

Chapter 86 – Basic Rhinoplasty

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Perhaps no other procedure combines the degree of artistic and technical detail affecting both form and function to the same extent as cosmetic rhinoplasty, which is what makes it the most challenging, humbling, and variable of all cosmetic procedures in facial plastic surgery. No single procedure is suitable to all patients, no single procedure is embraced by all surgeons, and the goals or desired changes will vary from one individual to the next.

Given the number of variables that come into play with each patient, no two operations are ever exactly the same. Each case is unique, and only through thoughtful preoperative analysis,^[1–3] commitment to technical detail, critical and honest evaluation of one's postoperative results, ongoing education, and years of experience can the surgeon deliver consistent and predictable results. Finally, rhinoplasty surgery requires not only an appreciation of the artistic but also an awareness of the potential impact that changes may impart on nasal function so that nasal airflow is preserved or improved but not compromised.

The goal of this chapter is to outline some of the principles behind basic rhinoplasty maneuvers and the most commonly requested changes—dorsal reduction, tip refinement, and changes (increase or decrease) in nasal tip projection. In most cases, combinations of procedures are carried out, and it is incumbent on the rhinoplasty surgeon to understand the dynamic interplay^[4,5] between techniques to properly anticipate what is necessary to help achieve the desired result.

PREOPERATIVE PLANNING

Preoperative evaluation begins by establishing the issues that are of greatest concern to the patient to clarify what the patient hopes to achieve through rhinoplasty surgery. A complete medical history is obtained. In particular, a history of any previous nasal surgery is elicited and medications reviewed. Any anticoagulant medications (including products containing warfarin [Coumadin], aspirin, or ibuprofen and any herbal products) should be discontinued 7 to 10 days before surgery to minimize the likelihood of excessive or unnecessary bleeding intraoperatively or postoperatively.

A thorough assessment^[1–3] of the nose follows, which should include an evaluation of the nasal airway, skin thickness, dorsal height, tip definition, rotation and projection, alignment of the nose (straight versus crooked), and identification of any preoperative asymmetry.

Based on the patient's desires and findings on physical examination, a surgical plan is developed. The operation should be individualized according to the deformity, characteristics of the patient's tissues, and the patient's objectives. In this way a “game plan” unique to the individual patient is formulated.

The operative plan is then discussed with the patient and realistic expectations are set. The typical postoperative course, as well as potential complications and their relative frequency, are reviewed.

It is equally important to consider the limitations imposed by the patient's tissues and what may *not* be achievable and to clearly convey this information to the patient. The goal of surgery is to create a natural-looking nose without the tell-tale signs of surgery—one that harmonizes well with the other facial features. A conservative change is always preferable to overcorrection.

Preoperative photography must be done routinely and should include full facial frontal, right and left lateral, right and left oblique, and nasal base views. Close-up views are optional in general but preferable in cases in which there is obvious asymmetry preoperatively or a crooked nose.

ANESTHESIA

Rhinoplasty can be carried out under deep intravenous sedation or general anesthesia according to the preference of the patient and surgeon. Because intraoperative bleeding is inevitable, a general anesthetic provides maximal airway protection against aspiration and is thus preferred in most circumstances. In either case, the nose is also injected with 10 to 15 mL of 1% lidocaine with 1:100,000 adrenaline and the mucosa is decongested with oxymetazoline pledgets. The minimal amount of infiltrative anesthesia required to facilitate hemostasis without overly distorting the nose is recommended.

SURGICAL APPROACHES

Surgical approaches to rhinoplasty can be broadly classified as endonasal or external. Endonasal approaches to rhinoplasty are more difficult to learn and master because of somewhat more limited visual access, and for that reason most surgeons and certainly the less experienced are best served by the external approach for maximal exposure of the surgical anatomy. Consequently, only the external rhinoplasty approach will be outlined herein.

The basic principles underlying design of the columellar incision in external rhinoplasty are intended to minimize the chance of an unsightly conspicuous scar across the columella.^[6] For this reason the incision is irregularized rather than linear and placed across the narrowest portion of the columella. A variety of incisions are used (gull-wing, stair-step, inverted-V incisions), but the basic rationale that underlies each of them is the same. We prefer a five-cornered, inverted V transcolumellar incision because the angles of the incision facilitate meticulous alignment at the end of surgery, which helps better camouflage the resulting scar.

A five-cornered inverted-V incision (Fig. 86-1) is marked across the narrowest portion of the columella. The transcolumellar incision is joined at a precise right angle to bilateral "marginal" incisions—incisions made along the lower (caudal) margin of the lower lateral cartilage (LLC) (Fig. 86-2). Using a sharp wide two-pronged double hook, the surgeon everts the alar rim to expose the lower (caudal) border of the lateral crus of the LLC. The incision is made with a no. 15 blade, beginning laterally beneath the lateral crus (Fig. 86-3), curving medially beneath the dome of the LLC, and continuing alongside the lateral aspect of the columella (Fig. 86-4) adjacent to the caudal margin of the medial crus to meet the lateral extension of the previously outlined transcolumellar incision. The transcolumellar incision is made with a no. 15 blade while taking care to stay superficial so that the underlying medial crura are not inadvertently incised (Fig. 86-5).

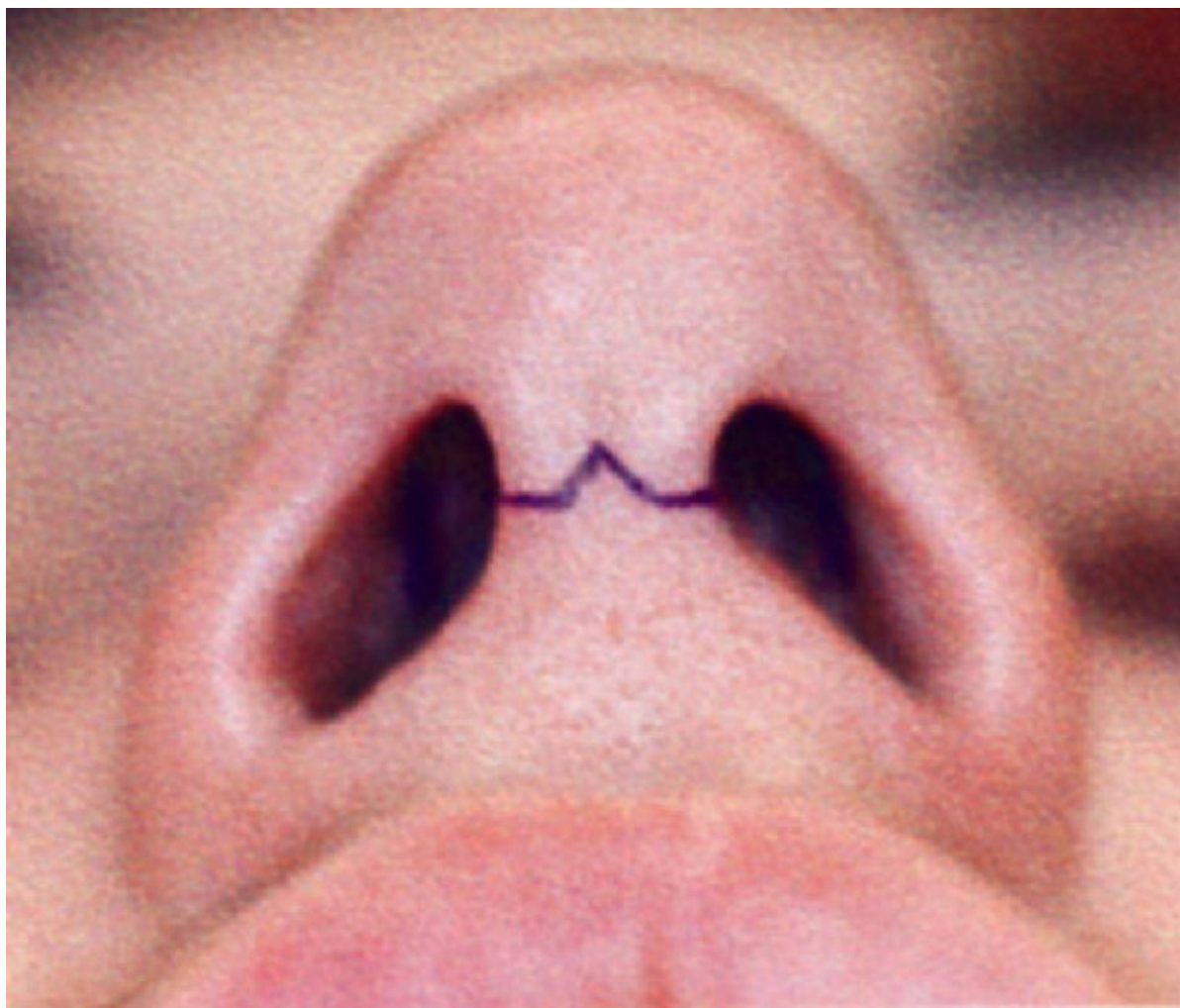


Figure 86-1 Five-cornered transcolumellar incision for an inverted-V external approach.

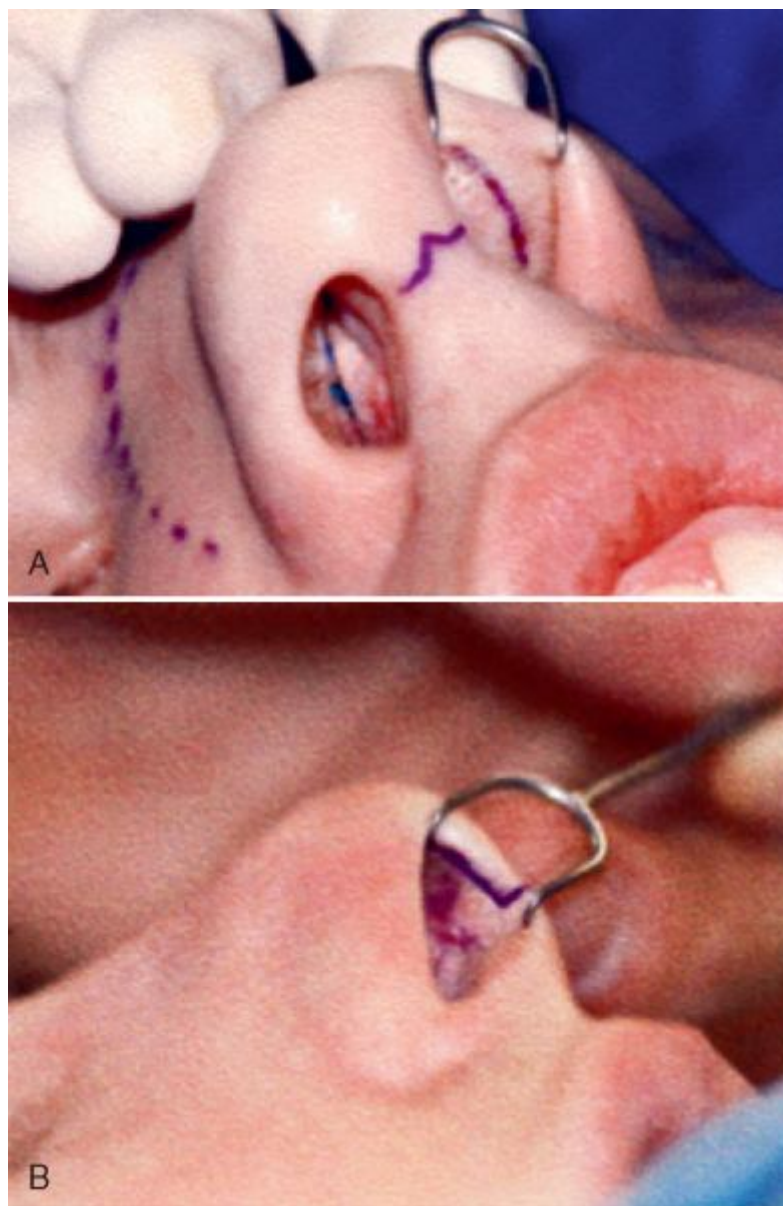


Figure 86-2 A, Marginal incision outlined along the caudal margin of the lateral crus. B, Marginal incision outlined along the caudal margin of the medial crus and joining the transcolumellar incision at a right angle.



Figure 86-3 Marginal incision below the lateral crus of the lower lateral cartilage.



Figure 86-4 Marginal incision on the lateral aspect of the columella, below the medial crus of the lower lateral cartilage.



Figure 86-5 Trancolumellar incision.

Careful elevation of the columellar skin flap is carried out with fine scissors by passing from the marginal incision on one side of the columella completely through to the other side (Fig. 86-6). The scissors are then used to complete the trancolumellar incision and release any soft tissue attachments of the flap for exposure of the underlying medial crura (Fig. 86-7). A small double skin hook is placed beneath the columellar skin flap while a second such hook is placed beneath the alar cartilage to provide delicate counter-retraction (Fig. 86-8) as dissection of the skin-soft tissue envelope is carried anteriorly over the dome of the LLC and laterally over the lateral crura in a relatively avascular plane intimate to the overlying perichondrium. Precise and deliberate dissection is required to avoid inadvertent injury to or incision of the underlying cartilage.



Figure 86-6 Elevation of the columellar skin flap is facilitated by first undermining from the marginal incision on one side through to the marginal incision of the opposite side.



Figure 86-7 Retraction of the columellar skin flap exposes the underlying paired medial crura.

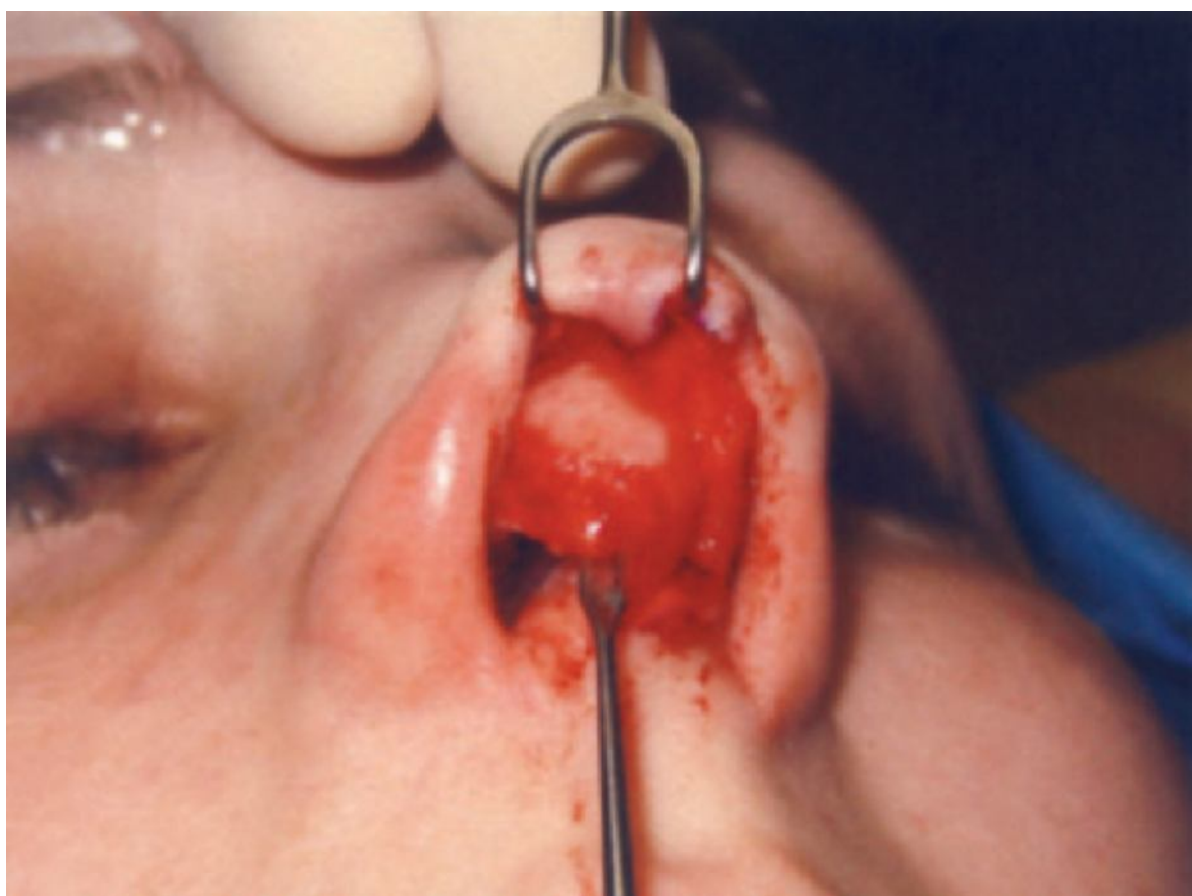


Figure 86-8 Retraction of the lateral crus of the lower lateral cartilage enables elevation of the overlying skin in a relatively avascular plane.

Once the tip cartilage is exposed, it can be retracted inferiorly by a sharp medium-width two-pronged hook straddling the columella, with one hook beneath each dome (Fig. 86-9). The skin-soft tissue envelope that has already been elevated is retracted cephalically with a wide sharp double-pronged skin hook. The anterior septal angle (the most anterior and caudal point on the dorsal cartilaginous septum) is identified in the midline. The dissection is then carried superiorly along the dorsum in a plane intimate to the perichondrium overlying the dorsal septum to reveal the upper lateral cartilage (ULC) in the middle third of the nose (Fig. 86-10) and ultimately the nasal bones in the upper third, where one transitions to a subperiosteal plane. As the dissection moves cephalically, the best exposure is achieved with the use of an Aufricht dorsal nasal retractor.

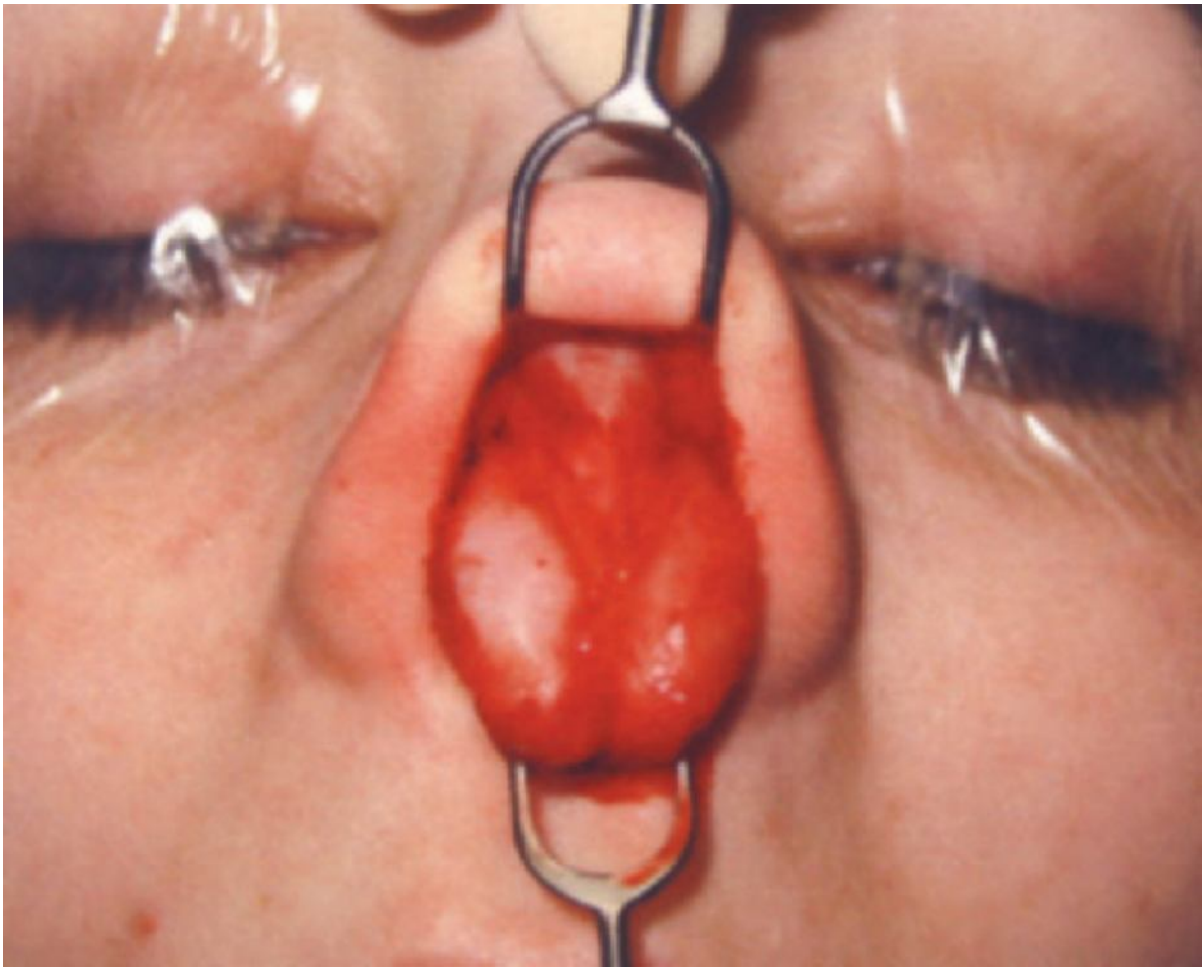


Figure 86-9 Retraction of the lower lateral cartilage caudally to expose the anterior septal angle for dissection superiorly along the nasal dorsum.

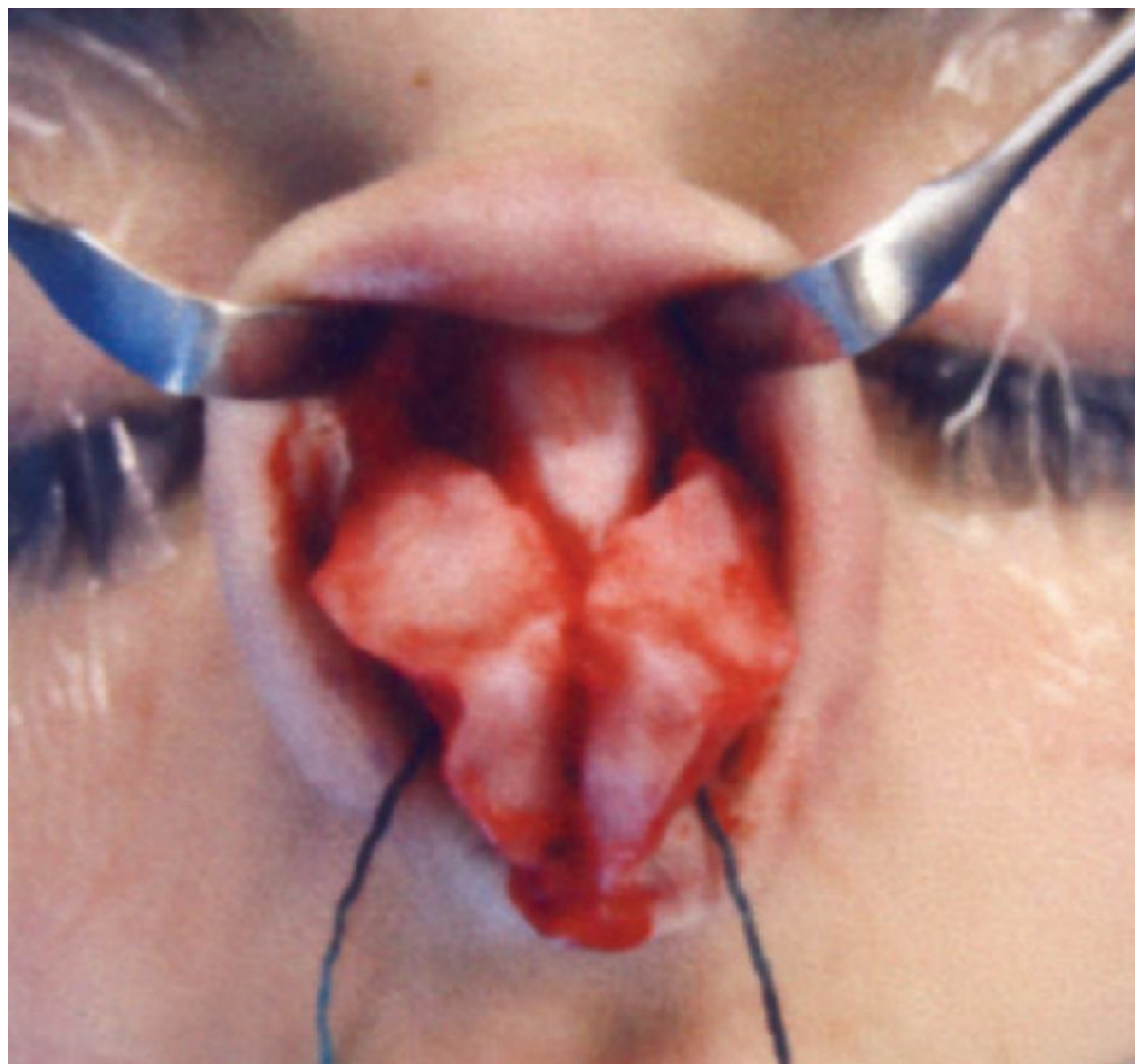


Figure 86-10 Complete exposure of the paired medial and lateral crura of the lower lateral cartilage and the cartilaginous nasal dorsum.

Dorsal Reduction/Profile Alignment/Osteotomies

The use of life-size photographs will allow one to take precise measurements preoperatively to provide a more accurate guide to the amount of cartilaginous or bony reduction required intraoperatively. In general, the preference in men is for a stronger profile and a relatively straight nasal profile line from the nasion (root of the nose) to the nasal tip. In women, a slightly concave dorsal profile line that is 1 to 2 mm below the most anterior point of the projection of the nasal tip will yield an aesthetically pleasing feminine profile with a slight supratip break. In either case, extreme over-reduction or under-reduction is to be avoided.

Profile reduction is best done incrementally to arrive at the final level in a graduated fashion. The bulk of the reduction is carried out in the first pass, with fine-tuning and refinement thereafter. In most patients the osseocartilaginous hump is composed mostly of the cartilaginous vault, with a smaller contribution coming from the nasal bones themselves.

The cartilaginous dorsum is preferably reduced before septoplasty (if planned) to prevent inadvertent over-reduction of the dorsal septal strut that is to be preserved, which might otherwise occur if submucosal resection of the septum is done before further reduction of the dorsal strut in the process of adjusting the profile. The cartilaginous reduction can be done with either a knife (no. 15 or 11 blade) or angled Fomon scissors (Fig. 86-11), with or without first separating the ULC from its attachment to the dorsal septum. If reduction of 3 mm or more is planned, submucosal separation of the ULC before dorsal reduction will preserve the support provided by the nasal mucosa below the ULC. When a smaller reduction is planned, it can generally be done without separating the ULC from its septal attachment yet still remaining extramucosal (i.e., without violating the nasal mucosa). Once the cartilaginous hump is removed, the height of the ULC relative to the dorsal septum is inspected and its medial borders lowered with a knife or fine scissors until they lie flush or level with the dorsal septum.

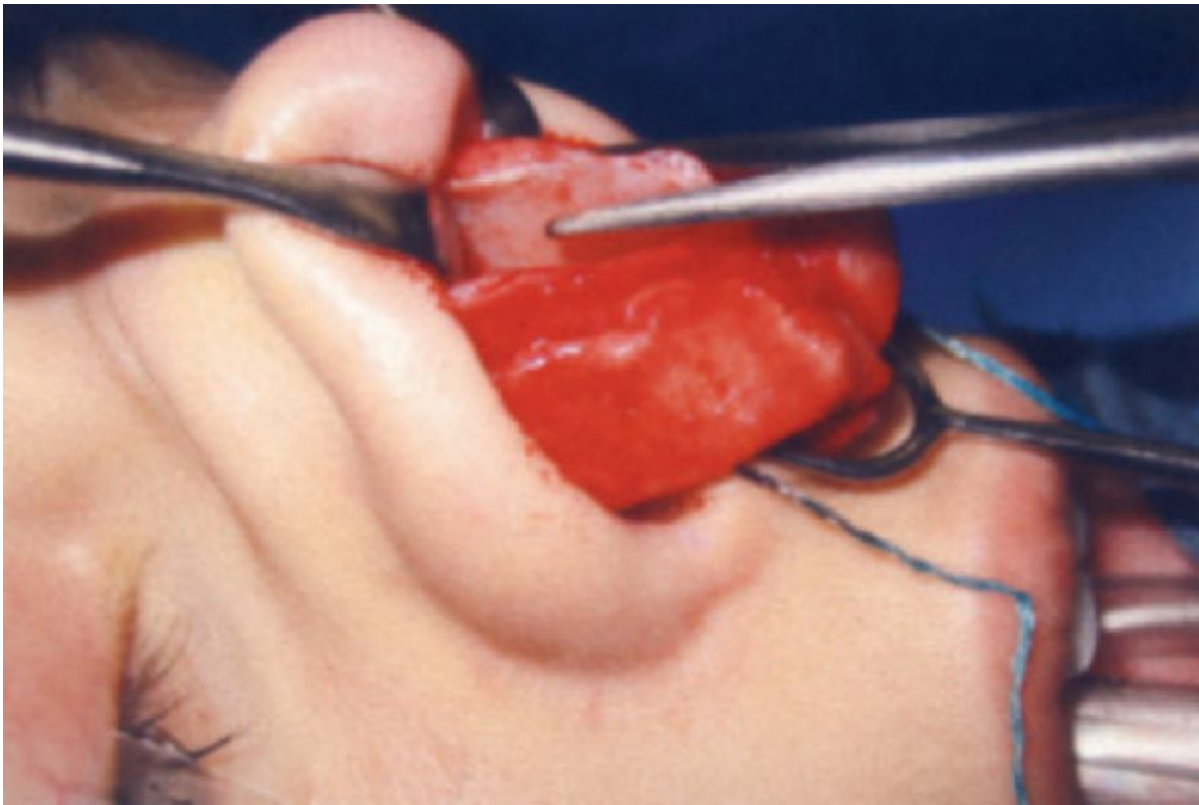


Figure 86-11 An angled (Fomon) scissors is used to reduce the height of the cartilaginous dorsum (note that the upper lateral cartilage has been separated from its attachment to the dorsal septum).

The amount of bone to be removed is now defined by the height of the dorsal septum just below the caudal end of the nasal bones. Conservative reduction of the bony hump is carried out initially so that incremental refinement can be carried out as needed. The bony hump can be reduced with either nasal rasps or an osteotome.[7] Rasps allow more gradual reduction and are therefore recommended for a smaller bony hump and less experienced surgeons. For removal of a larger hump, a Rubin osteotome (a flat osteotome with a vertical fin to guide alignment and help keep the osteotomy level) is seated at the caudal end of the nasal bones (Fig. 86-12) and advanced toward the radix on a line parallel to the ideal dorsal line as the assistant strikes the back end of the osteotome with a mallet. Slight undercorrection is preferred, followed by final smoothing with a fine sharp nasal rasp.



Figure 86-12 A Ruben osteotome is positioned for reduction of the bony dorsum. The incised portion of the cartilaginous dorsum to be resected is seen above the level of the osteotome.

When a large bony hump has been removed, an “open roof” deformity of the nasal bones is produced that requires closure with lateral osteotomies to mobilize and infracture the nasal bones. The osteotomies will also serve to narrow the bony nasal pyramid. A large open roof deformity may not need medial osteotomies, but in many cases a short, fading medial oblique osteotomy will help establish a predictable, controlled location for the backfracture of the lateral osteotomy.

Five to 10 minutes before the osteotomies are carried out, the pathway of the proposed lateral osteotomies is reinjected with 1% lidocaine with 1:100,000 adrenaline to help minimize bleeding and therefore postoperative bruising.

Medial osteotomies^[7] are carried out bilaterally with a straight osteotome—2, 3, or 4 mm wide, depending on the thickness of the nasal bones and the surgeon's preference. The osteotome is engaged at the cephalic end of the open roof deformity at the junction of the bony septum and nasal bone. As the assistant taps the back end of the osteotome with a mallet, the osteotome is advanced cephalically at first and then fades obliquely 15 to 25 degrees off midline to join with the medial end of the backfracture from the lateral osteotomy that follows. For thinner, delicate or shorter nasal bones in particular, medial osteotomies may not be necessary.

Lateral osteotomies are initiated through a stab incision at the base of the piriform aperture, just above the attachment of the inferior turbinate. Straddling the piriform aperture with a small or medium-size speculum will help bring the bone into relief and facilitate accurate placement of the stab incision. Through that incision a periosteal elevator is used to create a narrow tunnel through the soft tissue along the line of the proposed osteotomy to help diminish secondary soft tissue trauma and bleeding from the osteotomy itself.

A 4-mm curved guarded osteotome (Fig. 86-13) is initially directed laterally (as though aiming for the ipsilateral lateral canthus) to engage the osteotome in the ascending process of the maxilla. Once engaged, the osteotome is then directed cephalically while making certain to stay low in the nasofacial groove to avoid creating a visible or palpable step deformity on the bony nasal sidewall. Near the level of the infraorbital rim below the medial canthus, the osteotome begins to curve medially to meet the apex of the open roof deformity or the cephalic end of the medial osteotomy. The osteotome is then rotated medially to create a backfracture in the nasal bone for medialization and closure of the open roof deformity. The path of typical medial and lateral osteotomies is seen in Figure 86-14. A patient who underwent rhinoplasty with dorsal reduction and lateral osteotomies only is seen in Figure 86-15.

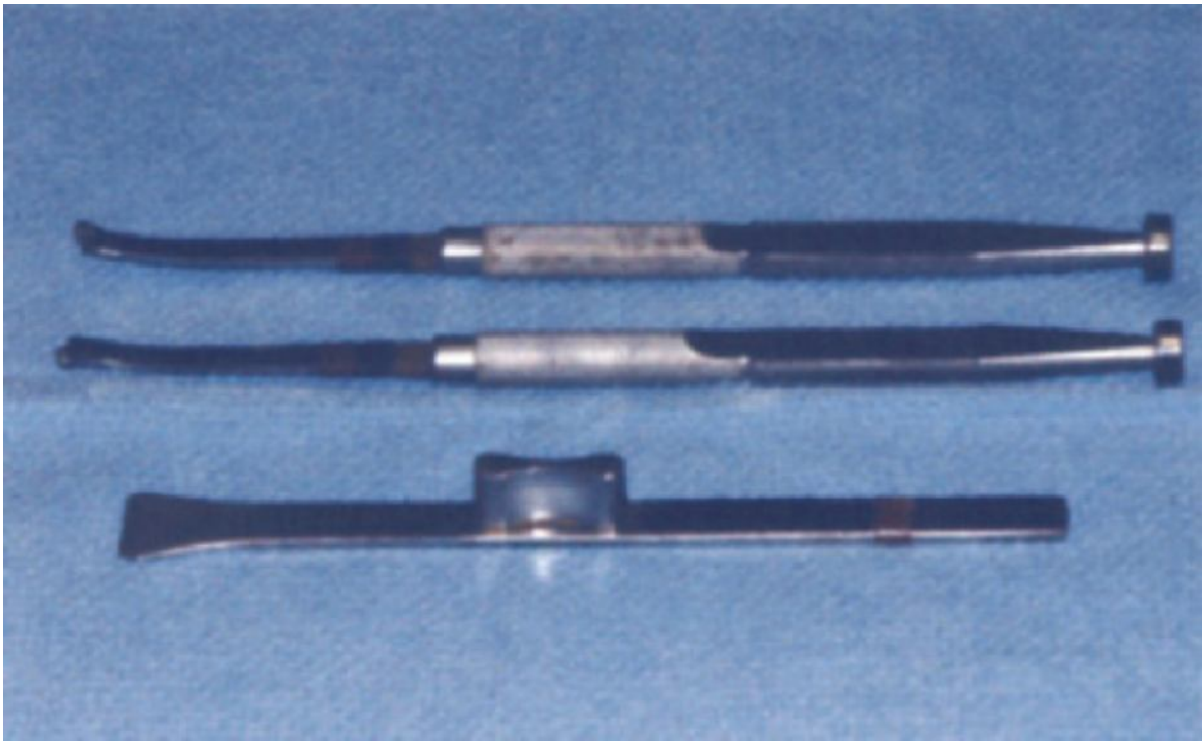


Figure 86-13 Curved right and left lateral osteotomes (*above*) and a Rubin osteotome (*below*).



Figure 86-14 Typical path of fading medial and lateral osteotomies marked externally.



Figure 86-15 Preoperative and postoperative lateral (A) and base (B) views of a patient who underwent only dorsal reduction and lateral osteotomies. Note the retraction of the nasal tip as seen on the base view that results from reducing the height of the nasal dorsum.

Nasal Tip Surgery

The range of surgical techniques described in the surgical literature to modify the nasal tip is a reflection of the complexity of nasal tip surgery and the evolution that has taken place to achieve better, enduring, and more consistent and predictable results while diminishing complication rates.

In most cases, the goals of nasal tip surgery are the same regardless of technique and include

- A natural looking, well-defined tip to address a broad or bulbous nose.
- Tip rotation appropriate to gender to address a drooping nasal tip (ideal nasolabial angle, 90 to 105 degrees in males and 100 to 115 degrees in females).
- Tip projection appropriate to the height of the nasal dorsum. In men, desirable tip projection creates a fairly straight profile from the root of the nose (the nasion or radix) to the tip, whereas in women the tip may project 1 to 2 mm above the level of the dorsum to yield a more feminine profile.

Nasal Tip Definition

As seen from the base of the nose, the ideal nasal tip contour will be more triangular in shape than broad, boxy, or trapezoidal. On a frontal view it should appear as a nasal tip lobule with two distinct tip-defining points closely approximating one another but without looking “pinched.”

Enhancement of tip definition can be accomplished with suture techniques (more conservative) or with cartilage excision (more aggressive) to shape the cartilage at the lobular dome. The former is better suited to a patient with very thin skin, a tip in need of more limited refinement, or a surgeon with less experience, whereas the latter is best reserved for a patient with thicker skin and a surgeon more familiar with the nuances of excisional techniques.

1. **Cephalic trim.** Regardless of whether one is applying suture modification or excisional techniques at the dome of the LLC, both are frequently used in conjunction with a reduction in the overall height of the lateral crus known as a *cephalic trim* (Fig. 86-16). Volume reduction of the lateral crura will help address a tip that

appears too bulbous. A cephalic trim is limited to the more medial aspect of the lateral crus. Trimming the cartilage more laterally does nothing to enhance definition more centrally in the lobule and may unduly risk alar collapse by compromising the strength and support that the lateral crura provide to the nasal ala.

A minimum height of 6 to 7 mm of the lateral crus should be preserved to ensure adequate alar support and minimize the risk of alar collapse or retraction. A no. 15 blade is used to incise the lateral crura, and the cartilage to be removed is then dissected off the underlying vestibular mucosa with either fine scissors or the no. 15 blade. Care is taken to ensure that the height of the remnant of the lateral crus is symmetrical on the two sides.

- 2. Tip suturing.** One method to narrow a broad or bulbous nasal tip uses permanent sutures^[8] to modify the lower lateral crura at the tip (dome). This is a very effective and conservative (nondestructive) technique. By not actually excising any cartilage, one avoids having any incisional edges in the tip and thus diminishes the likelihood of visible irregularities.

A 5-0 monofilament permanent suture is placed as a horizontal mattress stitch spanning the alar dome. The stitch is passed through cartilage only (superficial to the vestibular mucosa underneath) from a point medial to the dome; it exits the cartilage lateral to the dome and is then repassed back through the cartilage several millimeters below the first pass in a lateral-to-medial direction (Fig. 86-17). In this way the suture knot ends up between the two medial crura. This is known as a *transdomal* suture. As the suture is tightened, the domal angle is narrowed, thus reducing the width of the nasal tip. The same maneuver is executed bilaterally. At the knot, one limb of the suture from each side is tied to that of the opposite side to unite the two domes from either side to one another (the *interdomal* suture). This adds stability to the new tip complex, helps ensure that the two tip-defining points rest at the same level, and minimizes the likelihood that as the nose heals, the effect of soft tissue contracture will draw the two domes apart from one another and lead to visible irregularities, asymmetry, or bossae (knuckling) of the cartilage. Finally, any sharp or prominent edges of the cartilage are shaved or beveled as necessary to yield a smooth final result. An example of tip narrowing with transdomal and interdomal sutures is seen in Figure 86-18.

- 3. Vertical dome division.** Vertical dome division (VDD) refers to an excisional technique that involves interruption of the integrity of the LLC from its cephalic to its caudal border at or near the dome.^[9] It has also been referred to as the *mobile tripod technique*^[10] or *vertical lobule division*.^[11] With this technique a cephalic trim is carried out in continuity with excision of either a cephalically based triangle (Fig. 86-19) or a wedge (Fig. 86-20) of cartilage at the chosen point of "division." The underlying vestibular mucosa is always preserved.

In either case, the two medial crura are then sutured to one another several millimeters proximal to the cut edge with 5-0 clear nylon mattress suture. This will stabilize the medial crural complex as natural scar contracture develops with healing and thereby help prevent migration or twisting of the cartilage, which might otherwise create visible irregularities. It is very important with VDD, especially in patients with thinner skin, to trim or round off any sharp or protruding edges of cartilage. Meticulous attention to such fine detail is essential when using this technique. An example of tip narrowing with VDD using the technique illustrated in Figure 86-19 is seen in Figure 86-21.

Where the surgeon chooses to divide the cartilage will vary with what the surgeon is trying to achieve with respect to tip projection and tip rotation. Excision of a cephalically based triangle of cartilage (see Fig. 86-19) lateral to the dome will tend to increase both tip rotation and projection while simultaneously narrowing the tip. In such cases the medial border of the excised triangle should be no more than 2 to 3 mm lateral to the dome.^[9] Alternatively, a wedge of cartilage can be excised right at the dome (Fig. 86-20), thus shortening the medial and lateral crura equally to effectively deproject and narrow the nasal tip.

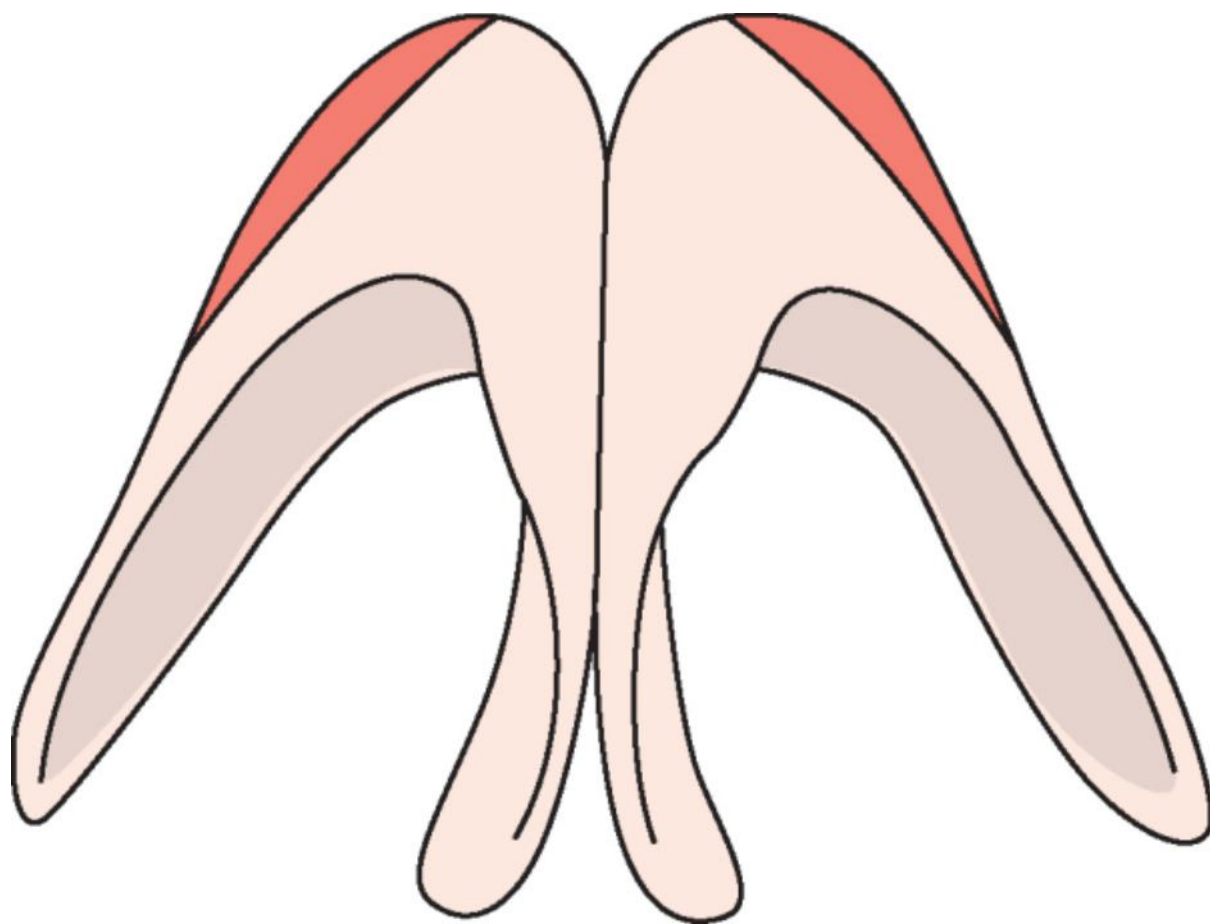


Figure 86-16 In a cephalic trim, the upper border (marked in red) of the lateral crus is excised to help improve definition of the nasal tip.

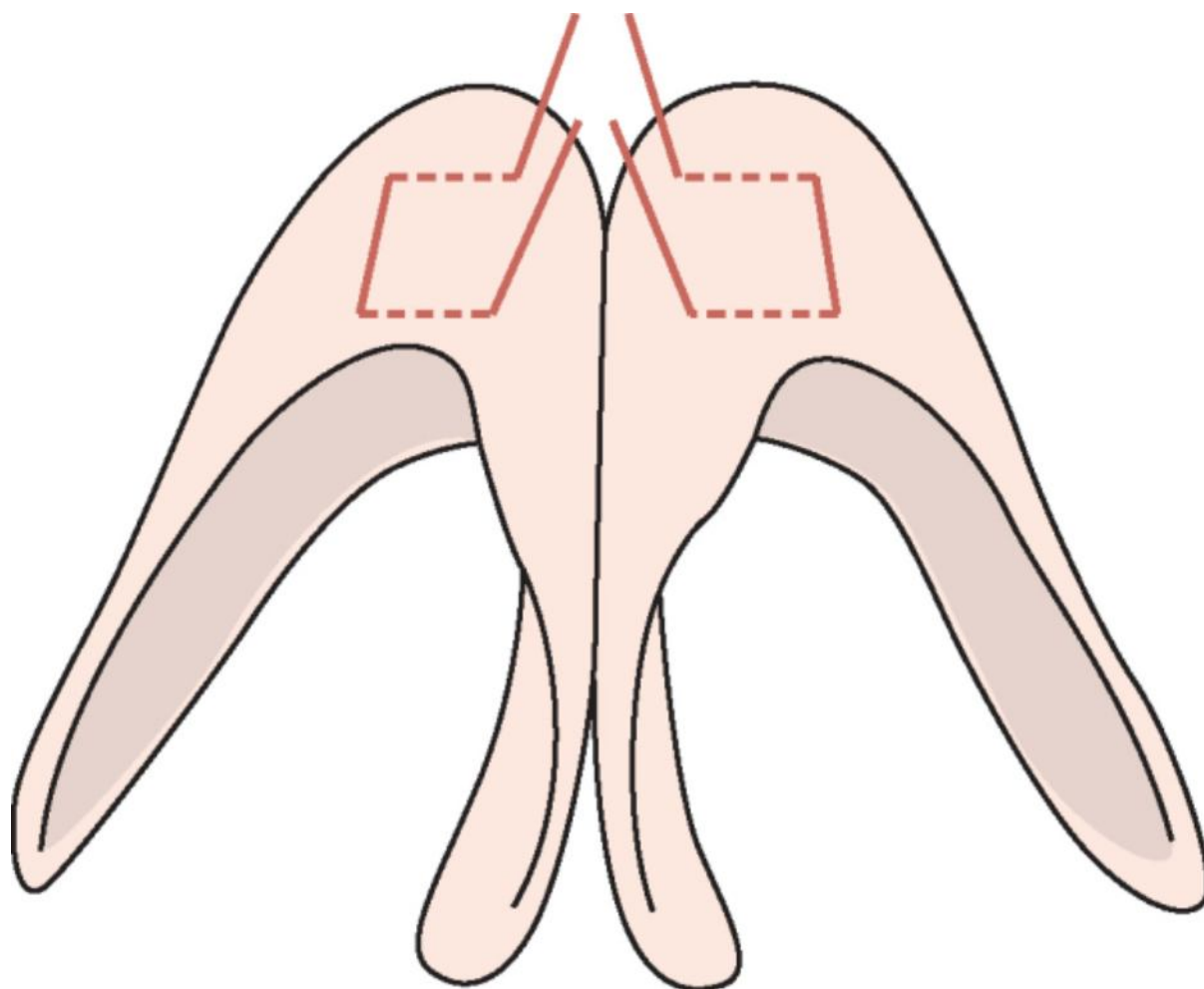


Figure 86-17 Bilateral horizontal mattress transdomal sutures will narrow the domal angle and reduce tip width as they are tightened. Suture ends from either side are then interlocked (interdomal suture).



Figure 86-18 Preoperative (*left*) and postoperative (*right*) base views of a nasal tip refined with transdomal and interdomal sutures.

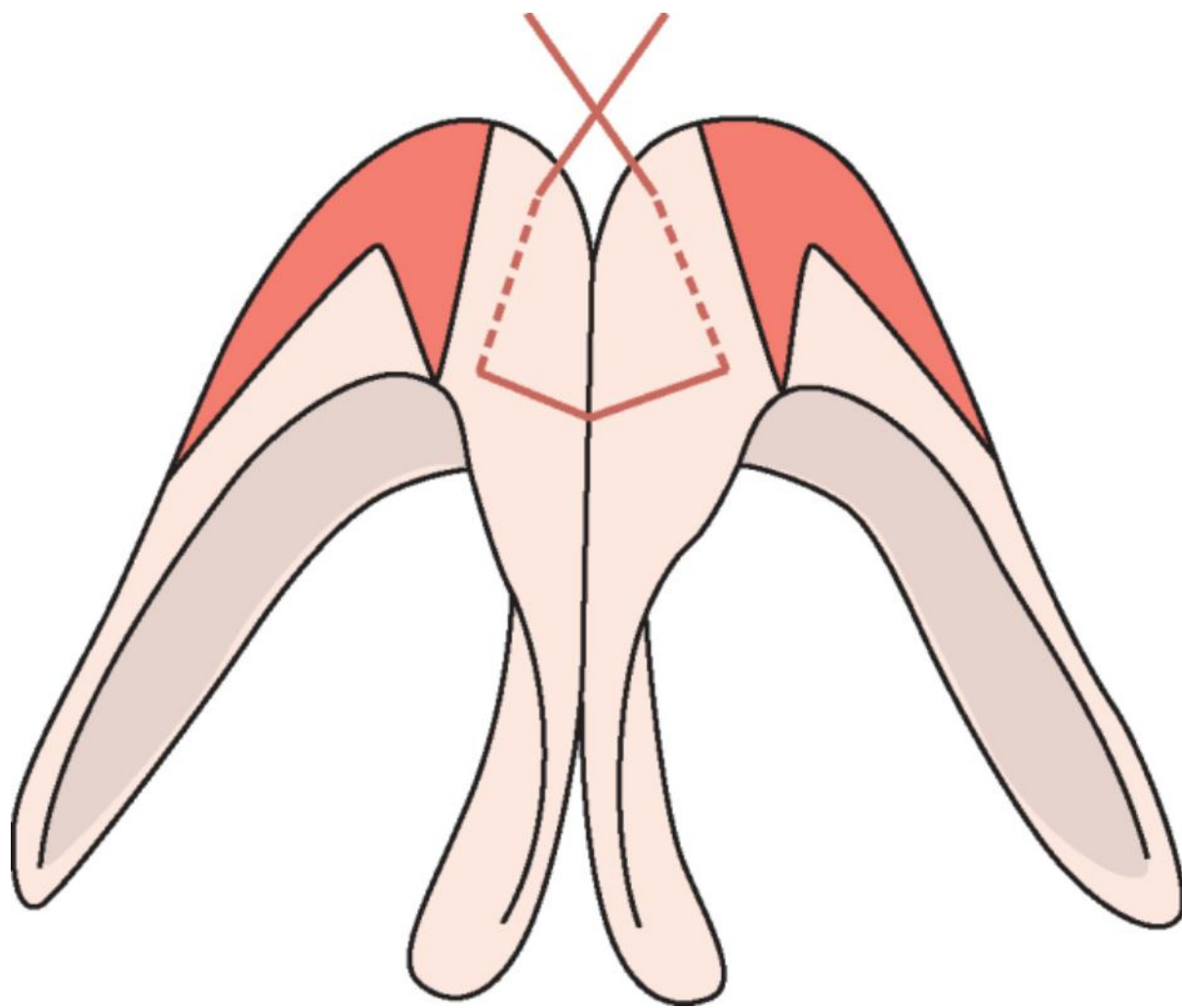


Figure 86-19 A vertical dome division (outlined in red, in continuity with a cephalic trim) carried out by excising a cephalically based triangle of cartilage 2 to 3 mm lateral to the dome will narrow the broad or boxy nasal tip while simultaneously increasing tip projection. The two medial crura are suture-united for stability of the medial complex.

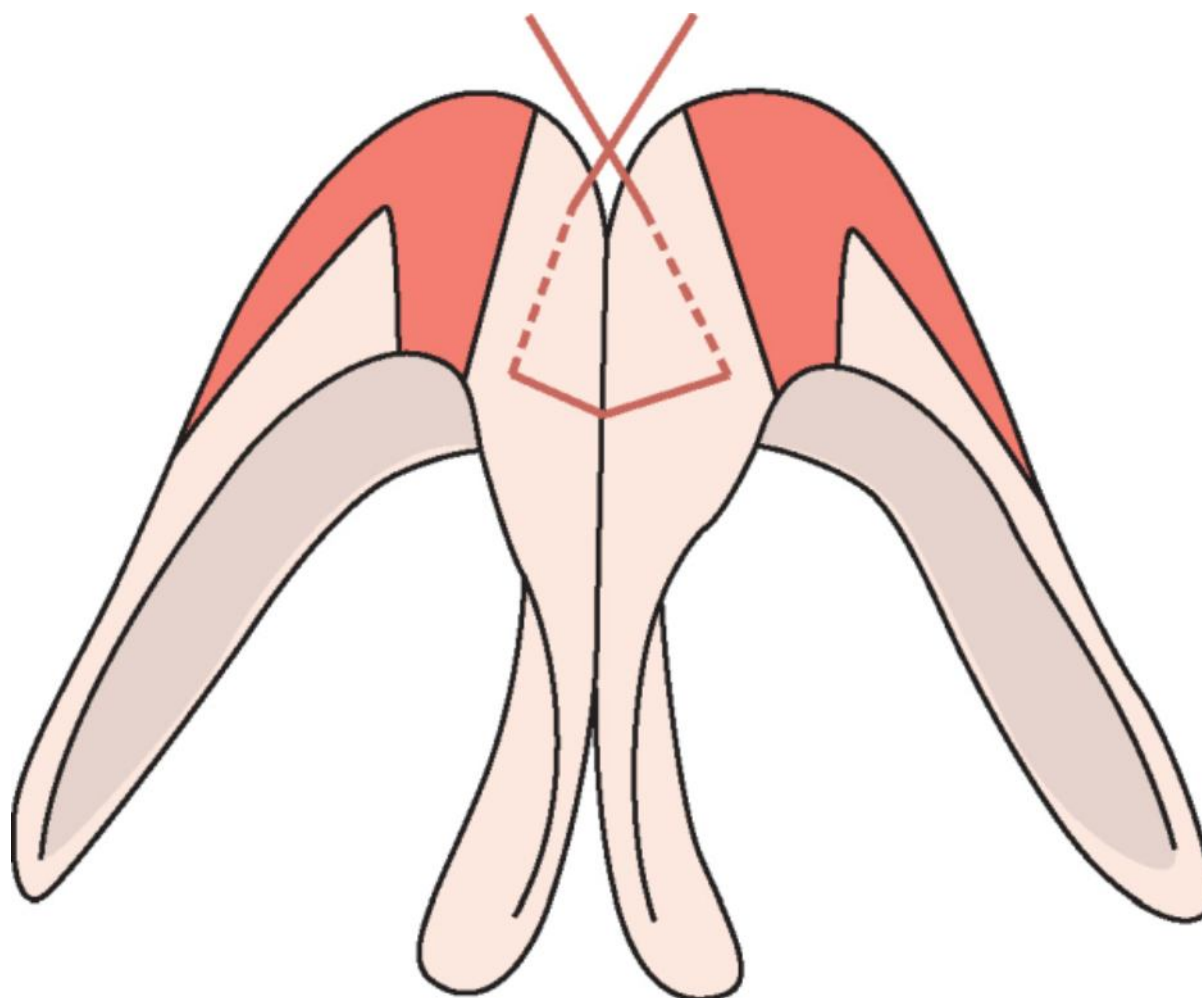


Figure 86-20 A vertical dome division (outlined in red, in continuity with a cephalic trim) carried out by excising a wedge of cartilage at the dome will reduce the medial and lateral crura equally. This will narrow the broad or boxy nasal tip while simultaneously decreasing tip projection. The two medial crura are suture-united for stability of the medial complex.



Figure 86-21 Preoperative (*left*) and postoperative (*right*) base views of the nasal tip refined via vertical dome division with excision of a cephalically based triangle of cartilage lateral to the dome.

Nasal Tip Rotation

Elevation or increased rotation of the nasal tip (to address a drooping nose) may result from alterations to the LLC or as a by-product of other maneuvers that do not directly change the shape of the LLC. Some basic techniques that facilitate an increase in tip rotation are described.

1. **Dorsal reduction.** In patients in whom the dorsum is quite high and overprojected preoperatively, reduction of the nasal dorsum will promote upward rotation of the nasal tip. Whereas a more limited reduction (2 to 3 mm) may not effect a very significant change in nasal tip rotation, reductions of 4 mm or greater will often

result in secondary rotation of the nasal tip.

2. **Shortening the caudal septum.** In patients with excessive columellar show (>4 mm on lateral view), shortening the overly long caudal septum is another effective means of promoting tip rotation. In such cases, a dorsally (anterior) based triangular wedge of cartilage is excised from the caudal end of the quadrangular cartilage together with the overlying septal mucosa. The septum can be stabilized with forceps in the nondominant hand while the cartilage is excised with a no. 15 blade.
3. **Transdomal/interdomal sutures.** Transdomal and interdomal sutures,^[8] when applied as described earlier and illustrated in Figure 86-17, will provide a conservative and modest increase in tip rotation. A patient in whom a transdomal and interdomal suture technique was used is shown in Figure 86-22.
4. **Vertical dome division.** VDD, as described earlier, will increase rotation when division of the lateral crura is executed several millimeters (2 to 3 mm) lateral to the dome (see Fig. 86-19).^[9] In essence, the medial crura are thus lengthened at the expense of the lateral crura when using this technique, thereby increasing projection and rotation simultaneously.
5. **Lateral crural overlay.** With this technique, vertical division of the lateral crura is carried out midway along the lateral crus, and the two segments are then overlapped and suture-fixed. A lateral crural overlay (also called a lateral crural flap) procedure^[12,13] will rotate the tip upward while simultaneously deprojecting the tip (as the lateral crura are effectively shortened). When tip deprojection is desired together with tip rotation *and* the nasal tip itself is already narrow and well defined, maneuvers further out on the lateral crura that produce the desired changes are preferable to maneuvers executed at the dome itself so that tip features that are already agreeable are not altered or disrupted.

It is helpful to first undermine the vestibular mucosa with fine scissors from beneath the lateral crus at the area to be divided and overlapped. Division of the cartilage is carried out with a no. 15 blade, and the two segments are then overlapped and secured with a 5-0 or 6-0 PDS mattress suture (Fig. 86-23). The greater the degree of rotation/deprojection desired, the greater the extent of the overlap.



Figure 86-22 Preoperative and postoperative lateral (A) and base (B) views of a patient who underwent dorsal reduction and tip modification with transdomal and interdomal sutures (in addition to chin augmentation).

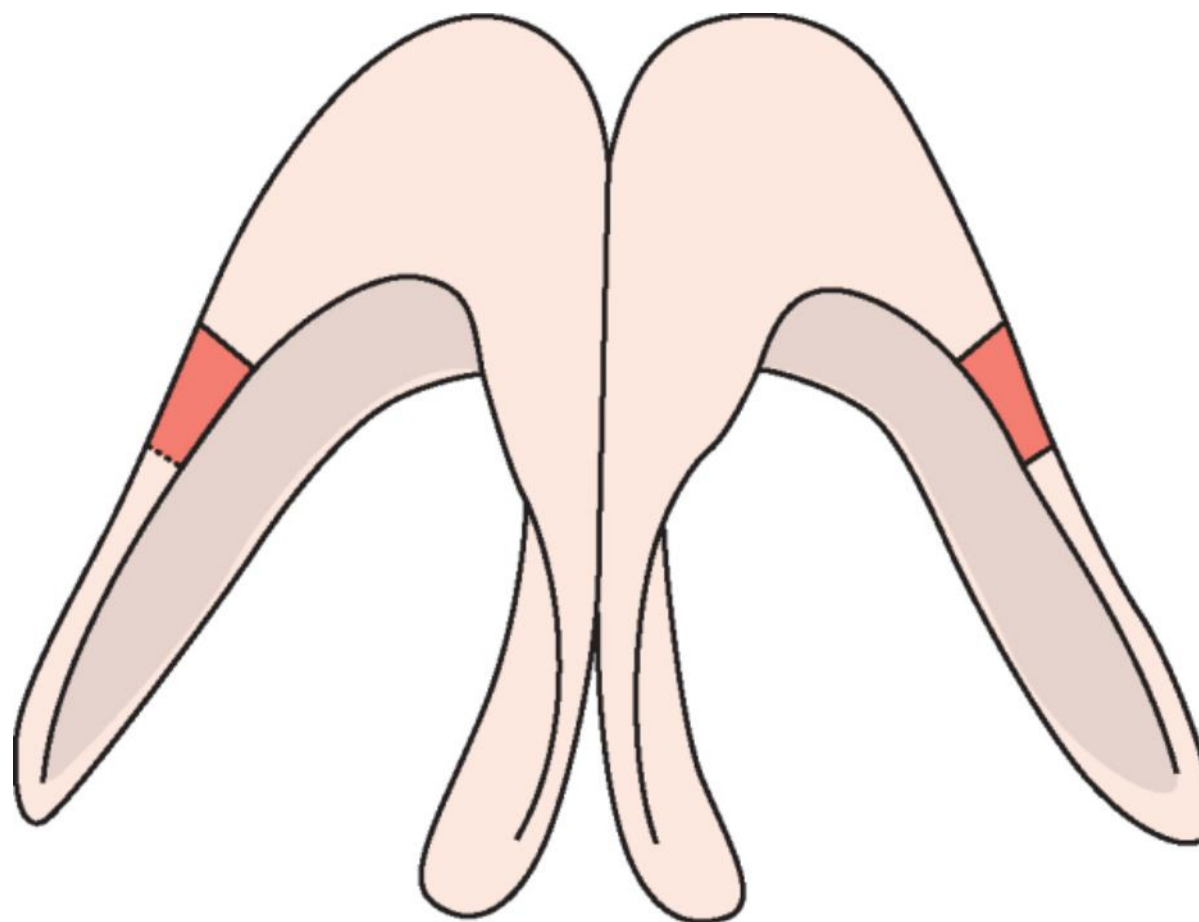


Figure 86-23 With a lateral crural overlay an incision is made in the lateral crus (*solid line*). The cartilage medial to the incision is then overlapped with and sutured to the cartilage lateral to the incision to deproject and rotate the nasal tip. The area outlined in red illustrates an example of an area to be overlapped.

Nasal Tip Projection

As is evident from the preceding sections on nasal tip surgery, many of the very procedures that are used to change either tip definition or tip rotation will have an effect on tip projection as well. There are many different options one may choose from to promote either an increase or a decrease in tip projection, and for this reason the surgeon needs to always consider the broader view of what one is trying to accomplish to select options that are best suited to each given patient. Some of the more commonly used techniques in tip projection are outlined.

1. **Deprojection.** As is the case with tip rotation, tip deprojection may occur directly as a result of alterations made to the LLC or as a secondary by-product of other maneuvers peripheral to the LLC. A smaller degree of tip deprojection will result naturally as tip support mechanisms are disrupted over the course of the operation, whereas greater deprojection will generally require some direct alteration of either the medial or the lateral crura.

Maneuvers that diminish tip support and thus deproject the nasal tip include significant *dorsal reduction* (described earlier; also see Fig. 86-15), *separating* the attachment of the LLC from the ULC (separation occurs as the scroll attachment of the two is eliminated with a cephalic trim), or a *full transfixion incision* along the caudal septum. For each of these maneuvers the degree of actual tip deprojection is limited. To make a full transfixion incision, a no. 15 blade is used to complete a through-and-through incision from the vestibular mucosa on one side of the caudal septum right through the vestibular mucosa on the opposite side. This severs the attachment of the medial crural feet to the caudal septum and thereby allows the tip to become retrodisplaced. Septocolumellar sutures (from the caudal septum to the columella) are used to resecure the tip in a new, deprojected position while at the same time closing the transfixion incision. Scar contracture will retrodisplace the tip toward the fixed nasal spine.

When more pronounced tip deprojection is required, changes will need to be directly made to the LLC. Shortening the lateral crura (the *lateral crural overlay*,^[12,13] described earlier) will deproject and rotate the nose (Fig. 86-24). Alternatively, one could use exactly the same technical maneuver on the medial crura to deproject and derotate (lengthen) a short nose by incising and overlapping the medial crural segments in a *medial crural overlay*.^[13] Finally, one could also promote tip

deprojection by shortening *both* the medial and lateral crura equally (which generally should not change tip rotation) either by combining the *lateral and medial crural overlay*^[13] or by using the *dome division technique* (described earlier under tip definition), which involves resection of a wedge of cartilage right at the dome (see Fig. 86-19) to effectively shorten both the medial and lateral crura equally (Fig. 86-25).

2. **Increasing tip projection.** One of the more common techniques to increase tip projection is the use of *transdomal/interdomal sutures* (described earlier). The advantage of this method is that it is conservative, nondestructive, quick, and relatively easy to execute. Narrowing of the tip will also result, as will some modest tip rotation.

Another option is the use of *vertical dome division* (described earlier). To increase tip projection, the lateral crura are divided 2 to 3 mm lateral to the dome (see Fig. 86-19), and the medial elements are then brought together and suture-stabilized. What results is augmentation of the length of the medial crural complex at the expense of the lateral crura, thus increasing tip projection. At the same time the tip is narrowed and rotated cephalically. This technique requires fastidious attention to detail to reduce the likelihood of visible irregularities, particularly in a thinner-skinned patient. In these patients a thin tip overlay graft of crushed cartilage can be used in addition to VDD as an added layer to smooth out the surface of the cartilage at the tip.

With the exposure provided by the external approach to rhinoplasty, a different alternative would be to isolate the caudal septum between the two medial crura and advance and resecure both medial crura on the caudal septum. These options have been referred to as *projection control sutures*^[14] or a *tongue-in-groove technique*.^[15]

Another means of augmenting tip projection is with the use of a cartilage *tip graft*, usually harvested and fashioned from septal or auricular cartilage. The edges of the graft must be beveled and thinned to minimize visibility, and the graft is then secured to the domes of the lower lateral crura with 6-0 PDS suture. This technique must also be used judiciously in a thin-skinned patient lest the graft edges become visible through the skin.



Figure 86-24 Preoperative and postoperative lateral (A) and base (B) views of a patient who underwent dorsal reduction, a complete transfixion incision, and lateral crural overlay to facilitate nasal tip deprojection and rotation.



Figure 86-25 Preoperative and postoperative lateral (A) and base (B) views of a patient who underwent dorsal reduction, a complete transfixion incision, shortening of the caudal septum, and vertical dome division with excision of a domal wedge to facilitate nasal tip deprojection and rotation.

DRESSINGS AND POSTOPERATIVE MANAGEMENT

If a septoplasty was performed concurrently, Doyle splints may be secured intranasally to stabilize the septum. Some surgeons prefer packing with Telfa, Merocel sponges, or Vaseline gauze. All are acceptable. Packs are generally removed in 24 to 48 hours, whereas splints may stay in place from 4 to 7 days. Use of a prophylactic antibiotic is recommended as long as nasal packing remains in place.

If the ULC was separated from the dorsal septum before reducing the height of the nasal bridge, it should be resecured to the dorsal septum with a mattress 5-0 PDS suture. The marginal incisions are closed with absorbable suture (5-0 chromic or plain catgut), and the transcolumellar incision is closed with monofilament suture (6-0 nylon or Prolene). Meticulous realignment of skin edges will be rewarded with a very faint, well-camouflaged inconspicuous scar. An external dressing that consists of 1–2-inch paper tape or Steri-Strips over the skin and a moldable splint over the tape is then applied.

Patients are advised to use saline spray frequently to keep intranasal splints clean. The inside of the nostril area and the transcolumellar incision should be cleaned several times daily with cotton-tipped applicators soaked in peroxide to remove dried blood and crust and then coated with an antibiotic ointment to help keep the tissue moist. Keeping the head elevated for the first 48 to 72 hours helps avoid postoperative edema, and ice packs or cool compresses are used over the eyes on a regular basis.

The patient is seen for suture and splint removal 5 to 7 days postoperatively. They are instructed at that time to avoid sunburn for 3 to 6 months with use of an appropriate sunblock and to avoid wearing glasses directly on the nose for the first 4 to 6 weeks while the edema continues to settle. Further follow-up appointments are usually made for 1, 3, 6, and 12 months postoperatively and annually thereafter.

COMPLICATIONS[16]

Patient Dissatisfaction

Managing expectations preoperatively is essential to minimizing the likelihood of having an unhappy patient.^[17] Patients should be equally aware of the limitations of surgery and their own unique anatomy, as well as the difficulty that can sometimes arise in matching surgical outcomes to expectations. A patient who sets realistic goals and thoroughly understands the risks associated with rhinoplasty surgery will usually be a satisfied patient postoperatively.

Dorsal Over-reduction/Under-reduction

The use of life-size photographs from which one can make preoperative measurements is a useful guide to avoiding gross under- or over-reduction, particularly for a less experienced surgeon. Under-reduction, if significant, may require a revision procedure to further lower the dorsum. Gross over-reduction, on the other hand, will result in a “saddle” deformity^[18] and necessitates a revision procedure to augment the dorsum, preferably with cartilage grafting.

Pollybeak Deformity

Over-reduction of the bony dorsum or under-reduction of the cartilaginous dorsum will result in a pollybeak deformity^[19] in which the profile line appears high from the rhinion to the nasal tip. If caused by over-reduction of the bones, dorsal augmentation in that area is required. If secondary to under-resection of the cartilaginous dorsum, additional reduction of that part of the nasal bridge is then required.

Tip Asymmetry/Irregularities/Bossae

Meticulous attention to detail in planning and executing the surgery will help avoid such complications,^[20] especially in a thin-skinned patient because tip irregularities are more likely to be camouflaged in patients with thicker skin. Nonetheless, scar contracture and shrinking of the soft tissue envelope can result in either asymmetry or visible irregularities despite vigilance of the surgeon intraoperatively. In such cases, targeted revision surgery (usually relatively minor) may be warranted.

Alar Retraction/Alar Collapse

Both these complications are typically caused by overly aggressive resection of the lateral crura and result in a deformity with both aesthetic and functional implications. For this reason, preservation of at least 6 mm of the height of the lateral crura is recommended. Both retraction and collapse will require structural grafting with cartilage (septal or auricular) to either replace or reinforce the overly resected lateral crura.^[21,22]

PEARLS

- Complete and thorough analysis is a vital prelude to developing a successful surgical plan.
- Realistic goals must be established with the patient because patients with unattainable expectations are not good surgical candidates.
- Effort should be made to maintain dissection in tissue planes intimate to the underlying cartilage and bone to maximize the thickness of the soft tissue cover, which will minimize unnecessary bleeding and swelling.
- Conservatism is always warranted, and desirable preoperative features should be preserved.
- Many alterations to the lower lateral cartilage affect both tip projection and tip rotation.

PITFALLS

- Over-reduction of the nasal dorsum will produce an unnatural, scooped appearance and give the nose a telltale “surgical” look.
- Aggressive resection of tip cartilage will not yield better nasal definition but will set the stage for complications such as alar collapse or alar retraction.
- One cannot overcome thick skin by resecting more of the underlying cartilaginous support in search of better refinement.
- In patients with thin skin, inexact surgery at the tip-defining points will lead to visible prominences or bossae.
- Inattention to detail when closing the transcolumellar incision will result in visible notching or a wide unsightly scar.

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