

**Poltava State Medical University**  
**Department Otorhinolaryngology**

# **Acute and Chronic Diseases of Ear**

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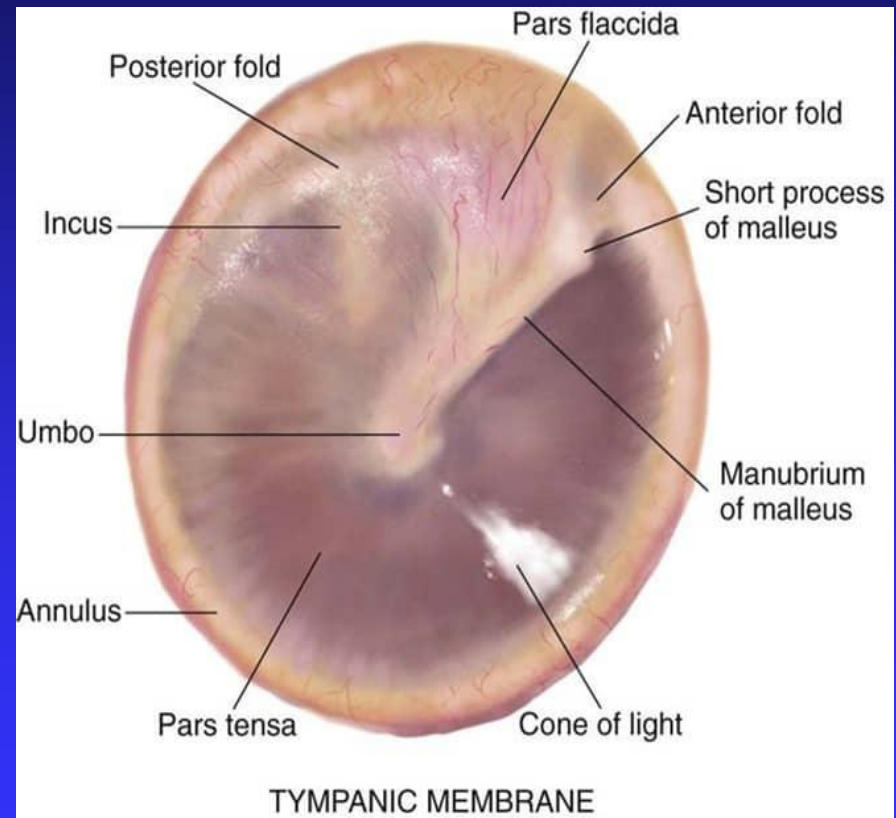
# Examination of External Ear

- inspect auricles and mastoid region: size, shape, symmetry, landmarks, color, position, deformities or lesions
- palpate auricles and mastoid: tenderness, swelling, nodules



# Tympanic Membrane

- inspect external auditory canal (with pneumatic otoscopy): cerumen, color, lesions, foreign bodies
- inspect tympanic membrane: landmarks, color, contour, perforations, mobility, all 4 quadrants



# Normal Tympanic Membrane

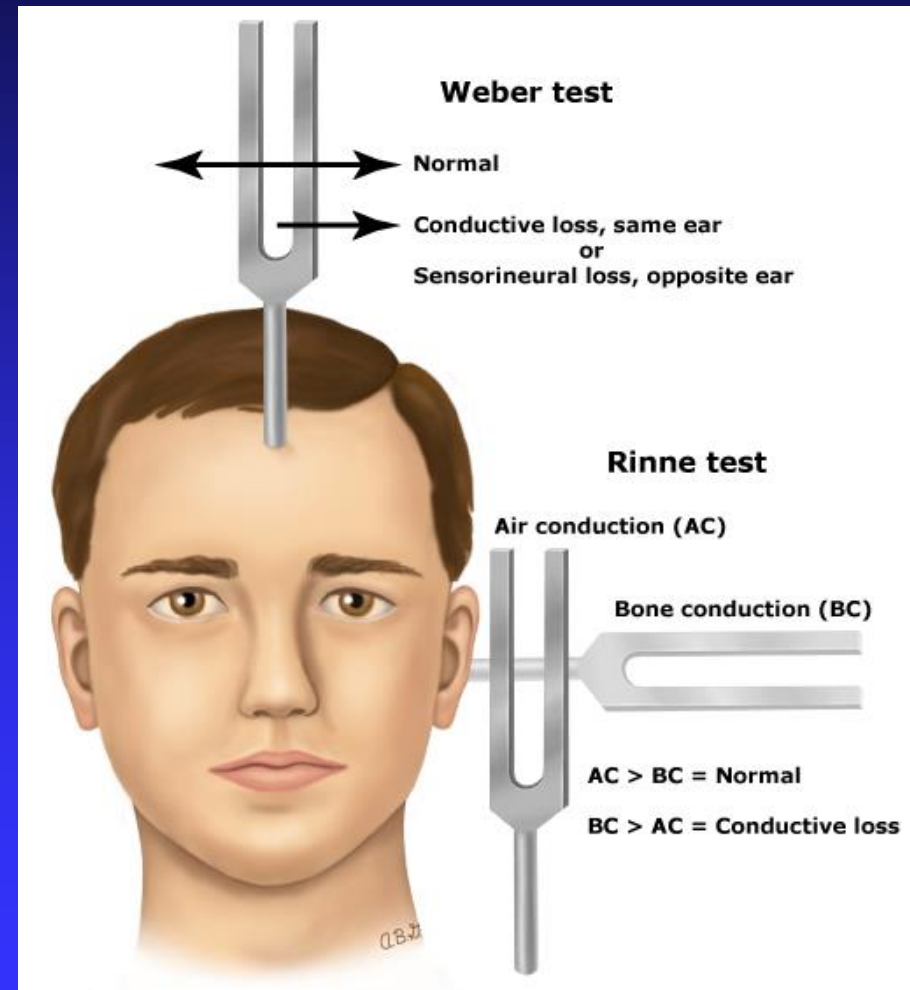


# Hearing Assessment


- response to questions during history
- response to a whispered voice (min. 6 m) to a speech voice (min. 20 m)
- tuning fork – air/bone conduction

Rinne test

Weber test



# Interpretation of Tuning Fork Tests

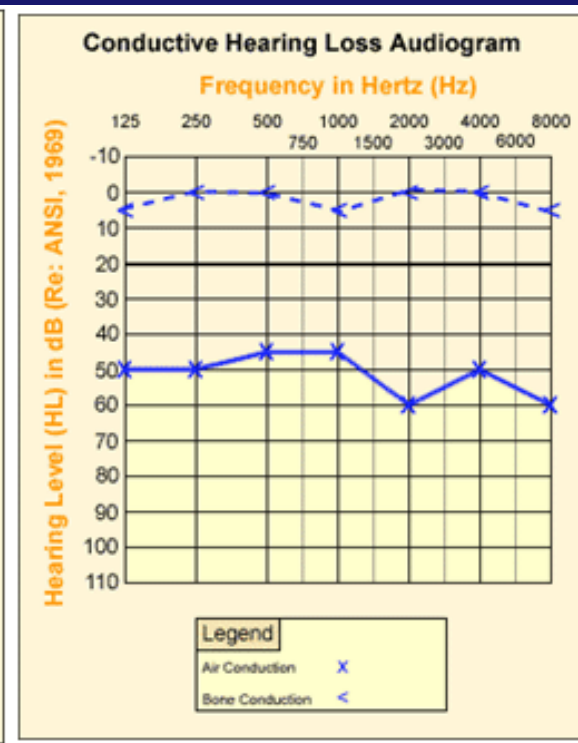
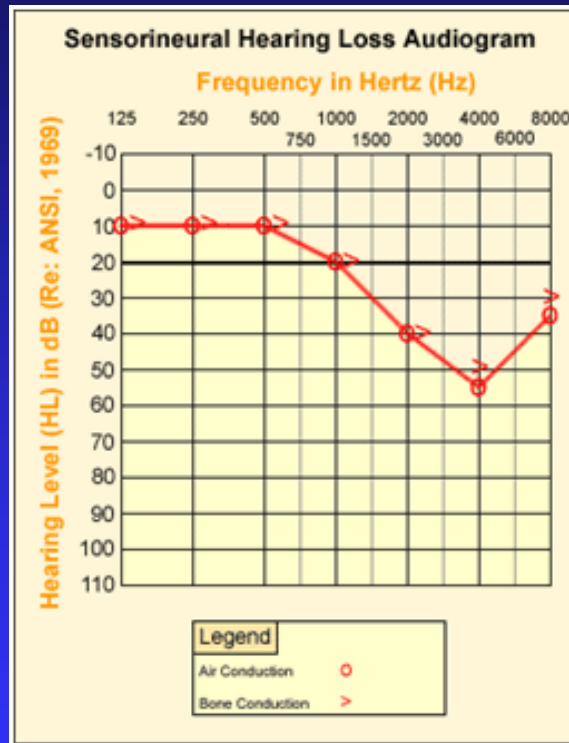


<b>Test</b>	Normal	Conductive hearing loss	Sensorineural hearing loss
<b>Rinne's</b>	AC>BC	BC>AC	AC>BC <small>false positive</small>
<b>Weber's</b>	<small>heard in</small> midline	<small>heard in</small> bad ear	<small>heard in</small> good ear

AC = air conduction; BC = bone conduction

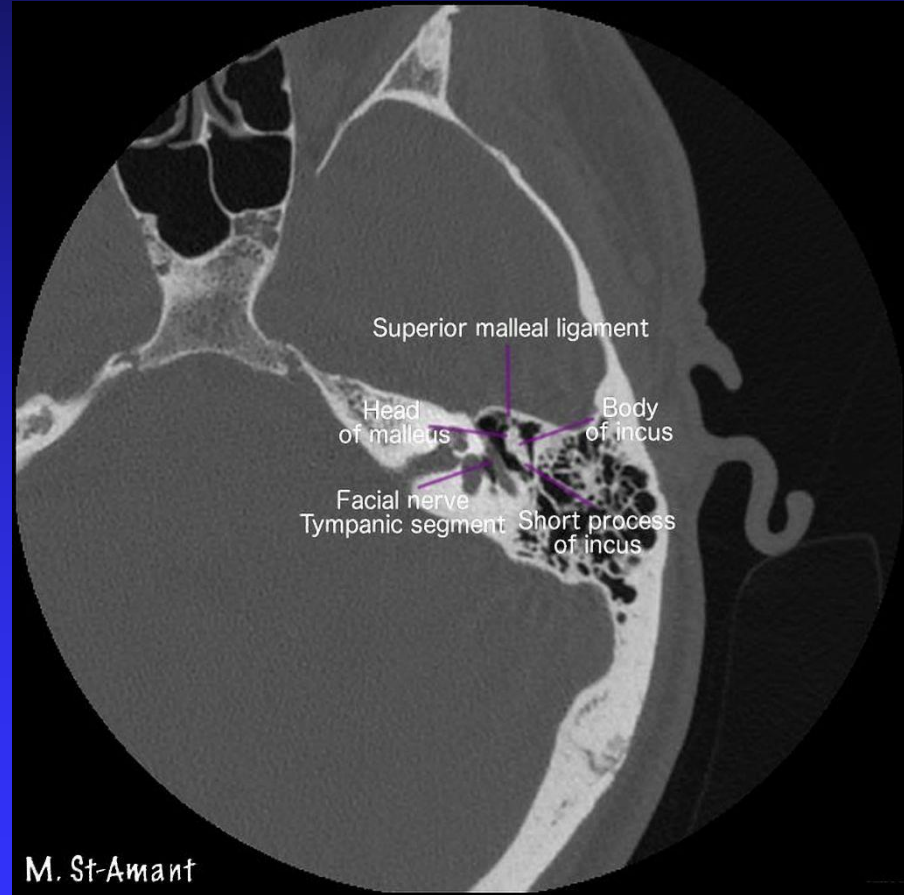
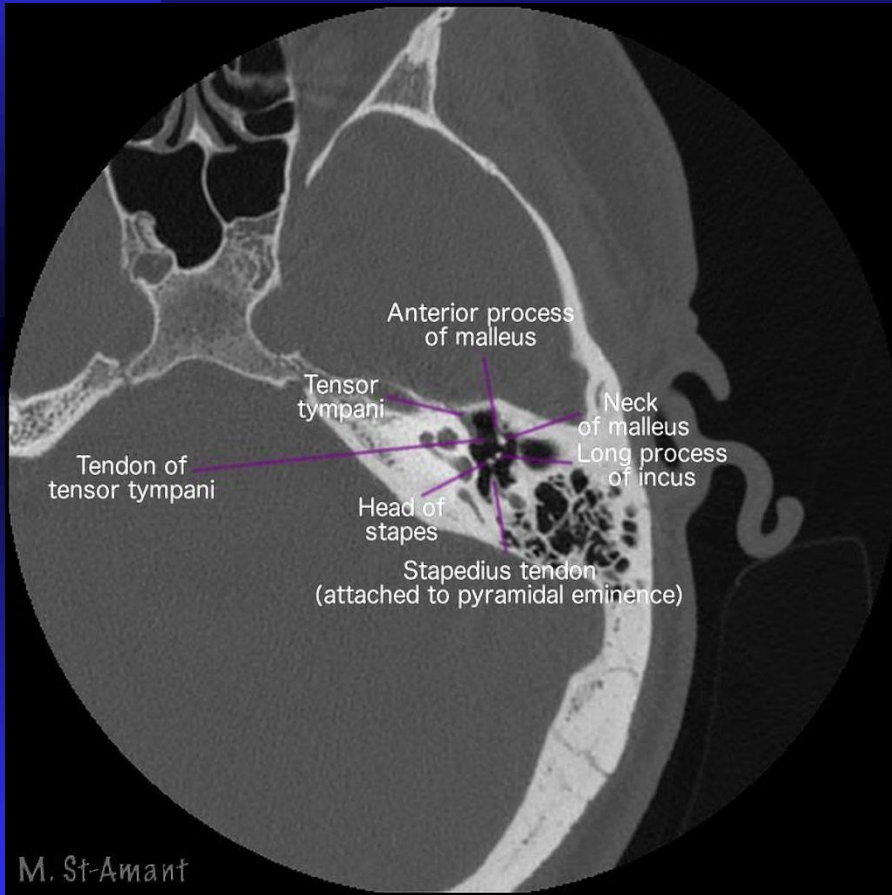
# Audiometry

- evaluation of air and bone conduction lines
- air-bone gap - conductive hearing loss
- depressed bone and air conduction lines - sensorineural loss





# CT of Ear

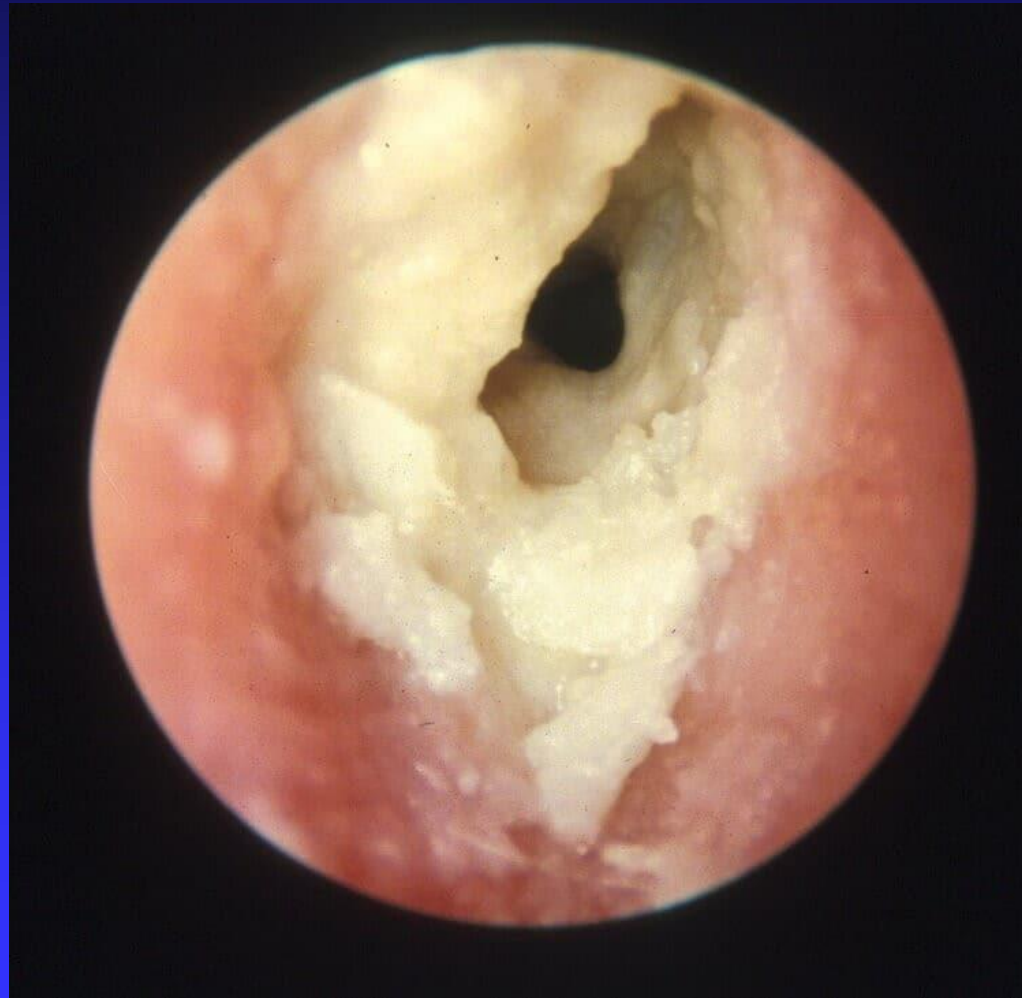




# Otitis Externa

- usually caused by infection (bacterial, occasionally fungal)
- may be associated with noninfectious factors or local dermatologic processes
- characteristic symptoms are otalgia, pruritis, conductive hearing loss
- characteristic signs are erythema and edema of the canal with variable discharge

# Otitis Externa



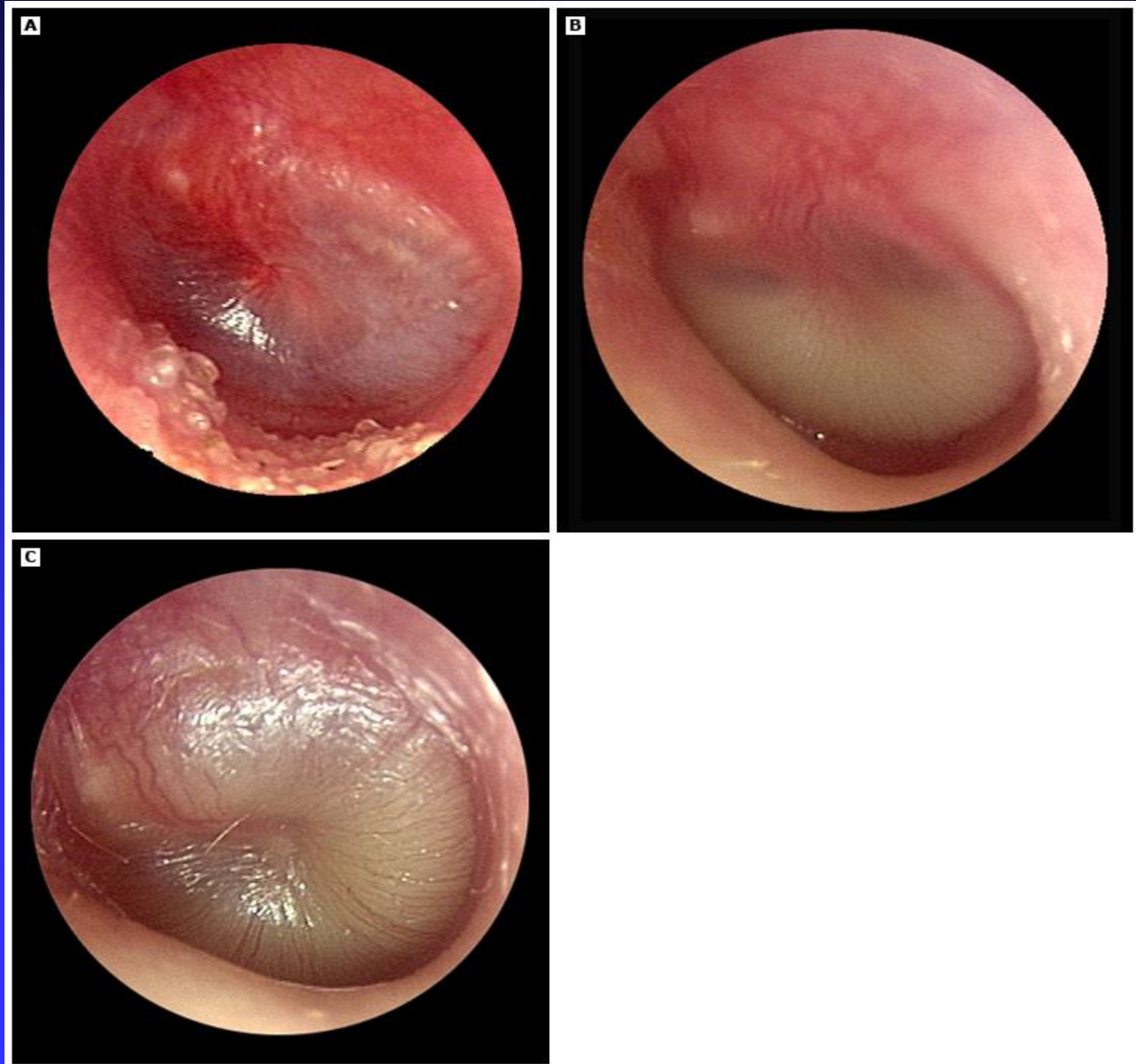
# Acute Otitis Media

- usually is complication of eustachian tube dysfunction at viral infection of upper respiratory tract
- pathogens: *Str. pneumoniae*, *H. influenzae* and *M. catarrhalis*
- acute onset, physical evidence of middle ear effusion and inflammation based on otoscopic findings
- symptoms: pain, conductive hearing loss, otorrhea etc

# Nose and Paranasal Sinuses History

- **nasal**
  - rhinorrhea
  - nasal obstruction
  - sneezing
  - discharge
  - olfaction
  - allergies
- **sinuses**
  - facial pain
  - dental pain
  - postnasal drip
  - olfaction
  - congestion
  - discharge

# Acute Otitis Media



# Otitis Media Complications

## Otologic

- mastoiditis/subperiosteal abscess
- petrous apicitis
- labyrinthitis
- facial paralysis

## Intracranial

- meningitis
- epidural abscess
- sigmoid sinus thrombosis
- brain abscess



# Otitis Media Complications

- high risk: neonate, immunocompromised state (diabetes, hiv, neutropenia)
- symptoms of intracranial complications: fever, severe headache, meningeal signs, seizures
- symptoms of otologic complications: mastoidal pain, displaced pinna, vertigo, SNHL, cranial nerve damage (6th, 7th, 8th)

# Forms of Chronic Otitis Media

- mesotympanitis
- epitympanitis

# Chronic Otitis Media Symptoms

- purulent effusion from the ear
- permanent perforation of the ear drum
- hearing loss, noise in the ear

# Mesotympanitis

- central ear drum perforation
- permanent or periodical discharges without bad smelling



# Epitympanitis

- marginal ear drum perforation
- discharges with bad smelling
- cholesteatoma



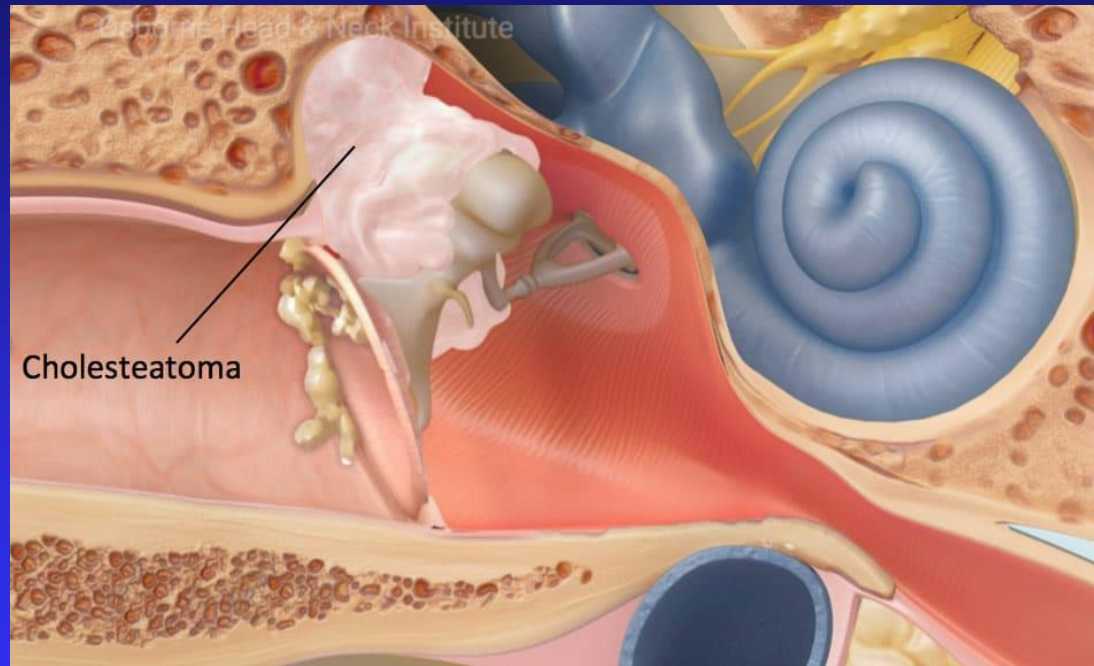
# Cholesteatoma

Theories of formation:

- metaplastic
- ingrowth of epidermis

Mechanism of bone destruction:

- pressure
- excretion of bone destroying fements





# Management

- examination: CT of temporal bone, audiometry, consulting neurologist
- common treatment
- nasal and nasopharyngeal sanitation
- local sanitation: mechanical evacuation of pus and infusion of medications into tympanic cavity

# Indications for Radical Surgery

- caries of middle ear cavity walls
- cholesteatoma
- chronic mastoiditis
- paresis of facial nerve
- otogenic intracranial complications (absolute indication)

# Hearing Loss

- **conductive hearing loss**
  - impedes transmission of sound to cochlea
  - involves external ear, EAC, TM, middle ear space and/or contents
- **sensorineural hearing loss**
  - involves inner ear (i.e. cochlea), acoustic nerve and/or central auditory pathways
- **mixed hearing loss**

# Hearing Loss

- **Conductive**

- External Ear
  - congenital atresia
  - cerumen
  - foreign body
  - malformations
  - infections
  - neoplasms
- Middle Ear
  - congenital anomalies
  - effusions (serous OM)
  - acute OM
  - TM perforation
  - chronic OM
  - mastoiditis
  - ossicular discontinuity
  - ossicular fixation
  - otoclerosis
  - neoplasms

- **Sensorineural**

- congenital
- acquired
  - presbycusis
  - noise-induced SNHL
  - sudden SNHL
  - drug toxicity
  - labyrinthitis
  - perilymphatic leak
  - Meniere's syndrome
  - head trauma
  - CNS diseases
  - neoplasms

# Sudden Sensorineural Hearing Loss

- sudden appearance, usually unilateral, no trauma history, rapidly progressive (<3 days)
- etiology – uncertain (30-50% associated with viral upper respiratory tract infection)
- associated symptoms: aural fullness, tinnitus, vertigo

# Sudden Sensorineural Hearing Loss

- diagnostics: audiometry, otoacoustic emission, possible MRI with gadolinium (90% no etiology found)
- management: early referral
  - antiinflammatory – steroids
  - vasodilators: carbogen, histamine, papaverin
  - rheologic agents: low molecular weight dextrans, heparin
  - antivirals/diuretics/triiodobenzoic acid deriv
  - 2/3 recover spontaneously



# Tinnitus

- presbycusis (age-related sensorineural hearing loss)
- cardiovascular diseases (pulsatile)
- Meniere's syndrome (episodic vertigo, aural fullness, hearing loss)
- otosclerosis - otospongiosis of cochlea
- drug-induced
- trauma (temporary noise and hearing loss)
- brain neoplasms
- psychosocial diseases (aural hallucinations etc)
- multiple sclerosis

# Vertigo

- false perception of movement
- important questions: onset, duration, frequency, associated ear symptoms, history ear disease/head trauma
- ENT examination, Hallpike maneuver, cranial nerves and cerebellar testing

# Common Causes of Vertigo

- **Meniere's syndrome**
  - episodes lasting minutes-hours
  - roaring tinnitus, aural fullness, low-pitched hearing loss
- **Labyrinthitis/Vestibular neuronitis**
  - sudden onset
  - lasts hours, subsides over days
  - history viral infection
- **Benign Paroxysmal Positional Vertigo (BPPV)**
  - most common cause
  - episodes lasting seconds
  - triggered by head movement
- **Central**
  - +/- history infection or trauma
  - associated with other neuro syndromes
  - vascular
  - temporal lobe
  - cerebellar

**Thank you for attention!**