**Otology Workshop; Advanced**

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Updated 1/24/2015

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**Introduction**

There are multiple methods and techniques available to successfully complete all the topics presented in this workshop. Some are based on patient request, available equipment or supervising physician’s preference.

The goal of this workshop is to correctly demonstrate the most common methods and give participants time for hands on training.
Otology Workshop; Advanced

Learning Objectives

• Practice removing cerumen impaction under microscope
• Practice myringotomy
• Practice ventilation tube insertion
• Practice intra-tympanic membrane injection
• Practice Paper Patch Myringoplasty

Task: Removal cerumen impaction under microscope

1. Position: Recline/patient/microscope – Explain Procedure
2. Visualize Canal/landmarks
3. Determine BEST Procedure – Remove Cerumen
4. Retract Ear

Reclined position allows visualization of attic space with microscope.

Use largest size speculum that fits & place deep enough to clear the hair-bearing skin.

Hold speculum between first & second finger to retract the pinna up & backward in an adult.

Visualize membrane and identify landmarks.

Suction
Curette
Alligator Forceps

Myringotomy & Tympanostomy Tube

Practice mannequins available have simulated tympanic membrane to practice removal of cerumen, myringotomy and ventilation tube insertion as well as intratympanic injection.
Myringotomy with Ventilation Tube Insertion

Indications

Discuss 2013 AAO-HNSF guidelines tympanostomy tube insertion children.

Otitis Media

Acute otitis media—fluid in the middle ear accompanied by signs or symptoms of ear infection (bulging eardrum usually accompanied by pain; or perforated eardrum, often with drainage of purulent material).
Otitis Media


Otitis media with effusion—fluid in the middle ear without signs or symptoms of ear infection. Note air bubble.

Tympanometry Testing

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Normal Type 'A'</td>
<td>A peaked tympanogram indicates normal tympanic function or that the tube is unobstructed.</td>
</tr>
<tr>
<td>Flat Type 'B'</td>
<td>A flat tympanogram with a small volume indicates a nonfunctioning tube with a middle ear effusion.</td>
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<tr>
<td>Negative/Positive Pressure Type 'C'</td>
<td>Negative pressure (red) suggests poor Eustachian tube function. Positive pressure (blue) is seen with Valsalva.</td>
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</table>

Types of Tubes

Shepard Grommet
Siouxtec Tytan® Ventilation Tubes
Armstrong Beveled Grommets, Modified
Paparella-Type Vent Tubes
Triune Tubes

Most grommets are short term 6-12 months but may last up to 36 months. For longer duration use "T" tubes (Triune tubes) or grommets of wider diameter and flange.
Myringotomy Tray

Sterile Kits Generally Include:
- 5 sizes of ear specula
- 2 sizes of curettes
- 1 myringotomy knife, sickle blade
- 1 suction

Myringotomy Blades
- Spear Blade
- Lance Blade
- Upcutting, Angled

Operating Microscope

1. An operating microscope with a 250-mm lens is brought into the field and focused on the external auditory meatus.

2. A speculum of a size appropriate for visualizing the tympanic membrane is placed into the external auditory canal, and any cerumen is removed so that the entire tympanic membrane can be visualized. For narrow canals consider inserting grommet BEFORE speculum.

Topical Anesthetic

- Phenol is in aqueous form of 20-25% solution
- Effect of the phenol anesthesia lasts about 15-20 minutes
- Also has bacteriostatic (0.2%), bacteriocidal (1.0%) and fungicidal (1.3%) properties.

- A topical solution of 8% tetracaine base in 70% isopropyl alcohol. Five to 10 drops of the solution applied to the tympanic membrane for 10 to 15 minutes and aspirated.
- Lidocaine

Procedure

1. A horizontal incision is made in the anteroinferior quadrant. It should be deep enough to incise the eardrum but not so deep that it injures the middle structures.
2. The incision should be slightly smaller than the diameter of the tube’s inner flange.
3. Microsuction effusion with a 3, 5 or 7 French Baron suction cannula.
4. A ventilation tube is introduced by holding the posterior surface of the inner flange with small alligator forceps.
5. If necessary, insertion is completed with a curved or straight pick. Most tubes can be inserted directly with small alligator forceps.
6. Residual effusion or blood is aspirated.
7. Otic antibiotic drops are instilled to reduce bleeding and loosen any thickened secretions that were not removed by suction.

Myringotomy & Tympanostomy Tube

Myringotomy & Tympanostomy Tube

Demonstration of myringotomy & tympanostomy tube procedure
1. An operating microscope with a 250 mm lens is brought into the field and focused on the external auditory meatus.
2. A speculum of a size appropriate for visualizing the tympanic membrane is placed into the external auditory canal, and any cerumen is removed so that the entire tympanic membrane can be visualized.
3. A horizontal incision is made in the anteroinferior quadrant. It should be deep enough to incise the eardrum but not so deep that it injures the middle structures.
4. The incision should be slightly smaller than the diameter of the tube’s inner flange.
5. Microsuction effusion with a 3, 5 or 7 French Baron suction cannula.
6. A ventilation tube is introduced by holding the posterior surface of the inner flange with small alligator forceps.

**Tympanostomy Tube Management**

- The average functional duration of a standard “short-term” ventilation tube has been estimated to range between 6 and 18 months with a mean of 13 months.
- Follow-up care should be every 4 to 6 months to ensure tube patency.
- Tympanostomy tubes should be removed when there is chronic infection or granulation tissue that fails to respond to topical and systemic antibiotics or if they have been in place longer than 3 years. The longer the tubes remain, the greater the risk of persistent perforation.

**Otorrhea with Tympanostomy Tubes**

Otorrhea occurs in 21% to 34% of patients who have undergone tympanostomy tube placement.

**Ototopical Antimicrobials vs. Oral Antibiotics**

Asymptomatic = ototopical  
Symptomatic = ototopical first line, then oral or combination
Intratympanic Injection

Intratympanic Injection


Intratympanic Injection

- Gentamicin injection into the ear is presently the most common destructive procedure for vertigo (http://american-hearing.org/disorders/destructive-treatments-of-vertigo/)
- Intratympanic (IT) methylprednisolone and oral prednisone are equally effective for treatment of idiopathic sudden sensorineural hearing loss. (http://www.medscape.com/viewarticle/743423)
Intratympanic (IT) injections of steroid can be given through the ear drum via a small needle. IT steroids allows for unilateral treatment and does not interfere with unaffected ear. It also avoids complications of systemic steroids, may avoid surgery, and may work when other treatments fail.

Most patients begins with a single intratympanic injection of dexamethasone (12 mg/ml). Follow up in 2-3 weeks. Repeat the injection at 6-8 weeks if vertigo recurs.

The dexamethasone solution should be prepared fresh (preservatives cause intense pain).

A mixture last about 1 week. Make two small incisions – one for the injection and one for ventilation. Allow the dexamethasone to warm to room temperature (to avoid dizziness).

Inject the dexamethasone through the posterior incision.


Intratympanic Injection

Demonstration of intratympanic injection procedure

Paper Patch Myringoplasty

- Small chronic perforations
  - Overall closure rate 62.8%, perforations < 5% 78.3%, >5% 45%.
- Topical phenol or trichloroacetic acid is applied to the edges of the perforation with a wisp of cotton on an applicator.
- A sharp pick is then used to freshen the margins of the tympanic membrane perforation to allow removal of the edges of the perforation.
- This technique removes any squamous epithelium that may have migrated under the medial surface of the tympanic membrane at the edge of the perforation and stimulates bleeding and healing from the local vascular supply.
1. Explain Procedure. Prepare supplies. Allow the dexamethasone to warm to room temperature to avoid dizziness.

2. Position patient

3. Apply anesthetic

4. Make two small incisions—one for the injection and one for ventilation.

5. Inject the dexamethasone through the posterior incision.

- Most patients begin with a single intratympanic injection of dexamethasone (12 mg/mL).
- Follow-up in 2-3 weeks. Repeat the injection at 6-8 weeks if vertigo recurs.

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**Paper Patch Myringoplasty**

- The edge of the perforation is circumferentially freshened to remove epithelium from the medial margin and promote local bleeding.
- The *inset* emphasizes that the medial edge of the perforation must be removed to eliminate squamous epithelium from the middle ear.

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**Paper Patch Myringoplasty**

- A cigarette paper patch, Steri-Strip, or silk patch is applied to the lateral surface of the tympanic membrane.

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• Rotate through stations.
• Practice mannequins available to practice;
  — cerumen and ear foreign body removal technique.
  — myringotomy and ventilation tube insertion
  — Intratympanic injection
  — Paper Patch Myringoplasty

### Otology Workshop; Advanced Room Set Up

#### Otology Workshop-Advanced Evaluation

Score cards will be used for admission to workshops and attendance. Credit will only be awarded for completed score cards.

<table>
<thead>
<tr>
<th>Name</th>
<th>Session 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>1. Were learning objectives met?</td>
<td>Scale 1-5</td>
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<td>2. Was instruction free of commercial bias?</td>
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<td>3. Was there adequate instruction before practice?</td>
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<td>4. Was there adequate supervision during practice?</td>
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<td>5. Were training aids useful/realtistic in learning skill?</td>
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<td>6. How likely are you to perform these skills in future?</td>
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<td>7. Did this training improve your skills?</td>
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<td>Comments:</td>
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### Otology Workshop-Advanced Score Card

Rotate and complete each station. **“Go/No Go”** for internal use only.
Completion of workshop is NOT contingent on pass/fail.

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<tr>
<th>Name</th>
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<th>Session 5</th>
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<tbody>
<tr>
<td>Task</td>
<td>Go</td>
<td>No Go</td>
<td>Go</td>
<td>No Go</td>
<td>Go</td>
</tr>
</tbody>
</table>
- Removal of cerumen under microscope
- Perform myringotomy
- Insert ventilation tube
- Perform intratympanic injection
- Perform Paper Patch Myringoplasty

**Comments**

**Proctor Name**

**Proctor Signature**