Rhinoplasty- Nasal Tip

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History of Rhinoplasty

- 500 B.C., Ancient India, Sushruta
  - Reconstruct traumatic noses including amputated as a punishment for crimes
- In 1845, German, Johann Friedrich Dieffenbach
  - Published a procedure for reduction/straightening a deviated nose using external incisions
History of Modern Rhinoplasty

- In 1907, Jacques Joseph published his *Treatise on Rhinoplasty*
  - Detailed nasal deformities and surgical treatments
  - Some of these procedures and instruments are used today
  - Describe the first suture in tip rhinoplasty, the orthopedic suture

- Consider by many as the father of modern facial plastic surgery
Introduction

- Important considerations in primary rhinoplasty
  - Airway function
  - Precise assessment of the deformity
  - Nasal support mechanisms
  - Soft tissue skin envelope
  - Postoperative scar contracture and healing (modifications over the lifetime of the patient)
Pre-Op Assessment

- Functional airway problems
  - Medical management
    - Intermittent obstruction from mucosal inflammation
  - Surgically correctable
    - Septal deviation or spurs
    - Large turbinates
    - Nasal deformity/deviation
    - Nasal valve collapse
External Valve Collapse

- Collapse of lobule on inspiration
- Loss of Lower lateral cartilages support
- Improvement of breathing
  - Modified Cottle Maneuver
Palpation of the nose

- Shape, position, and strength of the nasal structures
- Trace the LLCs
  - Position
  - Stability
Tip support - Test Tip Recoil

- Major tip support mechanisms
  - Strength of Lower lateral cartilage
  - Attachment of the medial crura to Septum
  - Attachment of upper lateral cartilage to alar cartilage

- Minor tip support mechanisms
  - Dorsal septum
  - Interdomal ligaments
  - Membranous septum
  - Nasal spine
  - Surrounding skin and soft tissues
  - Alar sidewalls
Photographic Documentation

- Allow for more detailed evaluation
  - Full-face
    - Frontal
    - Lateral
    - Oblique
    - Base view
    - Smiling view
  - Close-up views
    - Skin Assessment
Frankfort line
Nasal Tip

- Rotation
- Projection
- Definition
Facial Analysis

- Nasal tip rotation
  - Along a radius based at the EAC
  - Rotation increases along the upper portion of the arc
Facial Analysis

- Nasolabial angle
  - Male
    - 90° to 95°
  - Female
    - 95° to 110°
Facial Analysis

- Nasal projection
  - Facial plane
    - Vertical line connecting the nasion with alar groove
  - Nasal tip distance from facial plane (Perpendicular line)
Tip projection
- Goode's method
- Ratio of B/A
  - 0.55 to 0.60
Facial Analysis

- Nasomental angle
  - Nasal dorsum to tip,
    Tip to pogonion
  - 120 to 130°

- Posterior pogonium
  - Illusion of increase projection
Facial Analysis

- Line dropped from lower lip vermillion
  - Female = posterior to vertical line
  - Male = at vertical line

- Chin Implant
  - Sagital plane
  - Does not affect vertical or transverse problems
Facial Analysis

- Definition

- Caudal View:
  - Equilateral Triangle
  - Divided into three equivalent unit
  - Tip is 1/3 of basal view
Facial Analysis

- **Lateral view**
  - Ideal Ala-to-tip lobular complex ratio is 1:1
Computer Image Modification Programs

- Increasingly popular for consultation of cosmetic patients
- Valuable
  - Patient might have unrealistic goals for surgery
  - Accurate image can focused a reasonable goal
- Unrealistic images will inevitably lead to an unhappy patient
- Under-promise, Over-deliver
Nasal Skin-Soft Tissue Envelope (SSTE)

- Thick-skinned
  - Tip definition is challenging
  - Augment framework to project into the thick skin
  - Inelastic- may be difficult to drape
    - Dead space- scarring
  - Does not show small irregularity
Nasal Skin-Soft Tissue Envelope (SSTE)

- Thin skin
  - Irregularities becoming visible or palpable
    - Ensure that all bony, cartilaginous, grafts, and implants are precisely positioned and smoothly contoured
  - Draping is easier
Surgical Approach

- **Endonasal approaches**
  - Ideal for patients with subtle deformities

- **External rhinoplasty**
  - Wider exposure and access afforded
Nasal Tip

- Rotation
- Projection
- Definition
Tripod theory

- First proposed by Anderson J R (1969)

- Tripod
  - Lateral cruras = two posterior legs
  - Conjoined medial cruras = anterior third leg

- Helps predict the tip rotation
  - Tilt in the direction of the shorter leg

- Cephalic rotation
  - Shortening of the lateral cruras
  - Lengthening medial cruras
Tip Rotation

- Common presenting situations
  - Ptotic Tip
  - Overrotated nose

- Techniques to alter tip rotation
  - Associated with modification of the tripod
Tip Rotation

Ptotic Tip

- Caudal tip rotation
- Acute nasolabial angle
  - <Male 90° to 95°
  - <Female 95° to 110°
Ptotic Tip

- Inherited

- Common acquire causes
  - Nasal trauma
  - Aging face
  - Previous rhinoplasty

- Loss of tip support mechanisms
  - Loss of integrity of the medial and lateral crura
  - Loss of attachment of the medial crura to septum
  - Loss of attachment of upper lateral to lower laterals
Management of Ptotic Tip

- Treatment base on Tripod
  - Strengthening or elongating of the medial crura
  - Trimming of the lateral crura
  - Shortening caudal septum
  - Restore support mechanism
Ptotic Tip

Medial Crura Surgery

- **Suture techniques**
  - Medial Crura Suture
    - Strengthen of medial crura
  - Secondary effects
    - Tip narrowing
    - Increased projection
Ptotic Tip

Medial Crura Surgery

- Interdomal Suture
  - Strengthen of medial crura
  - Secondary effects
    - Tip narrowing
    - Increased projection
Ptotic Tip

Medial Crura Surgery

- Medial crura strut graft
  - Strengthen of medial crura
  - Elongate the medial cruras (position dependent)
  - Cephalic rotation
Ptotic tip

Lateral crura surgery

- Cephalic trim
  - Rotates tip cephalically by creating a gap between the LLC and Upper Lateral Cartilage
  - LLC scars upwards
  - Improve definition
Ptotic tip

Cephalic Trim

DYNAMICS OF TIP ROTATION TECHNIQUES
Ptotic tip

Cephalic Trim
Ptotic tip

Lateral crura surgery

- Weakened Complete Strips
  - Augments cephalic rotation
  - May compromise tip support
Interrupted Strip

- Spring-tension of LLC is release, and significant rotation can occur
- Sacrifices major tip support mechanism, may ↓ tip projection
Lateral crura surgery

- Resuturing

  - Lateral Crural Overlay Technique increases rotation and decreases projection
ADJUNCTIVE
ROTATION TECHNIQUES I

A
SEPTAL SHORTENING

B
UPPER LATERAL REDUCTION

C
HIGH SEPTAL TRANSFIXION

D
REDUCTION HANGING MEDIAL CRURA
Ptotic tip

Onlay cartilaginous tip graft
Rotation Overrotated (Short Nose)

- Excessive cephalic trim of the lateral crura
- Overresection of the caudal septum
Overrotated (Short Nose)

- Management
  - Caudal septal extension graft
  - Minor deformities
    - Columellar plumping grafts
Tip Definition

- Common presenting situations
  - Boulbus Tip
  - Pinch tip
Bulbous Tip

- Decrease nasal tip definition
  - Wide interdomial distance
  - Wide domes
  - Weak alar cartilage
  - Thick & inelastic skin
Management of Bulbous Tip

- **Suture technique**
  - The Transdomal Suture
    - Mattress suture
    - Tip narrowing
      - Narrows domal arch
    - Increased tip projection
  - Medial Crura Suture
  - Interdomomal Suture
Management of Bulbous Tip

- Dome division with binding suture
  - Narrows the nasal tip
    - Narrowing the domal arch
  - Increase tip projection
Pinched Tip

- Excessive narrowing of the domes
  - Excessive tightening of domal sutures
  - Dome division
Definition

Management of Bulbous Tip

- The lateral crura suture
  - Horizontal mattress suture (cephalic)
  - Narrows tip
    - Decreased convexity of the lateral crura
  - Decreased interdomal distance
  - Caudal repositioning of the domes
  - Nose is elongated
Definition

Management of Bulbous Tip

- Cephalic trim
Lateral nasal wall weakness

- Alar cartilage weakening
  - Aggressive cephalic trim
  - Cephalic positioning of the lateral crura
- External Valve collapse
Management of Bulbous Tip

- **Shield graft**
  - Provide augmentation to the tip
  - Protrudes into thick skin
  - Increase projection by as much as 8 mm
Projection

- Link to rotation and definition
- Similar techniques
- Common presenting situation
  - Pollybeak
Projection

- **Suture techniques**
  - Medial Crura Suture
  - Transdomal Suture
  - Interdomal Suture
  - Dome division with binding sutures
Projection

- Steal technique
  - Increase tip projection
  - Narrows the nasal tip
Projection

- Medial Crura-Septal Suture
  - Change tip projection
  - May change rotation
  - Restore tip support
Projection

- **Shield graft**
  - Increase projection by as much as 8 mm

- **Collumellar strut**
Projection

- **Depressor Septi Nasi Muscle**
  - Decrease tip projection by pulling the tip caudally and posteriorly
  - Nasal tip ptosis
  - Resection of the muscle
Pollybeak

  - Most common deformity after rhinoplasty
- Convexity of the nasal supratip
  - Projecting beyond the tip and the rest of the nose (parrot’s beak)
Management of Pollybeak

- Restore tip support
- Increase tip projection
Projection

- Illusion of Increased tip Projection
  - Removal of Dorsal Hump
Over-projected

- Reduction of Tip Projection
  - Sacrifice major tip support mechanisms
  - Medial crura-septal suture
  - Lateral Crural resection with resuturing

- Illusion of decrease tip Projection
  - Chin implant
Conclusion

- Precise assessment of the deformity
  - Preoperative & intraoperative
- Preserve or restore nasal support mechanisms
- Knowledge of individual and additive effects of tip-modification maneuvers