VIBRANT SOUNDBRIDGE IN AURAL ATRESIA: HOW DOES ATRESIA SEVERITY MATTER?


Disclaimer
The views expressed in this presentation are those of the presenter and do not reflect the official policy or position of the Medical College of Georgia, Georgia Health Sciences University, Georgia Regents University, GRUA, or the State of Georgia.

Disclosures
Surgical Advisory Board, MED-EL Corporation
Research Support, Oticon, MED-EL

Atresiaplasty
- Only half of those patients meet criteria for conventional atresiaplasty
  - If the patient has an associated craniofacial syndrome, that percentage ≤ 25% or less
- Bone conduction hearing aids are encouraged prior to surgical intervention,
- Surgical repair typically after the 6th birthday and following microtia repair.

Atresiaplasty Results
- In appropriately selected candidates operated on by experienced surgeons,
- 7 or higher had SRT ≤30 dB in 89% of surgeries
- 6 or less had SRT ≤ 30 dB, in 45%
- SRT of ≤ 25 dB are seen in 75%
- Long term results suggest SRT ≥35dB may be more typical
- Poor pneumatization of the middle ear & mastoid best predictor of poor postoperative outcomes
- Revision rate 15-20%
  - Recurrence of stenosis common
  - especially in Grade III microtia
- Long term results of revision surgery have less improvement in hearing thresholds as well

BAHA Evidence-Based Outcomes
- Audibility
  - With BAHA ≥ Without BAHA
- Localization
  - With BAHA ≥ Without BAHA
- Speech Recognition
  - With BAHA ≥ Without BAHA
- Quality of life
  - With BAHA ≥ Without BAHA

VSB Outcomes
- Incus, Stapes, and Round Window
  - Mean functional gain of 45 dB
  - SDS ≥90% at 65 dB
  - Bone thresholds stable
- Consensus statement has recommended in Jahrsdoerfer Score ≥ 8¹
  - Success reported in Jahrsdoerfer Score ≥ 3²

Quality-adjusted life year: health outcome measurement that combines duration and quality of life

<table>
<thead>
<tr>
<th>Service</th>
<th>QALY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hearing Aids</td>
<td>$17,072/QALY</td>
</tr>
<tr>
<td>Cochlear Implants</td>
<td>$14,000-16,000/QALY</td>
</tr>
<tr>
<td>Middle Ear Implants</td>
<td>€16,085-€70,000/QALY</td>
</tr>
<tr>
<td>BAHA</td>
<td>£46,628-100,029/QALY</td>
</tr>
</tbody>
</table>

What is considered acceptable?

US ≤ $50,000/QALY
EU ≤ €40,000/QALY
UK ≤ £30,000/QALY

Methods

- Demographic data:
  - age, gender, laterality, associated syndromes, previous otologic surgery.
- Audiology data:
  - pre/postop air/bone, unaided and aided speech
- Clinical/Surgical:
  - CT imaging, approach, FN outcome, FMT placement, microtia repair.
  - Altman, Jahrsdoerfer and Yellon scores

Results

- Average age 22 yoa, range 6-68 yoa
- Average follow up 17 months, range 2-42 months
  - Initial 3.7 months
  - 16 (57%) M/12 (43%) F, 17 (61%) R/11 (39%) L
  - 5 (18%) with Treacher-Collins
  - All transmastoid, 1 transmastoid/transcanal
  - No iatrogenic FN paresis/paralysis
  - 2 had previous microtia repair
  - One non-user, one not yet fitted

11/17/2012 Georgia Society of Otolaryngology-Head & Neck Surgery
### Results

<table>
<thead>
<tr>
<th>Location of FMT</th>
<th>N</th>
<th>Initial Post-op Aided Speech Threshold</th>
<th>Initial Post-op Aided Word Recognition</th>
<th>Recent Post-op Aided Word Recognition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>Std Dev</td>
<td>Mean</td>
</tr>
<tr>
<td>1: Oval Window/Fenestra</td>
<td>5</td>
<td>42</td>
<td>12</td>
<td>88%</td>
</tr>
<tr>
<td>2: Stapes</td>
<td>5</td>
<td>36</td>
<td>15</td>
<td>97%</td>
</tr>
<tr>
<td>3: Round Window</td>
<td>4</td>
<td>38</td>
<td>5</td>
<td>100%</td>
</tr>
<tr>
<td>4: Incus</td>
<td>4</td>
<td>39</td>
<td>10</td>
<td>100%</td>
</tr>
</tbody>
</table>

- None of the severity scoring systems had predictive value.

### Results

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Initial Post-op Aided Speech Threshold (N = 18)</th>
<th>Initial Post-op Aided Word Recognition (N = 18)</th>
<th>Recent Post-op Aided Word Recognition (N = 24)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$r_s$</td>
<td>p-value</td>
<td>$r_s$</td>
</tr>
<tr>
<td>Normal stapes present</td>
<td>-0.570</td>
<td>0.014</td>
<td>0.273</td>
</tr>
<tr>
<td>Middle ear space large and favorable</td>
<td>-0.566</td>
<td>0.015</td>
<td>0.108</td>
</tr>
<tr>
<td>Mastoid well pneumatized</td>
<td>-0.489</td>
<td>0.035</td>
<td>0.302</td>
</tr>
</tbody>
</table>

### Reconsidering Aural Atresia VSB Criteria

- Atresia Severity not a contraindication.
- Jahrsdoerfer Score of 4 or better.
- Some reports of benefits with JS 3.
- No age restriction determined yet.
- Determination of Placement requires careful preoperative and intraoperative assessment of ossicular chain and facial nerve position.
- New criteria to guide candidate assessment are needed