Revision Rhinoplasty

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Grand Rounds Presentation
June 12, 2002
Introduction

- Most difficult, unpredictable
- Precise assessment of deformity
- Strong grasp nasal support, soft tissue
- Realistic outcome appraisal, acutely, long term
- Retrospective analysis highlight problems and improve
Introduction

- Dissatisfaction
- Analysis of post-rhinoplasty anatomic deformities
- Discuss anatomic abnormalities by anatomic region
- Prevention and resolution of each
Dissatisfaction

Parks

- “a previous surgical result that is deemed unsatisfactory can be due to poor surgical technique or judgment, a patient’s misconception of reasonable expectations, or capricious results of healing.”
Dissatisfaction

- Converse
  - “poor esthetic judgment on the part of the surgeon, the surgeon’s inexperience, and the inevitable need for a secondary operation in the difficult rhinoplasty…”
  - “…poor results often stemmed from the exacting surgeon attempting to accomplish too much in search of the perfect nose”

- Quinn
  - “The enemy of good is better”
Dissatisfaction

Mary Ruth Wright
- Three major causes of dissatisfaction are:
  - 1) a physical complication or disappointment in anatomical change
  - 2) an unrealistic psychological expectation
  - 3) a lack of understanding or rapport between the surgeon and the patient

Therefore not even clear understanding of what dissatisfaction is
Dissatisfaction

- Wright-physical complication
  - Dealing with physical complication-surgeon must resolve own feeling of disappointment and alleviate the patient’s emotional reactions
  - Do not attempt to “explain away” or deny the existence of any possible complication; these means only tend to imply guilt on the part of the surgeon and project blame onto the patient
  - Patients emotionality may question or feel guilty about decision for cosmetic surgery
Dissatisfaction

- Wright-physical complication
  - Must reinstate patients confidence in value of aesthetic procedure and right to choose to have such a procedure before secondary procedure discussed
  - Must initiate and follow through secondary procedure with same enthusiastic spirit as the initial procedure
Dissatisfaction

- Wright-unrealistic expectations
  - Cannot be dealt with directly, cannot tell “should not have expected so much”
  - Aggravate the situation
  - Accept patients right to have unrealistic expectations and leave responsibility of resolving these expectations to the patient
  - Most do not continue to be unhappy over time nor do they tend to decompensate emotionally
Dissatisfaction

- Wright-unrealistic expectations
  - Let the patient vent their dissatisfaction, state what the surgeon can and cannot do without making an issue of unreasonableness
  - Return visits are paramount as scheduled appointment time usually suffice to settle dissatisfaction from unrealistic expectations
Dissatisfaction

- Wright-rapport
  - NEVER TOO LATE TO ESTABLISH RAPPORT
  - Lack of rapport
    - Documented to be major cause for medical malpractice suits
    - Might be interpreted as a lack of sensitivity
  - Listen sensitively and intellectually, respond affirmatively and not defensively
Revision Rhinoplasty
Analyzed

- Varying rates 7%-18%
- Accepted 5-10%
- Adamson, Kamer, Parkes, Vuyk and others
Analysis

Table 2.—Revision Rhinoplasty: Aesthetic Classification of Deformities in 126 Revision Cases*

<table>
<thead>
<tr>
<th>Year</th>
<th>Saddling</th>
<th>Midnasal Asymmetry</th>
<th>Pollybeak</th>
<th>Retracted Ala</th>
<th>Retracted Columella</th>
</tr>
</thead>
<tbody>
<tr>
<td>1984</td>
<td>3</td>
<td>10</td>
<td>22</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>1985</td>
<td>8</td>
<td>6</td>
<td>22</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>1986</td>
<td>9</td>
<td>3</td>
<td>27</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Total (%)</td>
<td>20 (16)</td>
<td>19 (15)</td>
<td>71 (56)</td>
<td>14 (11)</td>
<td>11 (9)</td>
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</tbody>
</table>

*A revision case may have more than one deformity, i.e., 16% of revision cases had saddling, etc.

Table 3.—Revision Rhinoplasty: Aesthetic Classification of Deformities in 126 Revision Cases*

<table>
<thead>
<tr>
<th>Year</th>
<th>Bossa</th>
<th>Hanging Columella</th>
<th>Wide Base</th>
<th>Irregular or High Dorsum</th>
<th>Implant Adjustment</th>
<th>Acute Nasolabial Angle</th>
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</thead>
<tbody>
<tr>
<td>1984</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>11</td>
<td>2</td>
<td>1</td>
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<tr>
<td>1985</td>
<td>11</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td>2</td>
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<tr>
<td>1986</td>
<td>11</td>
<td>7</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Total (%)</td>
<td>28 (22)</td>
<td>16 (13)</td>
<td>10 (8)</td>
<td>22 (17)</td>
<td>7 (6)</td>
<td>5 (4)</td>
</tr>
</tbody>
</table>
Analysis

  - Anatomically- upper, middle and lower third
  - Most common deformity-pollybeak
  - Other common
    - Saddling, midnasal asymmetry, bossa, columellar retraction
## Analysis - Vuyk

<table>
<thead>
<tr>
<th>Feature</th>
<th>Upper 1/3</th>
<th>Middle 1/3</th>
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</thead>
<tbody>
<tr>
<td>Profile</td>
<td></td>
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<tr>
<td>High</td>
<td>21</td>
<td>44</td>
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<tr>
<td>Low</td>
<td>36</td>
<td>23</td>
</tr>
<tr>
<td>Width</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broad</td>
<td>14</td>
<td>5</td>
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<tr>
<td>Narrow</td>
<td>4</td>
<td>23</td>
</tr>
<tr>
<td>Shape</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asymmetry</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>Irregularity</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deviation</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>87</td>
<td>118</td>
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## Analysis-Vuyk

<table>
<thead>
<tr>
<th>Tip</th>
<th>Position</th>
<th>Count</th>
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<tbody>
<tr>
<td></td>
<td>Over Projected</td>
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<td></td>
<td>Under projectd</td>
<td>36</td>
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<tr>
<td></td>
<td>Over rotated</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Under rotated</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>Deviation</td>
<td>1</td>
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</table>

<table>
<thead>
<tr>
<th>Shape</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Broad</td>
<td>20</td>
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<tr>
<td></td>
<td>Amorphous</td>
<td>18</td>
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<tr>
<td></td>
<td>Narrow</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Asymmetry</td>
<td>33</td>
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<tr>
<td></td>
<td>External scar</td>
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</table>

<table>
<thead>
<tr>
<th>Columella</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Hanging</td>
<td>7</td>
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<tr>
<td></td>
<td>Retracted</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Sharp nasolabial angle</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Subluxation</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ala</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Retracted</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Broad alar base</td>
<td>6</td>
</tr>
</tbody>
</table>

| Total                |                | 202   |
Adamson

- 50% one deformity
- 30% two
- 20% three
## Analysis

<table>
<thead>
<tr>
<th>Define the deformity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detailed history</td>
</tr>
<tr>
<td>Facial analysis</td>
</tr>
<tr>
<td>Nasal analysis</td>
</tr>
<tr>
<td>Determine the etiology:</td>
</tr>
<tr>
<td>Displaced anatomic structures</td>
</tr>
<tr>
<td>Underresection</td>
</tr>
<tr>
<td>Overresection</td>
</tr>
<tr>
<td>Combination of above</td>
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<tr>
<td>Establish surgical goals</td>
</tr>
<tr>
<td>Formulate the treatment plan:</td>
</tr>
<tr>
<td>Repositioning of displaced anatomic structures</td>
</tr>
<tr>
<td>Amount and location of further resection</td>
</tr>
<tr>
<td>Location and type of tissue replacement</td>
</tr>
<tr>
<td>External vs. endonasal approach</td>
</tr>
<tr>
<td>Analysis</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>Nasofrontal angle position</td>
</tr>
<tr>
<td>Bony pyramid</td>
</tr>
<tr>
<td>Upper lateral cartilages</td>
</tr>
<tr>
<td>Supratip area</td>
</tr>
<tr>
<td>Nasal tip:</td>
</tr>
<tr>
<td>Projection</td>
</tr>
<tr>
<td>Rotation</td>
</tr>
<tr>
<td>Symmetry</td>
</tr>
<tr>
<td>Position of tip-defining points</td>
</tr>
<tr>
<td>Alae:</td>
</tr>
<tr>
<td>Width</td>
</tr>
<tr>
<td>Collapse</td>
</tr>
<tr>
<td>Retraction</td>
</tr>
<tr>
<td>Columella: degree of show</td>
</tr>
<tr>
<td>Columellar-labial angle</td>
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<tr>
<td>Internal nasal examination:</td>
</tr>
<tr>
<td>Internal nasal valves</td>
</tr>
<tr>
<td>Septum</td>
</tr>
<tr>
<td>Turbinates</td>
</tr>
</tbody>
</table>
Upper 1/3

- Bony dorsum least commonly encountered
- Excessive removal-low broad pyramid
  - A-P: indistinct separation of eyes
  - Pseudohypertelorism
  - Washed out appearance d/t less shadowing lateral nasal wall
Bony Dorsum Deficiency
Dorsal Deficiency/Open Roof

- More likely with osteotome rather than sharp rasp
- Corrected with completion osteotomies or on-lay graft
Radix

- Attempt to match dorsum to low radix
- Superior palpebral fold
- Inverted “V” at radix
- Byrd Hobar
  - Plane of cornea to radix 0.28 times “ideal nasal length”
Radix

- Affect on nasal length
Radix Grafting
Middle Nasal Vault

- Cartilaginous dorsum
- Saddle nose, pollybeak, pinched supratip, uneven/wide, midnasal asymmetry
Pollybeak

- Most frequent
- Convexity nasal supratip relative to rest of nose
- Lower two thirds convex profile of parrot’s beak
Pollybeak causes

- Inadequate resection of the dorsal septum
- Excessive dorsal septal removal
- Excessive bony dorsal resection
- Excessive alar cartilage removal
- Excessive supratip scar formation
Pollybeak Treatment

- Inadequate resection - re-resection, caution soft tissue
- Dorsal bony resection - onlay grafts
- Alar resection - increase tip support and projection
Soft Tissue Pollybeak

- Triamcinolone injection
- 10-40 mg/mL 4 week intervals
- Total of 4-5 injections
Saddle Nose

- Concavity of nasal dorsum
- Over-resection of cartilaginous and/or bony dorsum
- Over projecting nasal tip
- Often septal cartilage deficient
Saddle Nose

- Autologous
  - Conchal cartilage, outer table cranial bone, iliac bone, rib cartilage
- Irradiated homologous, costal cartilage
- Heterogonous not recommended, resorption
- Alloplastic
  - Gortex, Mersilene, Medpor, Proplast
  - Weigh infection, inflammation, rejection with benefits
Gortex-Expanded PTFE

- Popular, gaining acceptance
- Excellent results
  - Tissue ingrowth, contour, stability
- 10-year f/u study
  - Infection requiring removal
    - 3.2% overall
    - 1.2% primary
    - 5.4% revisions, dermal contact
    - 30% complications had septal perforation
  - Septal perforation contraindication to Gortex use
Saddle Nose

Infracture or Add Graft
Inverted “V” at Rhinion

- Over-resection upper lats
- Failure to re-secure following detachment
- Internal nasal valve collapse
Spreader Graft

- Open vs. Closed
- Open easier allows suture fixation
- Placed high on septum under nasal bones to caudal aspect of upper lat
- Must be equal width
- Asymmetry On-lay graft
Spreader Graft
Twisted Nose

- Straighten dorsal septum
- Detach upper lateral cartilage
- On-lay grafting or spreader grafting
Lower Third

- Most common area of dissatisfaction as whole
- Parkes tip/alar and columellar
- Columellar
  - Hanging columella, retracted columella, acute nasolabial angle
- Tip/ala
  - Retracted ala, pinched tip, dependent tip, bossa, underprojected tip, amorphous tip
Hanging Columella

- More than 2-4 mm columellar show
- Ala not notched or high
- Corrected by judicious excision of skin and/or caudal septum
Retracted Columella

- Less than 2 mm
columellar show
Retracted Columella
Acute Nasolabial Angle

- Under rotated tip
- Premaxillary deficiency
Retracted Ala

- Results excessive lower lateral cartilage and skin removal
- Composite grafting of skin and cartilage from ear
Retracted Ala
Pinched nasal tip

- Over resection of lower lateral
- Corrected by tip grafting techniques
Nasal Bossa

- Scar tissue or cartilage buckles
- Thinned skin patients
- Delivery and shave
- Temporalis fascia or similar material
Nasal Bossa

Shaving Bossa

Augmentation of Lower Side
Tip Projection

- Distance that the tip defining point projects anterior to the facial plane
- $0.55 - 0.60 \times$ nasal length
- Project anterior to dorsum with defined break
Tip Projection

- Subjective assessment perhaps the best
- Perception influenced
  - Chin projection, upper lip height, nasolabial angle, dorsal height, nasofrontal angle
Tip Support

1. Telescoping Attachment of Upper and Lower Lateral Cartilages

2. Length and Direction of Lateral Crura

3. Medial Crural (Feet) Attachment to Caudal Nasal Septum

4. "Ligamentous Attachment" of Superior Septal Angle to Domes of Lower Lateral Cartilages
Tip Support

- Rhinoplasty disrupts
- Healing interfere over time
Tip Projection

- McCollough/Anderson
- Increase 1.5 mm post judicious local injection
- Medial crural footplate/caudal septum most important
- Full transfixion incision detrimental
- Complete strip procedures decreased projection unless sutured-in columellar strut
Tip Projection

Byrd
Reviewed 20 patients
19 floating columellar struts lost projection
1 with suture to caudal septum maintained
Designed septal extension grafts
19/20 desired maintenance or increase projection achieved
Tip Dorsal Relationship
Septal Extension Graft
Extension Graft
Extension Graft
Tip Grafting

- Contour, increase projection, camouflage irregularities
- Prior to tip grafting techniques adjust dorsum to achievable tip projection
- Unrefined over-operated tips, over-resected weak dorsum
- 1970’s Sheen, Anderson and others, tip-grafting
Tip Grafting

- Initially single, then layered and morselized
- Septal, auricular cartilage
- Layered grafts interfere with double break, trade off
Tip Grafting
Tip Grafting
Tip Grafting

A

B

C

D
Tip Grafting
Layered Auricular Grafts
Conclusion

- Challenging
- Rapport—even perfect results unsatisfactory to unrealistic patient
- Careful assessment of abnormalities
- Knowledge of common revision abnormalities will not only allow correction but help prevent on primary cases
Case

- Two previous surgeries displeased with two points at nasal tip and operated appearing nose. Alar collapse on mild inspiration.
Analysis- Frontal

- Washed-out, poorly defined upper nasal third
- Inverted V deformity
- Poor brow-tip aesthetic lined
- Broad tip with bilateral bossa
- Bifid tip
- Asymmetric ala
- Thin Skin
Analysis - Lateral

- Over reduced bony dorsum
- Supratip pollybeak
- Tip-supratip disproportion
Analysis – Basal

- Concave lateral alar sidewalls
- Significant tip bifidity
- Bilateral bossa
- Poor tip definition
- Supratip prominence
Operating Technique

1. Septal reconstruction and graft harvest
   - left Killian incision
   - elevation left
     mucoperichondrial–mucoperiosteal flaps
   - harvest large graft quadrangular cartilage
   - quilting transseptal mattress suture repair
2. Delivery alar cartilage remnants
   - amputation bossae bilaterally
   - suture repair disrupted domes
   - excision interdomal excess tissue
   - transdomal suture narrowing refinement
3. Resection cartilaginous-scar pollybeak
4. Preparation narrow midline bony dorsum pocket
5. Insertion 16 × 5 mm onlay cartilage graft bony dorsum
6. Insertion bilateral supra–alar supportive battens
7. Suture-repair all incisions
8. Insertion of layer of crushed cartilage overlying tip cartilages
9. Bilateral curved low lateral osteotomies
Result
References