Anatomical Approach to Rhinoplasty

Herve LeBoeuf, MD
Faculty Advisor: Karen Calhoun, MD
The University of Texas Medical Branch
Department of Otolaryngology
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FIG. 175-1. Topographic key landmarks and accepted designations for (A) frontal and (B) oblique views of the nose. 1, Glabella; 2, nasion, nasofrontal angle; 3, rhinion (osseocartilaginous junction); 4, tip-defining point; 5, infratip lobule; 6, columella; 7, columella-labial junction; 8, facet; 9, alar sidewall; 10, alar-facial junction; 11, medial crural footplate; 12, supraalar crease; 13, alar margin; 14, philtrum; 15, philtral crest; 16, supratip dorsum. (From ref. 1, with permission.)
FIG. 175-5. Additional anatomic landmarks (A) and standard nasal terminology of base of nose (B). 1, Apex of alar cartilage; 2, medial angle of dome; 3, lateral angle of dome; 4, alar cartilage transitional segment—intermediate crus; 5, lateral crus alar cartilage; 6, medial crus alar cartilage; 7, medial crural footplate; 8, nostril aperture; 9, nostril floor; 10, nostril sill; 11, lateral alar sidewall; 12, alar lobule; 13, alar-facial junction; 14, anterior septal angle; 15, caudal septum; 16, maxillary crest; 17, nasal spine; 18, infratip lobule. (From ref. 1, with permission.) (See Color Plate 175-5)
FIG. 175-3. Key anatomic landmarks (A) and standard terminology (B) useful in nasal anatomy and surgery, easily identified in fresh cadaver dissection. 1, Nasal bone; 2, nasomaxillary suture line; 3, ascending process of maxilla; 4, osseocartilaginous junction (rhinion); 5, upper lateral cartilage; 6, anterior septal angle; 7, caudal free edge of upper lateral cartilage; 8, sesamoid cartilage; 9, piriform margin; 10, alar lobule; 11, lateral crus of alar cartilage—lateral portion; 12, lateral crus of alar cartilage—central portion; 13, tip defining point; 14, transitional segment of alar cartilage (intermediate crus); 15, infratip lobule; 16, columella; 17, medial crural footplate. (From ref. 1, with permission.) (See Color Plate 175-3)
FIG. 176-2. A: The intercartilaginous incision is made between the upper lateral and lower lateral cartilages. B: The intracartilaginous incision is made through the lower lateral cartilage. C: The bipedicle flap is created with an upper incision similar to the intercartilaginous and a second, lower incision paralleling the inferior border of the lower lateral cartilage. D: The incision for external approach crosses the columella with a notch in the central region, then parallels the inferior border of the lower lateral cartilage.
Transfixion/Hemitransfixion

- Caudal septum, medial crura, nasal spine
- Just caudal to septum
- Follows medial crura to flared ends
- Extend to floor for tip projection access
- Hemi- is unilateral only
  - Avoids disruption of tip support
  - Poorer access, ? Asymmetric healing
Intercartilaginous Incision

- Access to the tip and mid-nose
- Incision intranasal, between the ULC/LLC
- Begin medially as transfixion extension
- Continue entire length of LLC
- Avoid transecting the lateral end of the LLC
FIG. 175-23. Intercartilaginous incision demonstrated in cadaver specimen. Division of upper lateral cartilage from the cephalic margin of the lower lateral cartilage interrupts one of the major tip supports to the nose.
Intracartilaginous Incision

- Access to the tip and mid-nose
- Incise through vestibular mucosa +/- lower lateral cartilage
- Similar to intercartilaginous, but 3-5mm caudal to the cephalic end of LLC
  - This is caudal to the nasal valve
  - Decreases risk of nasal obstruction (avoids scar contracture of the valve)
Rim and Marginal Incisions

- Made parallel to the caudal borders of LLC (cephalic border of nasal vibrissae)

- Endonasal approach
  - More access to modify LLC
  - Combined with intercartilaginous incision to create pedicled or bipedicled flap of cartilage and mucoperichondrium

- Always used in external approach
  - Extend to lateral end of LLC
  - In continuity with the transfixion incision
Transcollumellar

- External approach
- Crosses collumella just above flared ends of the medial crura
- If too close to the lip, “dip” deformity
  - No cartilage support to counteract tension generated by the healing skin
- Notching at the midline – “aggie mark”, improved scar camouflage
Lateral Osteotomy

- Access for the osteotomy
- Short stab incisions just anterior to anterior attachment of the anterior turbinate
- Directed deep and laterally toward the bony piriform aperture
- +/- subperiosteal tunnels for osteotome
Open verses Closed ???

- **Open**
  - Much better exposure of structures
  - More accurate placement of grafts
  - More accurate structural diagnosis
  - Teaching value

- **Closed**
  - Possibly faster than open
  - No external scar
  - Avoids tip edema
  - No loss of tip support
Key:
1 Nasal process of frontal bone
2 Perpendicular plate of ethmoid
3 Nasal bone
4 Vomer bone
5 Palatine bone
6 Maxillary crest
7 Nasal spine
8 Quadrangular cartilage
9 Upper lateral cartilage
10 Caudal margin quadrangular cartilage
11 Membranous septum

FIGURE 1–108. Anatomy of the typical nasal septum.
Nasal Tip – Lower Lateral Cartilage

- Paired to form arch supporting lobule/nostrils
- Divided into medial and lateral crura
- Lateral crura
  - Flare posterosuperiorly away from rim
  - Tip defining point – junction between central and lateral crura
- Medial crura
  - Joined by ligamentous tissue in columella
  - Sagittal orientation with caudal flaring
  - Collumellar double break: medial crus bends posteriorly at superior extent, marks beginning of the central crus
Nasal Tip

- Dome: formed by the junction of the medial and lateral crura
  - Two point tip: aesthetically pleasing
  - Tent deformity: Single point tip
    - Overtight suture or poorly placed tip graft

- Sesamoid Cartilage
  - Accessory cartilage between lateral crura and piriform aperture

- Cephalic border of the lower lateral cartilage forms hinge with upper lateral cartilage
Tip Support

- Anderson: nasal tip similar to a Tripod
  - Conjoined medial crura and two lateral crura represent the three legs of the tripod

- Major support
  - Size, shape, resilience of medial and lateral crura
  - Fibrous attachment of the medial crura feet to the caudal septum
  - Fibrous attachment of the caudal margin of the ULC to the cephalic margin of the LLC
Tip Support

**Minor Support**
- Ligamentous sling between the alar cartilages
- Cartilaginous septal dorsum
- Sesamoid complex – extending the support of the lateral crura to the piriform aperture
- Attachment of the alar cartilages to overlying skin and musculature
- Nasal spine
- Membranous septum
Upper Lateral Cartilages

- Triangular, base at septum/ apex at pyriform
- Cephalic attachment to nasal bones
  - Nasal bones overlap ULC 1cm
  - Held in place with ligamentous fibers
- Attached to septum medially, which broadens to form a platform for the cartilages
- Intranasal valve: junction of ULC with septum
  - Ligaments connect with pyriform laterally to hold valve open, may be damaged during rhinoplasty and result in nasal obstruction
The Wide or Bulbous Tip

- Excess amount and/or convex curvature of the cephalad alar lateral crus
- Lateral alar convexities causing a trapezoidal appearance from the basilar view
- Increased interdomal distance
- Poor dome definition – often due to excessively obtuse angle between the medial and lateral crus
Excessive Cephalad Alar Cartilage

- Incise the cartilage
- Incise and morselize the cephalad cartilage
- Excise the cephalad cartilage
Lateral Alar Convexity
Goal: Unified Symmetric Tip

- Med crura fixation stitch
  - Stabilizes crura during strut placement

- Collumellar strut
  - Maintains columellar shape

- Flare Control Sutures
  - Narrow width of columella by decreasing crural flare after strut
Goal: Correct Lateral Alar Convexity

- Lateral crura spanning suture
- Dome spanning suture
Tip Projection

- posterior to anterior distance that the tip defining point extends from the facial plane at the alar crease
Tip Rotation

- Movement of the tip along a circular arc consisting of a radius centered at the nasolabial angle that extends to the tip defining point
Increasing Projection

- Columellar strut, +/- flare control suture
- “Projection Control Suture”….advancement
- Intradomal / interdomal suture
Increasing Projection

- Trim protruding caudal septum, if any
- Add tip graft if the infratip lobule becomes overshortened
Decreasing Projection

- Collumellar Strut, Flare sutures if needed
- Projection control sutures....recessive
- If lateral alar convexity, correct with interdomal suture
Decreasing Projection

- Intradomal stitch, if needed to correct widened domes
- May need to transect lateral crura
- May need to address medial crural or alar flaring
Some Tip Rotation Maneuvers

- Cephalic trim of LLC
  - Weakens tip support by dividing ligaments between ULC and LLC, may cause bossae
- Excise triangle of cartilage from mid LLC
- Lateral Crural Steal
- Illusion of rotation
  - Tip grafts
  - Lowering of dorsum
Tip Rotation Sutures
Bony Anatomy
The Dorsal Hump deformity
The Dorsal Hump
FIG. 176-6. Cartilage removal from the lower profile can provide guidance for the starting point for bony removal. NF, nasofrontal.

FIG. 176-8. Removal of a large bony hump can result in bony discontinuity over the dorsum. Lateral osteotomies are required to permit “leaning” of the lateral wall in a medial direction, closing the bony discontinuity.
The Wide Nasal Dorsum
The Crooked Nose
FIG. 176-10. The usual course of medial and lateral ost

FIG. 176-11. A: If the lateral osteotomy is begun very inferiorly, medial movement of the inferior part of the piriform aperture can result in nasal obstruction (B). C: Beginning the osteotomy higher allows satisfactory nasal narrowing without airway compromise (D).
FIG. 176-12. An angled osteotome cut provides poor support for the nasal sidewalls, sometimes permitting them to slide inward, medial to the desired position.

FIG. 176-13. During surgery, the proposed lines for medial and lateral osteotomies can be drawn on the overlying skin.
Pollybeak deformity

FIGURE 3-34. A. Patient seeking secondary rhinoplasty, demonstrating classic example of overreduction of bony profile coupled with failure to properly align supratip cartilaginous profile. B. At 1 year, correction with onlay septal cartilage grafts combined with significant lowering of cartilaginous pollybeak deformity restores normal nasal proportions.