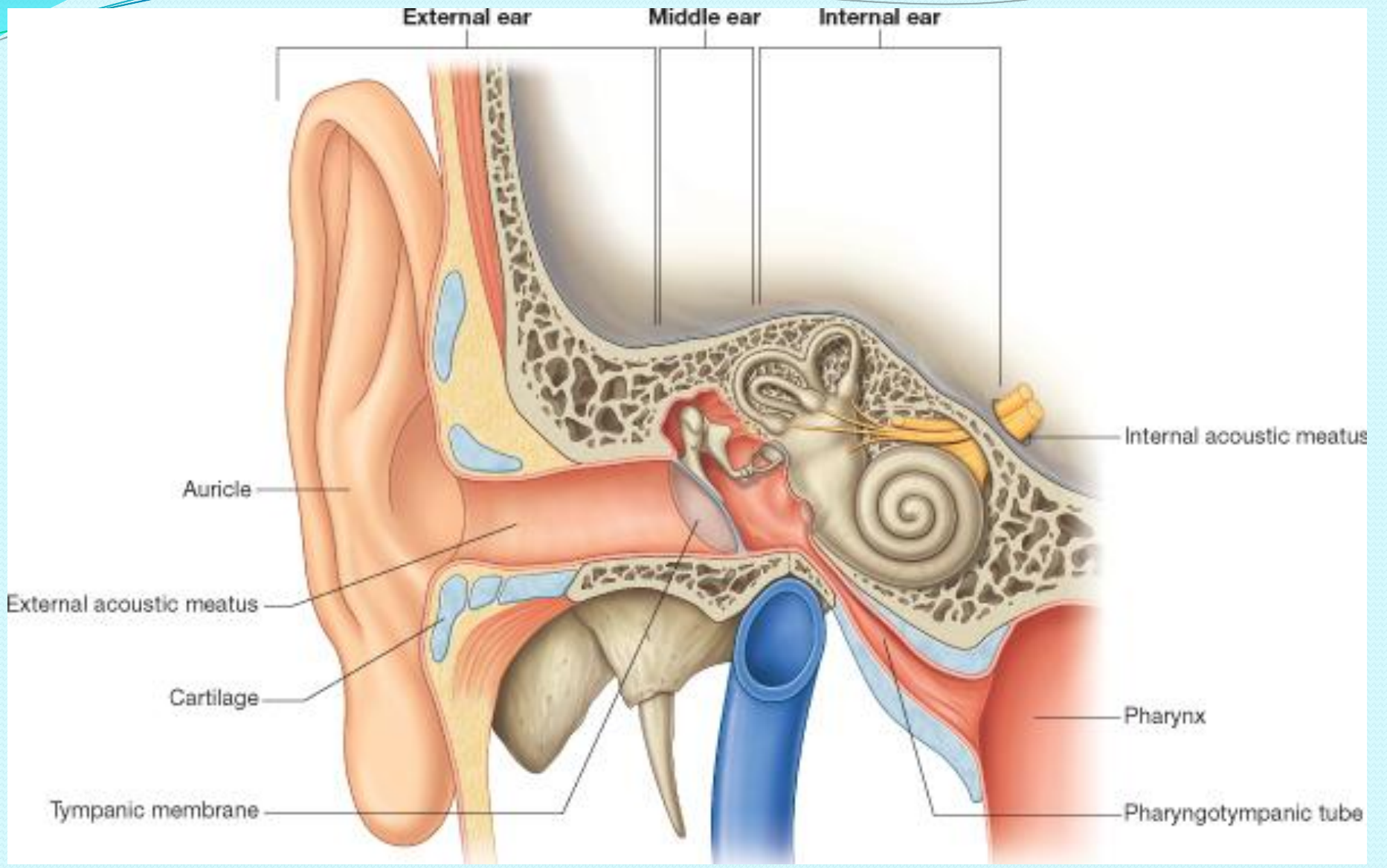




**E.N.T. for nursing college  
students  
The ear**





External ear

Middle ear

Internal ear

Auricle

External acoustic meatus

Cartilage

Tympanic membrane

Internal acoustic meatus

Pharynx

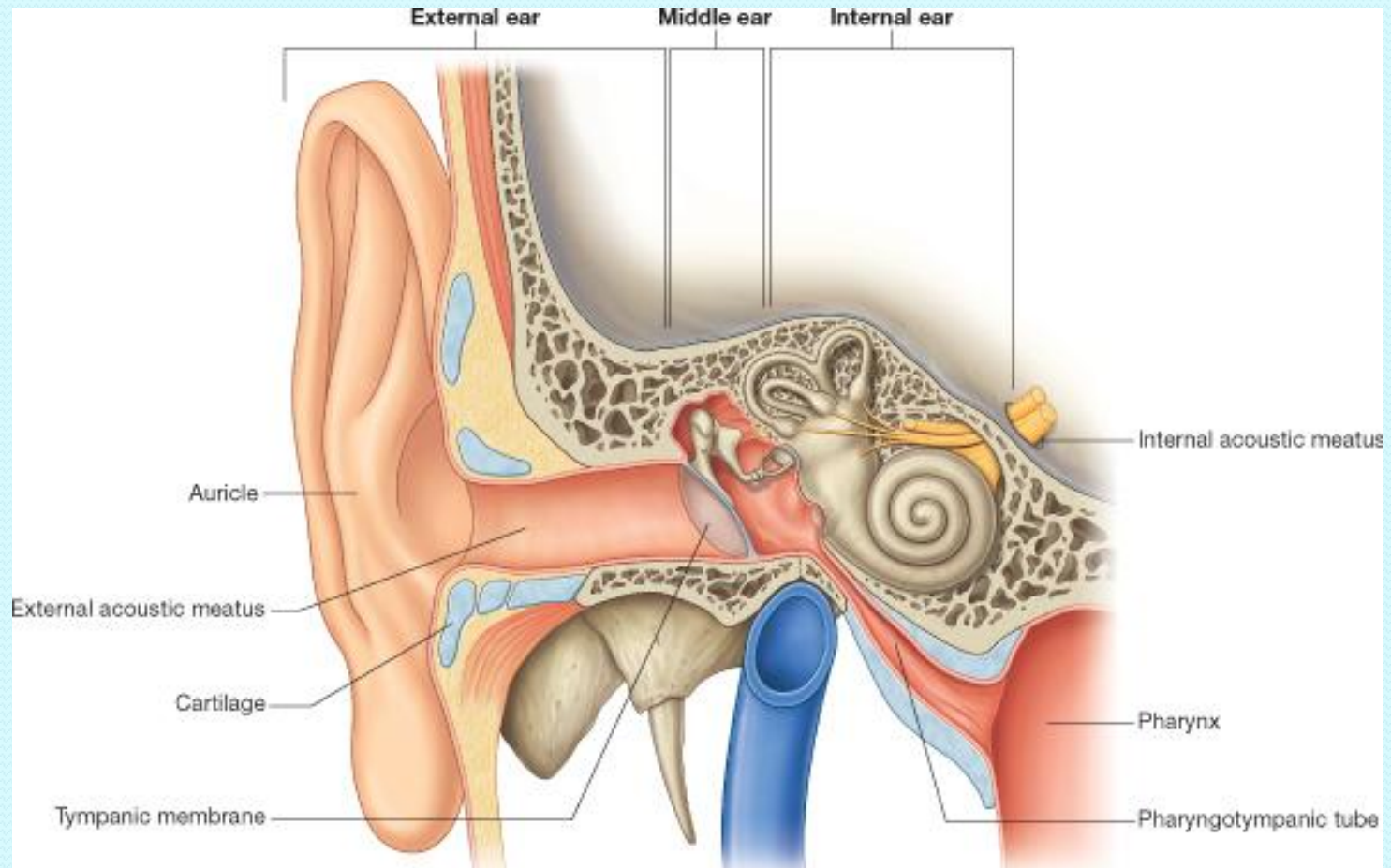
Pharyngotympanic tube

# Anatomy

- The ear is composed of
- 1- external ear
- 2- middle ear
- 3- inner ear



# External ear



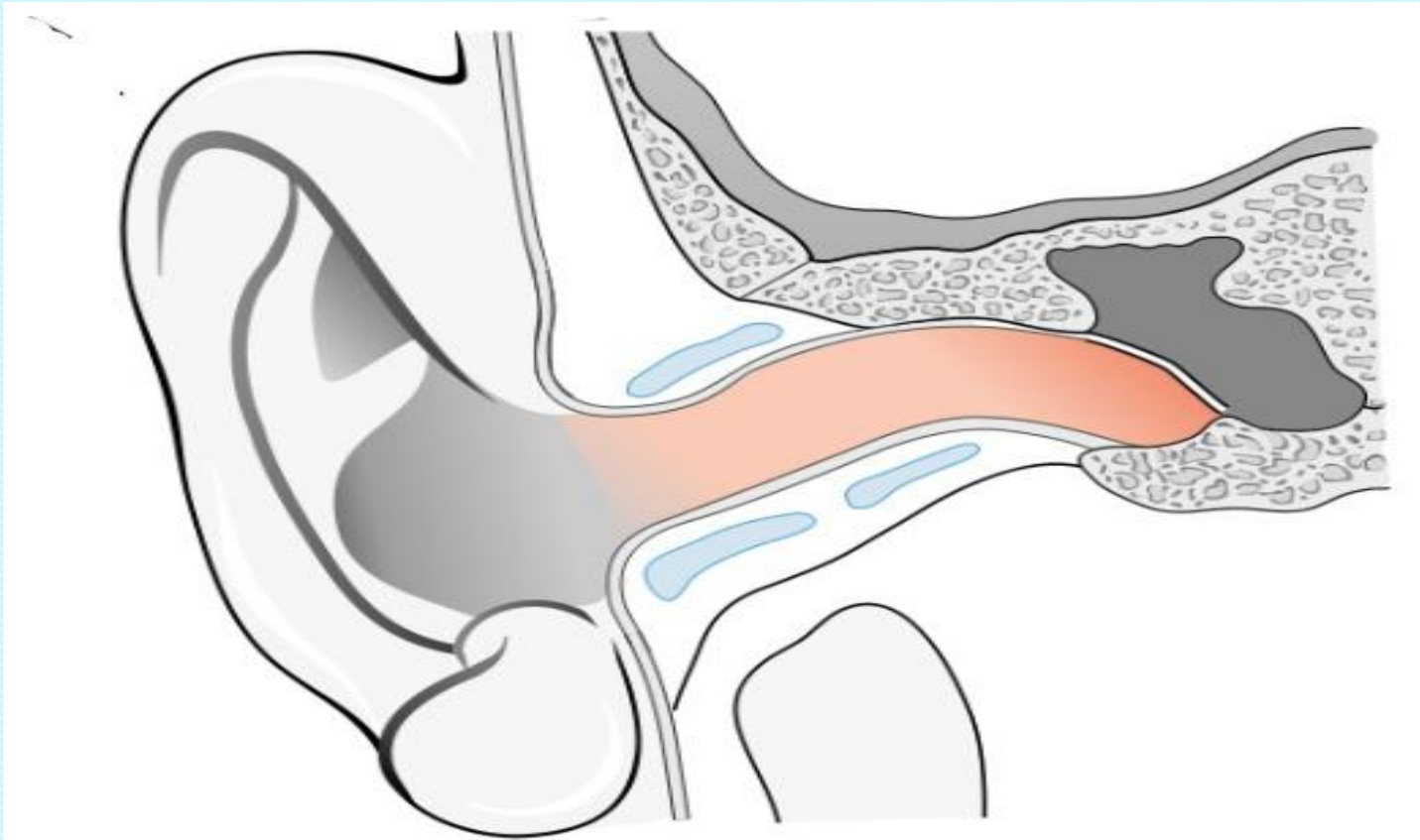
# External ear

- The auricle
- The external auditory canal

Auricle – cartilage + skin + fat



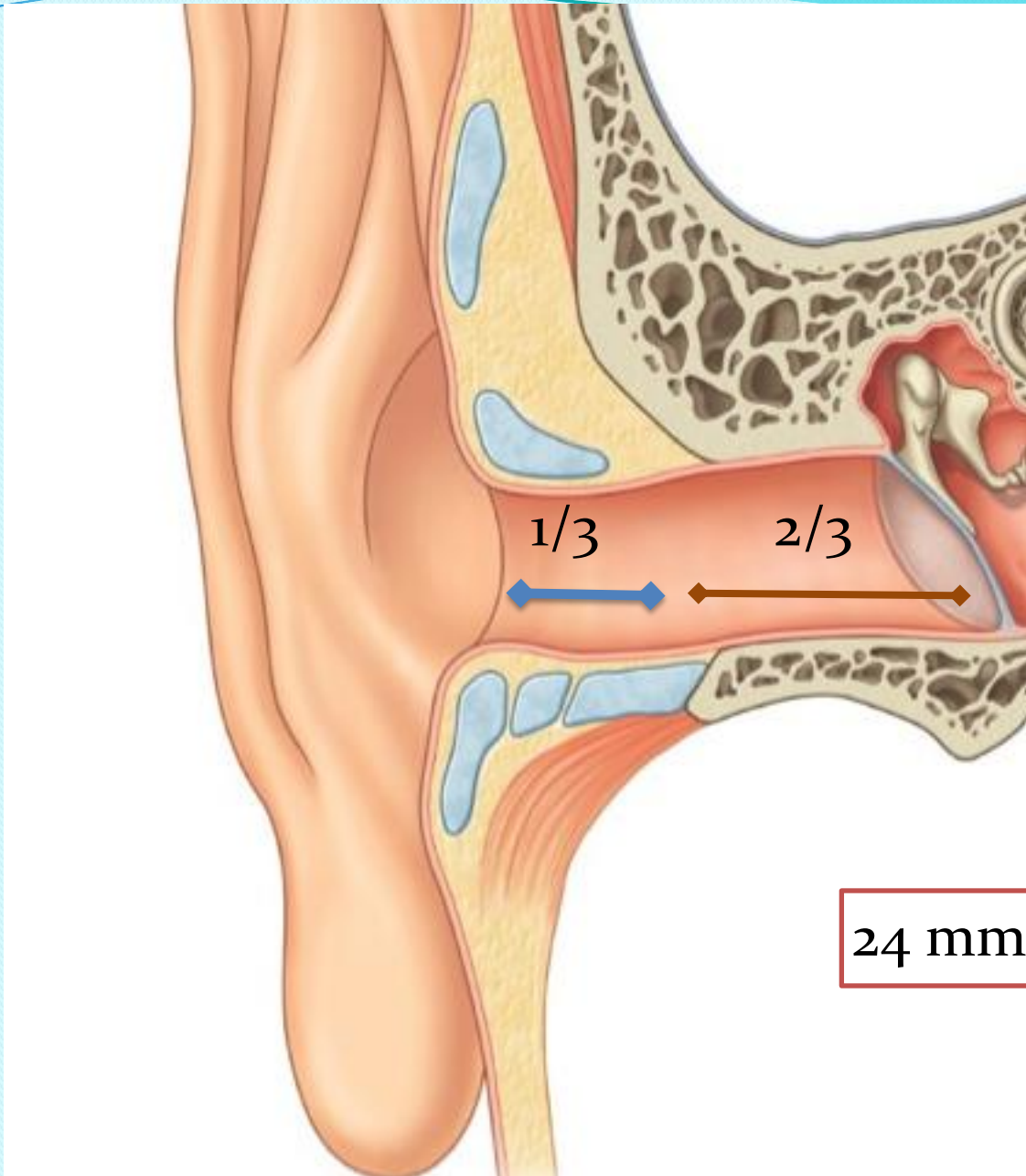
# External auditory canal





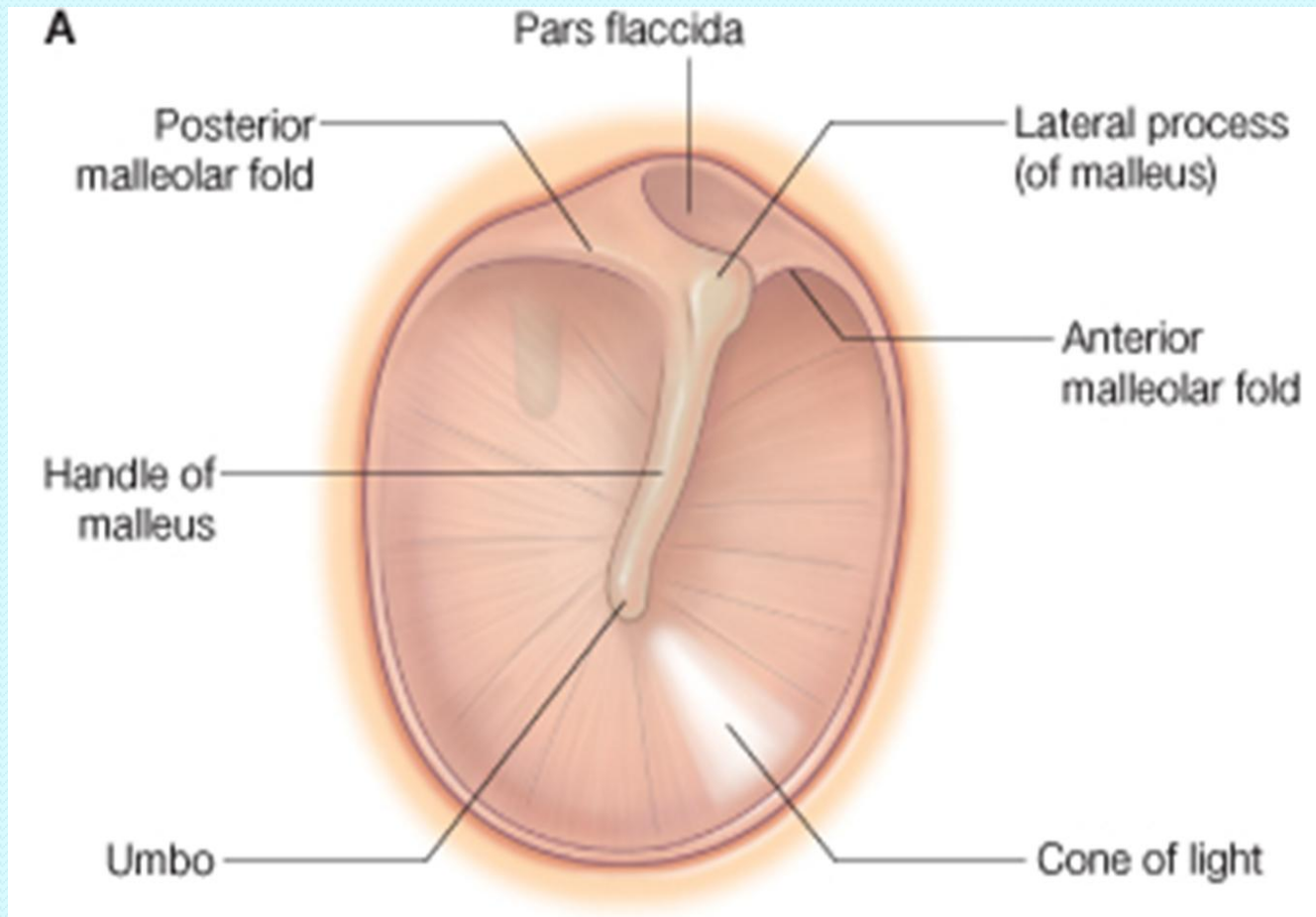
# External auditory canal

- External auditory canal consists of
- **1- the cartilaginous part**
- Outer 1/3, skin lining secretes wax
- **2- the bony part**
- Inner 2/3, thin skin – no hairs or glands

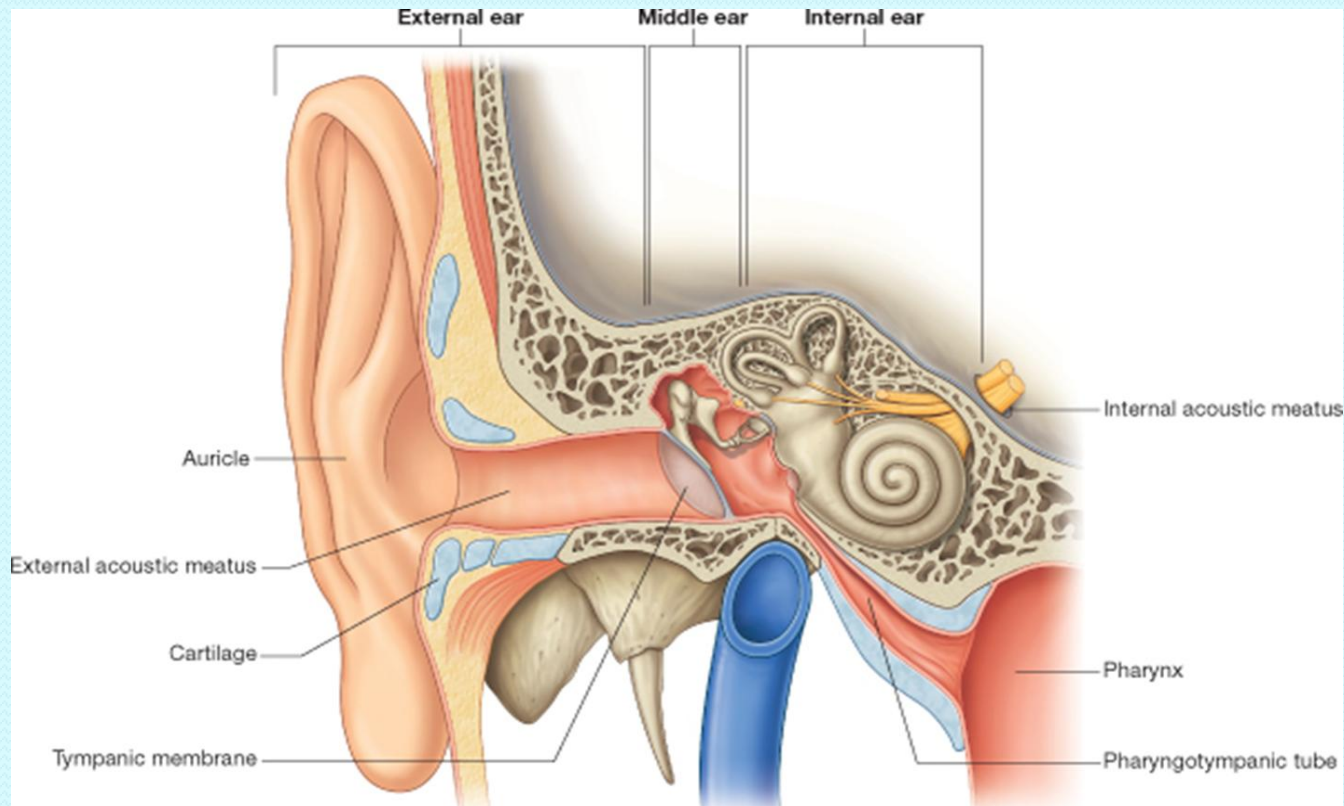


24 mm in length

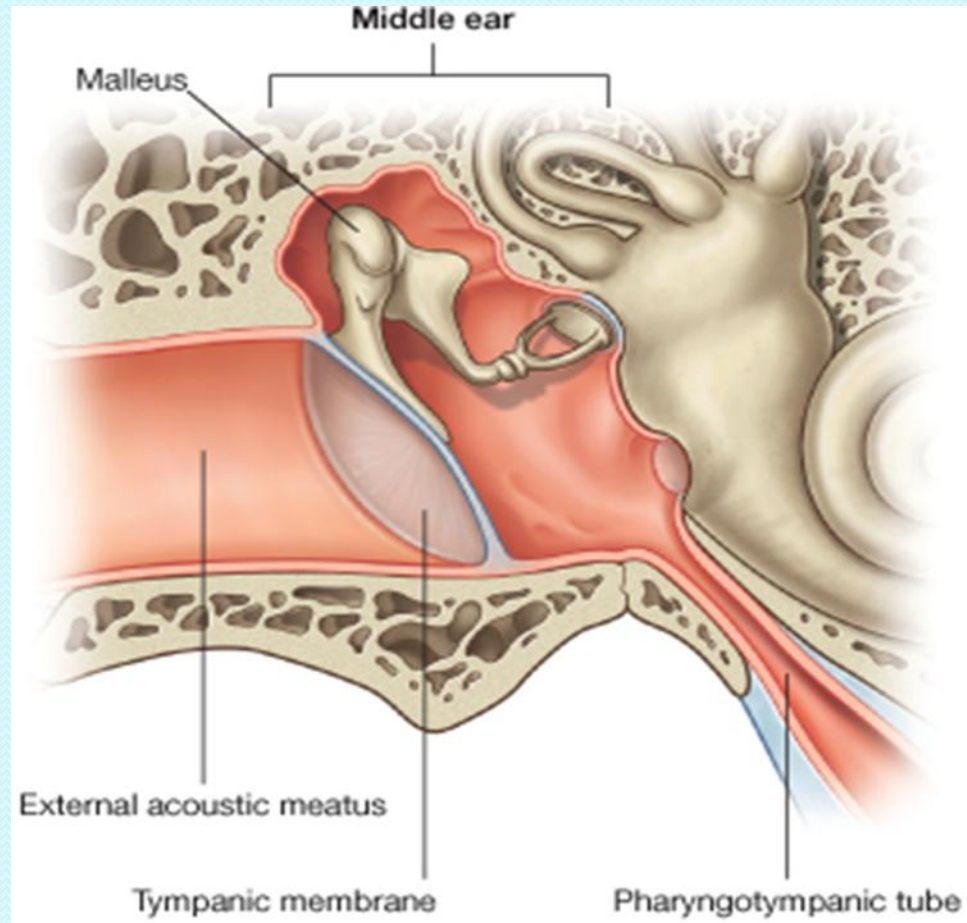
# Ear drum: oval, 1cm two parts tensa + flaccida



# Middle ear: air space communicates with nasopharynx + mastoid process

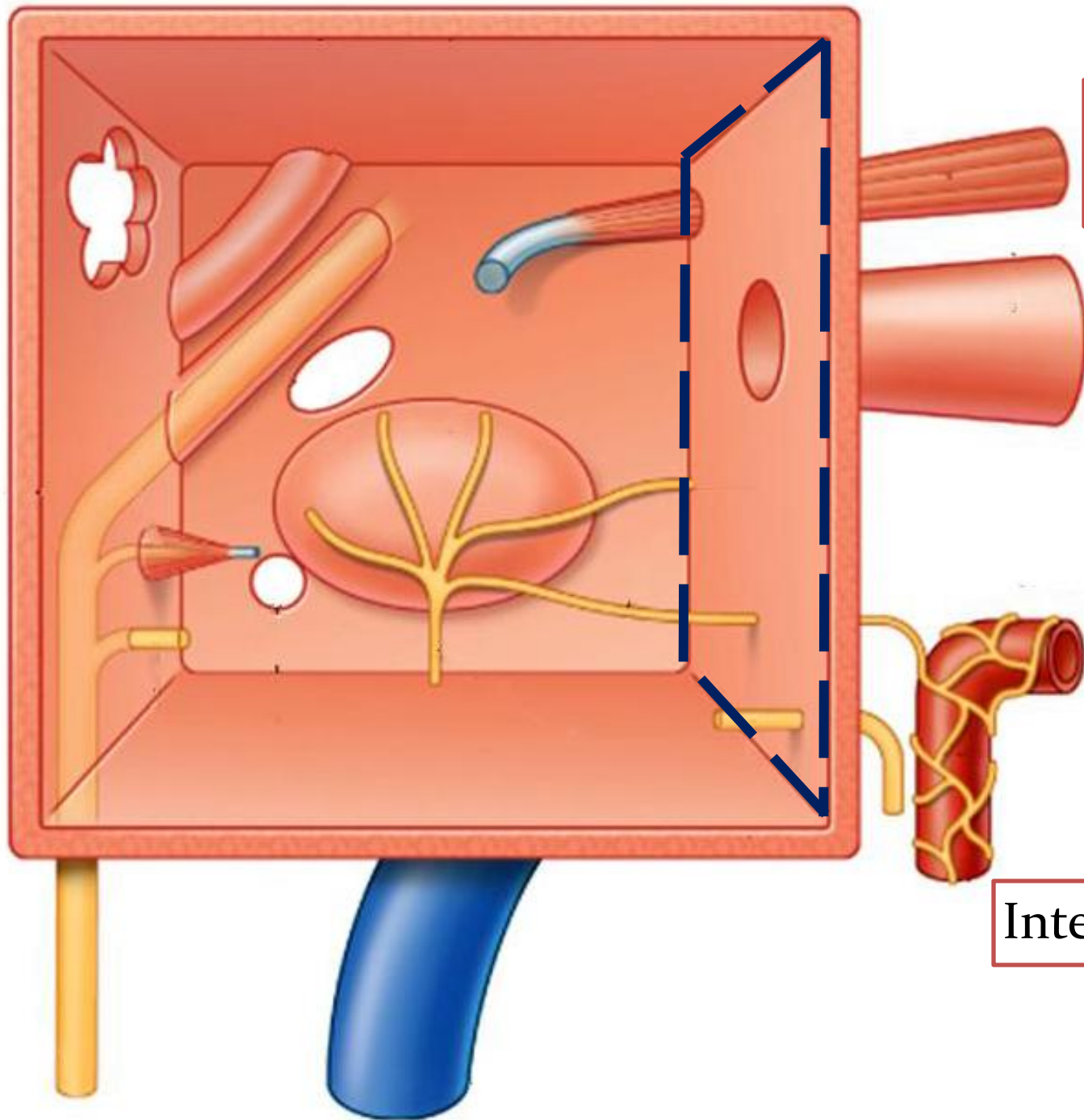






# The middle ear

- Tympanic cavity is 6 sided room
- **Lateral wall:** drum + external ear
- **Medial wall:** (promontory, oval+round Ws, facial nerve) + inner ear
- **Anterior wall:** ET
- **Posterior wall:** mastoid process (aditus)
- **Roof:** MCF(tegmen)                      **Floor:** Jb



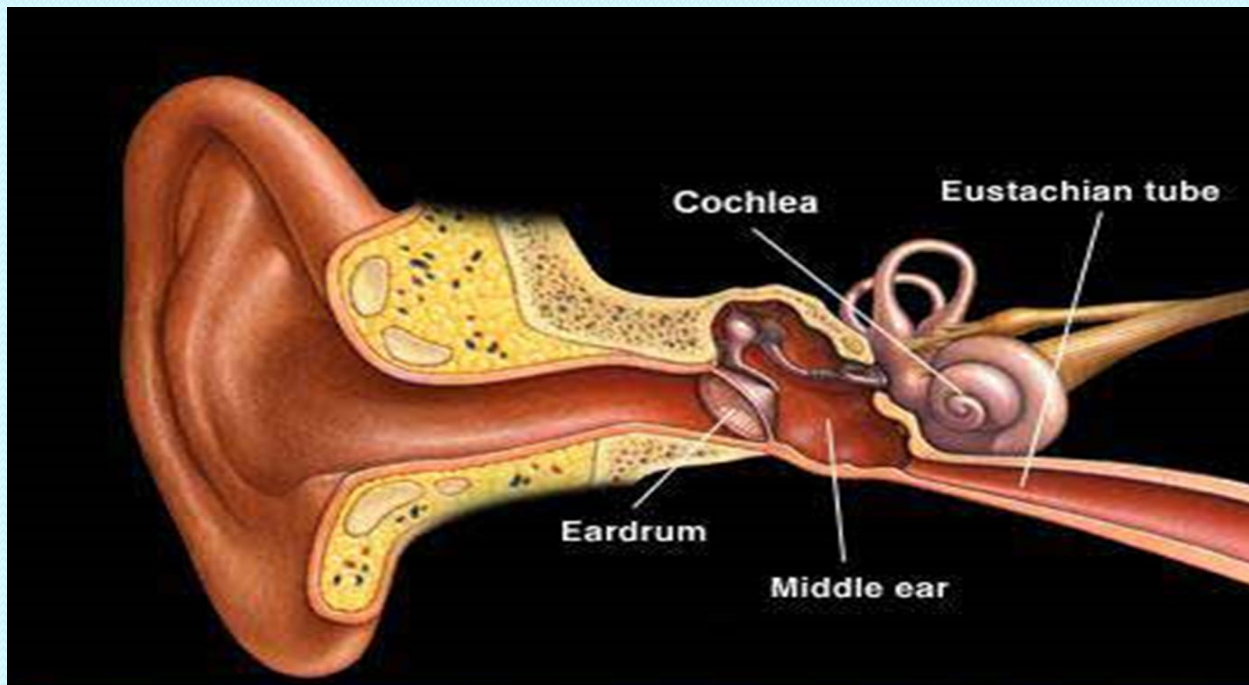
Canal for  
Tensor tympani

Bony part of  
Auditory tube

Internal carotid artery

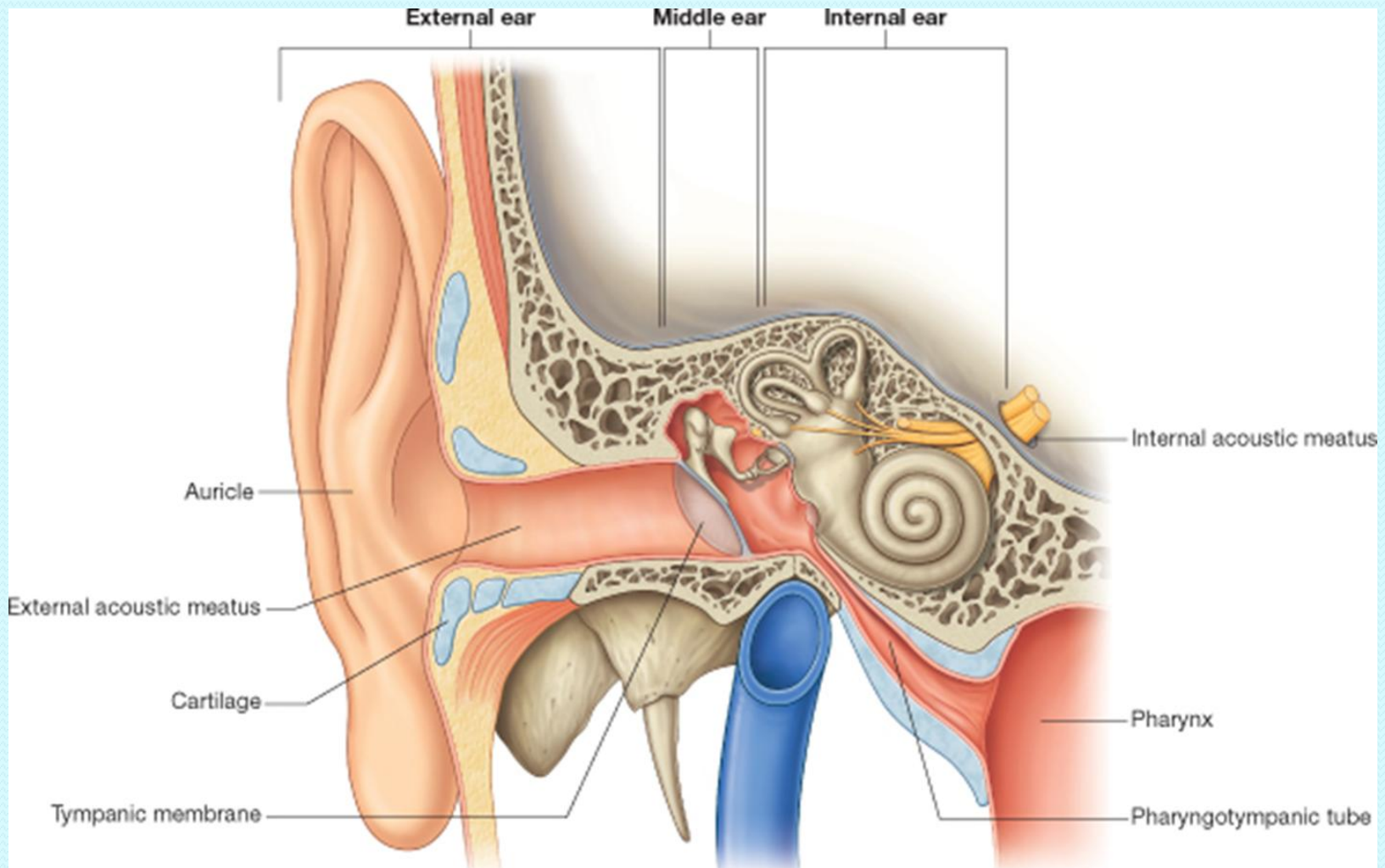
# The middle ear

- The ossicles: malleus, incus and stapes
- ET: bony  $\frac{1}{3}$  + cartilaginous part  $\frac{2}{3}$





# Inner ear

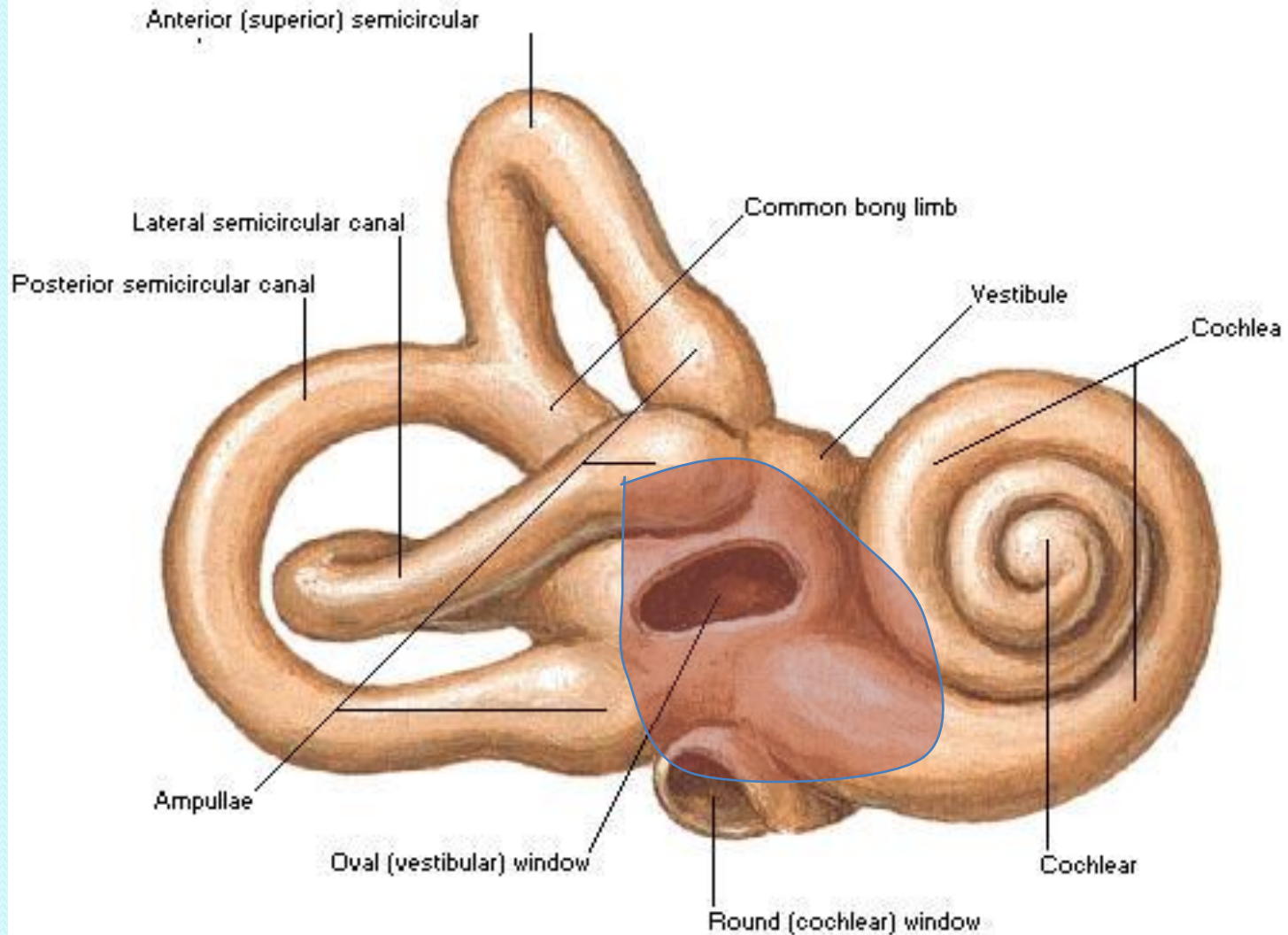


# The inner ear (**labyrinth**)

- 1- **Bony** labyrinth
- 2- **Membranous** labyrinth
- Bony – cochlea, vestibule + 3scc
- Membranous – cochlear duct, utricle + saccule and 3scds

# Right Bony Labyrinth

## Anterolateral View



# Right bony labyrinth

Top view

Semicircular  
canals

Aqueduct of vestibule

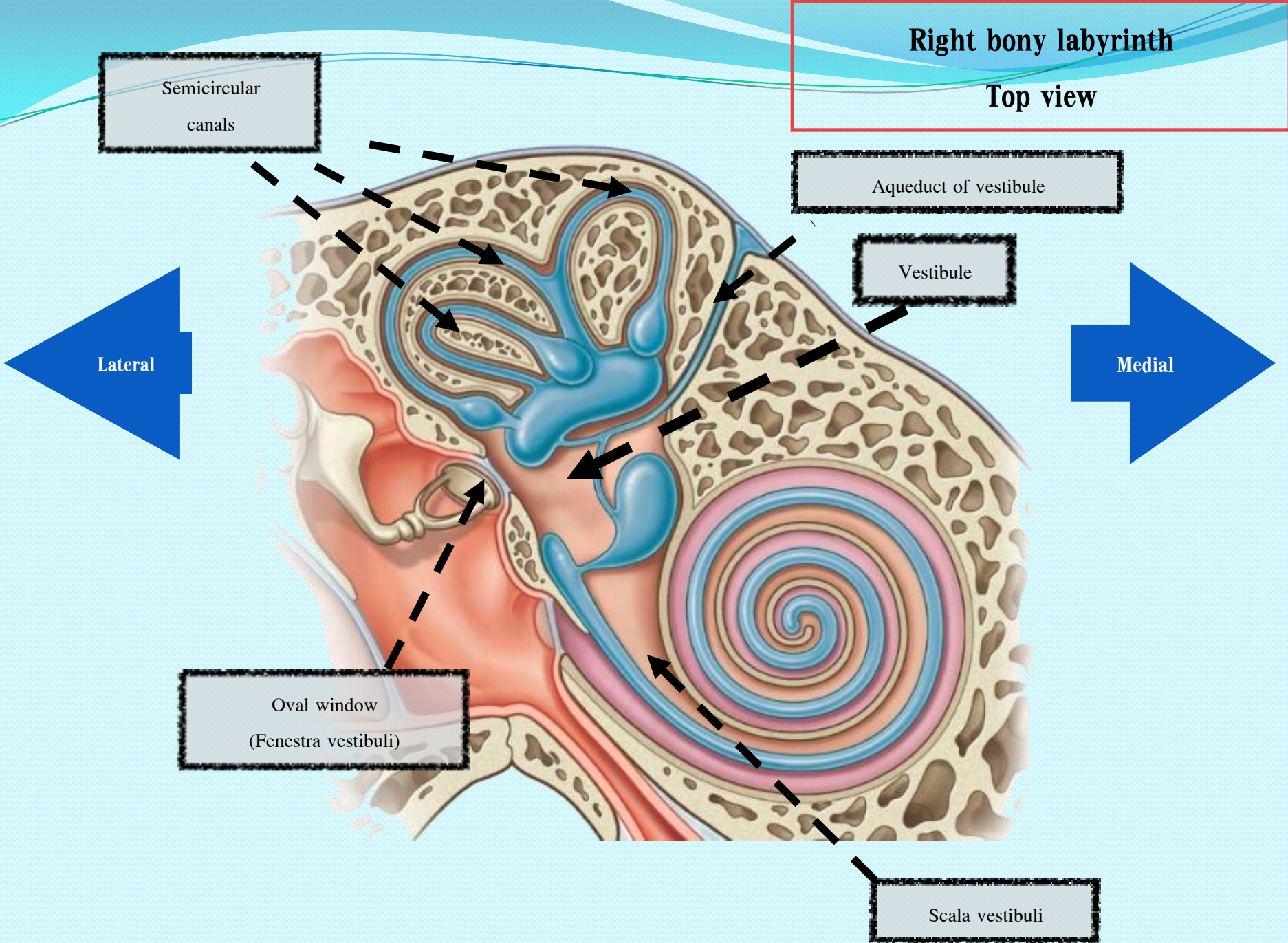
Vestibule

Lateral

Medial

Oval window  
(Fenestra vestibuli)

Scala vestibuli





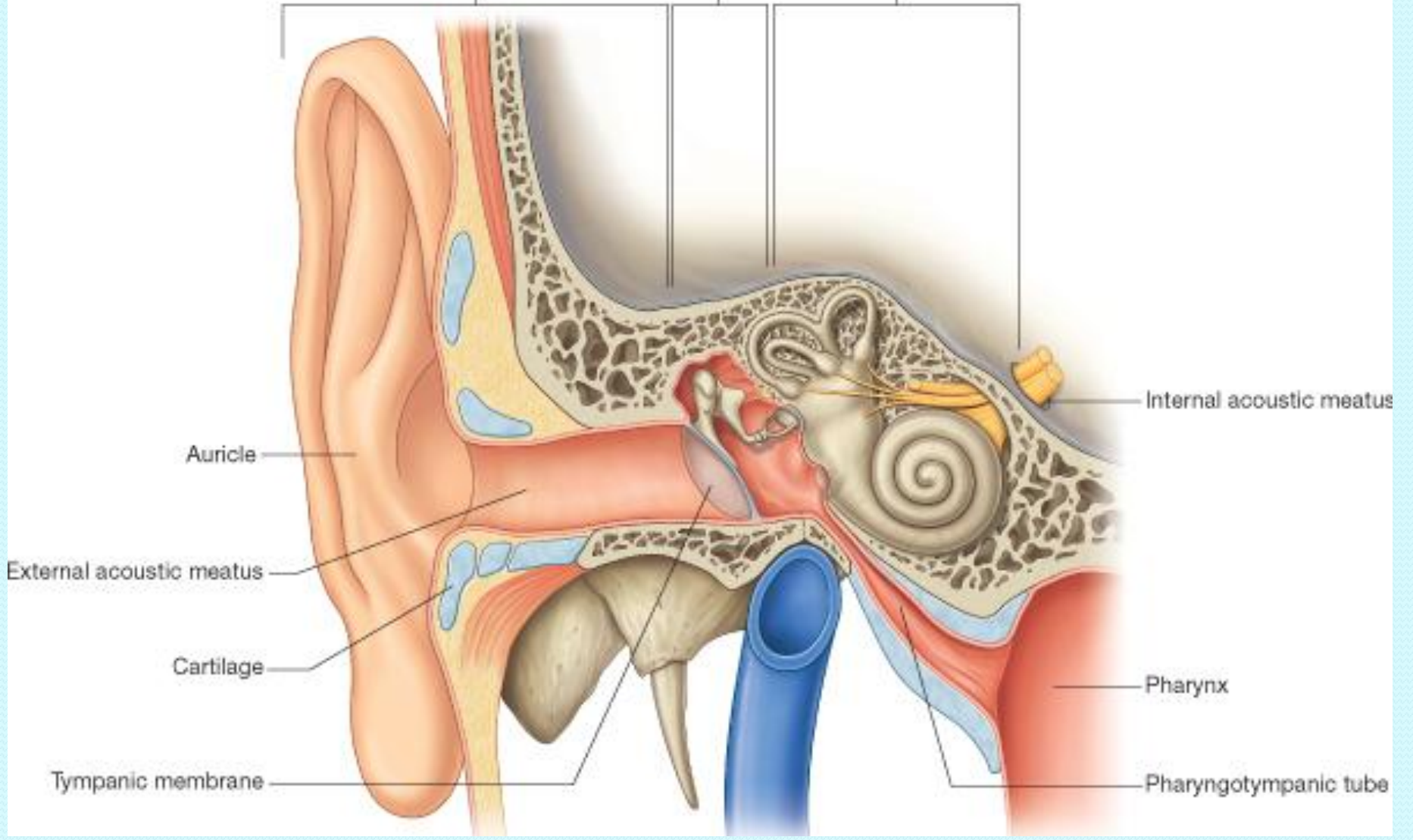
# Functions of the ear

- 1- Hearing
- 2- Equilibrium
- Hearing: conductive, perceptive
- Equilibrium: scc – kinetic
- Utricle + saccule - static

External ear

Middle ear

Internal ear



Auricle

External acoustic meatus

Cartilage

Tympanic membrane

Internal acoustic meatus

Pharynx

Pharyngotympanic tube

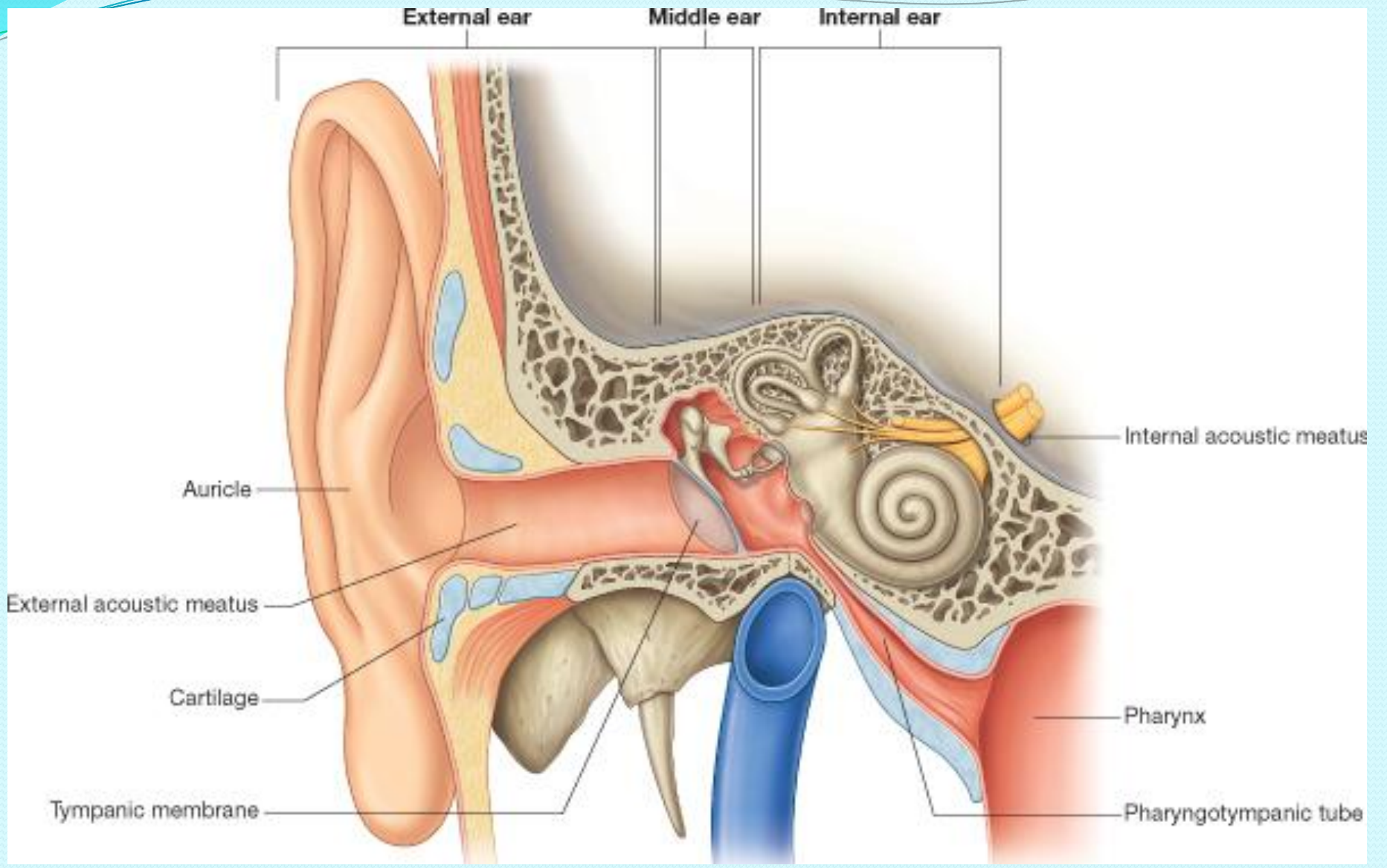
# Symptomatology of ear diseases

- 1-Deafness
- 2-Discharge
- 3- Pain
- 4- Vertigo
- 5- Tinnitus

# Deafness







External ear

Middle ear

Internal ear

Auricle

External acoustic meatus

Cartilage

Tympanic membrane

Internal acoustic meatus

Pharynx

Pharyngotympanic tube

# Causes of deafness

- **1- Conductive**
- **2- Perceptive (S.N.H.L)**
- **Conductive: external ear, drum and ME causes like wax, rupture drum + OM**
- **Perceptive: congenital, traumatic, inflammatory, neoplastic, DM degenerative, drugs + psychogenic**

# Discharge



# Nature of the discharge

- Cheesy or waxy
- Mucopurulent or purulent
- Bloody or sanguineous
- Wax – external ear
- Mucoïd – middle ear

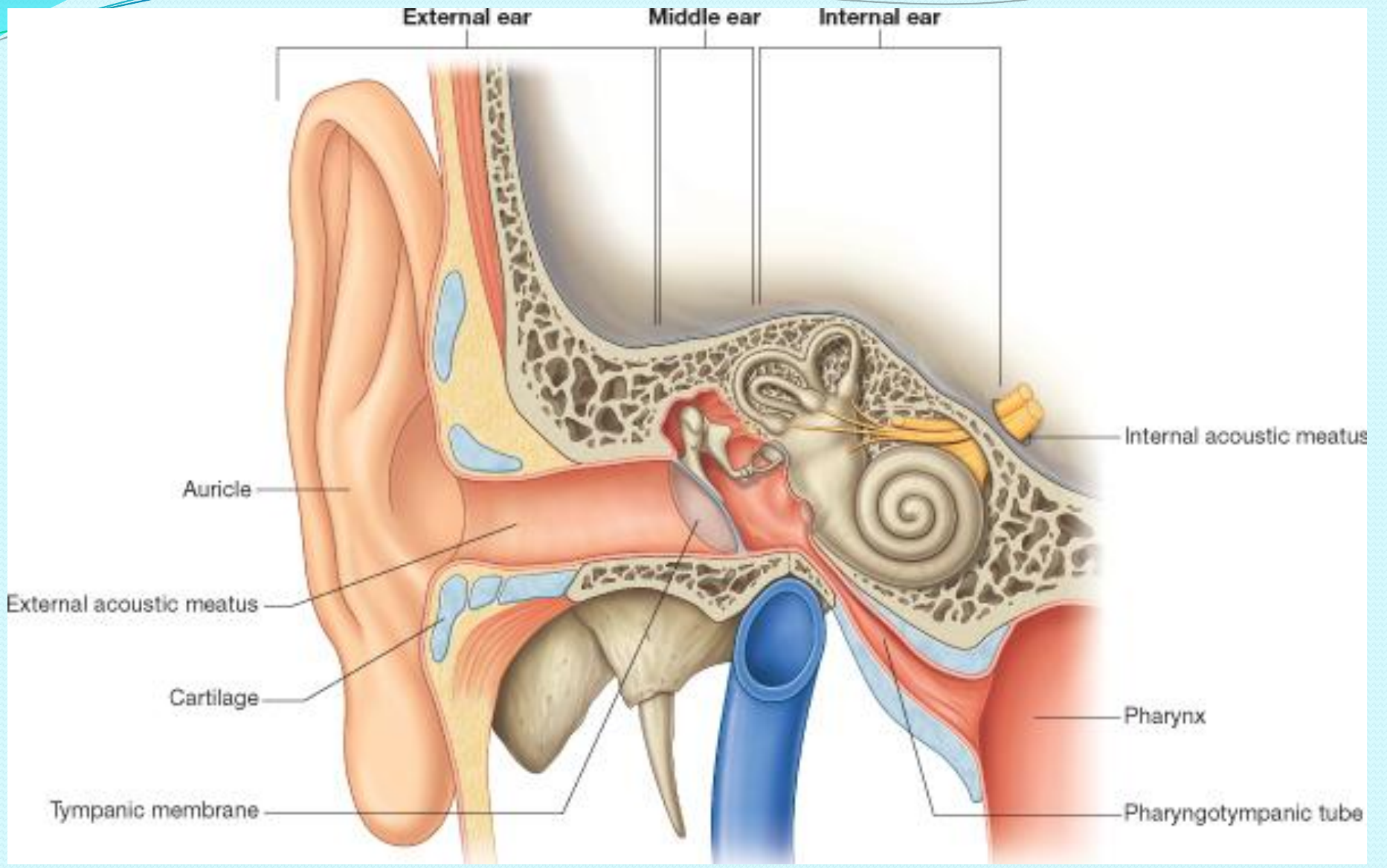
# Otalgia





# Pain in the ear (otalgia)

- **1- local causes**
- **2- referred causes – V.IX.X Cr.n**
- Local: otitis externa + media
- Complicated OM + malignancy
- Referred: painful lesions of pharynx, larynx + teeth carious



External ear

Middle ear

Internal ear

Auricle

External acoustic meatus

Cartilage

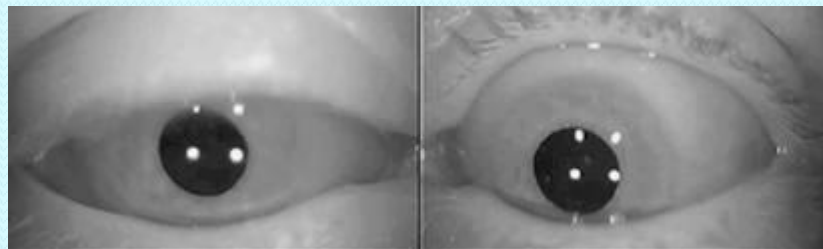
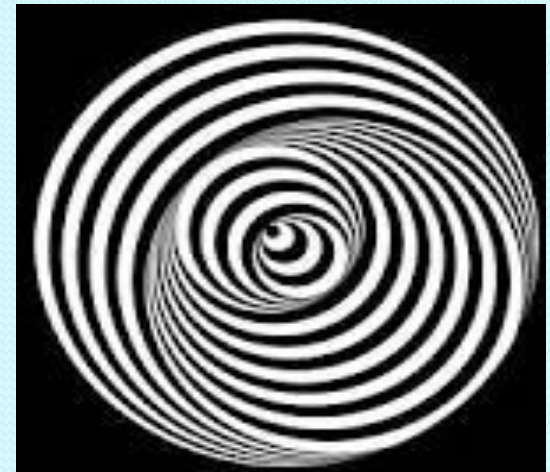
Tympanic membrane

Internal acoustic meatus

Pharynx

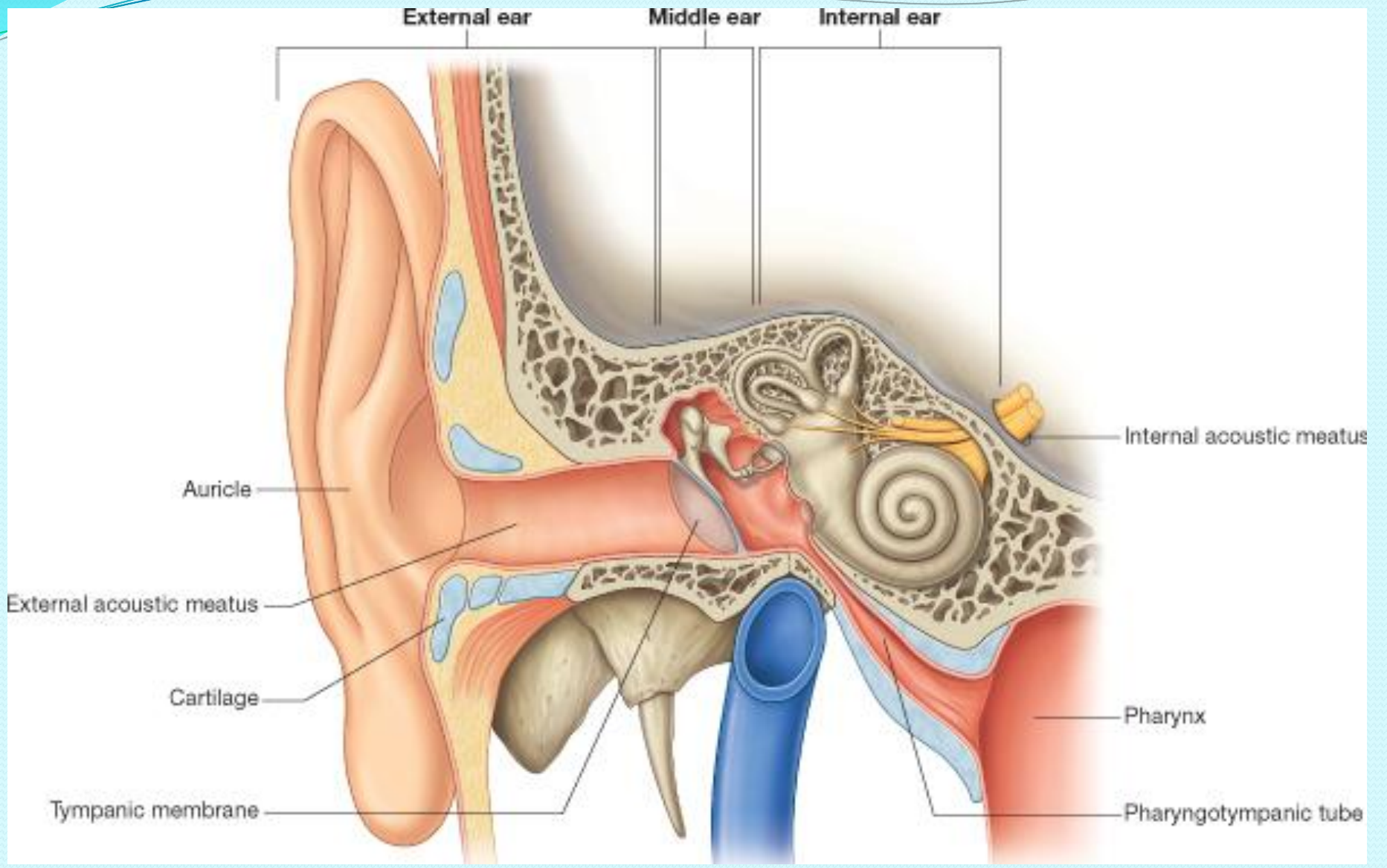
Pharyngotympanic tube

# Vertigo



# Vertigo

- False sense of rotation
- Balance is maintained by
  - 1- inner ear
  - 2- eye
  - 3- joints + muscles



External ear

Middle ear

Internal ear

Auricle

External acoustic meatus

Cartilage

Tympanic membrane

Internal acoustic meatus

Pharynx

Pharyngotympanic tube



# Causes of vertigo

- 1- **Labyrinthine**
- 2- **Ocular**
- 3- **Psycho-neurogenic**
- Labyrinthine: physiological, traumatic, inflammatory, degenerative, drugs, DM and vascular
- Vestibular nerve: neuritis + neuroma
- Cervical
- Meniere's disease

# Tinnitus

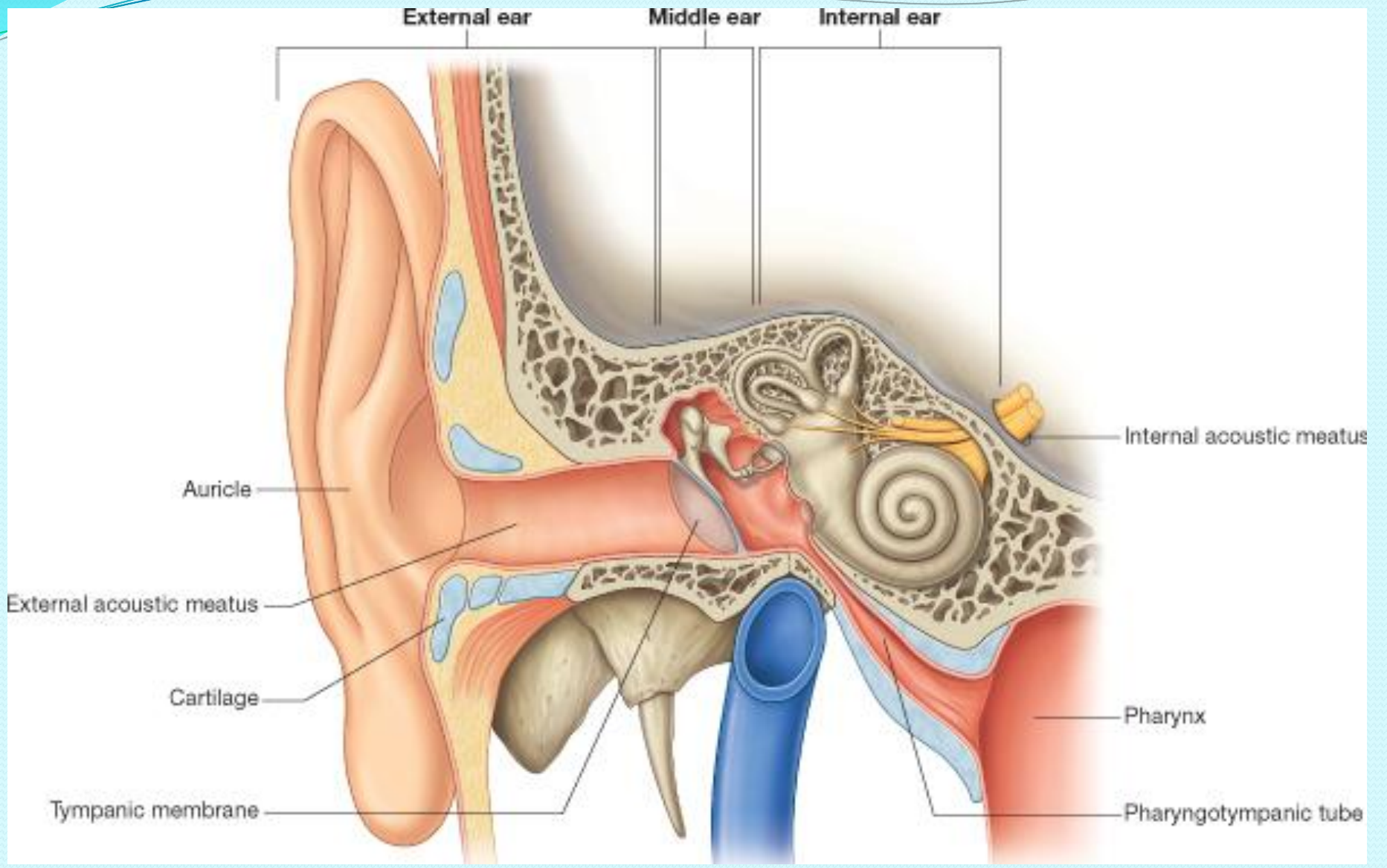


# Tinnitus

- Sense of sound in the ear or head
- Usually accompany deafness
- Due to
  - 1- Obstructive lesions
  - 2- Labyrinthine lesions
-

# Tinnitus

- 1- obstructive sounds – conductive apparatus occlusion or impaired mobility like wax, OM, otosclerosis
- 2- labyrinthine sounds – tinnitus associated with perceptive deafness like drugs, Meniere's and presbycusis



External ear

Middle ear

Internal ear

Auricle

External acoustic meatus

Cartilage

Tympanic membrane

Internal acoustic meatus

Pharynx

Pharyngotympanic tube



# Diseases of external ear

- 1- congenital
- 2- traumatic
- 3- inflammatory
- **Drum:** 1-traumatic rupture  
2- otitic barotrauma
- **wax**

# Congenital diseases

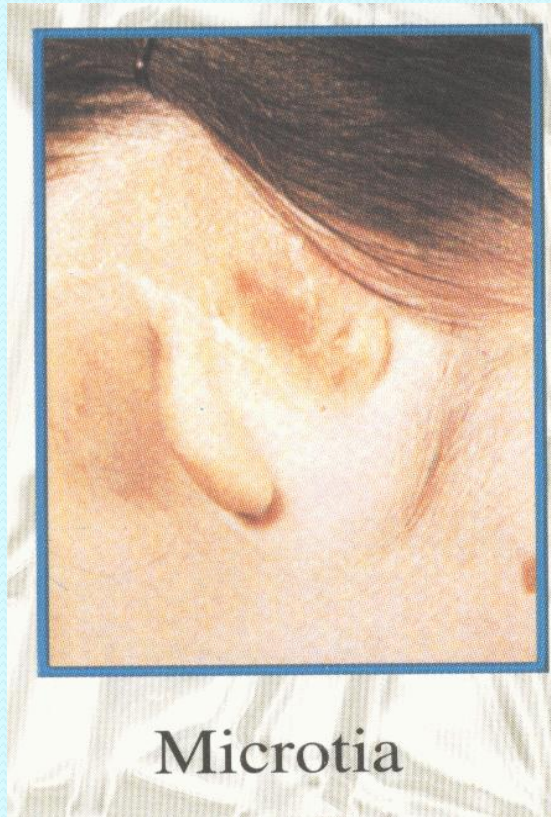
- 1- pre-auricular fistula
- Shallow pin point depression may be infected



## 2- Bat ear – prominent auricle



# 3- microtia + atresia of external meatus + accessory auricle





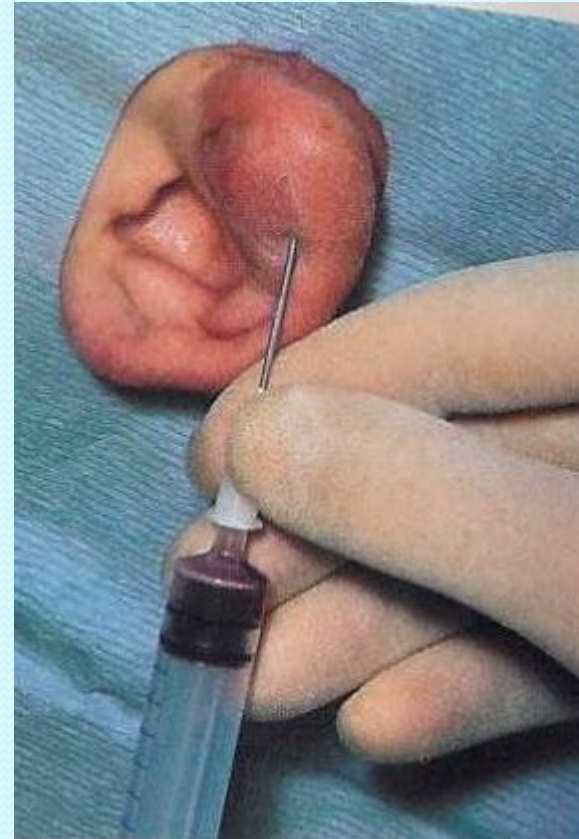
# Traumatic diseases

- 1- wounds – minor or severe





## 2- hematoma – blood collection



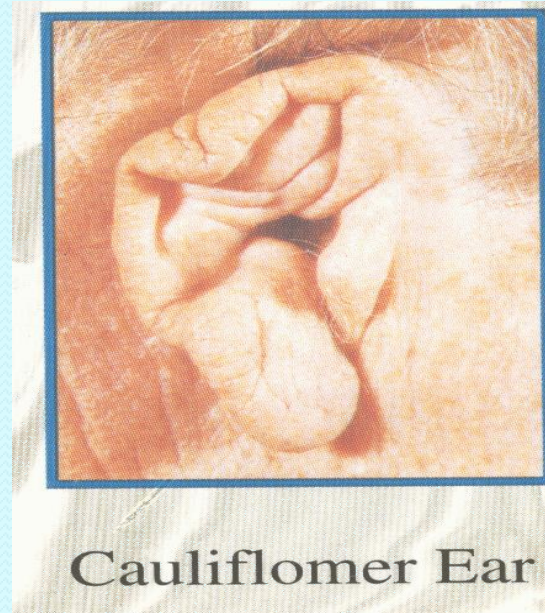
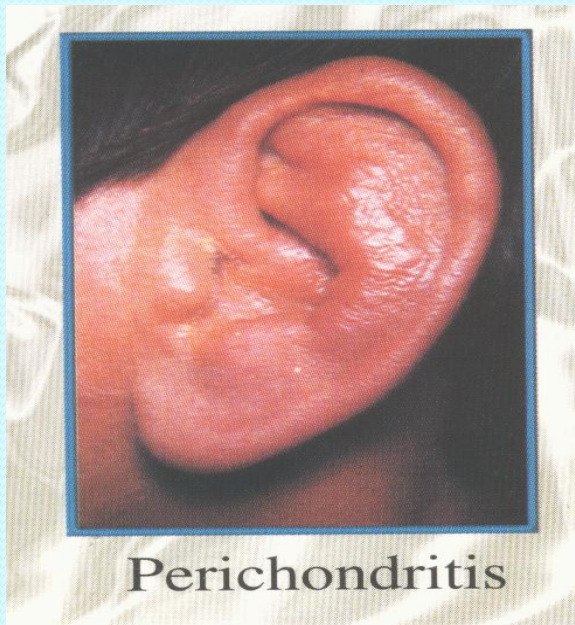
# Foreign bodies

- Children
- Animate – inanimate
- Symptomless – much discomfort – otitis externa
- wash



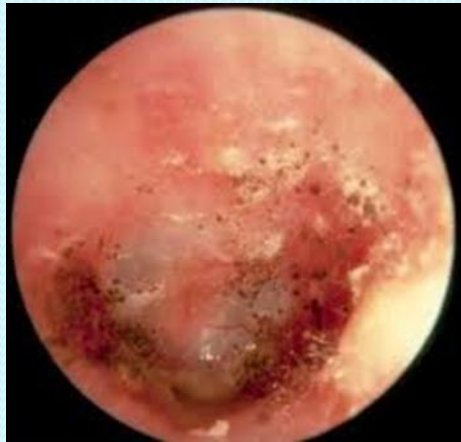
## 3- inflammation of external ear

- I- perichondritis
- Deep pinna infection



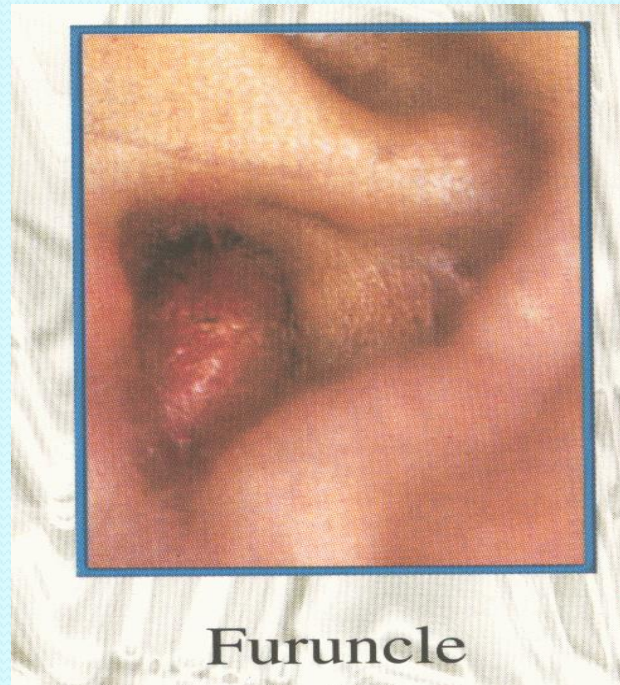
# Otitis externa A- infective

- I- **Otomycosis**: water - itching
- **Aspergillus** infection – black or greyish membrane ( wet newspaper)





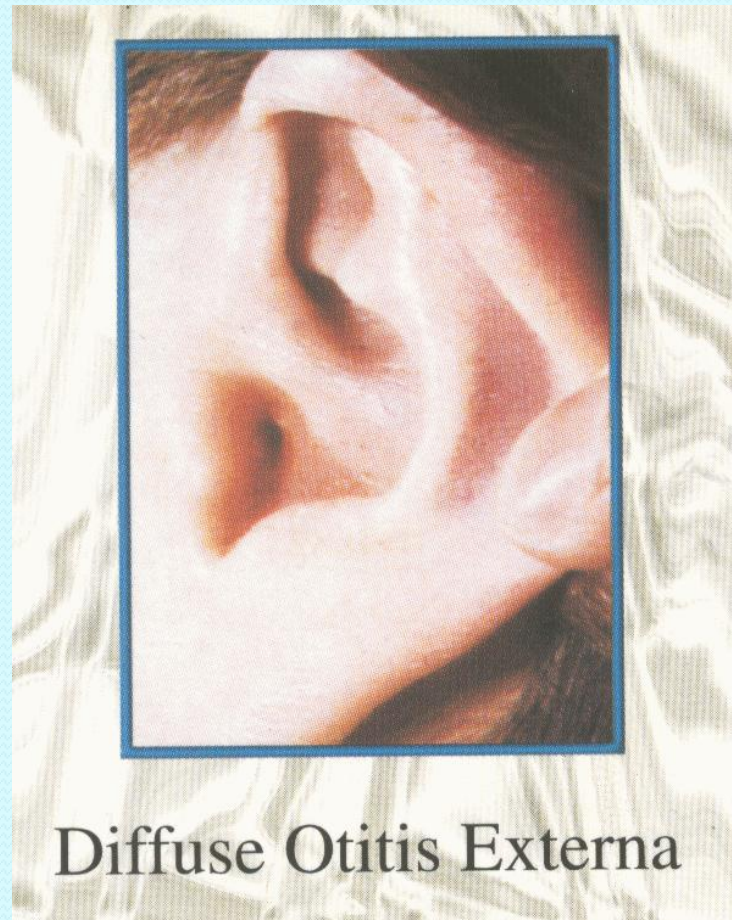
**II- FURUNCULOSIS** – staph infection of a hair follicle. Pain, small red swelling (localized)





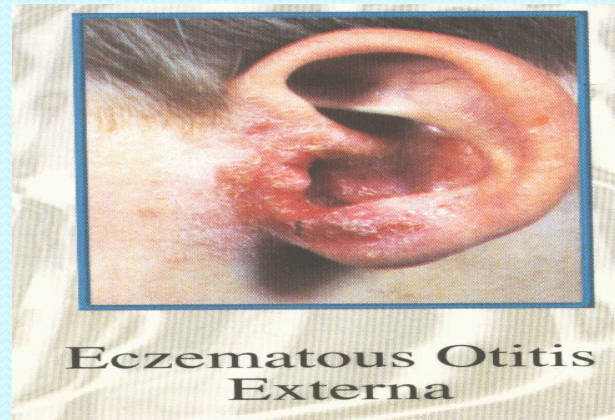
# III- DIFFUSE OTITIS EXTERNA

Bacterial – wax protective, water + seborrhea harmful. Pain, redness, swelling



# B- Reactive

- A-Seborrhea – whitish depress vesicles or fissures
- B- Eczema –



Diffuse otitis externa

# Treatment of otitis externa

- 1- cleaning
- 2- antibiotics
- 3- local antifungals
- 4- antihistaminic
- 5- hydrocortisone

# Traumatic rupture of the drum

- Direct + indirect trauma + base fracture
- Something giving way in the ear
- Blood in external ear
- Perforation
- Nothing / ear



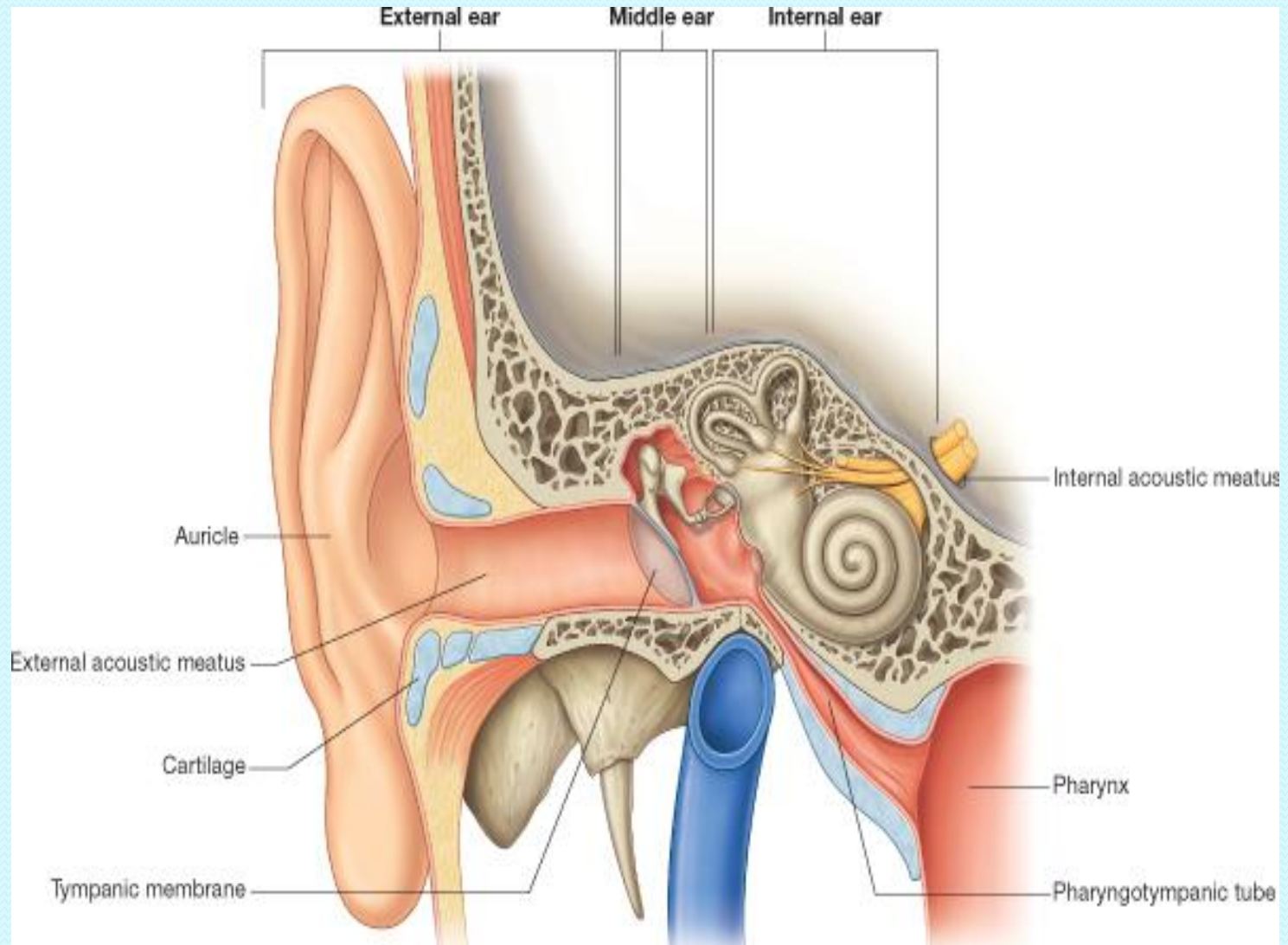
# Malignant otitis externa

- Old, diabetic, pseudomonas infection, intolerable otitis externa
- Cranial nerves palsy
- Ciprofloxacin

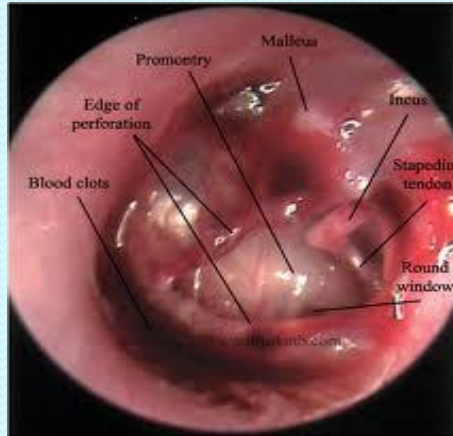
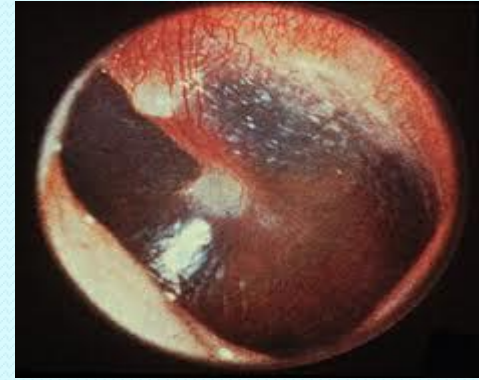




# Otitic barotrauma



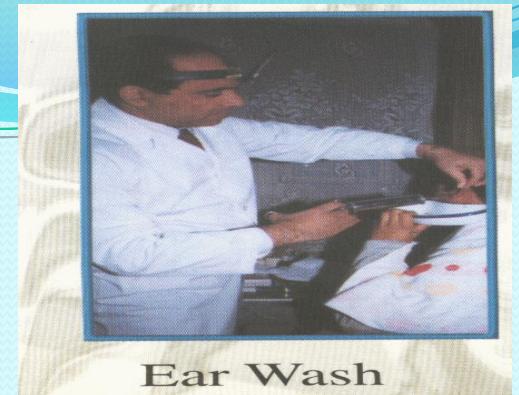
# Otitic barotrauma



# Otitic barotrauma

- Ear trauma due to pressure changes
- Airplane descent
- Increase atmospheric pressure
- Decrease ME pressure
- Pain, fullness and deafness
- Retraction, congestion, transudation
- Rapid descent – drum rupture
- Prophylaxis + curative

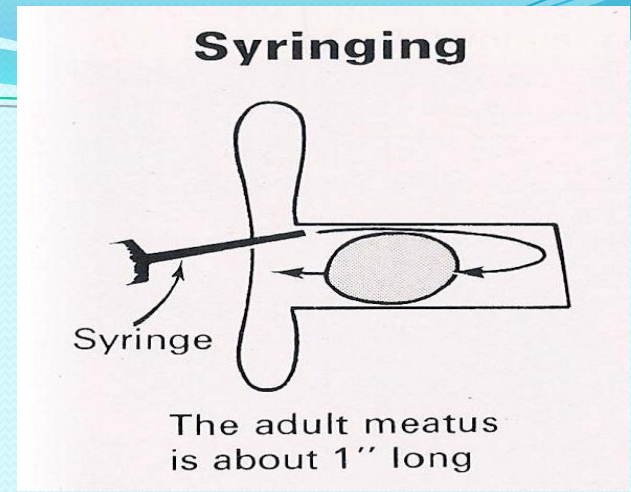
# Wax



- Cartilaginous external ear secretion
- Impaction – excess formation, stiff hairs and canal stenosis
- C/O: deafness + tinnitus
- Removed by hook or wash

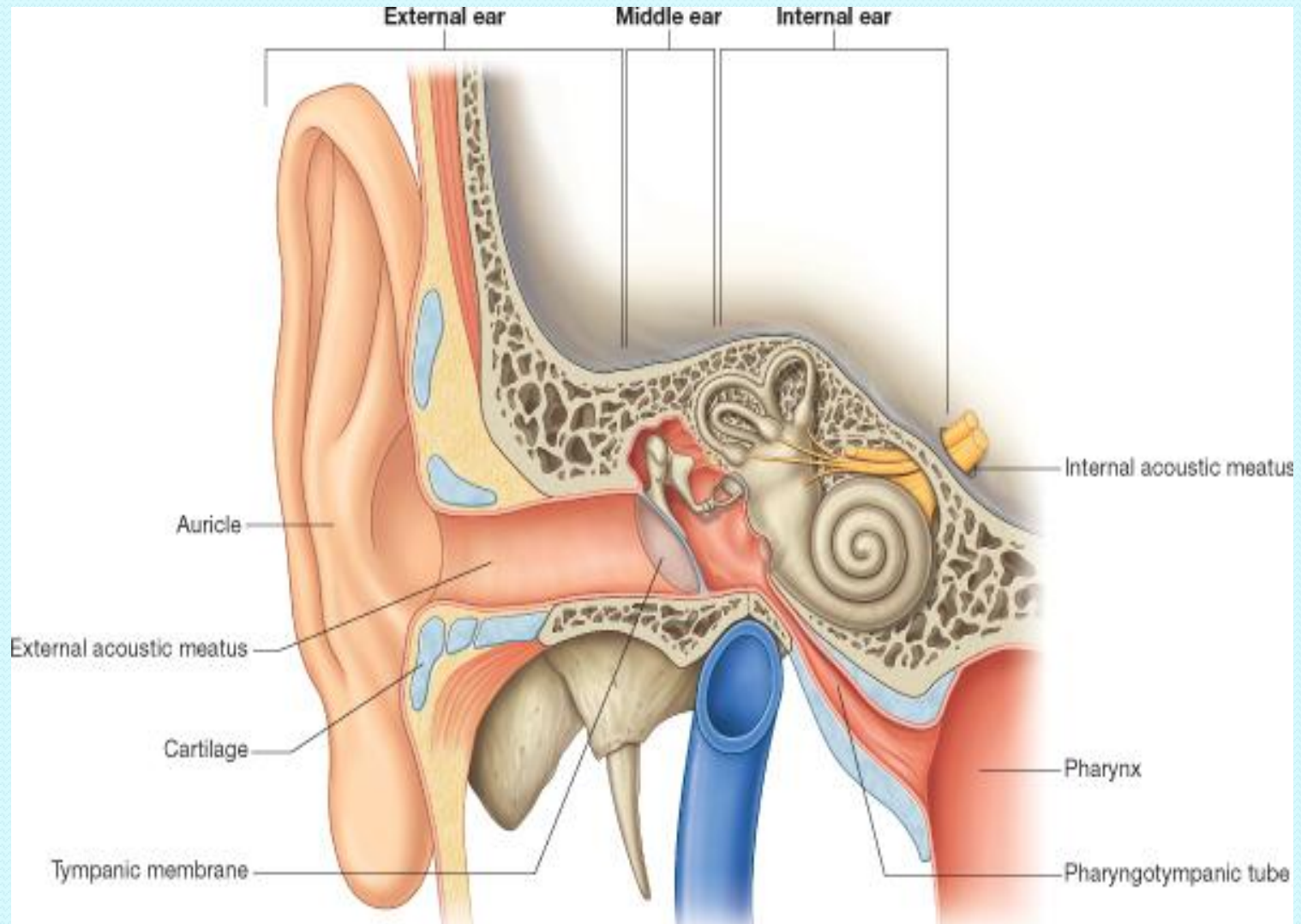
# Ear wash

- Indications: wax + FB
- Contraindications: big vegetable FB, drum perforation, infection
- Technique: straight the canal + wash posterosuperior + dry meatus
- Complications: trauma + infections + reflex





# Acute otitis media



# Otitis media(OM)



- Acute + chronic

- **Acute suppurative OM**

- ME inflammation following URTI

- 4 stages: 1- Eustachian catarrha

2- catarrhal OM

3- suppurative OM

4- perforation

# AOM

- **Stage of Eustachian catarrh:**
- ET edema
- Autophony
- Retracted drum



# AOM

- **Stage of catarrhal OM:**
- ME inflammation with serous fluid exudation
- Pain, deafness + tinnitus
- Congested drum



# AOM

- **Stage of suppurative OM:**
- Fluid in ME becomes purulent
- Fever, pain, deafness + tinnitus
- Bulging tympanic membrane





# AOM

- Stage of perforation:
- Discharge + hearing loss
- Perforation + CD

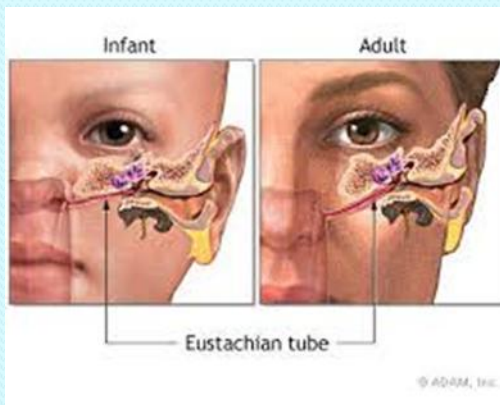


# Acute suppurative otitis media

- Treatment: 1- antibiotics
- 2- analgesics                      3- myringotomy
- **Acute OM in infants**
- Common than adults due to
- 1- predisposing factors:
- A- anatomy    B- feeding    C- teething

# Acute OM in infants

- Anatomical: ET + drum difference
- Feeding: common in bottle feeding
- Teething: low resistance



# Acute OM in infants



- Differed from adult:
- 1- clinically: high fever, vomiting and crying
- 2- by otoscope: drum dull + thick
- 3- myringotomy common



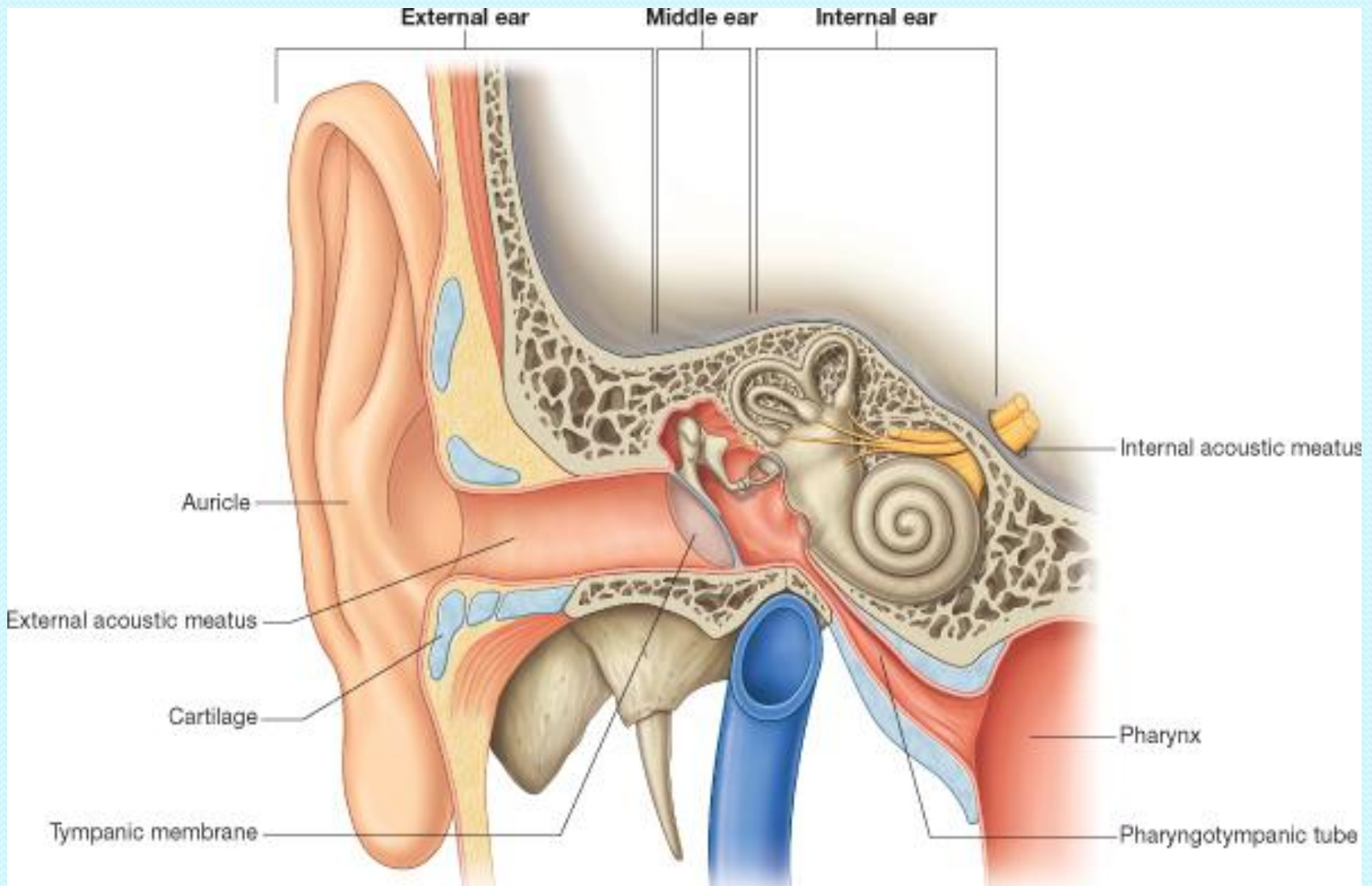
# Chronic OM

- 1- suppurative
- 2- non suppurative
- Suppurative OM
- A- tubo-tympanic
- B- attico-antral
- non suppurative OM
- A- secretory      b- adhesive





# Chronic OM





# CSOM

- tubotympanic

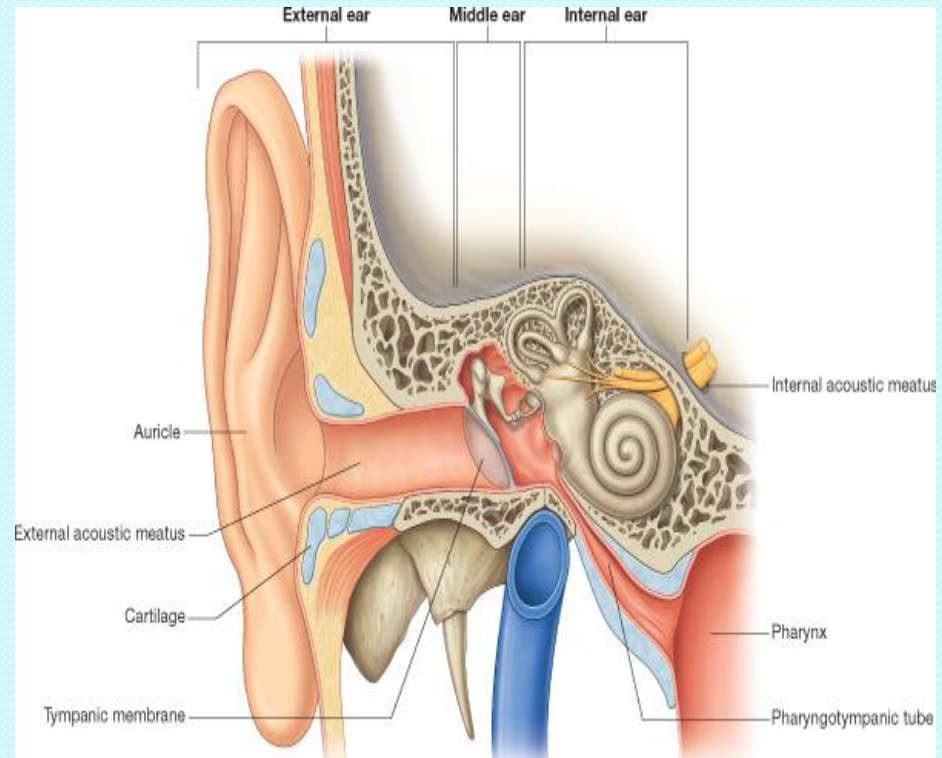


- atticointral

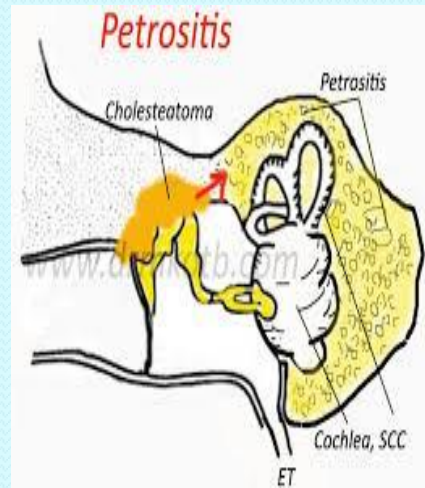


# Complications of SOM

- 1- cranial
- 2- intracranial
- 3- extracranial

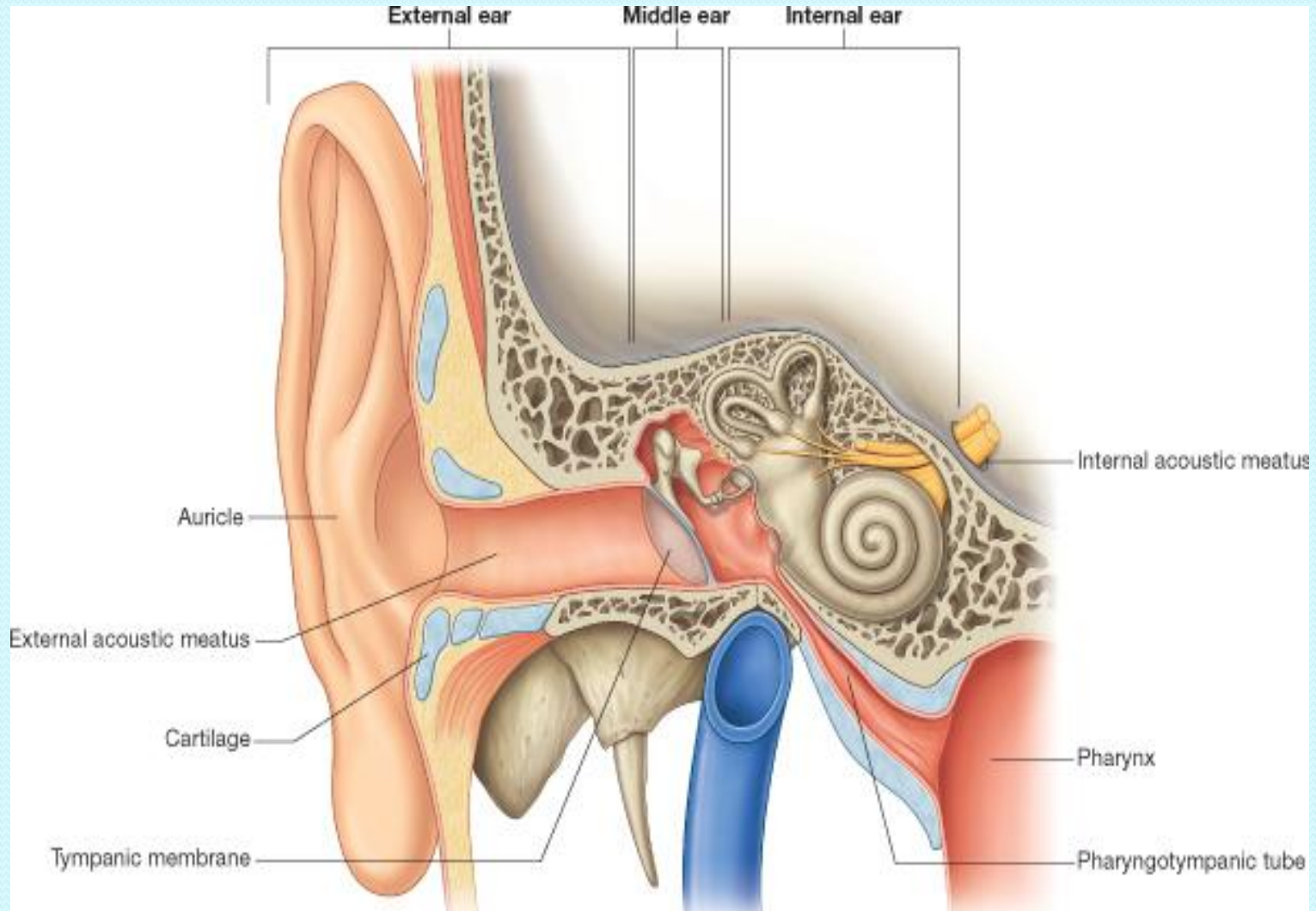


# Complications of SOM





# • OM with effusion



# Non-suppurative otitis media

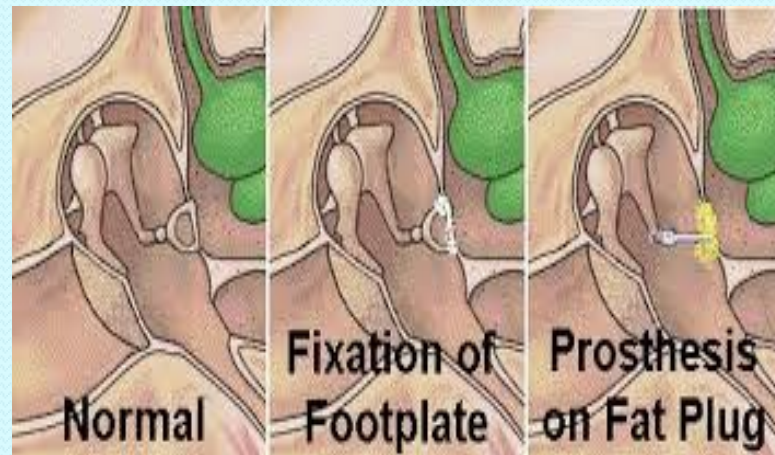
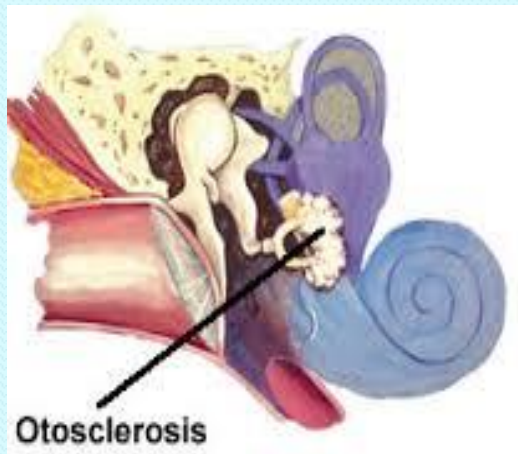
- **1- OM with effusion**
- Eustachian tube obstruction
- Big adenoid + allergy + AOM
- Child + deafness
- Bilateral + retraction + hair-line
- Conservative - myringotomy

# Secretory OM + adhesive OM



# otosclerosis

- Stapes fixation by new spongy bone
- Female, 30 ys, deafness + tinnitus
- +ve family history
- Stapedectomy -hearing aid





# Meniere's disease

- End lymphatic hydropes
- Recurrent vertigo + tinnitus + deafness
- Betaserc

