Impact of Endoscopic Ear Surgery On Resident and Fellow Training

1:30-2:30PM
Friday, June 14th
Overview

• Introduction of panelists

• Brief presentations by panelists

• Directed panel discussion

• Open Forum
“Not the boards answer”
HPI: 62 year old F with AD otorrhea and hearing loss x4 years

AD: Copious keratin surrounding the malleus and central portion of pars tensa with attic defect and cholesteatoma.

AS: TM 40% posterior perforation with rolled in edges and retraction superiorly involving the incus and stapes and tendon.

Audiogram: Mixed bilateral mild to severe downsloping hearing loss

Imaging: Likely cholesteatoma in the epitympanum and mastoid with erosion of the ossicular chain and a sclerotic mastoid.
Plan?

Transcanal endoscopic ear surgery consisting of exploratory tympanotomy, wide atticotomy, resection of cholesteatoma with likely limited canal wall up mastoidectomy to open the antrum for a transmastoid resection of the remainder of the cholesteatoma with cartilage graft reconstruction of the atticotomy, medial graft tympanoplasty with OCR and possible second look procedure.
Case 2:

**HPI:** 48 year old F with prior AS CWD mastoidectomy with draining left ear

**AD:** Normal canal with intact drum

**AS:** CWD cavity with a moderate size meatoplasty and low facial ridge, perforation of the graft, and cholesteatoma in the inferior aspect of the mastoid cavity

**Audiogram:** AS maximal conductive loss

**Imaging:** Likely cholesteatoma in the mastoid bowl
Plan?
Transmeatal endoscopic revision CWD with resection of cholesteatoma
1. Begin to understand the different ways that endoscopic ear surgery is influencing trainee education

2. Understand contemporary approaches to address new needs for endoscopic ear surgery training
World Congress on
Endoscopic Ear Surgery 3.0
June 13-15, 2019
BOSTON RENAISSANCE WATERFRONT HOTEL
Impact of Endoscopic Ear Surgery On Resident and Fellow Training

Ruwan Kiringoda, M.D.
Palo Alto Medical Foundation
Palo Alto, CA
Positives

• Better visualization!

• Better illustration of anatomical relationships – “like a textbook”

• Closer supervision of resident maneuvers

• Residents better able to watch complex attending maneuvers

• Residents comfortable with endoscopic sinus surgery may they have “tricks” to show us!
Negatives

• Longer surgeries in inexperienced hands

• If multiple ear surgeons at an institution, residents may have greater exposure to traditional microsurgery

• Less forgiving of poor canal injections (suction dissector may help)

• Decreased exposure to mastoidectomy skills

• Off-handed surgery (right handed surgeon, right ear surgery)
Risks

• Don’t knock the ossicles with the scope!
• Risks of thermal injury
• Careful not to pull graft out!
Challenges

• How do we blend teaching with developing our own skills?

• Managing time constraints in the OR

• Longer learning curve – are graduating residents competent w EES, or is a 5 yr graduate better off w microscopic skills?

• Difficult situations (off hand surgery, stapedectomy)
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Adela Cordero, PhD
Otology and Neurotology Department
Hospital Universitario Ramón y Cajal
Madrid, Spain
OBJECTIVE: To validate the sheep’s ear as a proper model for the practice of fully endoscopic stapedectomy.
Incudostapedial joint disarticulation and stapedius tendon section

Posterior crus section and stapes superstructure down-fracture
Posterior hemiplatinectomy and Perichondrium graft insertion

Incudomalleolar disarticulation and prosthesis placement
Complications

- Flap disruption
- Injury of the ILP
- Sinking of the footplate
- Total platinectomy
Results: Statistical analysis

<table>
<thead>
<tr>
<th>Surgeon A</th>
<th>First 10 surgeries</th>
<th>Surgeon B</th>
<th>First 10 surgeries</th>
<th>Second 10 surgeries</th>
</tr>
</thead>
</table>

Group 1 vs Group 2

**Surgical success**
- IS disarticulation
- ST section
- Posterior crus section
- SS down-fracture
- Platinectomy (total/partial)
- Prosthesis insertion

**Complications**
- Flap disruption
- CTN injury
- Incus luxation
- ILP injury
- Sinking of the footplate

**Group-time**
- Mann-Whitney U test
- Chi-squared test

**Side**
- CS resection
Surgical success: no S.S. differences

Complications: no S.S. differences

CS resection

Surgical success:
ST section 0.022
SS down-fracture 0.011
Possibilities for platinectomy 0.008

Complications: no S.S. differences

Groups

Surgical success:
Posterior crus section 0.003
SS down-fracture 0.008
Possibilities for platinectomy 0.002

Complications: no S.S. differences
What about in LIVE patients?

- Begin with easy procedures, as wax extraction, grommets insertion, resection of pearls of cholesteatoma, myringoplasties…
Go to courses and congresses on endoscopic surgery!!
Conclusions

• The sheep’s ear provides an excellent training model for endoscopic otologic surgery.

• It has some limitations, like the conflict of space to introduce both the endoscope and the microsurgical instruments in a very narrow area.

• Reflected in the statistical analysis, in which we found a significant reduction of surgical time and objective improvement of surgical skills.

• We promptly improved the management of the endoscope throughout our learning process. The lack of stereoscopic vision and single-hand-surgery were also overcome.
Thank you
MODELS FOR ENDOSCOPIC EAR SURGERY TRAINING

JANAINA LEITE, M.D.
ENT Surgery Master Degree
INTRODUCTION

• TEES new surgical approach
• 1960s: visualize only
• 1990s: EES begins
• New difficulties
  • One-hand
  • Depth perception
  • Angle
  • Bleeding control
• Surgical Models and Simulators


TEMPORAL BONE SIMULATOR

• VIRTUAL REALITY

https://www.youtube.com/watch?v=PN8LgIYs_II
TEMPORAL BONE SIMULATOR

• VIRTUAL REALITY

MIDDLE EAR SIMULATOR

• 3D COMPUTER MODEL OF THE EPITYMPANUM

MIDDLE EAR SIMULATOR

• MODULAR EES SKILLS TRAINER

3D PRINTED SIMULATOR

• PEDIATRIC EES TRAINING

3D PRINTED SIMULATOR

- ANATOMIC MODEL FOR SURGICAL TRAINING

OVINE MODEL

OVINE MODEL

TEMPORAL BONE MODEL

TEMPORAL BONE MODEL

- TEMPORAL BONE HOLDER
- CARTILAGE SUTURE
TEMPORAL BONE MODEL
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Question

How do you view the changing field of otology impacting trainee education?
Question

• Do you see fewer mastoidectomies being performed?

• Are we losing a critical skillset?

• How to maintain?
As a teacher, what do you see as the learning curve for endoscopic vs. microscopic ear surgery?

Any advantages or disadvantages from the perspective of a trainee or faculty member?
• Technically, EES may be harder for right handed trainees in right ears. As a teacher, how do you approach this?

• Do you try to have trainees switch hands?
Should we need to mandate that temporal bone courses incorporate endoscopic ear surgery?
Do board examinations need to change to be accepting of endoscopic ear surgery?
Questions

• How is endoscopic ear surgery being implement into fellowship training for otology/neurotology?

• Should it be a mandatory component?
Any unpredicted or unintended consequences of otologic training using endoscopes?
Questions

Predictions for the future?