Refinement of the Nasal Tip

Shashidhar S. Reddy M.D.,
Faculty Advisor: Karen Calhoun, M.D.
The University of Texas Medical Branch
Department of Otolaryngology
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Introduction

- Patient Discourse
- Facial Analysis
- Surgical Anatomy
- Surgical Approaches
- Surgical Techniques
- Conclusions
Patient Discourse

- What does the patient want?
- Are the goals realistic?
- Does the patient want to preserve certain nasal features?
- Examination with pictures, three-way mirrors, and realistic computer modeling
Facial Analysis

- Frontal View
- Profile View
- Caudal View
- Assessment of skin and tip support
Facial Analysis

- Frontal View
  - Symmetry
  - Tip Defining Points
  - Alar width
    - Equals ICD
    - Half of IPD
    - 70% of Nasal length
  - Nasal length
    - 1/3 of face
Facial Analysis

- Profile View
  - Dorsal Humps
  - Nasal Length
  - Naso-Frontal Angle
  - Naso-Facial Angle
  - Nasolabial Angle – (Tip Rotation)
Facial Analysis

- Nasal Profile
  - Tip Projection
    - Powell and Humphries
    - Goode
Facial Analysis

- Interrelation of Tip Rotation, Projection, and Nasal Length:
Facial Analysis

- **Caudal View:**
  - Equilateral Triangle
  - Columella:Lobule = 2:1
  - Ala:Lobule = 1:1
  - Columellar Show = 2-4mm

**OTHER FACTORS AFFECTING NASAL APPEARANCE:**
CHIN PROJECTION, CONTOUR OF LIPS, SUBNASALE
Facial Analysis – P.E.

- **Skin**
  - Thick skin – more postoperative edema and scarring, less refinement is noticeable.
  - Thin skin – more predictable healing, but less forgiving of minor asymmetries.

- **Palpation**
  - Helps determine tip support
  - Helps identify septal character
  - Helps visualize cartilages
Surgical Anatomy

- Skin and Subcutaneous Tissue
- Lower Lateral Cartilages
- Tip Support Mechanisms
Surgical Anatomy

- Skin and Subcutaneous Tissue –
  - Thickness of Skin
  - SMAS – violation of this layer leads to bleeding and postoperative scarring
  - Supraperichondrial Plane – bloodless
Surgical Anatomy

- Lower Lateral Cartilages
  - Medial Crus
  - Dome
  - Lateral Crus
  - Tip Defining Point
Surgical Anatomy

- Lower Lateral Cartilages
  - Scroll Area
  - Medial Crural Footplates
- Muscular Attachments to the Nasal Tip
  - Levator Labii Superioris
  - Depressor Septi Nasi
# Surgical Anatomy

## TABLE 173.2. TIP SUPPORT MECHANISMS

<table>
<thead>
<tr>
<th>Major</th>
</tr>
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<tbody>
<tr>
<td>Size, shape, and resilience of the medial and lateral crura</td>
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<tr>
<td>Medial crural footplate attachment to the caudal border of the</td>
</tr>
<tr>
<td>quadrangular cartilage</td>
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<tr>
<td>Attachment of the upper lateral cartilages (caudal border) to</td>
</tr>
<tr>
<td>the alar cartilages (cephalic border)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Minor^a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ligamentous sling spanning the paired domes of the alar cartilages</td>
</tr>
<tr>
<td>Cartilaginous septal dorsum</td>
</tr>
<tr>
<td>Sesamoid complex extending the support of the lateral crura to</td>
</tr>
<tr>
<td>the piriform aperture</td>
</tr>
<tr>
<td>Attachment of the alar cartilages to the overlying skin and</td>
</tr>
<tr>
<td>musculature</td>
</tr>
<tr>
<td>Nasal spine</td>
</tr>
<tr>
<td>Membranous septum</td>
</tr>
</tbody>
</table>

^aOn occasion, because of extreme anatomic variability, a “minor” tip support may assume the importance of one of the more major supports.
Surgical Approaches

- Caudal Septum/Columella
- Lower Lateral Cartilages
Surgical Approaches

- Caudal Septum/Columella:
  - Transfixion/Hemitransfixion
    - Sacrifices major tip support
    - Resuturing is required
  - Partial Transfixion
    - Stops short of medial crura
  - High Transfixion
    - Leaves 5mm caudal strip
  - Killian
Surgical Approaches

- **Lower Lateral Cartilage**
  - Modifications of LLC are key in tip surgery
    - Cephalic or even Caudal Trimming
    - Tip Grafting
    - Interdomal Suturing
    - Alar rim advancement

- **Nondelivery Approaches**

- **Delivery Approaches**

- **Open Nose**
Surgical Approaches

- Nondelivery Approaches
  - Transcartilaginous:
Surgical Approaches

- Nondelivery:
  - Intercartilaginous:
Surgical Approaches

- Nondelivery
  - Less traumatic
  - Less tip edema
  - Poor visualization of cartilages
  - Sacrifice of scroll area
Surgical Approaches

- Delivery Approach
Surgical Approaches

- Delivery Approach
  - Better view of cartilaginous structures
  - More extensive dissection required
  - More tissue trauma and greater risk of tip edema and slightly more risk of postoperative scarring
Surgical Approach

- Open Nose
Surgical Approaches

- **Open Nose**
  - Best visualization of cartilaginous skeleton
  - Does not disrupt scroll area
  - Columellar incision has potential for scarring, but rarely does so when closure is meticulous
  - Tip edema is significant, making intraoperative assessment more difficult
  - Greater potential for scarring
  - Ideal when extensive tip work is required
Surgical Techniques

- Tip Rotation
- Tip Projection
- Other Procedures
Surgical Techniques

- **Tip rotation**
  - **Cephalic trim of LLC**
    - Rotates tip cephalically by creating a gap between the LLC and Upper Lateral Cartilage. LLC scars upwards
    - Can decrease tip projection if tip defining point is trimmed
  - **Complete strip techniques**
  - **Interrupted strip techniques**
Surgical Techniques

- **Complete Strip Techniques**
  - Residual complete strip resists significant cephalic rotation
  - Maintains Tip Support
  - Tip Defining Point Should be preserved when possible
  - Adjunctive rotation techniques often required
Complete Strip Technique

~30% Cephalic Trim
Surgical Techniques

- Weakened Complete Strips
  - Augments cephalic rotation
  - May compromise tip support
Surgical Technique

- Interrupted Strip
  - Spring-tension of LLC is release, and significant rotation can occur
  - Sacrifices major tip support mechanism, may \( \downarrow \) tip projection
Surgical Techniques

- Interrupted Strip Techniques
  - Lateral interruption
    - Disrupts the nasal dome less and therefore saves the patient from unpredictable scarring
    - Reduces visible postoperative notching
Medial Interrupted Strip

- Can lead to visible nasal tip irregularities and should be avoided in patients with thin skin
- Can lead to notching of the medial nostril
- Frequently leads to loss of tip projection
Surgical Technique

- Lateral Interruption with Cartilage Resection and Resuturing
  - When excised in a wedge, can increase rotation significantly
  - Lateral Crural Overlay Technique increases rotation and decreases projection
Surgical Technique

Lateral Crural Overlay
Surgical Techniques

- Adjunctive Tip Rotation Measures

Plumping Graft
Surgical Techniques

- Tip Projection
  - Normal tip projection requires meticulous preservation or reconstruction of tip support during rhinoplasty
    - Resuturing of medial crural footplates
  - To add/maintain tip projection, grafts are used
    - Autogenous grafts should be used when possible for the nasal tip
    - Nasal septum, conchal cartilages
Surgical Techniques

- Maintaining/Increasing Tip Projection
  - Columellar strut
    - Can add tip support and projection
    - Sutured in place between the medial crura
    - Graft should not project beyond domes
    - Graft should not rest on nasal spine
    - Can be sutured to caudal septum as well
Surgical Techniques

- Increased Tip Projection
  - Tip Defining Point
  - Grafts:
    - Placed to project and accentuate tip defining points
    - Can be “shield shaped” or concentric circles or squares
Surgical Techniques

- Increasing Tip Projection
  - Division and resuturing of medial crura
  - Should not be used in thin skinned patients
  - Causes increased projection and cephalic rotation
Surgical Techniques

- Division of Medial Crura with Resuturing
Surgical Techniques

- Increased Tip Projection
  - “Lateral Crural Steal”
Surgical Techniques

- Illusion of Increased Tip Projection
  - Removal of Dorsal Hump
  - Cephalic Rotation
Surgical Techniques

- Reduction of Tip Projection
  - Resection of caudal septum in “Tension Nose Deformity.”
  - Sacrifice of Major Tip Support mechanisms as needed
  - Lateral Crural resection with resuturing
  - Reduction of Tip Projection often necessitates Alotomies and Alar skin resection
Surgical Techniques

- Nasal Tip Narrowing
  - Cephalic trim and horizontal mattress sutures of domes achieve this

- Asymmetries
  - Best corrected by wide undermining and onlay grafting
Conclusions

- Patient Discourse
- Facial Analysis
- Surgical Anatomy
  - Major and Minor Tip Support Mechanisms
- Surgical Approaches
  - Comparison of Delivery, Nondelivery, and Open
- Surgical Techniques
  - Tip Rotation, Tip Projection, Nasal Tip Narrowing