Cutting-Edge Advances in Endoscopic Ear Surgery
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I have nothing to disclose.

Within the last 12 months I have not had any type of financial arrangement or affiliation with commercial interests related to the content of this continuing education activity that requires disclosure.
Transcanal Endoscopic Ear Surgery

Utilize the EAC as the natural corridor of the tympanic cavity and beyond
Seeing Beyond What the Eye Can See

High resolution
Well beyond
Retina

Transcanal
Endoscopic
Tympanoplasty
Reach beyond your grasp
Development of a new surgical procedure
Development of a new surgical procedure
Side-by-side insertion

One-handed surgery
Challenges of TEES

Challenges
1. 2D visualization
2. One-handed surgery
3. Difficulty in accessing the antrum
4. Narrow EAC

These disadvantages have limited the spread of this technique.
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Incorporation of Powered Instruments

Indication for TEES has been expanded
Endoscopic Retrograde Mastoidectomy (Inside-out) requires considerably less bone removal than microscopic retrograde mastoidectomy.
We are able to successfully perform “endoscopic retrograde mastoidectomy on demand” by using powered instruments.
Ultrasonic Aspirator

The UA cuts bony tissue with no kicking or grabbing of the soft tissue.
When irrigation and suction are required, an assistant handles the irrigation and suction.
A chisel and hammer are also very effective in the TEES. The operator holds a chisel and an assistant use a hammer.
Two-handed surgery

Chisel

Hammer

Endoscope
PSQ
Cholesteatoma
TP IVi-M
6 year-old boy

minor axis: 4.4mm
major axis: 7.7 mm
Indications for TEES for Cholesteatoma

Divisions of the Middle Ear Space using PTAM system
(The Japan Otological Society, 2010)
P: protympanum, T: tympanic cavity, A: attic, M: mastoid

Exclusion criteria (TEES)
- Infiltrative cholesteatoma
- Large defect in tegmen

Extending to the antrum before the Donaldson line
→ TEES

Extending to the central mastoid beyond the Donaldson line
→ Dual Approach (CWU)
TEES+MES

With extracranial complications
→ MES (CWD)
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Surgical procedures and stages (PTAM) of cholesteatomas (primary cases) (September 2011 - March 2015)

90 of 133 cholesteatoma patients (68%) were treated by TEES
Development of surgical instruments

Non-slip Surface Treatment Technology
Non-slip Surface Treatment Technology

Ultimate Diamond Carbon Nanotube coating

Development of surgical instruments
Non-slip Surface Treatment Technology

Development of surgical instruments
Forceps with non-slip surface treatment technology

Does allow precise surgical procedure
Development of a new surgical procedure

iArms is supposed to
Make TEES more safe and more secure
Reduce the stress and fatigue of the surgeon.
Evaluation of Camera Shake Without iArms vs With iArms
Evaluation of Camera Shake

Without iArms

With iArms

Moving Velocity

iArms
Intelligent Arm Support system
The Goal of Transcanal Endoscopic Ear Surgery

Less Invasive
Secure & Safe
Functional

Under construction
Tremendous progress has been made in improving TEES. Our journey is not over yet, we still haven’t reached the top!
Save the Date

KYOTO
April 6–9
2021
ROHM Theatre Kyoto
Miyako Messe

YAMAGATA
April 11–12
2021
Satellite Symposium

4th World Congress on Endoscopic Ear Surgery
http://www.ees2021.umin.jp