The endoscopic management of epitympanic cholesteatoma

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The idea

• Why are all pictures of ears taken with an endoscope not a microscope?
Current practice

- Microscopic approach
But...

- 2D rather than 3D
- Largely one handed technique
- Requires practice
- Gentle learning curve
History


4) Tarabichi M. Endoscopic management of limited attic cholesteatoma. Laryngoscope 2004; 114(7):1157-1162.
Surface of remnant of tympanic membrane

Basal turn of cochlea

Promontory

Thermocouples

Datalogger

Laptop

Measure temperature -200 to +1300 °C

Every second

To 0.01 °C
Methods

- Endoscopes inserted into EAM to a mark 5mm from TM
- Recording started
- 30 seconds later - light switched on
- Light switched off after 25 mins
- Further recording for 4.5 mins
- 3 recordings averaged

- 4mm endoscope inserted into middle ear
- Recording started
- 30 seconds later - light switched on
- Light switched off after 25 mins
- Further recording for 4.5 mins
- 3 recordings averaged

Results - all

3mm 0deg

3mm 30deg

3mm 70deg

4mm 0deg
Getting started - training issues

- Haptic feedback more important than when using a microscope
- Endoscope in the hands of an Otologist
- Different 3D requirements
- Nowhere to hide

Cholesteatoma
Conclusions

• Full field of view
• Look around corners
• Minimally invasive
• Less removal of bone
• Almost no scar