Advances in Endoscopic Management of Inverted Papilloma

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2.7.15
• ‘Limited’ surgery leads to high ‘recurrence’
  • 20-100% (Benninger, 1991)

• ‘Radical’ surgery has better control rates
  • 20-30% (Bielamowicz, 1993)
Endoscopic Approach

Pros:
- Better magnification
- Better lighting
- Increasing surgical corridor
- No facial scar

Cons:
- One-hand required to hold the scope
- Lateral limits
Endoscopic Resection of Sinonasal Inverted Papilloma: A Meta-analysis

Jose M. Busquets, MD, and Peter H. Hwang, MD, Portland, Oregon

  - 714 endoscopic → 12 % recurrence
  - 346 non-endoscopic → 20% recurrence
  - 692 → 19% recurrence
Endoscopic Technique

- Debulk tumor
- Expose site of attachment
- Excise tumor attachment
- Reconstruct defect
Debulk Tumor

Video courtesy of Jeffrey D. Suh, MD
Attachment Site

• Landsberg 2008 (n=25, 17 T3)
  • attachment diameter 8.4+/−6 mm
• Pagella 2014 (n1=37, n2=36)
  • Equivalent oncologic control
  • 20 minute shorter operative times when site identified

Endoscopic Exposure Challenges

- Maxillary Sinus
- Frontal Sinus
- Supraorbital ethmoid
Maxillary
Surgery requires transseptal dissection with direct drilling to the anterior maxillary wall (mucosal side).

Zone 5 is where the tumor involves premaxillary tissue and/or skin. Surgery requires an open approach.

The septum was defined as the 0° baseline. The surgical access, in degrees of angulation, was measured by the angle between the instrument reach and a septal point at the level of the anterior lacrimal duct (Fig. 4). This angle does not have a direct surgical application, like the MUSC zones, but is a useful objective comparative measure.

Statistical Analysis

Ordinal data were analyzed using 2 and Fisher's exact tests. Scale data, from angulations, were assessed with t-test. Normality was observed. Calculations were performed with SPSS, Version 15 (Statistical Software for Social Sciences; SPSS, Inc., Chicago, IL).

RESULTS

Resection Limits Based on Surgical Access

Simple transnasal/ MMA ipsilateral access with straight and angled instruments gave excellent access to zones 1 and 2. The MMA only allowed zone 3 surgery in 40% of specimens. This was improved to 85% with a TMM. Zone 4 was not accessible via anything less than a TMM in which only 25% of patients could be accessed even with curved instruments. The summary of access by zone and angulation is represented in Fig. 5, A and B.

Straight versus Angled Instrumentation

For ipsilateral surgery, curved instruments offered an advantage over straight instruments (straight, 35.01° ± 11.81° versus curved, 53.10° ± 19.94°; p < 0.001). A representation by endoscopic sinus surgery is shown in Fig. 6 A. With transseptal surgery, the straight instrument angulations offered similar access compared to the curved instruments.

Modified Medial Maxillectomy
Medial Maxillectomy
Septal Dislocation

Management of nasolacrimal system

• Open maxillectomy: epiphora 2-63%¹

• Endoscopic maxillectomy?²

Table 1  Patient characteristics and distribution

<table>
<thead>
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<th>Subject</th>
<th>DCR</th>
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<tr>
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Frontal Sinus
Draf III Limits
Outside-In Lothrop

Lateral Frontal Access
Frontal Sinus 70°-Drill Access

<table>
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<tr>
<th>Zone</th>
<th>Anterior wall</th>
<th>Posterior wall</th>
<th>Inferior wall (orbital roof)</th>
<th>p</th>
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<tr>
<td>Lateral limit reached (%)</td>
<td>95</td>
<td>95</td>
<td>35</td>
<td>&lt;0.01</td>
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- Zone 1 – 100%
- Zone 2 – 57%
- Zone 3 – 10%

Supraorbital Ethmoid Access
Supraorbital Ethmoid Access

55M with recurrent left frontal recess and frontal sinus IP.
Excise Tumor Attachment

- Outline resection margin
- Elevate tumor out
- Drill/remove bone
- Send margins
Address Underlying Bone
Dehiscent Lamina
Defect Reconstruction

- Expedite sinus recovery
- Prevent scarring off of sinuses (5.7% in Lombardi 2011) or obstructing frontal
- Free grafts, nasal floor flap
- Allograft/Xenograft materials
Mucosal flaps
Mucosal Grafts
Xenografts

Surveillance

- Anticipate surveillance
  - turbinate resection
  - open all sinuses
  - septoplasty
  - debridements to facilitate open sinuses
- Majority of recurrences occur within the first 2 years after surgery.
# Recurrence by stage

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<tr>
<td>T1/Group A</td>
<td>Confined to the nasal cavity</td>
<td>0%</td>
<td>IP confined to the nasal cavity, ethmoid sinuses, or medial maxillary wall</td>
<td>3%</td>
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<tr>
<td>T2/Group B</td>
<td>Limited to the ethmoid and medial or superior portion of the maxillary sinus</td>
<td>4%</td>
<td>Involvement of any maxillary sinus wall (other than the medial wall), frontal sinus, or sphenoid sinus</td>
<td>19.8%</td>
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<td>T3/Group C</td>
<td>Tumor involves the lateral or inferior aspects of the maxillary sinus or has extension into the frontal or sphenoid sinuses</td>
<td>19.2%</td>
<td>Extension beyond the paranasal sinuses</td>
<td>35.3%</td>
</tr>
<tr>
<td>T4</td>
<td>Any extrasinus involvement or malignancy</td>
<td>35.3%</td>
<td>n/a</td>
<td>n/a</td>
</tr>
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Suh JD, Chiu AG. What are the surveillance recommendations following resection of sinonasal inverted papilloma? Laryngoscope. 2014.
High Risk for Recurrence

- Supraorbital ethmoids
- Floor of pneumatized max
- Sphenoid sinus over optic nerve and/or carotid

Suh JD, Chiu AG. What are the surveillance recommendations following resection of sinonasal inverted papilloma? Laryngoscope. 2014.
Questions