

EXTERNAL EAR

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PURPOSE OF MCI & MUHS

▣ GOAL:

The basic idea is that STUDENT should acquire knowledge and skills for optimally dealing with

>Common disorders

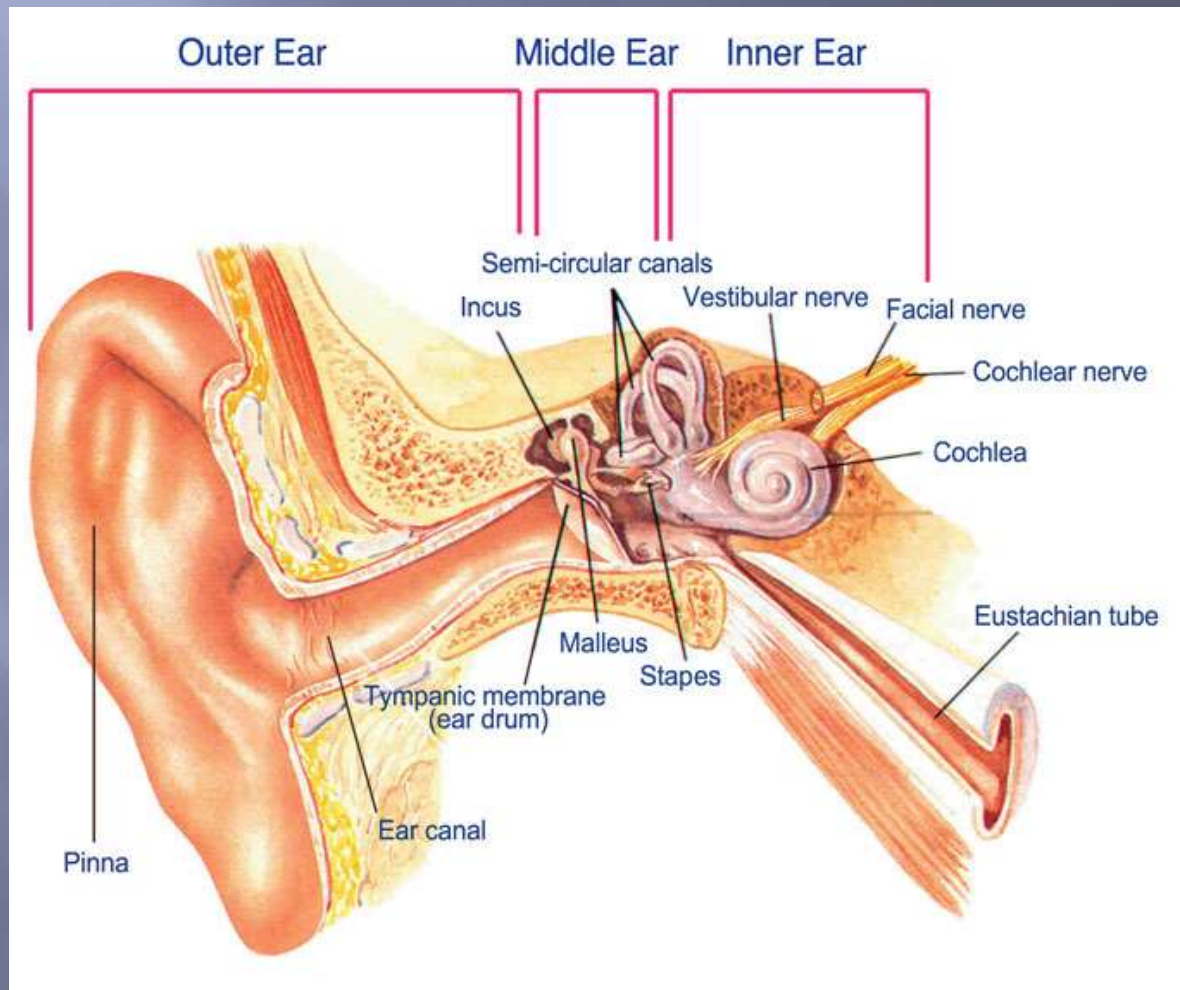
➤ Emergencies in ENT

➤ Basic principles of rehabilitation of hearing impaired.

▣ Objectives

- At the end of course student can examine and diagnose the common ear nose and throat diseases and emergencies including malignancies.
- Should know the basic treatment of common ent diseases
- Should recognize complication at earliest level so that to refer to proper centre.

External Ear Anatomy and diseases....



Embryological Development

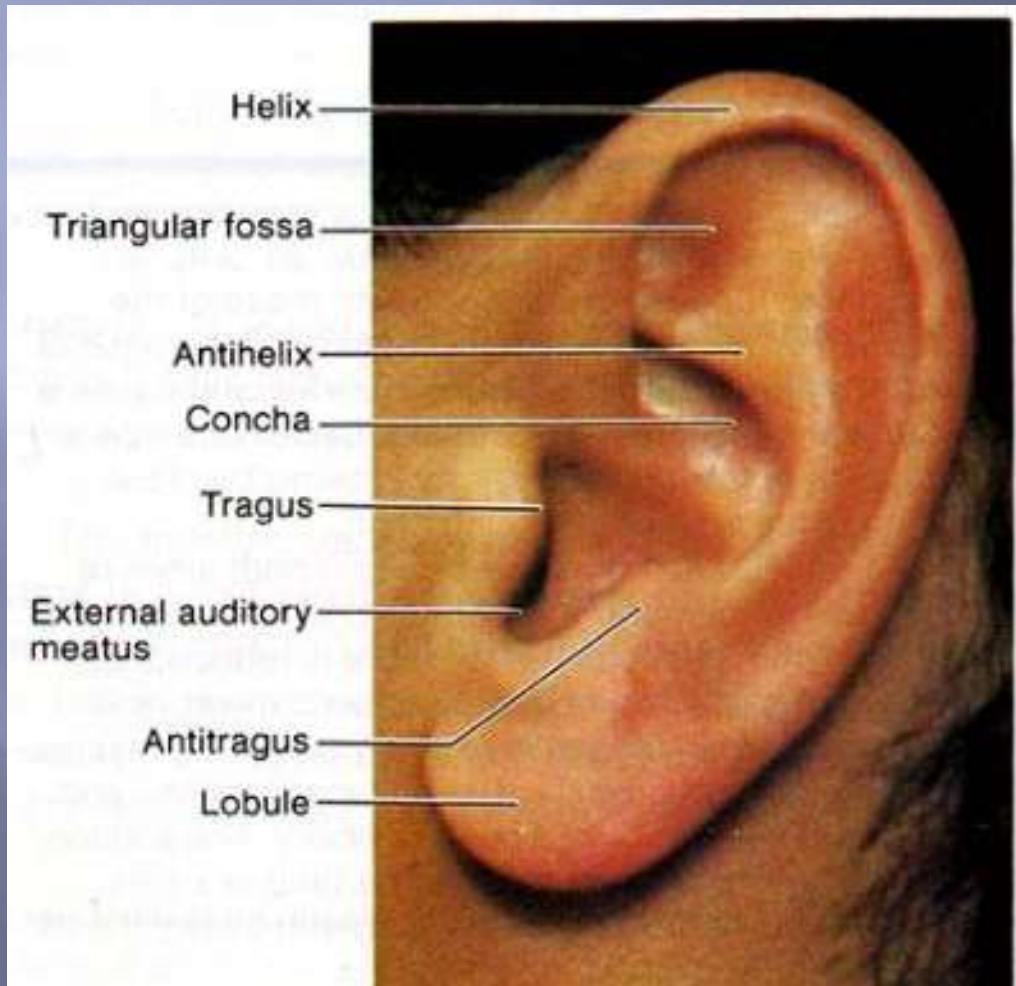
▣ External Ear Development



- ▣ External auditory canal (EAC) develops from the first branchial cleft.
- ▣ EAC gets fully formed by 28th week.
- ▣ While tympanic membrane develops from all the three germ layers .

- ❑ In the 6th week of embryonic life, 6 tubercles appear around first branchial cleft.
- ❑ They progressively grow and coalesce to form the auricle.
- ❑ Tragus develops from tubercle, which arise from the first branchial arch.
- ❑ The remaining part of pinna develops from rest of the five tubercles of second arch.
- ❑ By the 20th week of intrauterine life, pinna attains adult shape.
- ❑ It contains yellow elastic cartilage except its lobule.

Pinna



- ▣ Innervation: cranial nerves V, VII, IX, X, and greater auricular nerve
- ▣ Arterial supply: superficial temporal, posterior and deep auricular branches
- ▣ Venous drainage: superficial temporal and posterior auricular veins
- ▣ Lymphatics

Question

What is the purpose of the pinna?

- A. Cosmetics
- B. Sound collector
- C. Same side localization


Function of Outer Ear

- ▣ Collect sound
- ▣ Localization
- ▣ Resonator
- ▣ Protection
- ▣ Sensitive
(earlobe)
- ▣ Other?

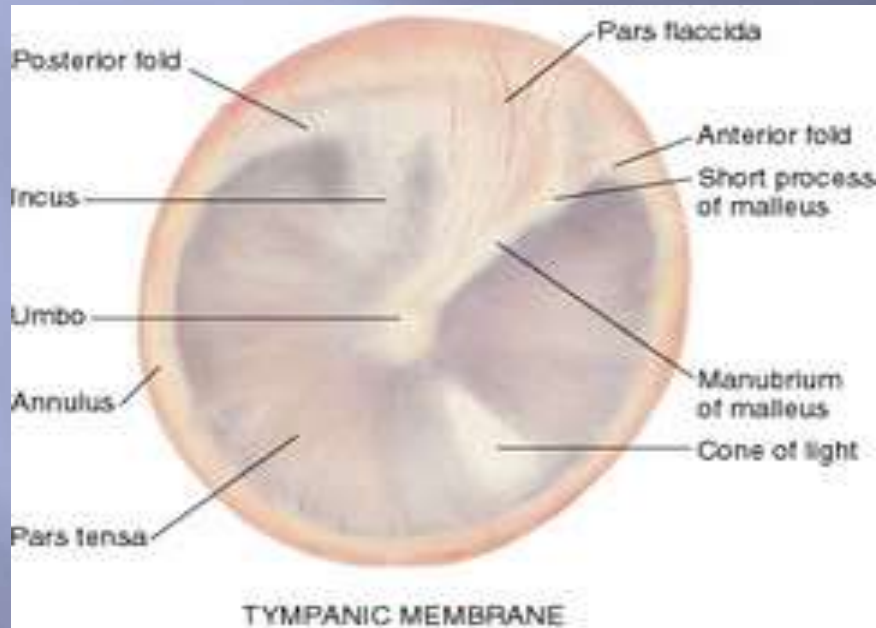
Other



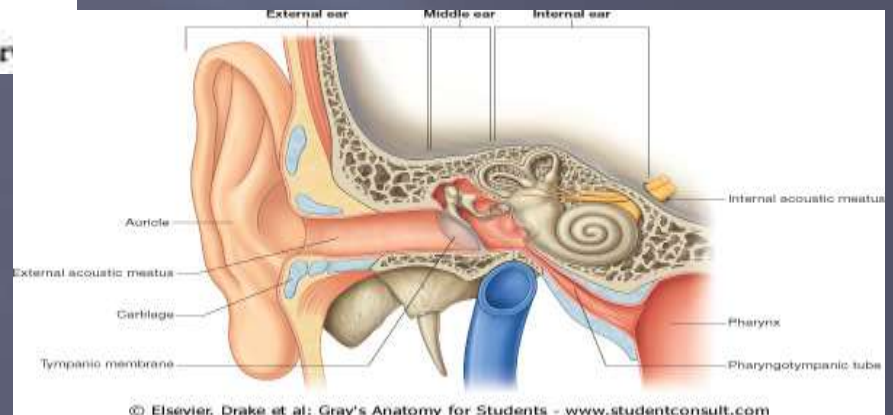
External Auditory Meatus

- 
- Extends from the pinna to the tympanic membrane
 - About 24 millimeters (mm) in length and 7 mm in diameter in adult ear.
 - Outer one third 8 mm is cartilaginous and inner two third is bony.
 - Size and shape vary among individuals.
 - Protects the eardrum
 - Resonator
 - Provides about 10 decibels (dB) of gain to the eardrum at around 3,300 Hertz (Hz).
 - The net effect of the head, pinna, and ear canal is that sounds in the 2,000 to 4,000 Hz region are amplified by 10 to 15 dB.
 - Sensitivity to sounds greatest in this frequency region
 - Noises in this range are the most hazardous to hearing

Tympanic membrane



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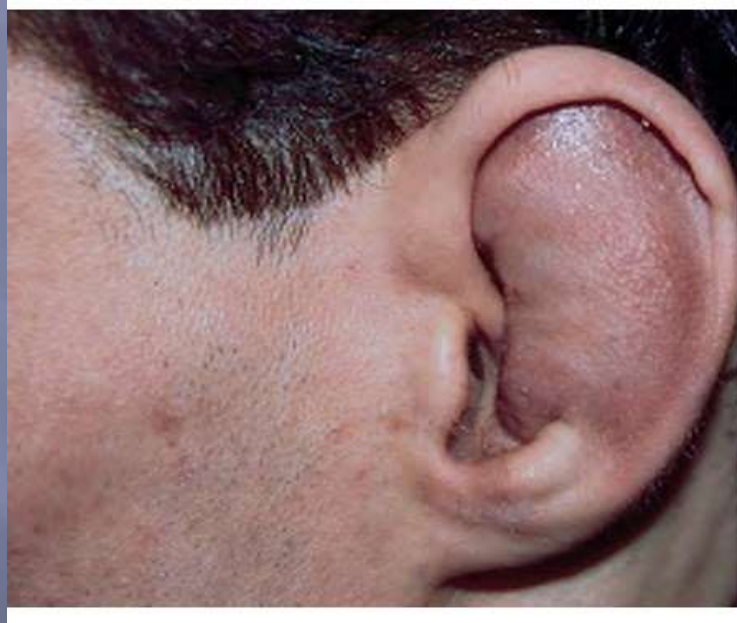
Diseases of external ear

- ▣ Congenital
 - Anotia
 - Microtia
 - Macrotia
 - Bat ear
 - Atresia of external auditory canal



Acquired

1. Haematoma :Collection of blood between cartilage and its perichondrium.

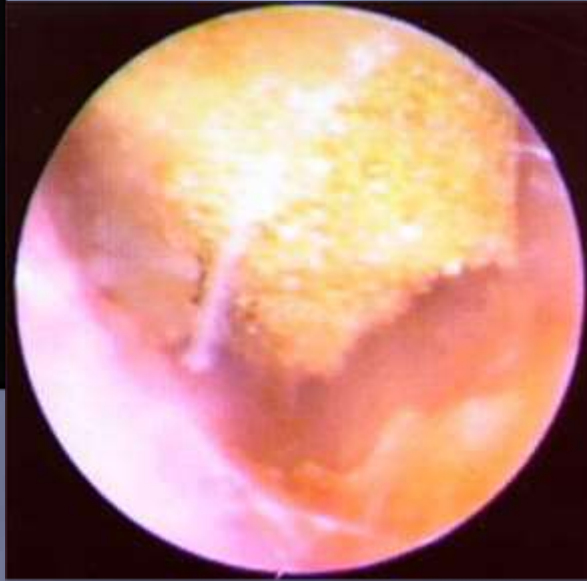


Cerumen

- ▣ The purpose of wax:
 - Repel water
 - Trap dust, sand particles, microorganisms, and other debris
 - Moisturize epithelium in ear canal
 - Odor discourages insects
 - Antibiotic, antiviral, antifungal properties
 - Cleanse ear canal



Foreign bodies



- ▣ Treatment
 - Removal
 - Syringing
 - Sometimes may require general anaesthesia.

Furunculosis

- ▣ Acute localized infection
- ▣ Lateral 1/3 of posterosuperior canal
- ▣ Obstructed apopilosebaceous unit
- ▣ Pathogen: *S. aureus*

Furunculosis: Signs

- ▣ Edema
- ▣ Erythema
- ▣ Tenderness
- ▣ Occasional fluctuance



Furunculosis: Treatment

- ▣ Local heat
- ▣ Analgesics
- ▣ Oral anti-staphylococcal antibiotics
- ▣ Incision and drainage reserved for localized abscess
- ▣ IV antibiotics for soft tissue extension.

Herpes Zoster Oticus (Ramsay Hunt Syndrome)

- ▣ J. Ramsay Hunt described in 1907
- ▣ Viral infection caused by varicella zoster
- ▣ Infection along one or more cranial nerve dermatomes (shingles).
 - herpes zoster of the pinna with otalgia.
 - facial paralysis
 - sensorineural hearing loss
 - Bullus myringitis
 - A vesicular eruption of the concha of the pinna and the EAC.

Symptoms

- ▣ Early: burning pain in one ear, headache, malaise and fever
- ▣ Late (3 to 7 days): vesicles, facial paralysis

Treatment

- Corneal protection
- Oral steroid taper (10 to 14 days)
- Antivirals (eg. Valacyclovir)



Otomycosis

- ▣ Mostly in children who are exposed to warm, moist climates or who have a Hx of chronic use of antibiotic ear drops.
- ▣ Fungal infection of EAC skin

- ▣ Primary or secondary
- ▣ Most common organisms: *Aspergillus* and *Candida*



Otomycosis: Signs

- Canal erythema
- Mild oedema
- White, gray, green, yellow or black fungal debris

Otomycosis: Symptoms

- Often indistinguishable from bacterial OE
- Pruritus deep within the ear
- Otorrhoea
- Dull pain
- Hearing loss (obstructive)
- Tinnitus



Otomycosis: Treatment

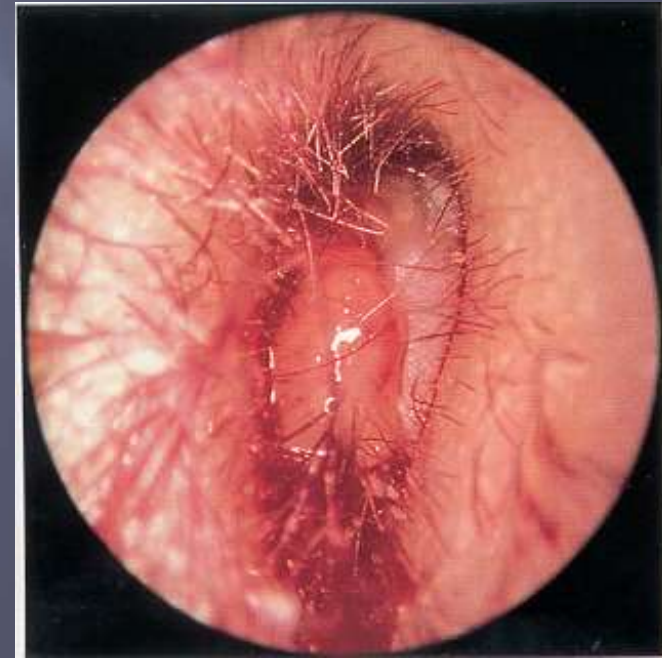
- ▣ Thorough cleaning and drying of canal
- ▣ Topical antifungals (clotrimazole for eg., amphotericine B, oxytetracycline-polymyxin, and nystatin are very effective!).

Malignant (Necrotising) Otitis Externa

- ▣ Potentially lethal infection of EAC and surrounding structures
- ▣ *Pseudomonas aeruginosa* is the usual culprit
- ▣ Risk Factors:
 - Diabetes Mellitus
 - Elderly
 - Immunocompromised state
 - Human Immunodeficiency Virus (HIV)
- ▣ Typically seen in diabetics and immunocompromised patients

Signs & Symptoms

- ▣ Similar to Otitis Externa except
 - Severe, unrelenting Ear Pain and Headache
 - Persistent discharge
 - Does not respond to topical medications
 - Commonly associated with Diabetes Mellitus
- ▣ Granulation tissue in posterior and inferior canal
 - Pathognomonic for necrotizing otitis
 - Occurs at bone-cartilage junction
- ▣ Extra-auricular findings
 - Cervical Lymphadenopathy
 - Trismus (TMJ involvement)
 - Facial Nerve Palsy .
 - ▣ Associated with poor prognosis



Dx, Prevention and T/T:

- ▣ Prognosis; Reportedly mortality 20-53%
- ▣ Dx: Hx, PE, Labs and Imaging:
 - Labs; FBC, Culture of discharge, ESR, Serum glucose, Serum creatinine.
 - Radiology; CT, or MRI (ear), Tc 99m medronate methylene bone scanning, Ga 67 scintigraphy.
- ▣ Prevention:
 - Avoid use of cotton swabs in ear and other canal trauma.
 - Use caution when irrigating ear of high risk patients.
 - Treat eczema of ear canal and other pruritic dermatitis

Treatment

- ▣ Intravenous antibiotics (fluoroquinolones) for at least 4 weeks.
- ▣ Local canal debridement until healed
- ▣ Pain control
- ▣ Use of topical agents controversial
- ▣ Hyperbaric oxygen experimental
- ▣ Surgical debridement for refractory cases

THANKS

