

# Surgery of The Ear, Nose, Pharynx, and Larynx

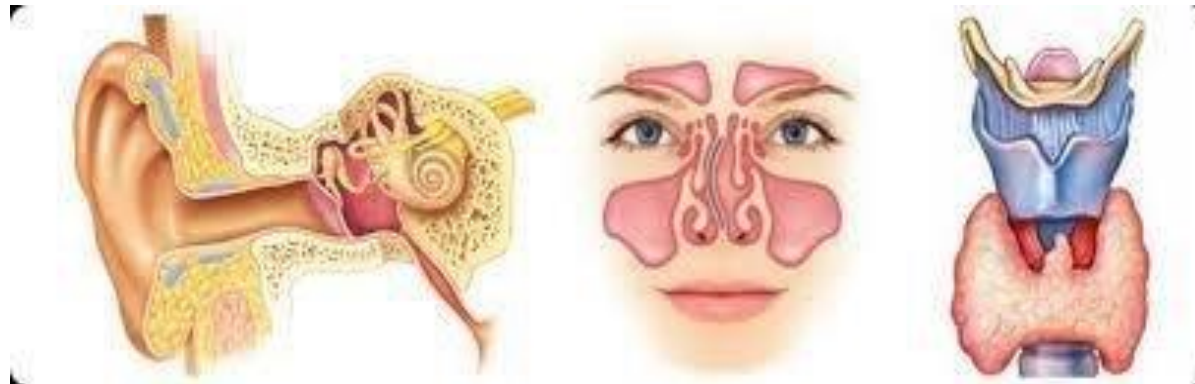
Surgical Techniques and Considerations



# Lesson Objectives:

In this lesson, we will cover:

1. Identify the key anatomical structures of the ear, nose, pharynx, and larynx
2. Discuss key aspects of case planning, including instrumentation, for ear, nose, pharynx, and larynx procedures
3. Describe common procedures of the ear, nose, pharynx, and larynx



# Otorhinolaryngology

- **Specialty dealing with ear, nose, and throat; ear surgery involves outer, middle, and inner ear procedures under microscope.**
- **Patient Communication:** Adjust communication for hearing deficits; accommodate preferred method and affected ear; consider written communication.
- **Addressing Isolation:** Hearing deficits may cause isolation; prioritize patient comfort and healing; compassionate communication fosters equality in care.



# Anatomy

# Anatomy of the Ear

- **External Ear**

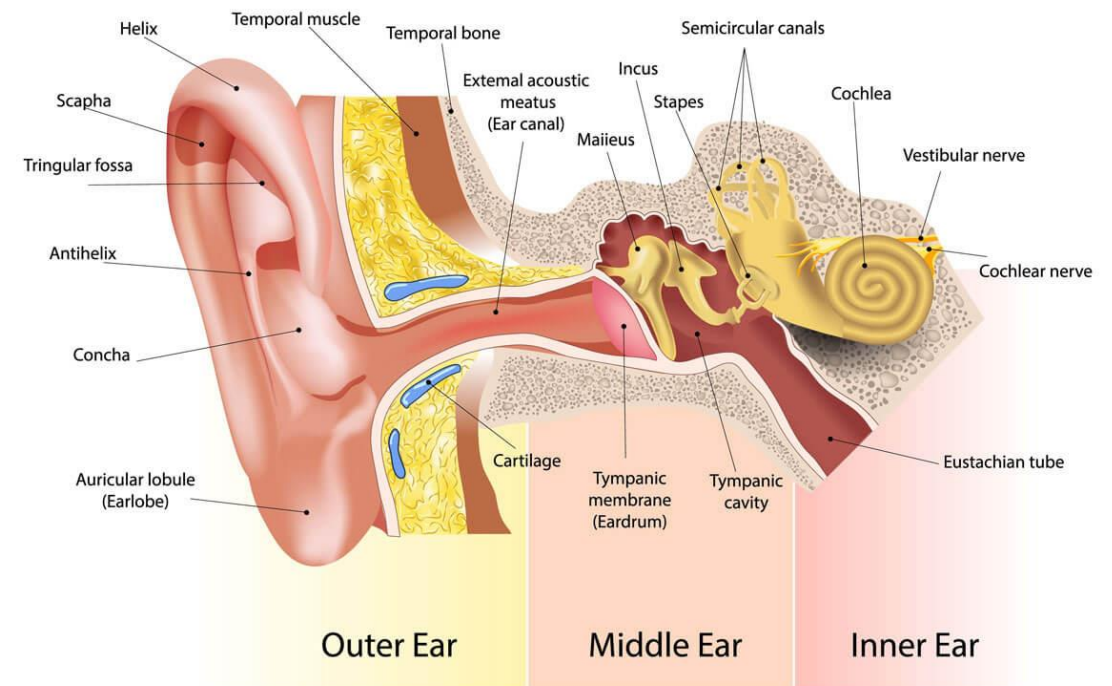
- Includes structures like the auricle, external auditory canal, and tympanic membrane (TM).

- **Middle Ear**

- Encompasses the TM, ossicles (malleus, incus, stapes), and eustachian tube.

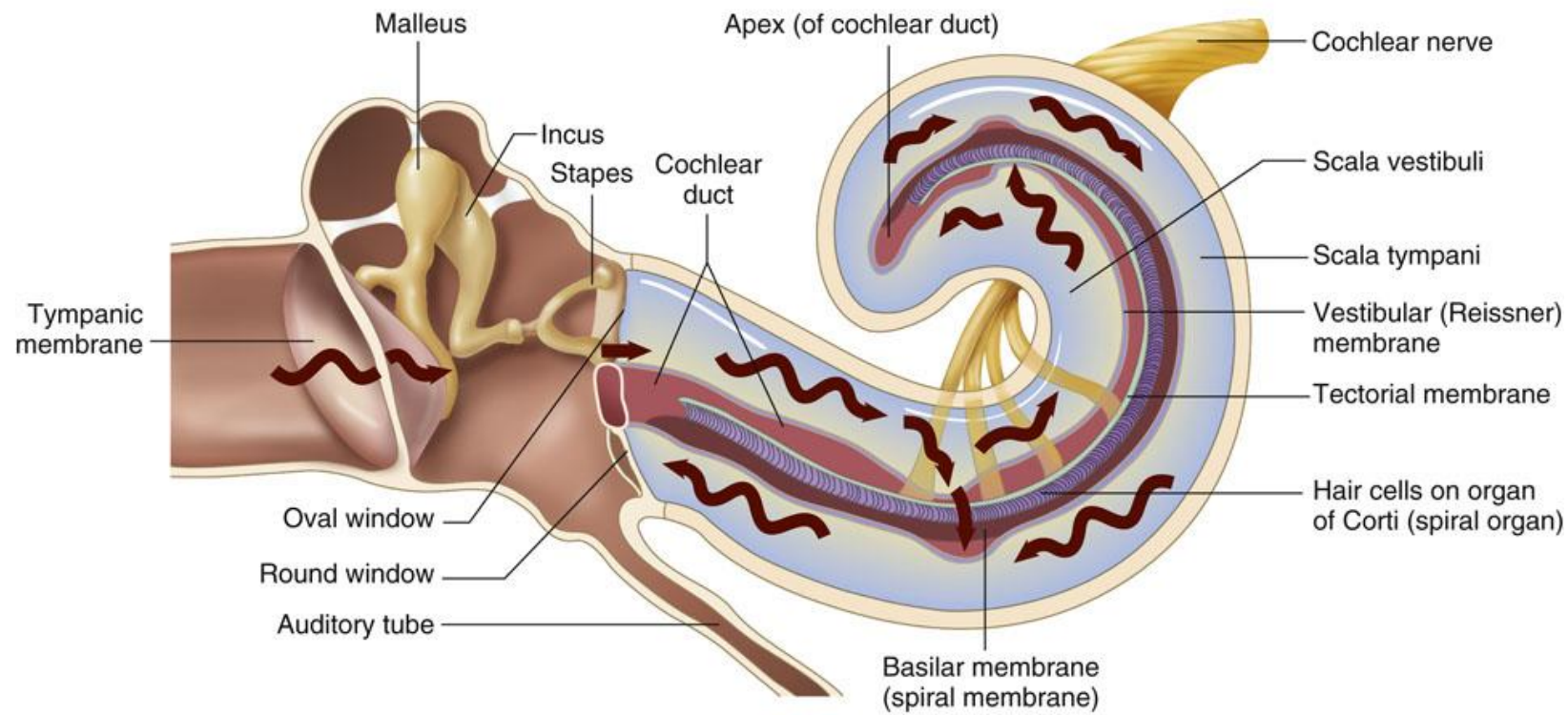
- **Inner Ear**

- Comprises cochlea, semicircular canals, and vestibule, vital for hearing and balance.



# Sound Transmission

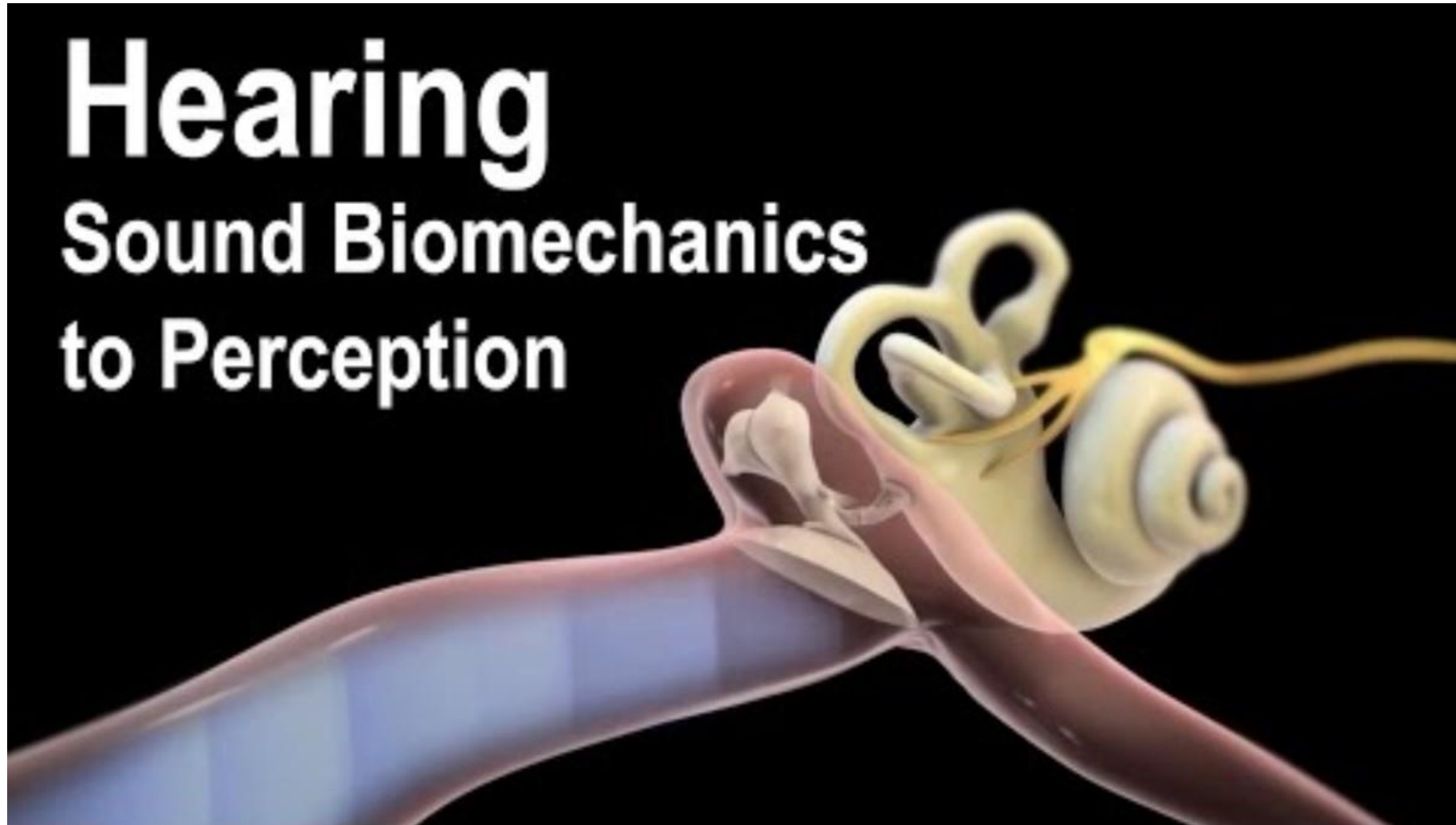
- A neural interpretation of sound transmission
- Nerve transmission occurs from the basilar membrane to the cochlear nerve



**Watch the "Hearing: Sound Biomechanics and Perception" Video**



# Hearing: Sound Biomechanics and Perception Video





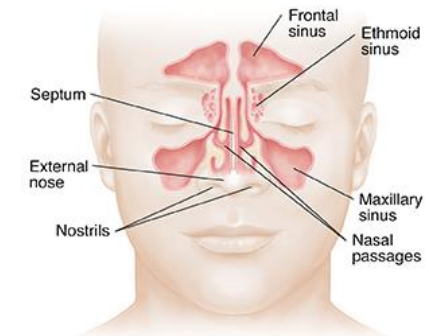
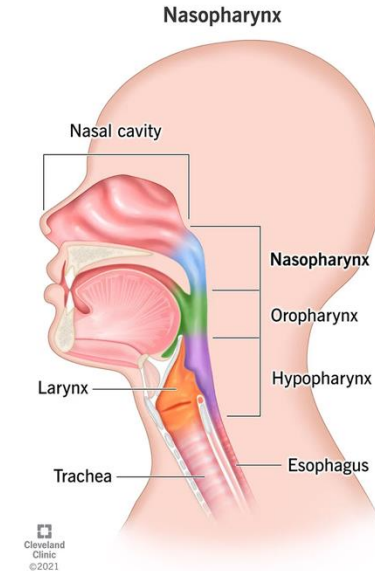
# Hearing: Sound Biomechanics and Perception Video

## Summary of Video:

- Sound waves enter the ear and vibrate the eardrum
  - Malleus, Incus and Stapes bones in the middle ear vibrate
- Sensory hair cells in the cochlea turn the vibrations into electrical signals
- This is sent to the brain

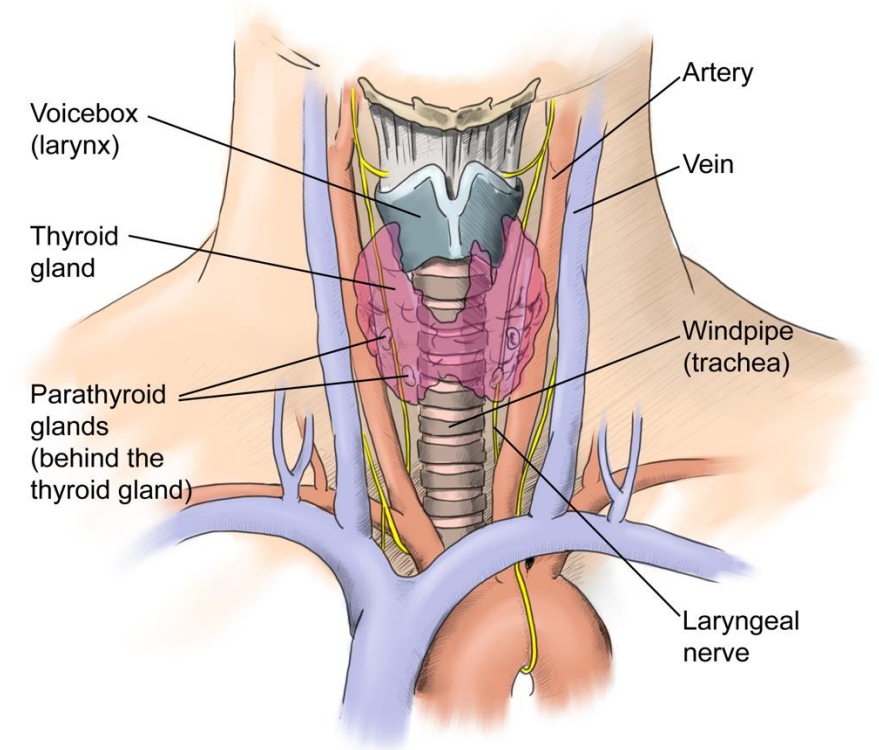
# Anatomy of the Nasal Cavity, Oropharynx, and Larynx

- **External nose:**
  - Anatomy of the visible structures: cartilages, bones, and nares.
- **Nasal cavity and sinuses**
  - Exploring the nasal cavity, its boundaries, and the vital role of sinuses.
- **Oral cavity**
  - Divisions and key features: vestibule, oral cavity proper, and associated glands.
- **Pharynx**
  - Division into nasopharynx, oropharynx, and laryngopharynx, highlighting key structures.
- **Larynx**
  - Composition of cartilages and functional compartments: supraglottis, glottis, and subglottis.



# Anatomy of the Neck

- **Nerves, Vascular Supply, and Muscles of the Neck**
  - SCM divides neck into triangles
  - Carotid sheath houses major vessels and nerves
- **Salivary Glands**
  - Parotid, submandibular, and sublingual glands
  - Innervation and anatomy of major glands
- **Thyroid Gland**
  - Location and structure
  - Hormones secreted and function
  - Role of parathyroid glands





# Case Planning

# Case Planning—Ear

- **Positioning**
    - supine or lateral positions, with adjustments for minimizing bleeding and stabilizing the head
  - **Prepping and draping**
    - verifying the correct solution, and using sterile cotton ball in the ear canal
  - **Irrigation**
    - Clear blood and tissue debris during surgery
  - **Instruments**
    - retractors, forceps, scissors, picks, elevators, knives, and retractors.
  - **Equipment and supplies**
- Note that many procedures may be "clean-contaminated" rather than sterile. Setup may be much more straightforward and simplistic, with basic draping with towels

# Case Planning—Nasal Cavity, Oropharynx, and Larynx

- **Prepping and draping**

- forehead to upper neck prep, head drape, towels for face, eye protection; Pharynx/larynx: minimal prep, draped with three-quarter sheet, optional head drape, eye protection.

- **Equipment and supplies**

- Operating microscope used in upper airway surgery

- **Nasal instruments**

- Regional anesthetics, vasoconstrictive agents, decongestants used; local anesthetic with epinephrine for nasal procedures

- **Tonsil and adenoid instruments**

- Crowe-Davis gag, McIvor mouth gag used; tonsil snare replaced by newer tech; adenoid curettes less commonly used.

- **Shaver and drills**

- Microdebrider for tissue excision in nasal/laryngeal surgery; high-speed drill for bone work.

- **Sinus scope**

- 0-degree scope for sinus exploration; 30-degree for maxillary, sphenoid, ethmoid sinuses; 70-degree for frontal sinus.



# Case Planning—Neck

- **Positioning the patient for neck surgery**
  - Usually supine with neck extension (shoulder roll)
- **Draping**
  - Towel draping to exclude face and maintain sterile field
- **Instruments**
  - neck retractors, thyroid grasping clamps, and vascular clamps
- **Dressings**
  - Tracheotomy incisions dressed with drain sponges and tracheal ties
- **Medications**
  - Local anesthetics and hemostatic agents crucial
- Better access to the neck (surgical field) may be achieved by tucking arms and/or fully rotating the OR bed for the surgical team



# Common Procedures

# Diagnostic Procedures for Ear

- Tuning Fork
- Audiometry
- Audiometer
- Otoscope
- Computed Tomography
- Tympanogram
- Electronystagmography



**Pure Tone Audiometry (PTA)**



**Speech Audiometry**



**Tympanometry**



**Otoacoustic Emissions (OAE) Test**



**Auditory Brainstem Response Test**

# Common Procedures—Ear

- **Endoscopic ear surgery:** Utilizes endoscopes for minimally invasive procedures within the ear canal and middle ear, aiding in precise visualization and treatment.
- **Endoscopic tympanotomy:** Involves accessing the middle ear through the eardrum using an endoscope, enabling detailed examination and surgical intervention while minimizing trauma.
- Open procedures of the ear
  - Myringotomy
  - Myringoplasty
  - Tympanoplasty
  - Mastoidectomy
  - Stapedectomy
  - Cochlear implant

**Watch the "Myringotomy Video"**

# Myringotomy Video





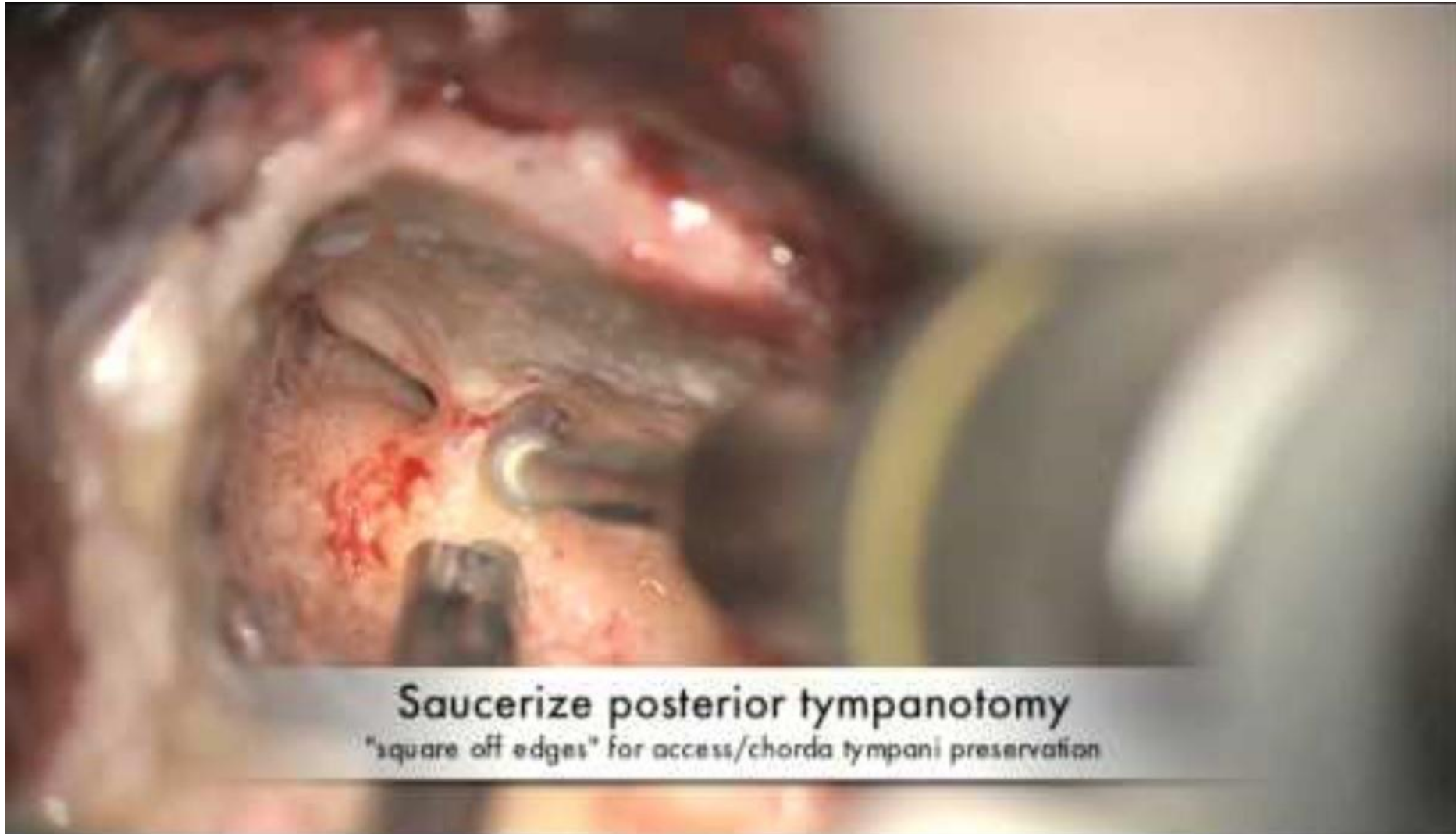
# Myringotomy Video

## Summary of Video:

- Myringotomy or ear tubes usually placed to remove fluid behind ear drum or for recurrent infections
- Small incision made into eardrum with a knife
- Tube placed in the opening
- Children usually done in the OR, Adults usually done awake in office or outpatient center

**Watch the "Cochlear Implant" Video**

## Cochlear Implant Video (start at 0:15)



# Cochlear Implant Video

## Summary of Video:

- Done for patients with hearing loss
- Small incision behind the ear
- Creates incision into mastoid bone to access the cochlea
- Implant leads placed inside cochlea

# Diagnostic Procedures for Nasal Tracks

- Direct Vision
- Mirror Examination
- Radiograph



# Common Procedures—Nasal Cavity, Oropharynx, and Larynx

- Endoscopic sinus surgery
- Caldwell-Luc procedure
- Turbinectomy/turbinate reduction
- Septoplasty
- Open rhinoplasty
- Tonsillectomy
- Adenoidectomy
- Uvulopalatopharyngoplasty
- Laryngoscopy
- Tracheotomy/tracheostomy



**Watch the "Tracheostomy" Video**

## Tracheostomy Video (Start at 0:05)



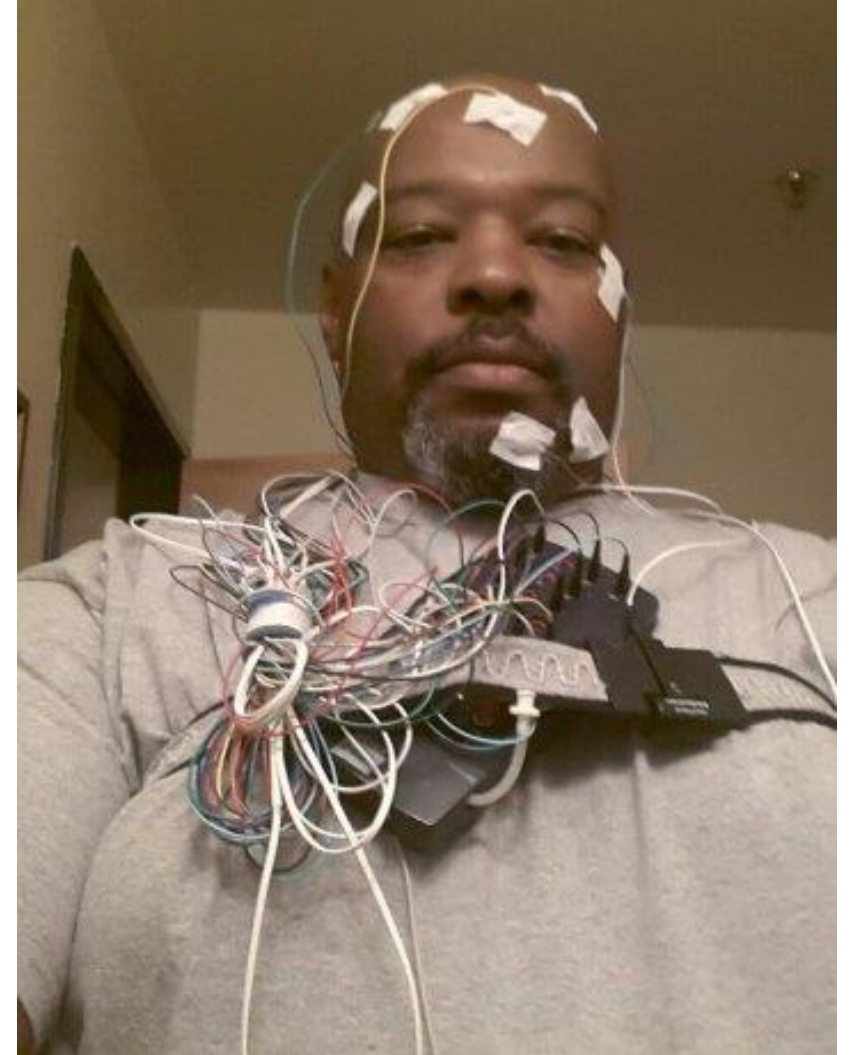
# Tracheostomy Video

## Summary of Video:

- Tracheostomy done for patients with an injury preventing adequate ventilation
- Dissection to Trachea
- Placement of Tracheostomy Tube
- Tracheostomy is done by a wide range of surgical specialties: ENT, General, Trauma, Cardiothoracic, etc.
- Tracheostomy may be done emergently if an airway is lost

# Diagnostic Procedures for Oral Cavity and Throat

- Direct and Indirect Visualization
- Culture and Sensitivity Tests
- Blood Count
- Radiological Examinations
- Videostroboscopy
- Polysomnography
- Multiple Sleep Latency Test (MSLT)



# Common Procedures—Neck

- **Parotidectomy:** Surgical removal of the parotid gland, often due to tumors or chronic inflammation.
- **Modified radical neck dissection:** Surgical procedure involving removal of lymph nodes in the neck while preserving vital structures.
- **Glossectomy:** Surgical removal of all or part of the tongue, usually performed to treat oral cancer.
- **Laryngectomy:** Surgical removal of the larynx (voice box), typically due to cancer or severe trauma.
- **Temporomandibular joint arthroplasty:** Surgical reconstruction or replacement of the temporomandibular joint to treat disorders such as arthritis or joint damage.

**Watch the "Thyroidectomy" Video**



# Thyroidectomy Video (Start at 0:10)



# Thyroidectomy Video

## Summary of Video:

- Dissection to the thyroid through the sternothyroid muscle
- One or both lobes of the thyroid may be removed
- Caution is taken around the blood vessels and nerves of the neck

# Read Chapter 26 from the E-book

Read **Chapter 26** from your E-Book to pass the upcoming quiz from **Surgical Technology - Elsevier eBook on VitalSource, 8th Edition**.

[Click Here](#) to read chapter 26!

# Thank you!

Get ready for your quiz and rest of the activities now. Best of luck!



# Congratulations!

Lesson 26 is complete.