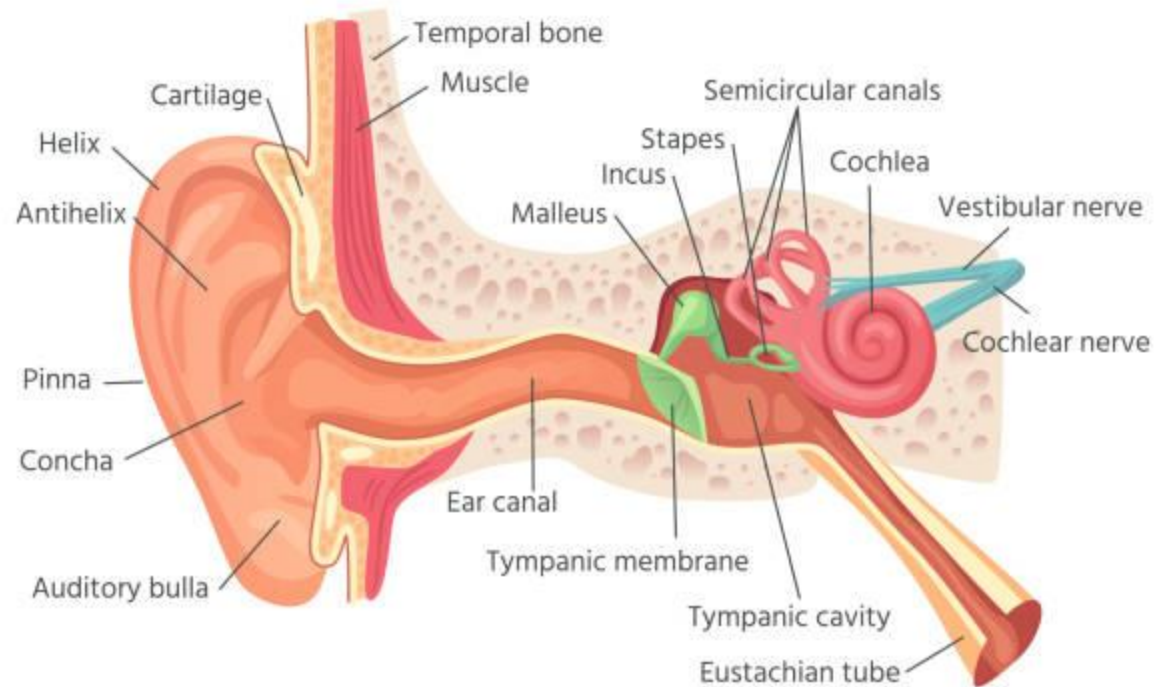


# Diseases of Ear Nose And Throat

Dr Amer Hishmeh

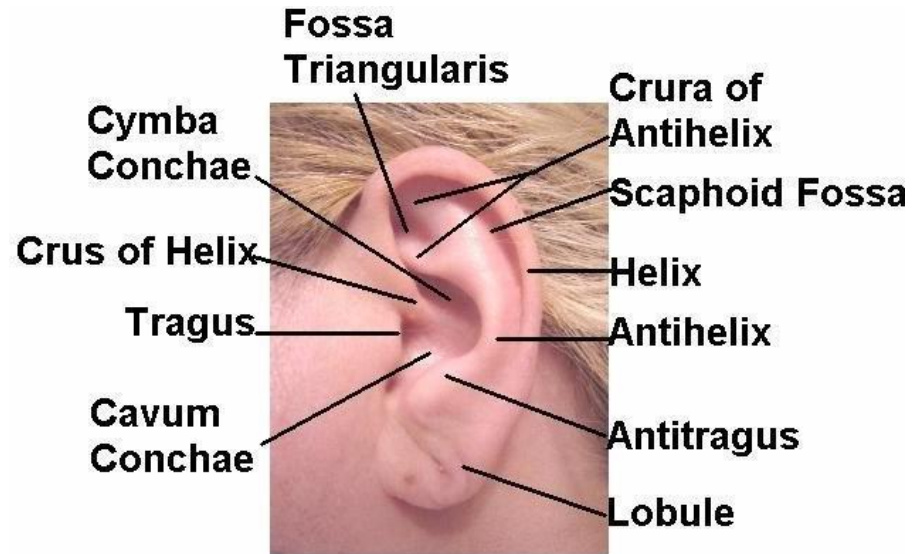
# Ear anatomy

- Ear is divided into 3 parts:
- 1. External ear
- 2. Middle ear
- 3. Inner ear



# 1. External ear

***Auricle (Pinna)*** : It is composed of cartilaginous part (upper 3/4) & fibro fatty part (lobule)



**Anatomy of the Pinna**

# ***External auditory canal***

S shaped tube extending from the auricle to the tympanic membrane (25 mm). It is pulled backward upward when examining adults and backward downward when examining children.

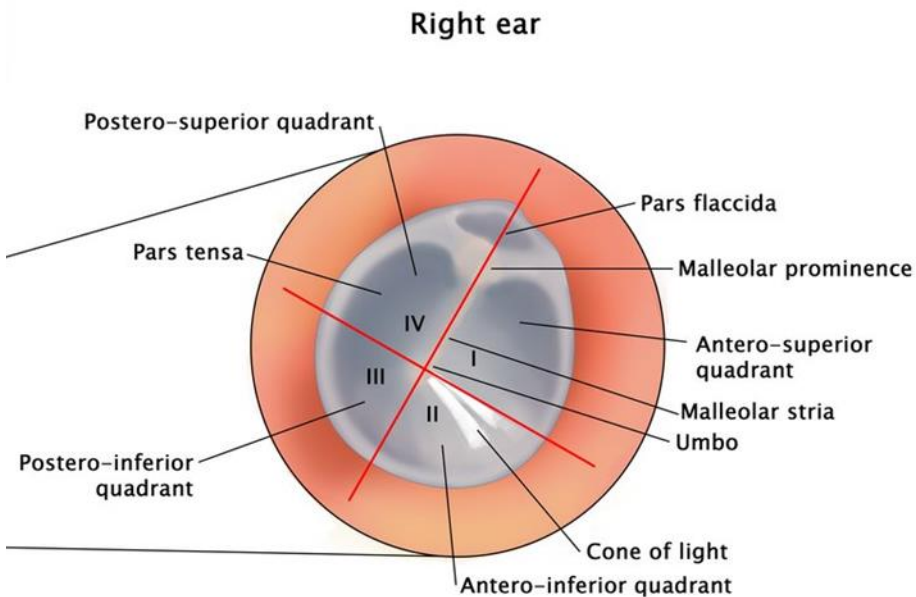
It has two parts:

Cartilaginous part (outer one third)

Bony part (inner two third).

# ***Lateral (outer) surface of the tympanic membrane:***

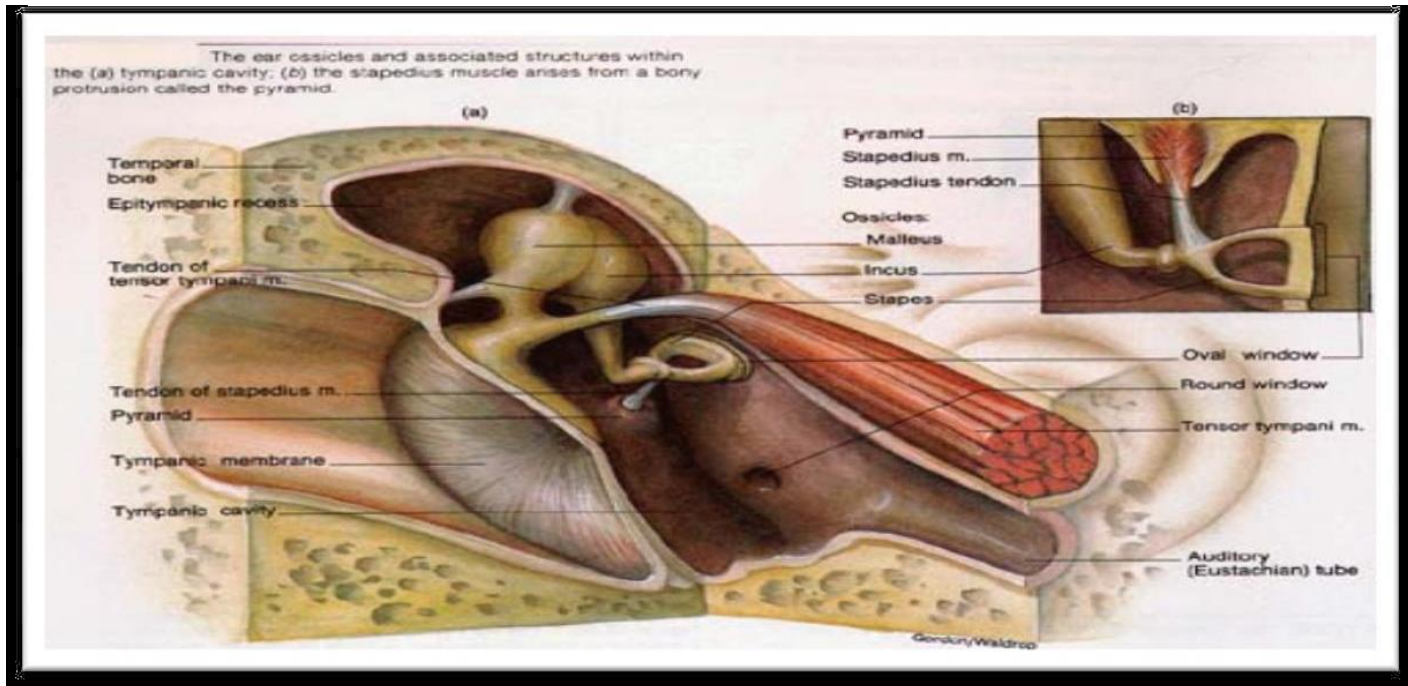
It is the outer layer of the tympanic membrane which is composed of skin of keratinized squamous epithelium.



# ***Tympanic membrane (TM):***

- It is 1 cm in diameter
- It is formed of 3 layers:
  1. Outer layer (Lateral layer): skin of keratinized squamous epithelium.
  2. Middle layer (B/w the Lateral & Medial): fibrous layer.
  3. Inner layer (Medial layer): respiratory mucosa (Pseudostratified squamous ciliated mucosa).

# 2. Middle ear:



Composed of middle ear cleft which contains:

a. Tympanic cavity itself including:

1. *ossicles* (Malleous, Incus, Stapes),
2. *two muscles*(stapedius muscle ", tensor tympani muscle “
3. *two nerves* (horizontal and *chorda tympani* branches of facial n)



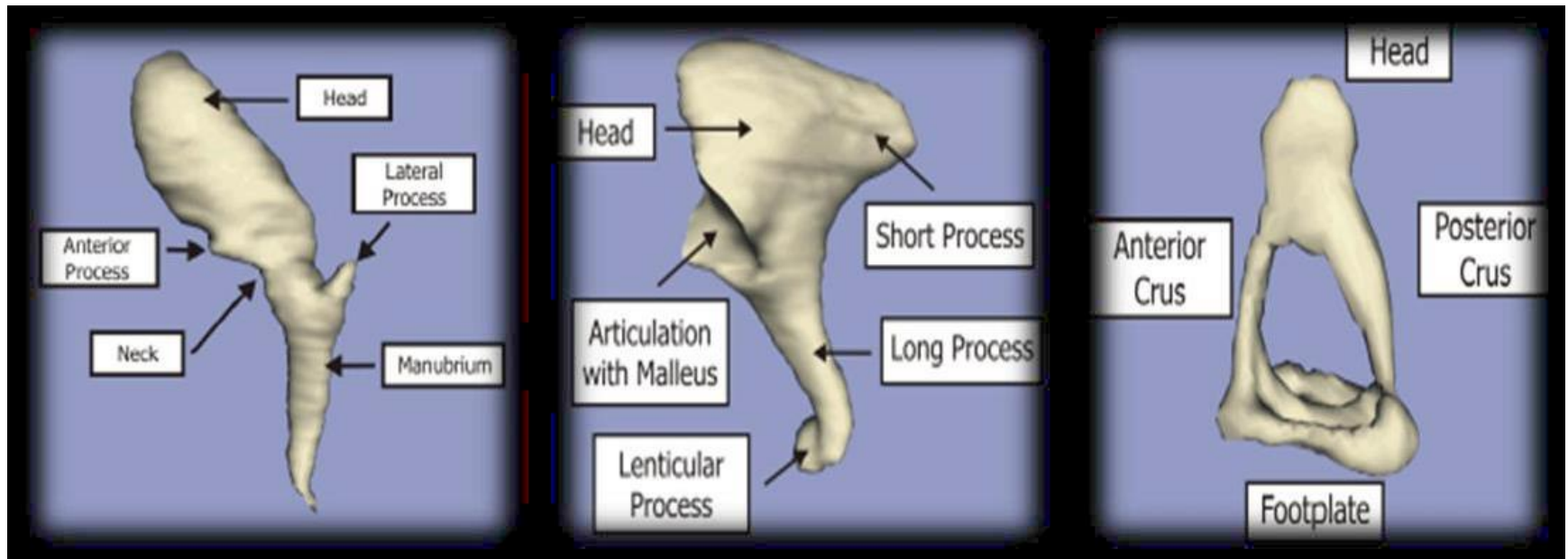
- b. Eustachian tube (auditory tube).
- c. Mastoid air cells (Air containing cavity in petrous bone of temporal bone).
- d. Aditus ad antrum (mastoid antrum) : canal between middle ear and mastoid air cells.

# Ossicles:

Malleus

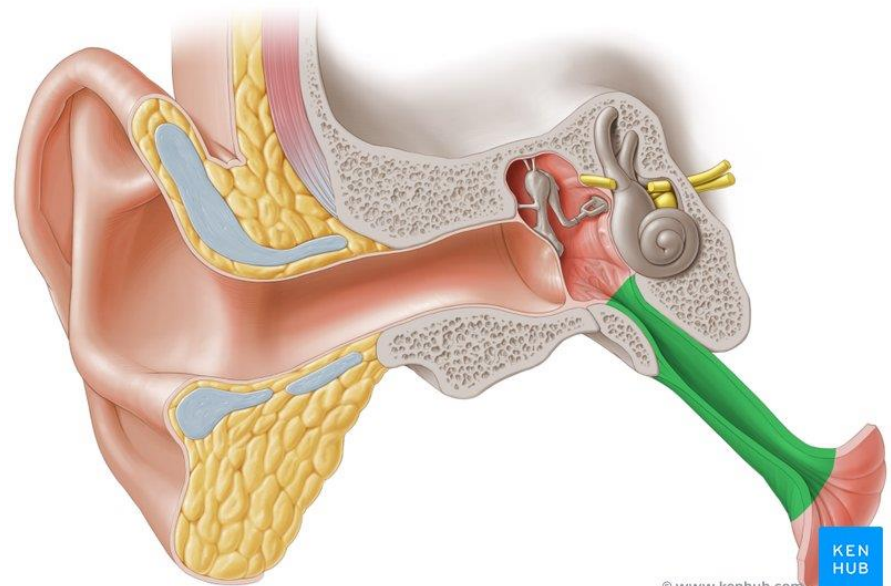
Incus

Stapes



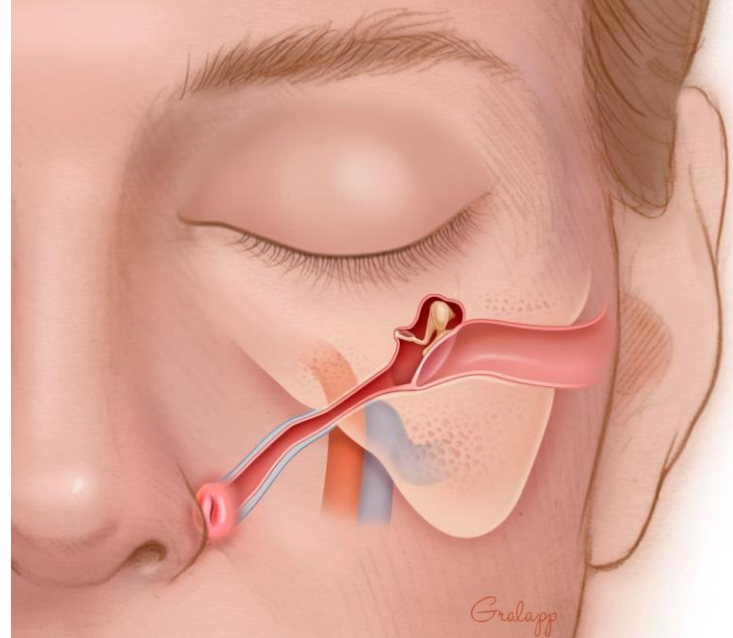
# Eustachian Tube (Auditory tube):

- Connects middle ear and nasopharynx.
- It has two parts: Proximal 1/3 is bony & distal 2/3 is cartilaginous



# Function of Eustachian Tube:

- Protection from nasopharyngeal secretions
- Clearance of middle ear secretions
- Ventilation (pressure regulation) of middle ear



## Ear Examination

### ⑨ Inspect the auricles for:

Shape

Redness

Swelling

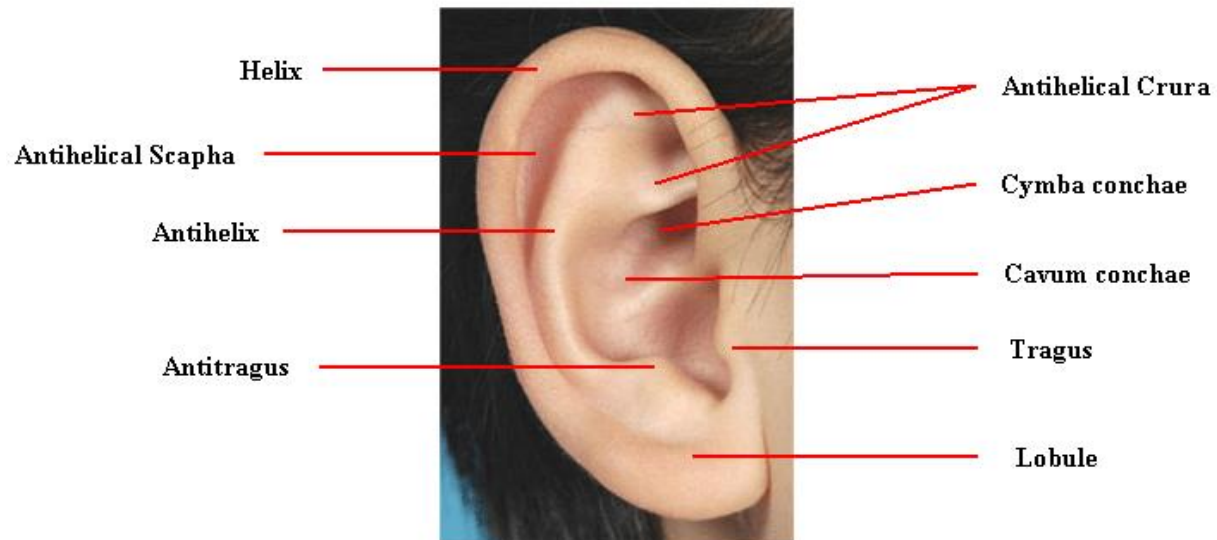
Ulceration

Tumors

Fistula

Retroauricular skin.

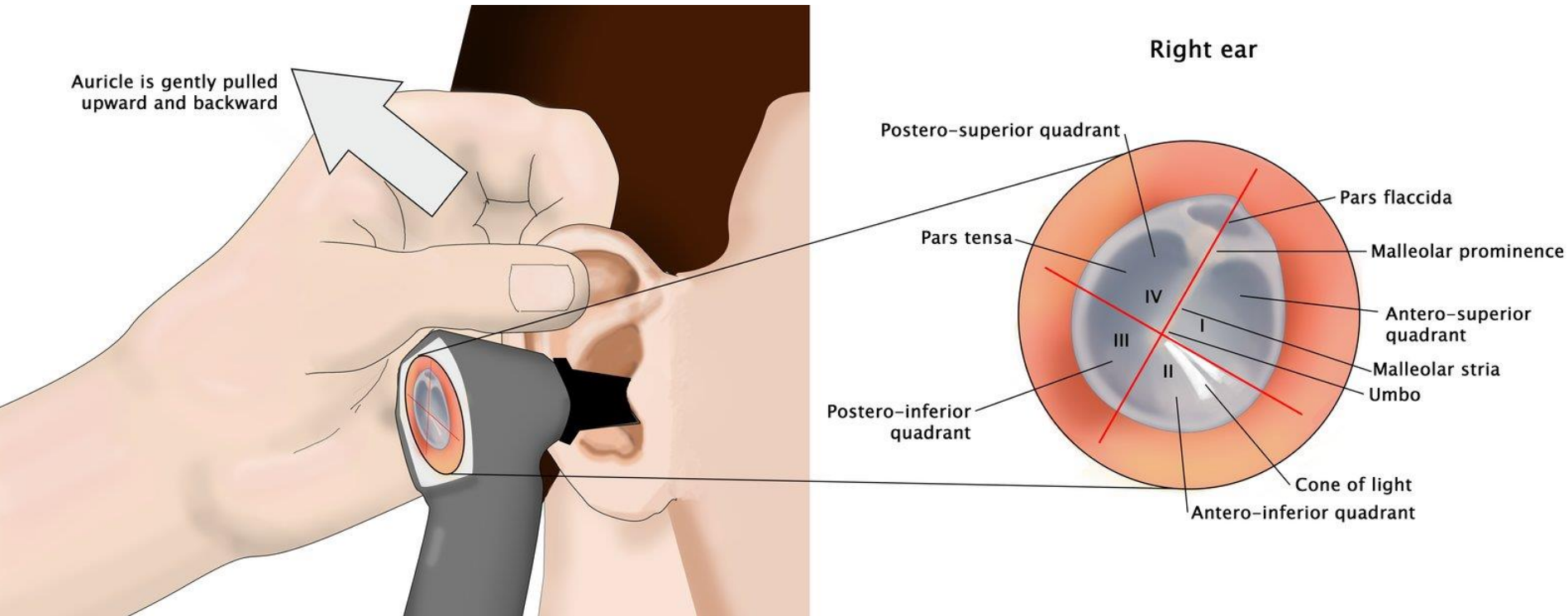
Preauricular fistua.



# Palpate the auricles for:

Tenderness

Pre or Post auricular swelling or tenderness



## **Inspect the external canal:**

Pull the auricle upward backward in adult or backward

downward in infants and young children to see the external canal, which is S shaped, by this movement you find out whether there is tenderness or not.

Tenderness means otitis externa .

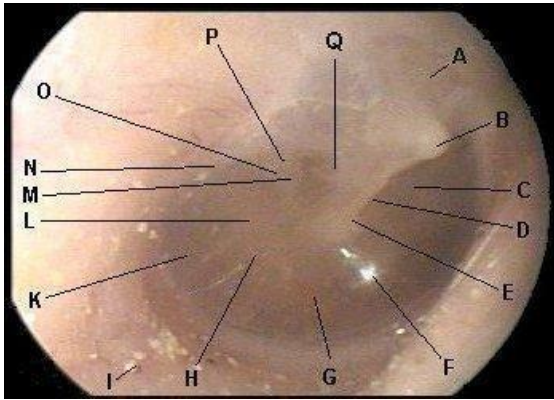
Using the **Otoscope**,

inspect the tympanic membrane (Remember the normal landmarks!!), &

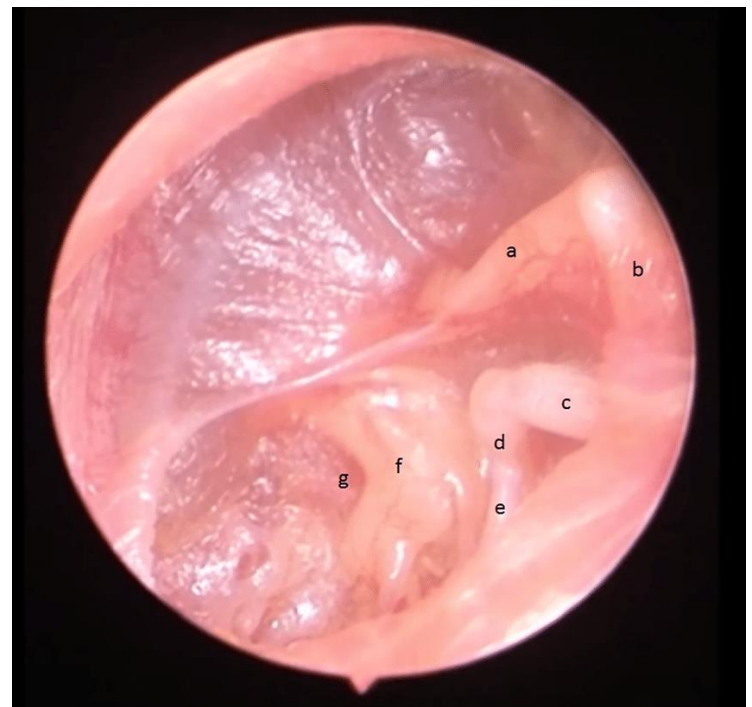
examine for the mobility of the tympanic membrane.

- Red congested ⑦ Acute otitis media (OM). OM causes also a reduction in the mobility of the tympanic membrane.
- Atrophic retracted with prominent handle of malleus in long standing negative pressure ⑦ Secretory or adhesive OM.
- Thick with calcification white in color ⑦ Myringosclerosis (due to recurrent OM or multiple ear surgeries ).
- Perforated: Central / Marginal





A: par flaccid, B: short process of malleus, C: pars tensa, D: manubrium of malleus, E: Umbo, F:light reflex.





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## **Ear discharge:**

- o Brown mass → Wax (& can be gold or even black, all are normal).
- o Moist keratin debris → otitis externa
- o Moist dirty mass → Fungus : Candida albicans, Aspergillus flavus, Aspergillus niger (most common one)
- o Mucoid or mucopurulent discharge → Chronic or acute otitis media.

o Scanty offensive purulent discharges →  
Cholesteatoma

o Clear fluid → CSF .. How to confirm that it is CSF ?

1. Halo sign : Non specific

2. Glucose level : Non specific

3. Beta2 transferrin : Found only in CSF so it is the most accurate & specific one.

o Bleeding → trauma, tumor.

# **Diseases of the external ear**

# ❖ Diseases of the auricle

- 1. Otohematoma or aurohematoma:
- It is caused by trauma or frost bite.
- It collects between the perichondrium and the cartilage.
- It is dangerous because cartilage receives its blood supply by perfusion from perichondrium so it results in malnutrition to the cartilage, necrosis and ear deformity (cornflower ear).
- It is an emergency, needs incision and drainage then pressure to prevent the formation of hematoma again.
- It occurs more commonly in psychotic patients.

# Auricular Hematoma



# Perichondritis:

- It is inflammation of the perichondrium.
- It can be local perichondritis or systemic perichondritis.
- Systemic perichondritis, such as autoimmune perichondritis (so do RF & ANCA), which may involve laryngeal cartilage, nasal cartilage or auricule.
- The most common cause is combined, gram negative bacteria
- An emergency, because of the risk of necrosis and cauliflower ear.
- It is an indication for admission and give antibiotics for gram negative & gram positive bacteria.



# Perichondritis



# Furuncle

- It is abscess in the hair follicles or sebaceous glands.
- The most common cause is *Staphylococcus aureus*.
- Patients may present with swelling in the retroauricular area .
- It is treated by incision & drainage and antibiotics

# Furuncle



# Acute otitis externa

- ❖ There are 8 types:
- 1. **Acute diffuse otitis externa (swimmer disease):**
  - There is a history of water invasion or trauma.
  - Mostly caused by gram neg. bacteria: *Pseudomonas*,
  - Patients present with severe pain, difficulty in opening the mouth, severe tenderness on examination, severely stenosed external auditory canal due to edema.
  - There is keratin containing discharge (whitish moist debris).
  - Treatment: Clearance, put a wick, give topical antibiotics (such as quinolones) & corticosteroids for edema. If not responding to topical treatment, give systemic antibiotic covering gram negative



# Fungal otitis externa (otomycosis):

- *Aspergillus* species are the commonest cause
- Patients present with hearing loss, earache, tinnitus, severe pain and tenderness.
- There is dirty moisty foul smelling material, white in *Candida*, yellow in *Aspergillus flavus* & black in *Aspergillus niger*. Sometimes we may see the hyphae of the fungus in the external auditory canal.
- Treatment: Clearance, dryness, protection from water exposure & topical antifungal such as nystatine or ketoconazole (This is for the mentioned noninvasive infections).
- If invasive fungus, such as in the immunocompromised patients, give systemic antifungal, amphotricine B.



# Herpetic otitis externa (herpes oticus)

- It is caused by herpes virus.
- Presents as a part of ramsay hunt syndrome, which is a triad of:
  - 1.Vesicles on the tympanic membrane or in the external auditory canal.
  - 2.Sensori neural hearing loss.
  - 3.Otalgia.





# Seborrhoic otitis externa:

- It is infection in the sebaceous glands.
- Patients present with pain and ear fullness.
- Treatment: Clearance, topical antibiotics & corticosteroids



# Eczematous otitis externa:

- Treatment: Topical corticosteroids and antibiotics



# Granular myringitis:

- It usually occurs after trauma to the lateral layer of the tympanic membrane or after the insertion of ventilation tubes that results in the formation of a granuloma.
- Treatment: Cauterization of the granuloma with silver nitrate or topical corticosteroids and antibiotics.



# Myringitis bellouosa hemorrhagica

- There is usually a history of URTI, measles or chickenpox.
- Patients present with severe pain, bulla of blood on the tympanic membrane.
- It is thought to be caused by viral infection or *Mycoplasma*.
- Treatment: Macrolides (erythromycin) for 7-14 days





# Necrotizing otitis externa (Malignant otitis externa)

- It is a severe form of acute diffuse otitis externa.
- It affects immunocompromised patients, mostly diabetic patients or patients with nephritic syndrome taking steroids, patients taking chemotherapy & AIDS.
- It is usually caused by Gram negative bacteria: *Pseudomonas*, *E. coli* or *Proteus*.
- It may lead to osteomyelitis of bone or intracranial complications.

# Necrotizing otitis externa (Malignant otitis externa)



# Diseases of the middle ear

## ❖ Otitis media

Definition: Inflammation of the *middle ear cleft* (( **not** *middle ear cavity*)).

# Classification

1. Acute: less than 3 weeks (or one month roughly)
  - a. Nonsuppurative → There is No pus
  - b. Suppurative → There is pus & indicates tympanic membrane perforation.
2. Subacute: 3 weeks to 3 months (or up to 90 days)
  - a. Nonsuppurative
  - b. Suppurative
3. Chronic: More than 3 months (or more than 90 days).

## **a. Nonsuppurative**

(AKA: Secretory OM / Serous OM/ Exudative OM/ OM with effusion (OME) / Blue ear)

\*\* In adults, unilateral secretory OM is nasopharyngeal carcinoma until proven otherwise.

## **b. Suppurative:**

Type 1 (Safe type): Tubotympanic type, there is central perforation & is **not** associated with cholesteatoma.

Type 2 (Unsafe type): atticointral type, there is marginal or peripheral perforation & is associated with cholesteatoma.