realize and are certain that all techniques involve consequences; the more complicated the technique, the greater the consequences.^{27,28}

With the endonasal approach, it is possible to have optimal visualization, while avoiding an external columellar scar. The FLI approach is ideal for comprehensive septorhinoplasty, making the scar an ally by using the force and axis of the natural healing process. It is possible to work on the dorsum, septum, valve region, modifying the inferior lateral cartilages via the retrograde approach, as well as liberating the nasal tip complex to rotate or project the tip (lobule), leaving the tip in an appropriate position.²² In the event, further tip modification is needed, and it is possible to provide additional visualization by delivering the inferior lateral cartilages through a marginal incision.

With all the techniques for septorhinoplasty, it is extremely important to take into account the delicate balance between good and excellent results, as well as weighing the risk-benefit ratio, making it possible to achieve long-term predictable and reliable results, both functionally and cosmetically.²⁸

This technique, like many others, is not the answer to every case but will avoid those complications seen with other techniques, such as inverted V deformities, dorsal irregularities, and narrowing of the nasal valve.

Conflict of Interest

None.

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