

SURGICAL APPROACHES TO THE NASAL SKELETON

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There are a variety of surgical options to expose the nasal skeleton and lower two thirds of the nasal anatomy when performing a cosmetic rhinoplasty. Knowledge and aptitude in each of these options is necessary for the complete rhinoplasty surgeon. The technique used should provide the least amount of tissue distortion and disruption of tip-supporting mechanisms, yet yield necessary exposure for the most reliable and favorable cosmetic result. All surgical approaches to the lower two thirds of the nose, and their specific advantages and disadvantages, will be described.

There are several different surgical approaches for exposure of the lower two thirds of the nose when performing cosmetic nasal surgery. The preferred technique often varies among rhinoplasty surgeons, based on their training, experience, and comfort level. Before performing a rhinoplasty, the dynamics of the nasal and facial anatomy must be carefully assessed and goals outlined. During the preoperative evaluation, the surgeon must choose the surgical approach that offers the best exposure; the least amount of tissue distortion, scarring and edema; and minimal disruption of tip-supporting mechanisms while accomplishing the best and most consistent cosmetic result.¹⁻² The most experienced and thoughtful surgeon is adept with all surgical approaches to the nasal anatomy and selects the technique on an individualized basis, not relying on one operation for every nose.

The approaches of the lower two thirds of the nose can be categorized as endonasal or external. In general, as one progresses through the following list, exposure is improved, yielding greater access to the nasal anatomy. However, this result is frequently at the expense of increased tissue edema and less control over postoperative healing. The approaches are:

1. Endonasal
 - a. transcartilaginous (intracartilaginous, cartilage splitting)
 - b. retrograde (eversion)
 - c. bipedicled chondrocutaneous flap (delivery)
2. External (open)

These techniques are accomplished through various incisions strategically placed to allow for careful anatomic dissection of the underlying nasal skeleton. The septal incisions are a continuation of either the transcartilaginous or intercartilaginous incision. Which incision is used depends on the approach selected and is directly related to the surgeon's preoperative assessment of the nasal and tip anatomy. The following incisions can be used:

1. Alar cartilage incisions
 - a. transcartilaginous (intracartilaginous, cartilage splitting)
 - b. intercartilaginous
 - c. marginal

2. Septal incisions
 - a. complete transfixion
 - b. partial transfixion
 - c. hemitransfixion
3. Transcolumellar incision

The choice of which septal incision is used as an extension of either the transcartilaginous or intercartilaginous incision depends on the cosmetic goals of the operation. A complete transfixion incision separates the caudal end of the septum from the membranous columella and medial crura. It should be used only when one wishes to decrease tip projection, shorten the nose, and achieve cephalic tip rotation. If these cosmetic changes are not desired, a partial transfixion incision is used. The incision courses around the anterior septal angle but not beyond the medial crural attachments to the caudal septum. This preserves vital tip support mechanisms, while yielding sufficient exposure to the lower two thirds of the nose.³ A hemitransfixion incision is best used for caudal septal deflections or alterations to effect tip rotation.

ENDONASAL APPROACHES

TRANSCARTILAGINOUS APPROACH

The transcartilaginous entry into the nasal anatomy uses only one incision within the structure of the lower lateral cartilage (LLC) itself. The transcartilaginous incision is also referred to as the *intracartilaginous* or *cartilage-splitting incision*, because it occurs within the LLC, actually dividing or "splitting" the cartilage. This single incision, when extended into the chosen septal incision, will allow excellent exposure of the entire lower two thirds of the nose. This approach is best used when one wishes only conservative volume reduction of the tip, with minimal tip rotation and preservation of a complete strip of LLC.

The ala is retracted with a sharp wide double hook, and one incision is made through the vestibular skin by using a #15 blade. The precise location of this incision is carefully planned based on how much cephalic reduction of the LLC is needed. The incision is placed several millimeters above the caudal end of the LLC and extends from the dome area laterally to the midsegment of the LLC. An angled, sharp tip (Converse) scissors dissect the vestibular skin in a subperichondrial plane from the piece of LLC to be removed. The undersurface of the LLC is now in full view. The alar cartilage is then resected us-

ing a beveled incision at a precise level predetermined based on the tip deformity. This generally extends from the dome to the midportion of the lateral crura, with care taken to maintain adequate structure laterally to avoid pinched alar collapse and nasal obstruction. Medially, from the septal angle, the incision is continued into the desired septal incision. This approach is repeated on the opposite side, with extreme care to maintain perfect symmetry (Fig 1).

A #15 blade is inserted through the transcartilaginous incisions on both sides to elevate the skin and soft tissue envelope just above the perichondrium of the upper lateral cartilages (ULCs) and septum. This maneuver is performed to the level of the periosteum of the nasal bones; the periosteum is carefully incised at the distal end of the nasal bones and elevated later with a periosteal elevator (Fig 2). The elevation on both sides, performed in the same suprapericardial plane, allows easy access for a Converse or Aufrecht retractor, providing excellent exposure of the lower two thirds of the nose. The transcartilaginous and septal incisions are closed with 5-0 chromic suture.

RETROGRADE APPROACH

This approach is similar to the previously noted technique in that both are used for conservative tip refinement and volume reduction, require only one incision in the nose, and minimally



Figure 2. Sharp elevation of skin and soft tissue envelope in a suprapericardial plane with a #15 blade through the intracartilaginous incision.

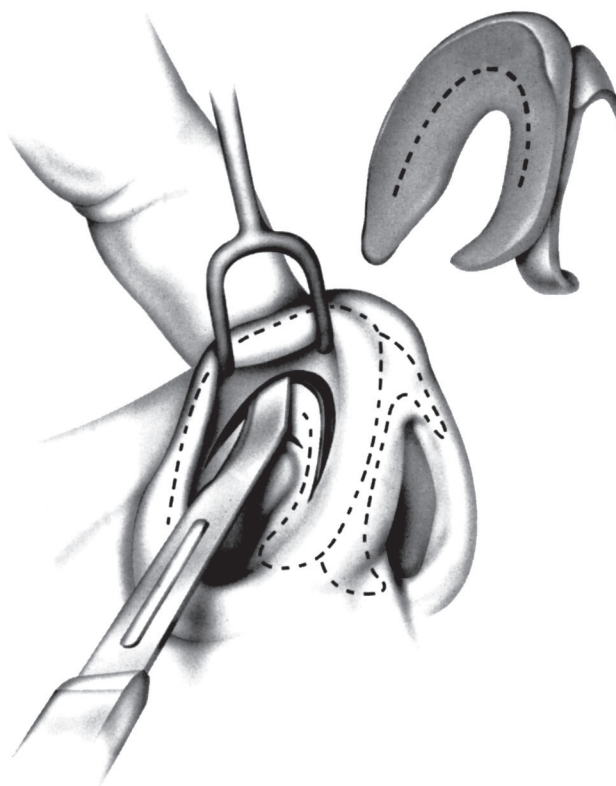


Figure 1. Intracartilaginous incision extending up to and around anterior septal angle into a partial transfixion incision with dissection of vestibular skin off undersurface of lower lateral cartilage.

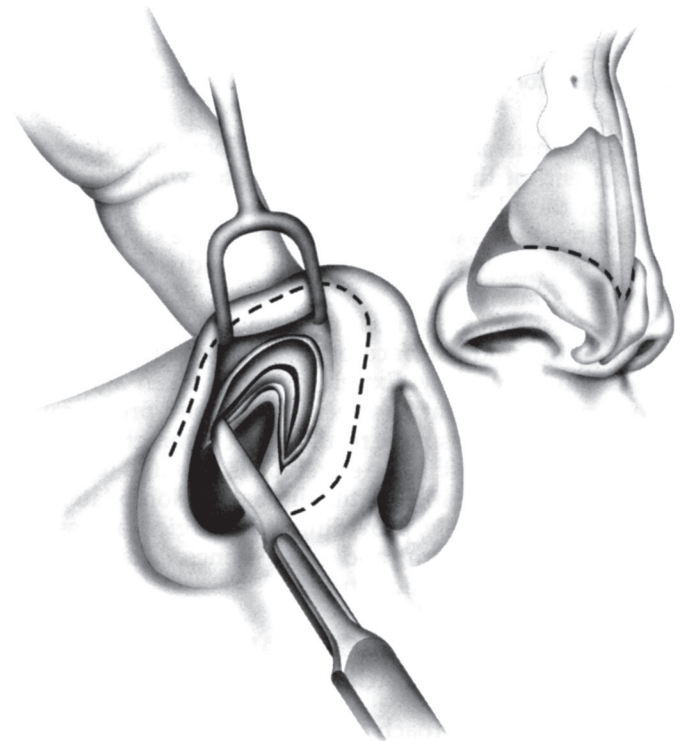


Figure 3. Intercartilaginous incision placed between the caudal end of the upper lateral cartilage and the cephalic margin of the lower lateral cartilage and then carried into a partial transfixion incision.

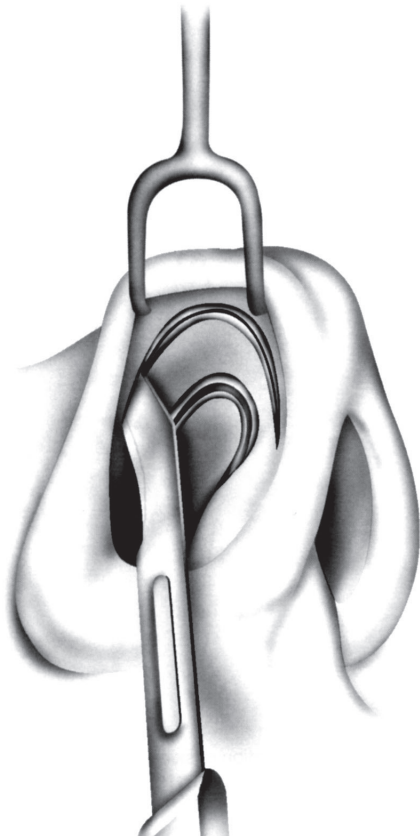


Figure 4. Intercartilaginous and marginal incisions used in preparation for delivery of the lower lateral cartilage.

disrupt tip supporting mechanisms. Exposure is obtained using a sharp wide double hook and bilateral intracartilaginous incisions are used. The intercartilaginous incisions are placed between the caudal end of the ULC and the cephalic margin of the LLC and then carried into the appropriate septal incision. The intercartilaginous incision courses along the obvious edge of the caudal end of the ULC as it articulates with the cephalic edge of the LLC. This edge is brought into full view by retracting the ala with the skin hook while simultaneously providing gentle pressure with the middle finger over the ULC (Fig 3.)

The vestibular skin is undermined in a retrograde fashion, the undersurface of the LLC exposed excised as described previously. Extreme care is taken again to remove precisely what has been determined preoperatively to yield the best cosmetic result. Exact symmetry is crucial.

The skin and soft tissue envelope is elevated using a #15 blade through the intercartilaginous incision bilaterally as described previously, providing easy surgical access to the ULCs, dorsal septum, and nasal bones. The incision is closed with 5-0 chromic suture.

BIPEDICLED CHONDROCUTANEOUS FLAP (DELIVERY) APPROACH

The delivery approach to the tip and lower two thirds of the nose allows for direct view of the LLCs, both of which may be viewed simultaneously. The added exposure allows for expanded surgical manipulation of the LLCs and greater reassurance

of tip symmetry. It is best used in noses with a bifid tip, excessive bulbosity, tip asymmetry, or projection abnormalities. Many experienced surgeons also perform revision tip-plasties successfully through this approach.

Two incisions are required for this technique. An intercartilaginous incision is made, as described above. Next, a marginal incision, coursing along the caudal margin of the LLC is performed. A sharp wide double hook is placed just inside the nostril margin, retracting skin only with slight counter-pressure with the middle finger over the LLC. The incision is made along the caudal end of the LLC, coursing medially into the dome area, and extending downward along the edge of the medial crura. Care is taken not to cut the medial crura of LLC anywhere along its course (Fig 4).

A sharp, angled tip (Converse) scissors are used to dissect the soft tissue plane just above the perichondrium of the lateral crura and dome. Single hook retraction in the dome aids in dissection here. The LLC with attached, intact vestibular skin is the “delivered” out of the nose as a bipediced-chondrocutaneous flap, with exceptional exposure of the majority of the LLC (Fig 5). An identical procedure is performed contralaterally, and both LLCs can be delivered and viewed simultaneously, if needed. Necessary tip modification is now performed.

The appropriate septal incision is extended from the septal angle, a #15 blade is placed through the intercartilaginous incision, just above the perichondrium of the ULC and septum,

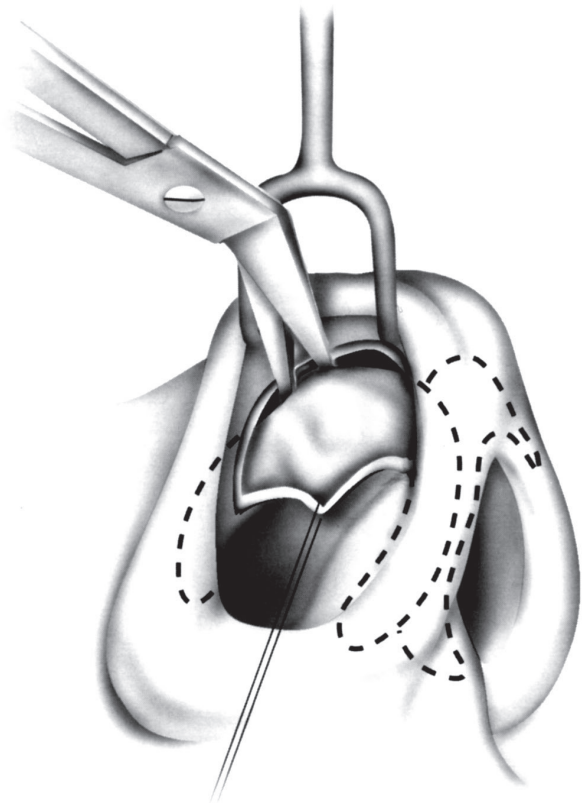


Figure 5. Delivery of the lower lateral cartilage using endonasal approach with intercartilaginous and marginal incisions.

and the skin and soft tissue envelope elevated as described previously for the transcartilaginous approach. Closure of the intercartilaginous and marginal incisions is carefully performed with 5-0 chromic sutures to prevent postoperative distortion.

EXTERNAL APPROACH

The external approach to the lower two thirds of the nose offers maximum exposure and is advantageous for correcting deformities and asymmetries of the nasal tip, dorsum, and septum, which may be difficult to assess fully from an endonasal technique.⁴ Previously described bilateral marginal incisions are executed, continued along the caudal margin of the intermediate and medial crura to a level just anterior to the flare of the medial crural footplates. At this level, where the columellar skin has underlying support from the medial crura, preventing possible postoperative scar contracture, the marginal incisions are connected to a transcolumellar incision. The transcolumellar incision is designed either as an inverted "V", with the notch midline, or via a stepped incision to aid in scar camouflage.⁵

Once the incisions are made, the sharp angled tip (Converse) scissors are used to dissect the supraperichondrial plane of the lateral crura bilaterally, as in the standard delivery approach. The lateral crura, dome, and interdomal areas are dissected from the overlying skin and soft tissue envelope. Next, through the transcolumellar incision a narrow sharp double hook and tip scissors are used to elevate the columellar skin off the supraperichondrial plane of the medial and intermediate crura, connecting this plane to the same plane above the dome and lateral crura. Except for revision rhinoplasties, this is generally a bloodless and easily accessed plane. Extreme care must be taken not to disrupt the delicate medial crura or the overlying thin skin of the columella (Fig 6).

At this point, the short, curved end of a Converse retractor retracts the undermined skin and soft tissue envelope superiorly, and with either the sharp tip scissors or a # 15 blade, the dissection is continued in the supraperichondrial plane to the

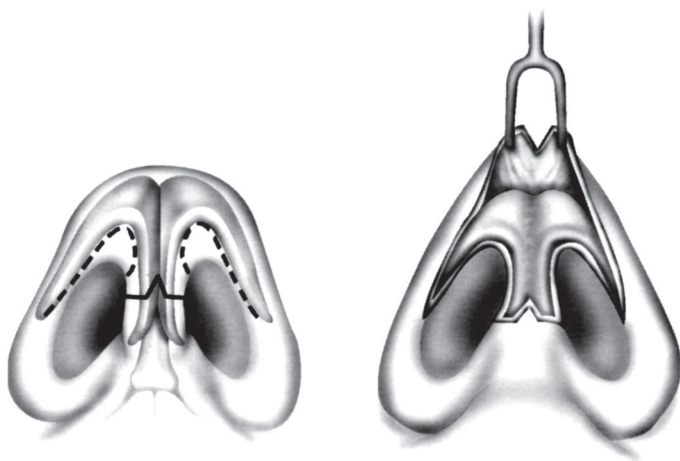


Figure 6. Marginal and inverted "V" transcolumellar incision used for external approach.

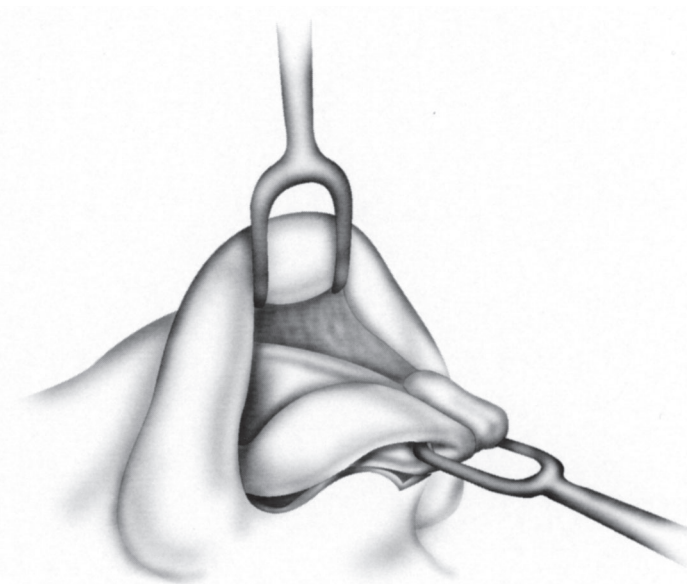


Figure 7. Exposure obtained of lower two thirds of the nose using the external approach.

caudal ends of the nasal bones (Fig 7). A septoplasty can be performed either through a standard and separate hemitransfixion incision or through access via the open approach. For the latter, the septal angle is identified from the dorsal approach and a mucoperichondrial flap is elevated. Excellent exposure of the lower two thirds of the nose and septum is thereby attained. Frequently hemostasis of the columellar vessels and branches of the angular vessels is required.

SUMMARY

The complexity of the nasal anatomy dictates which approach to the lower two thirds of the nose should be used. The technique providing the least dissection and disruption of tip-supporting mechanisms, yet accomplished the most consistent and favorable cosmetic result, must be used. Facility with all techniques described, a sound understanding of nasal anatomy and tip dynamics, and a thoughtful, individualized approach to each rhinoplasty will ensure success.

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