Reasons for Failure and Surgical Revisions

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• DISCLAIMER

• No medications available that have an FDA indication for CRS

• All medications and any medical management described in this lecture are OFF LABEL
• Why do primary sinus surgeries fail?
## Patient characteristics (n=43)

King, et al - Laryngoscope 1994

<table>
<thead>
<tr>
<th>Condition</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior Surgery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-FESS</td>
<td>33</td>
<td>76.7%</td>
</tr>
<tr>
<td>FESS</td>
<td>10</td>
<td>23.3%</td>
</tr>
<tr>
<td>Immune status</td>
<td>4</td>
<td>9.3%</td>
</tr>
<tr>
<td>Fungal sinusitis</td>
<td>4</td>
<td>9.3%</td>
</tr>
<tr>
<td>Asthma</td>
<td>14</td>
<td>32.6%</td>
</tr>
<tr>
<td>Oral steroid use</td>
<td>15</td>
<td>34.9%</td>
</tr>
<tr>
<td>Polyps</td>
<td>19</td>
<td>44.2%</td>
</tr>
<tr>
<td>Sphenoid sinus dz</td>
<td>22</td>
<td>51.2%</td>
</tr>
</tbody>
</table>
### Causes of sinus surg failure

**Vaughn, ARS COSM 2000**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remnant ethmoid cells</td>
<td>73.3%</td>
</tr>
<tr>
<td>Max mucous recirculation</td>
<td>41.7%</td>
</tr>
<tr>
<td>Lat middle turb</td>
<td>33.3%</td>
</tr>
<tr>
<td>Frontal sinusitis</td>
<td>23.3%</td>
</tr>
<tr>
<td>Undiagnosed fungal dz</td>
<td>23.3%</td>
</tr>
<tr>
<td>Sphenoid sinusitis</td>
<td>18.3%</td>
</tr>
<tr>
<td>Polyp recurrence</td>
<td>10%</td>
</tr>
<tr>
<td>Remnant Onodi cell</td>
<td>6.7%</td>
</tr>
<tr>
<td>Remnant Haller cell</td>
<td>1.7%</td>
</tr>
</tbody>
</table>
Uncinectomy - Necessary
Complete uncinectomy to avoid recirculation

Natural ostium

Antrostomy
<table>
<thead>
<tr>
<th>Polyps</th>
<th>No Polyps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eosinophils</td>
<td>No Eosinophils</td>
</tr>
</tbody>
</table>

Kountakis et al. molecular and cellular staging for the severity of chronic rhinosinusitis *Laryngoscope, 114:1895–1905, 2004*
CRS Severity Staging

- E CRS w NP
- NE CRS w NP
- E CRS n NP
- NE CRS n NP

Eosinophils

- MBP
- ECP

- Very toxic to mucosa

- Vasodilation
- Vascular permeability
- Gland secretion and mucous production

Leukocyte recruitment

- Smooth muscle contraction
• If Eos <5/HPF: Usual post-op meds, Intranasal steroid spray, NS

• If Eos Midrange/HPF: ISS, NS, Short oral steroid taper, budesonide irrigations, LT receptor antagonists budesonide in 3 oz NS, 1.5 oz irrigation each nasal cavity bid

• If Eos >20/HPF, ISS, budesonide irrigations, month long oral steroid taper, LT receptor antagonists budesonide in 3 oz NS, 1.5 oz irrigation each nasal cavity bid - consider anti-Lipo-oxygenase medications if failure
• Pre-op assessment
  • History
  • Endoscopy
  • Maximize medical therapy
  • CT evaluation
  • Game plan
  • Image guidance
• **Surgical techniques**

• Uncinectomy

• Incorporate natural max ostium into antrostomy

• Enter bulla inferiorly and medially

• Do not work in a hole

• Identify Lamina

• Respect the vertical plane of the MT

• Preserve horizontal basal lamella

• Do not open MMA flash to the posterior maxillary sinus wall
• Lateralized middle turbinate
Lamina papyracea

- Middle meatal antrostomy and ridge at the junction of the lamina papyracea
- Surgical techniques
  - Inferior turbinate - most constant and reliable landmark for MMA
  - Superior entrance can injure the Lamina
  - Anterior - Nasolacrimal duct
  - Posterior - sphenopalatine
  - Inferior - SAFER
• Surgical techniques
  • Eye ball palpation - monitor lamina
• Surgical techniques
  • Eye ball palpation - monitor lamina
Inclined plane of Skullbase

Sphenoid Roof = Level of Skullbase
Uncinate to Lamina

Recessus Terminalis
or
Pseudo-Frontal Recess
Uncinate to Lamina

Left side

Uncinate

FS

Left side
Supraorbital ethmoid cell as a landmark for the anterior ethmoidal artery
• Revision FESS - frontal

• Simplify a possibly complex case-Above and Below
• Critical / Vulnerable sites / Thin bone
cribriform/skull base abnormalities
• **Landmarks for sphenoid sinus**
  
  • Septum, Maxillary, Ethmoid cavities, choana
• In anatomic sphenoid variants identify the natural sphenoid ostium
Onodi or Sphenoethmoid air cell
Onodi or Sphenoid air cell
Is image guidance helpful in this case?
Thank you!