








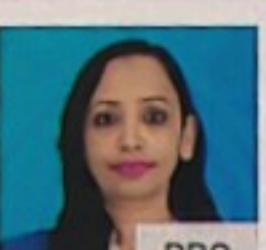


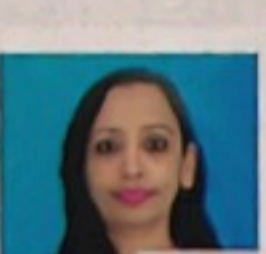
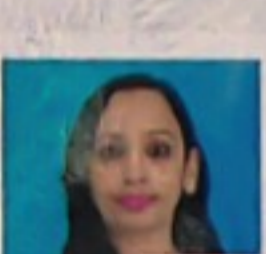
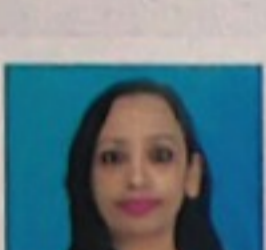
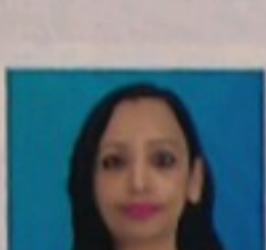
EDITION




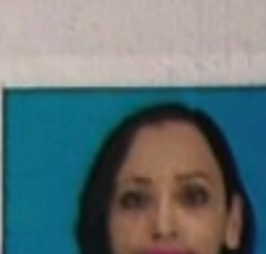

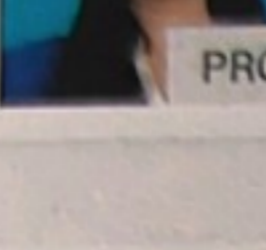
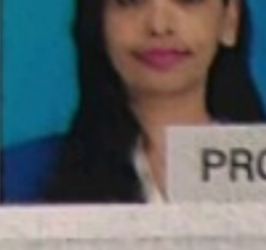

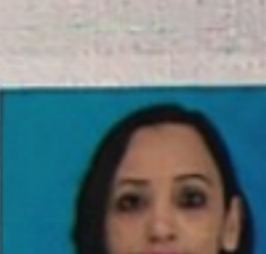

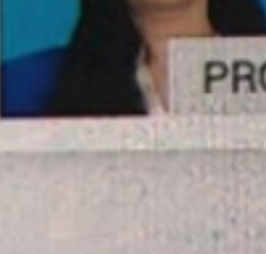
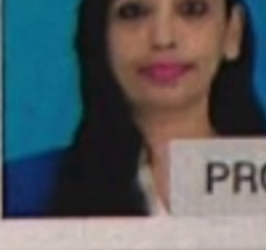
ENT

ED.08




EAR

- 2  **Basics of Ear** ★ 4.5 | 35 Min video
- 3  **Clinical Embryology and Anatomy of Inner Ear: Part 1** ★ 4.6 | 54 Min video
- 4  **Clinical Embryology of External and Middle Ear** ★ 4.6 | 26 Min video
- 5  **Clinical Anatomy and Diseases of Pinna** ★ 4.6 | 27 Min video
- 6  **Clinical Anatomy and Diseases of External Auditory Canal** ★ 4.6 | 41 Min video
- 7  **Clinical Anatomy of Tympanic Membrane and Ossicles** ★ 4.7 | 25 Min video
- 8  **Clinical Anatomy of Middle Ear: Part 1** ★ 4.6 | 49 Min video
- 9  **Clinical Anatomy of Middle Ear: Part 2** ★ 4.6 | 54 Min video
- 10  **Clinical Anatomy of Inner Ear: Part 2** ★ 4.6 | 41 Min video
- 11  **Nerve Supply of Ear** ★ 4.6 | 24 Min video
- 12  **Audiology and Evaluation: Tuning Fork Tests** ★ 4.6 | 72 Min video
- 13  **Audiology and Evaluation: Audiogram (PTA)** ★ 4.6 | 46 Min video






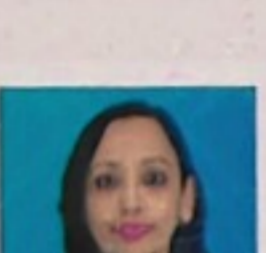
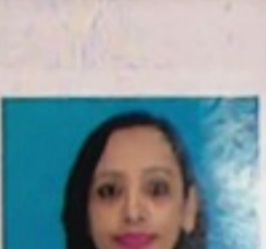
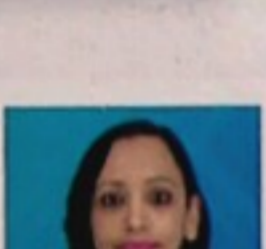
EAR

- 26  **Vestibular Function Test: Part 2** ★ 4.7 | 37 Min video
- 27  **BPPV and Vestibular Neuritis** ★ 4.6 | 32 Min video
- 28  **Meniere's Disease** ★ 4.6 | 49 Min video
- 29  **Superior Semicircular Canal Dehiscence and Perilymph** ★ 4.7 | 22 Min video
- 30  **Sudden SNHL, Noise Trauma, Ototoxicity and Presbycusis** ★ 4.6 | 37 Min video
- 31  **Tumors of External and Middle Ear** ★ 4.6 | 32 Min video
- 32  **Acoustic Neuroma** ★ 4.7 | 36 Min video
- 33  **Facial Nerve: Part 1** ★ 4.6 | 28 Min video
- 34  **Facial Nerve: Part 2** ★ 4.6 | 42 Min video
- 35  **Hearing Rehabilitation** ★ 4.6 | 46 Min video

NOSE



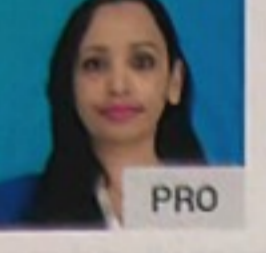





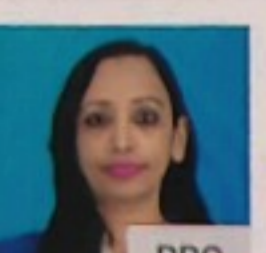


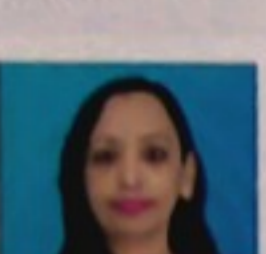
- 47  **Atrophic Rhinitis and Granulomatous Conditions of Nose** ★ 4.7 | 39 Min video
- 48  **Fractures of Face and CSF Rhinorrhea** ★ 4.6 | 57 Min video
- 49  **Tumors of Nose and PNS** ★ 4.6 | 29 Min video

PHARYNX


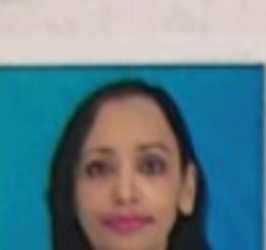
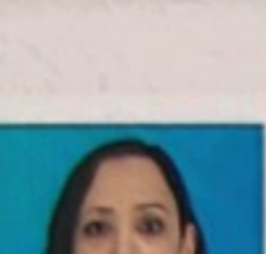

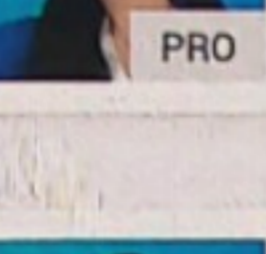
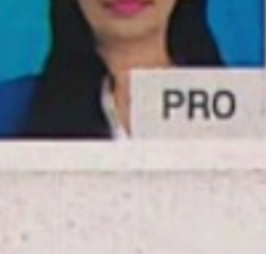


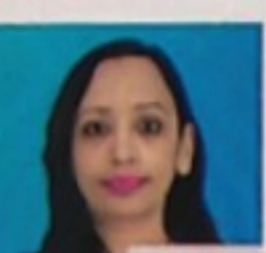

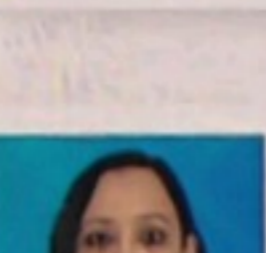
- 50  **Clinical Anatomy of Pharynx - Part 1: Overview** ★ 4.5 | 23 Min video
- 51  **Clinical Anatomy of Pharynx - Part 2: Pharyngeal Wall** ★ 4.6 | 54 Min video
- 52  **Clinical Anatomy Of Pharynx - Part 3: Cavity** ★ 4.7 | 80 Min video
- 53  **Clinical Anatomy Of Pharynx - Part 4: Spaces and its Abscess** ★ 4.5 | 92 Min video
- 54  **Adenoid Hypertrophy** ★ 4.6 | 44 Min video
- 55  **Angiofibroma** ★ 4.7 | 32 Min video
- 56  **Nasopharyngeal Carcinoma** ★ 4.6 | 24 Min video
- 57  **Conditions of Tonsils and Tonsillectomy** ★ 4.6 | 79 Min video

LARYNX

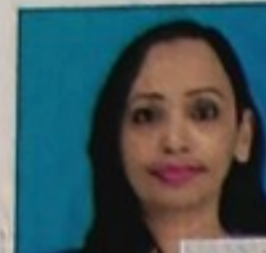
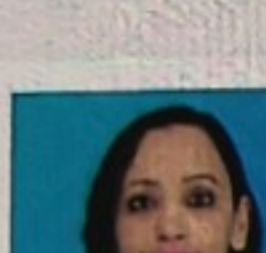

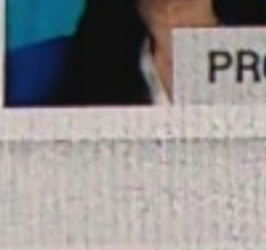
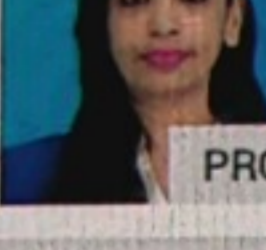

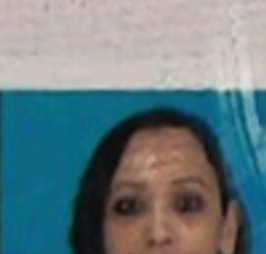
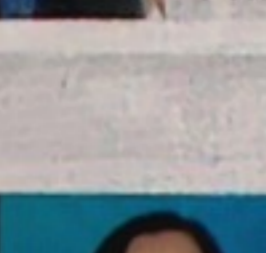
EAR

- 14  **Audiology - Part 3: Tympanometry and Stapedial Reflex** ★ 4.6 | 43 Min video
- 15  **Audiology - Part 4: OAE, ECOG, BERA, and Others** ★ 4.5 | 65 Min video
- 16  **Paediatric Hearing Assessment** ★ 4.5 | 29 Min video
- 17  **Conditions of Tympanic Membrane** ★ 4.6 | 41 Min video
- 18  **Acute Otitis Media** ★ 4.6 | 22 Min video
- 19  **Serous Otitis Media** ★ 4.6 | 43 Min video
- 20  **Chronic Mucosal Otitis Media** ★ 4.6 | 64 Min video
- 21  **Chronic Squamous Otitis Media** ★ 4.6 | 63 Min video
- 22  **Complications of Otitis Media** ★ 4.6 | 68 Min video
- 23  **Otosclerosis** ★ 4.6 | 42 Min video
- 24  **Vestibular Physiology** ★ 4.6 | 44 Min video
- 25  **Vestibular Function Test: Part 1** ★ 4.6 | 39 Min video

NOSE

- 36  **Introduction to Nose** ★ 4.6 | 3 Min video
- 37  **Clinical Anatomy of External Nose and Choanal Atresia** ★ 4.6 | 32 Min video
- 38  **Clinical Anatomy of Lateral Wall of Nose** ★ 4.6 | 61 Min video
- 39  **Clinical Anatomy and Diseases of Septum** ★ 4.6 | 37 Min video
- 40  **Nerve supply of Nose and its Diseases: Part 1** ★ 4.5 | 44 Min video
- 41  **Nerve supply of Nose and its Diseases: Part 2** ★ 4.6 | 25 Min video
- 42  **Arterial Supply of Nose and Epistaxis** ★ 4.6 | 71 Min video
- 43  **Clinical Anatomy of PNS and Rhinosinusitis** ★ 4.6 | 80 Min video
- 44  **Complications of Sinusitis** ★ 4.7 | 28 Min video
- 45  **Fungal Sinusitis** ★ 4.8 | 42 Min video
- 46  **Nasal Polyps** ★ 4.6 | 34 Min video

LARYNX

- 58  **Clinical Anatomy of Larynx: Part 1** ★ 4.5 | 75 Min video
- 59  **Clinical Anatomy of Larynx: Part 2** ★ 4.6 | 65 Min video
- 60  **Infections of Larynx** ★ 4.5 | 43 Min video
- 61  **Congenital Conditions of Larynx** ★ 4.7 | 44 Min video
- 62  **Voice Disorders** ★ 4.7 | 59 Min video
- 63  **Nerve Supply of Larynx and Vocal Cord Palsy** ★ 4.7 | 72 Min video
- 64  **Carcinoma Larynx** ★ 4.6 | 88 Min video
- 65  **Tracheostomy and Foreign Body in Airways** ★ 4.6 | 51 Min video

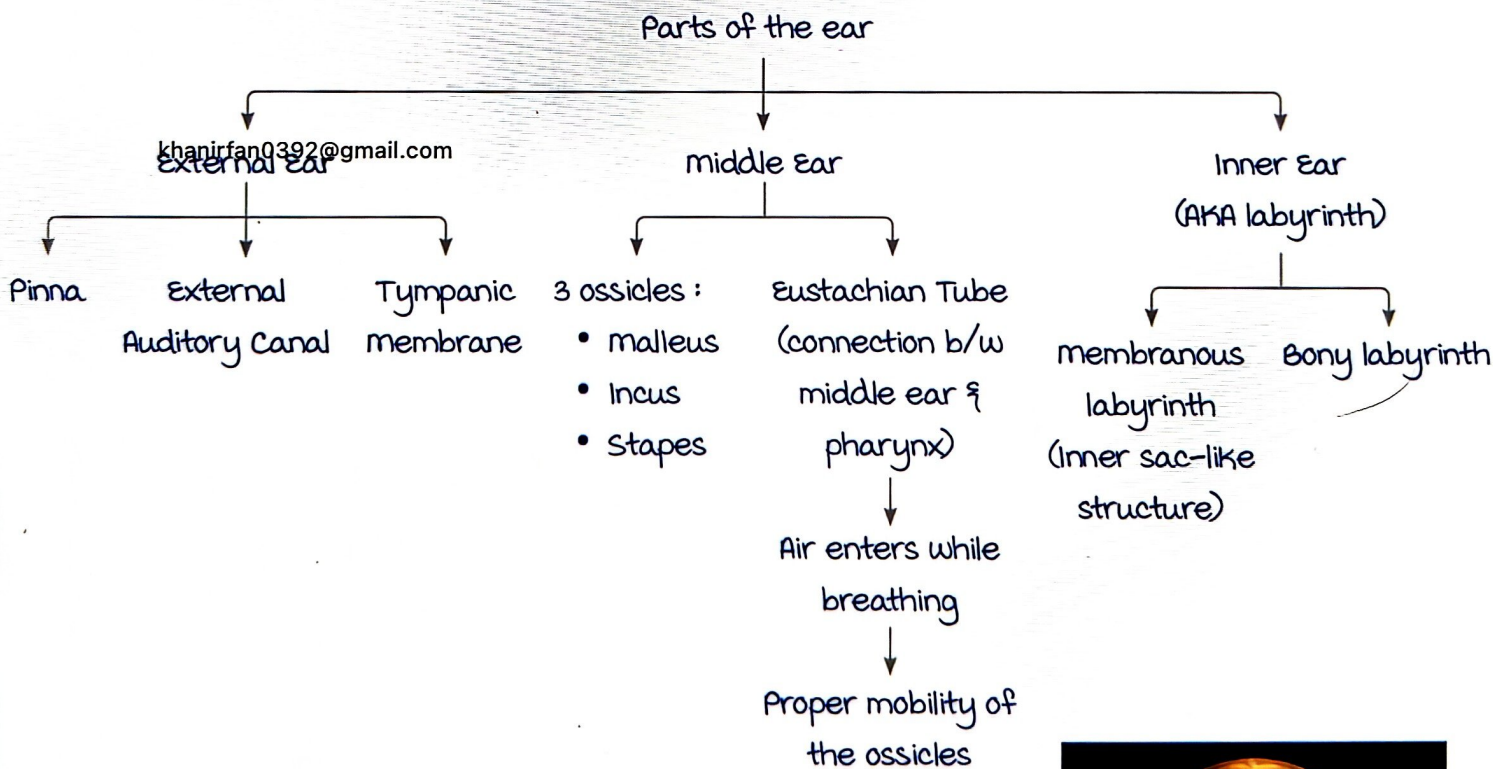
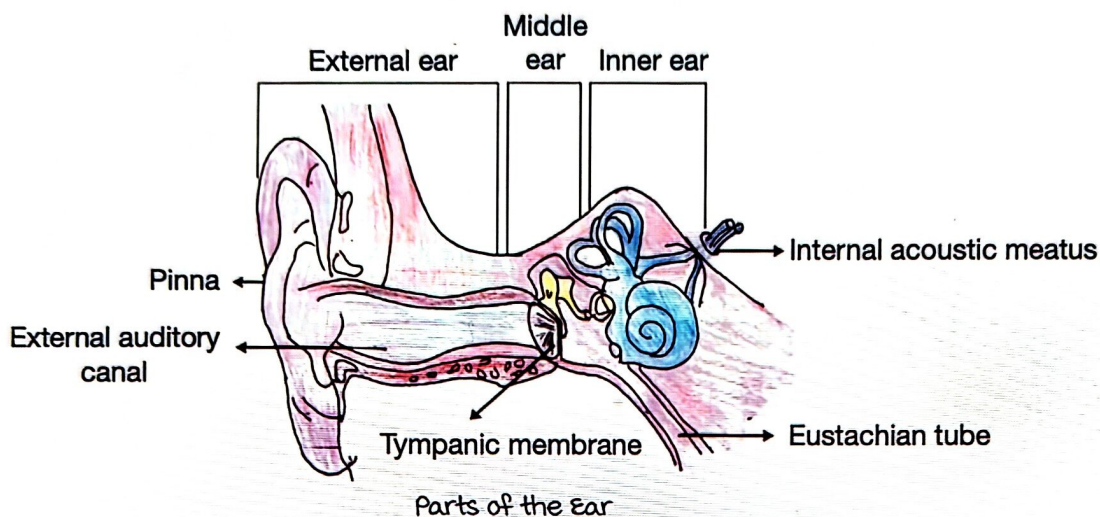
BASICS OF EAR

----- Active space -----



Introduction

00:00:40

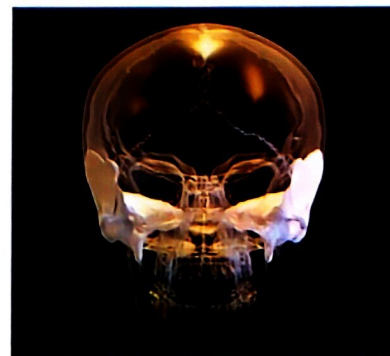


medial to Inner Ear : Brain (Cranium).

Base of Skull : Separates inner ear from the brain.

Internal Acoustic meatus : Opening which connects inner ear to brain.

Location of ear : Tunnel in the temporal bone.

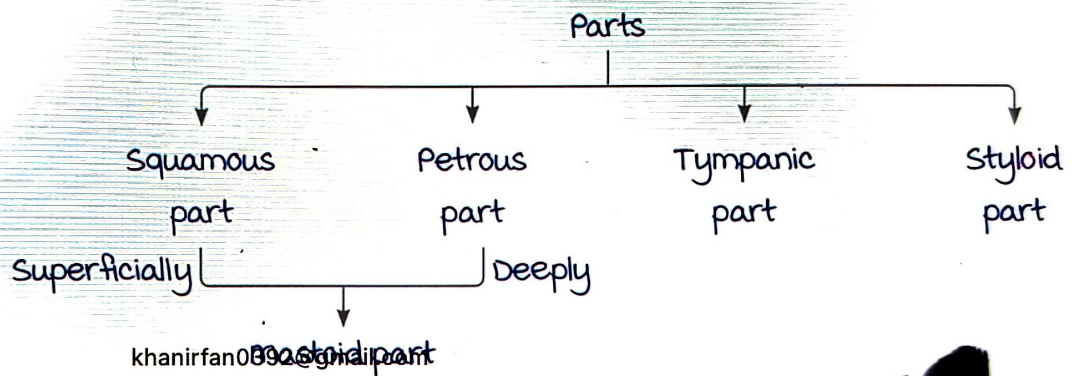
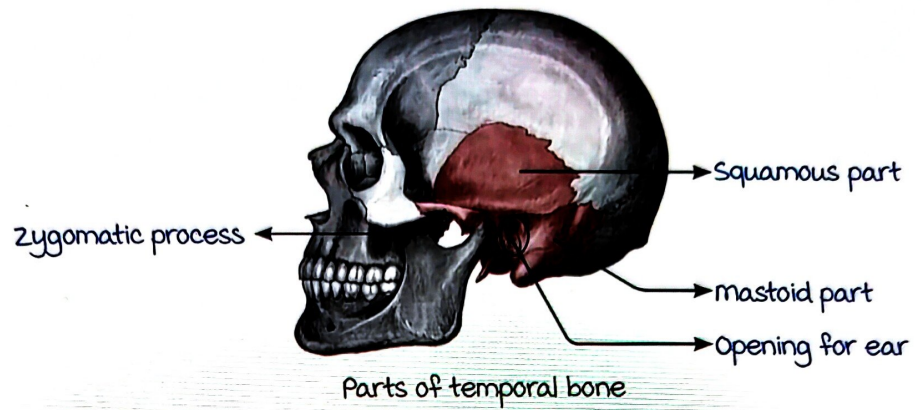


Temporal Bone

Feedback

----- Active space -----

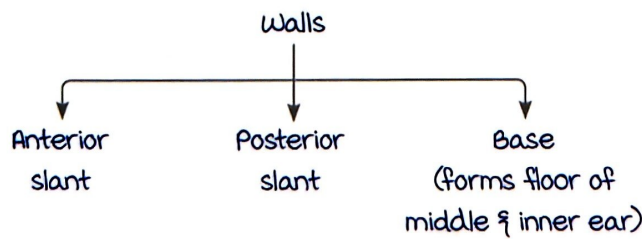
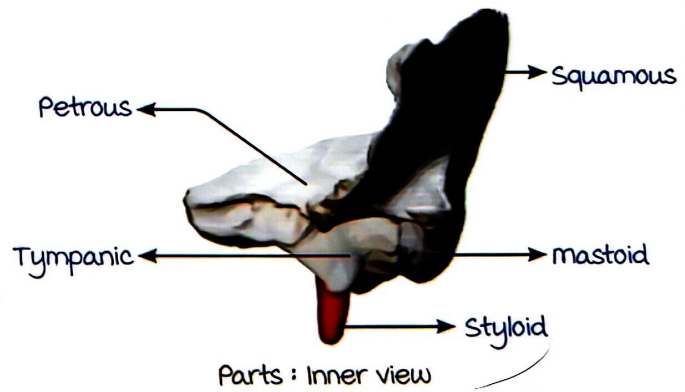
Temporal Bone and its Parts



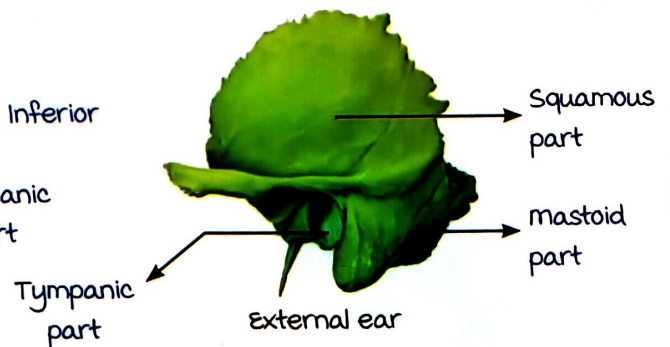
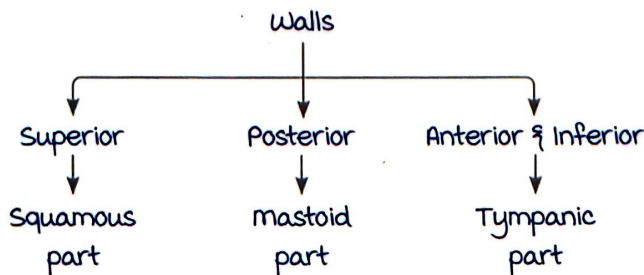
PETROUS PART

Pyramid-like bone.
'Petrus': Rocklike.

Contents : middle ear and inner ear.



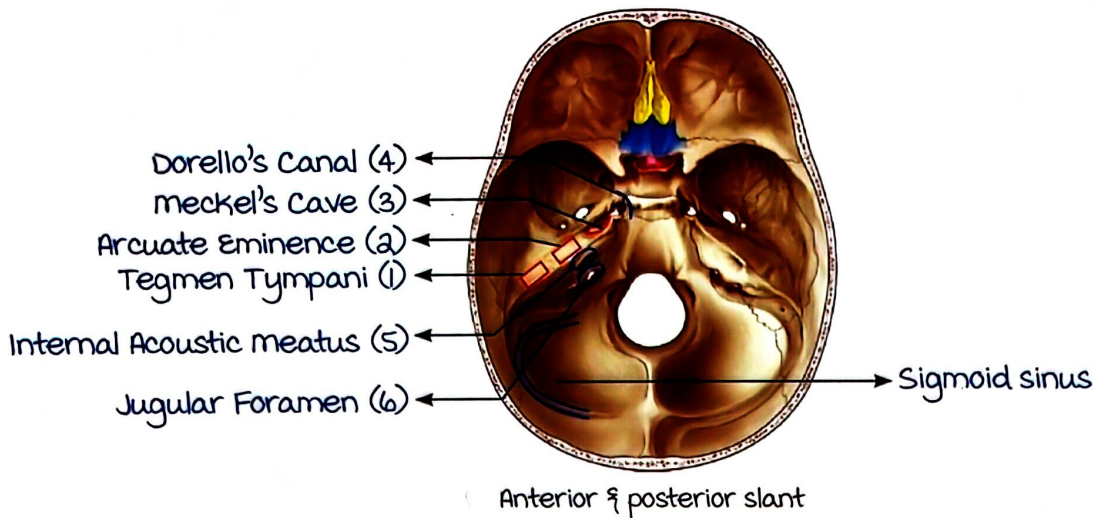
PARTS FORMING EXTERNAL EAR



Routes of Spread of Infection

00:11:45

----- Active space -----



SUPERIORLY (ROOF)

Infection reaches base of skull.

Anterior Slant :

1. Tegmen Tympani :

- Roof of middle ear.
- Separates middle ear from middle cranial fossa (temporal lobe).
- Infection reaches temporal lobe → Temporal lobe abscess.

2. Arcuate Eminence :

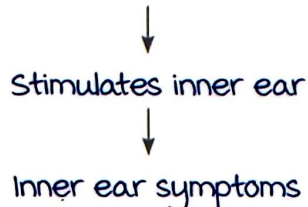
- Bulge in roof of internal ear.
- Produced by **Superior Semicircular Canal (SSC)**.

Note :

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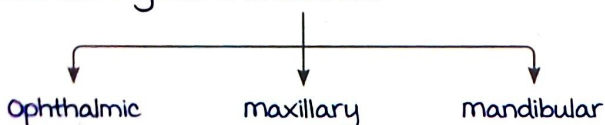
SSC dehiscence :

- Bone thin or gaping.
- Significance : Rise in Intra-Cranial Pressure



3. meckel's Cave :

- Depression containing **Gasserian ganglion** (ganglion of CN V).
Here CN V gives 3 branches.



Feedback

----- Active space -----

Significance : Infection reaches petrous apex

↓
Involvement of CN V↓
Retro-orbital pain with ear symptoms

4. Dorello's Canal :

- Present at petrous apex.
- CN VI passes.

Significance : **Petrositis** → Ear complaints + Diplopia (CN VI supplies lateral rectus).

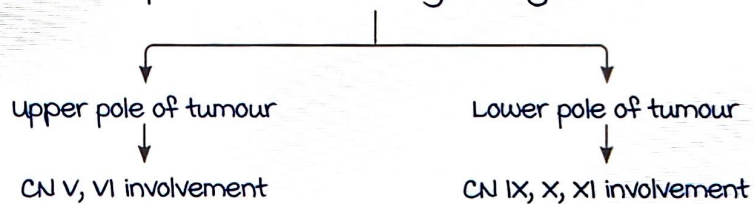
Posterior slant :

5. Internal Acoustic meatus (IAM) :

- Connects inner ear to posterior cranial fossa.
- **Nerves** passing : CN VII & CN VIII.

Note : CN VII → Passes through ear → Gives branches in ear → Exits through stylomastoid foramen → Supplies face.

Note : Acoustic neuroma spreads intracranially through IAM.



6. Jugular Foramen :

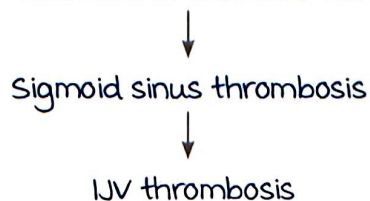
At the junction of petrous and occipital bone.

Structures passing :

- CN IX
 - CN X
 - CN XI
 - Jugular bulb
- } Go to floor of middle ear.

Sigmoid Sinus :

- Forms posterior boundary of mastoid.
- Sigmoid sinus → Jugular bulb → Internal jugular vein (IJV).
- Significance : Infection of mastoid/ear





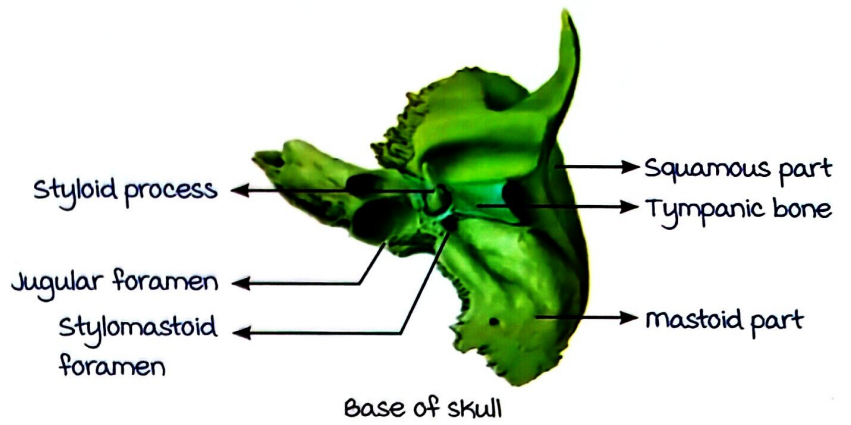
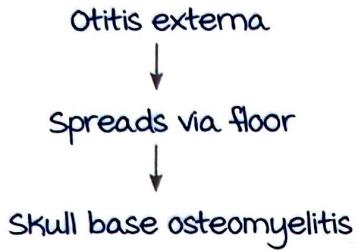
INFERIORLY (FLOOR)

Infection reaches base of skull.

Stylomastoid Foramen :

Present between styloid process & mastoid. Involvement causes facial nerve palsy.

Significance :

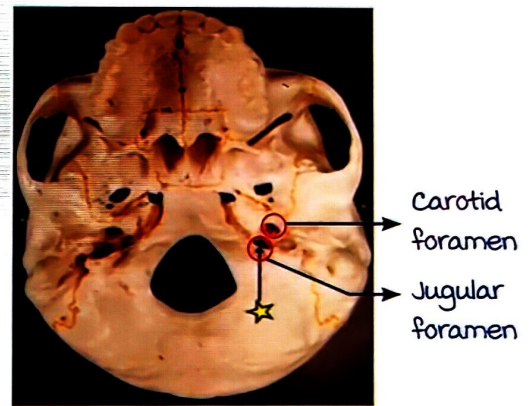


Jugular Bulb :

Lies in the floor of middle ear.

Significance :

Tumors of jugular bulb project through floor of middle ear.



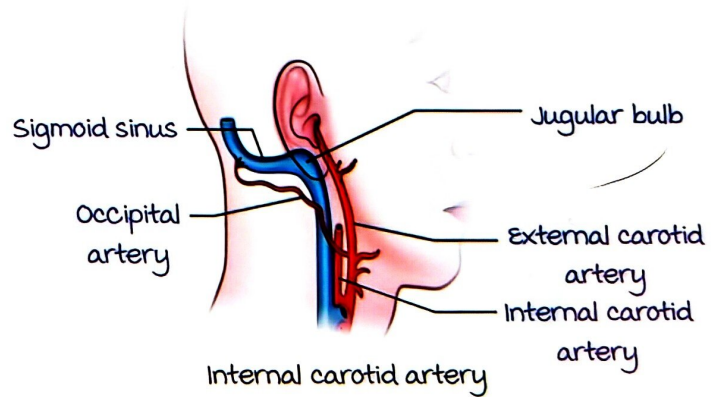
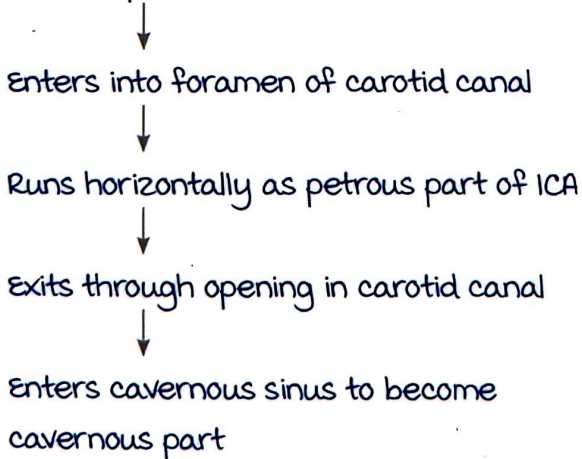
Base of skull

ANTERIORLY

Internal Carotid Artery (ICA) :

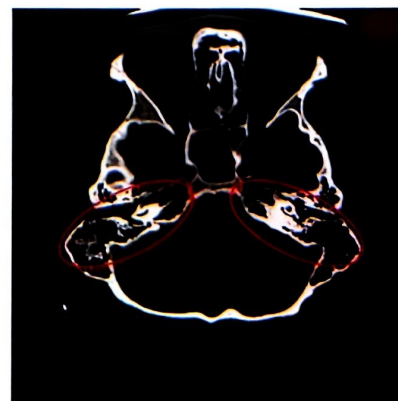
Related to anterior wall of middle & inner ear.

Course : Cervical part of ICA



Note :

High Resolution CT scan : Best investigation for conditions of middle ear & temporal bone fractures.



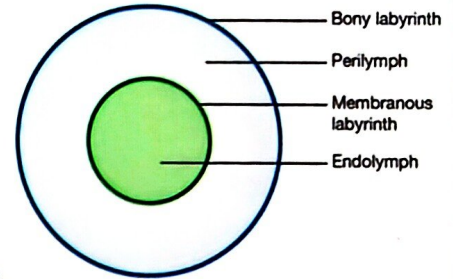
HRCT

----- Active space -----

CLINICAL EMBRYOLOGY AND ANATOMY OF INNER EAR : PART 1

Inner ear (Labyrinth) :

- Parts : membranous and bony labyrinth.
- membranous labyrinth :
 1. Closed sac-like structure filled with endolymph.
 2. Contains endolymph and sensory end organs of hearing and balance.
- Bony labyrinth : Has openings to connect inner ear to middle ear and brain.



Basic structure of inner ear

khanirfan0392@gmail.com

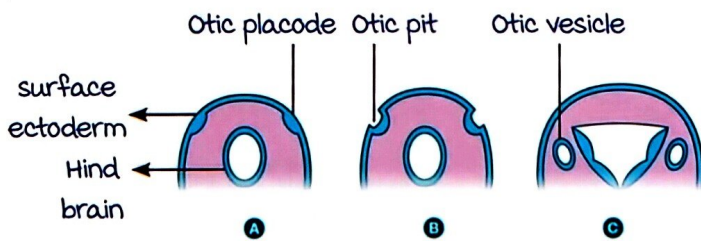
Membranous labyrinth

00:06:08

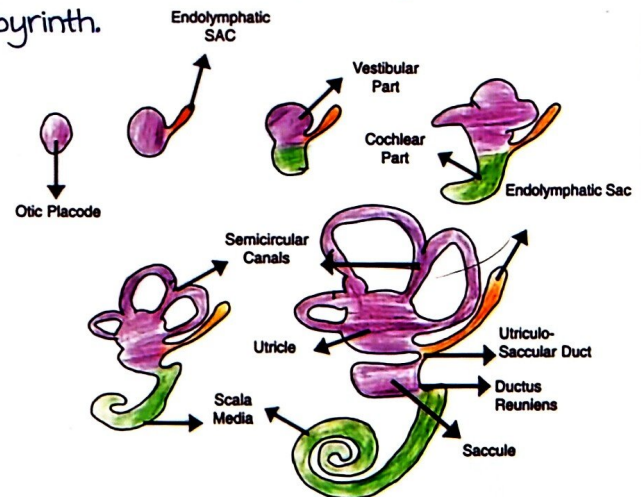
Embryology :

Development :

- Specialized area of **surface ectoderm** overlying the hind brain.
- Stages : Otic placode → Otic pit → Otic vesicle → Outpouchings from otic vesicle → membranous labyrinth.

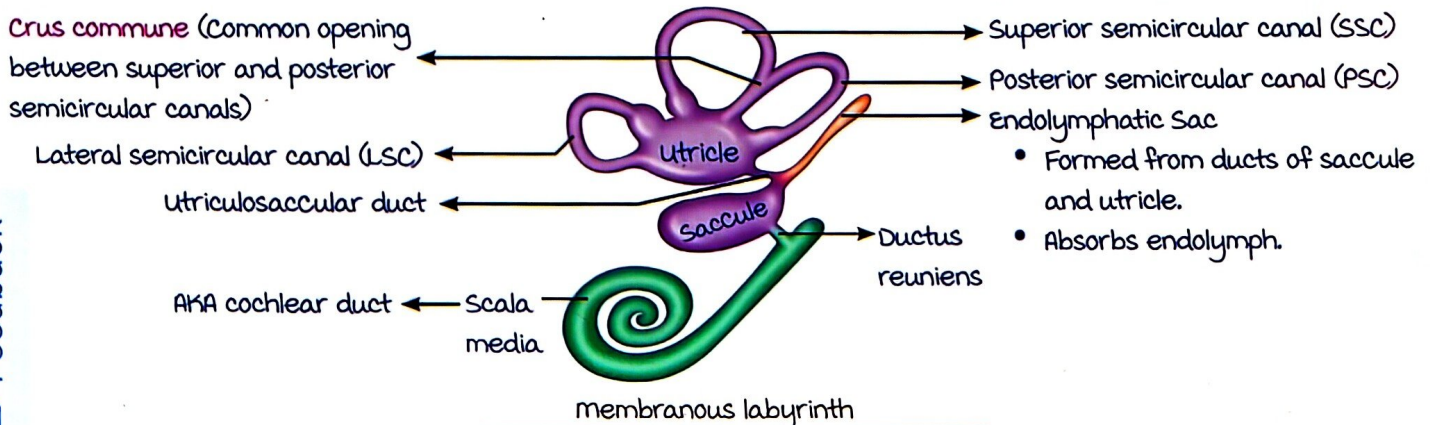


Development of membranous labyrinth



Parts :

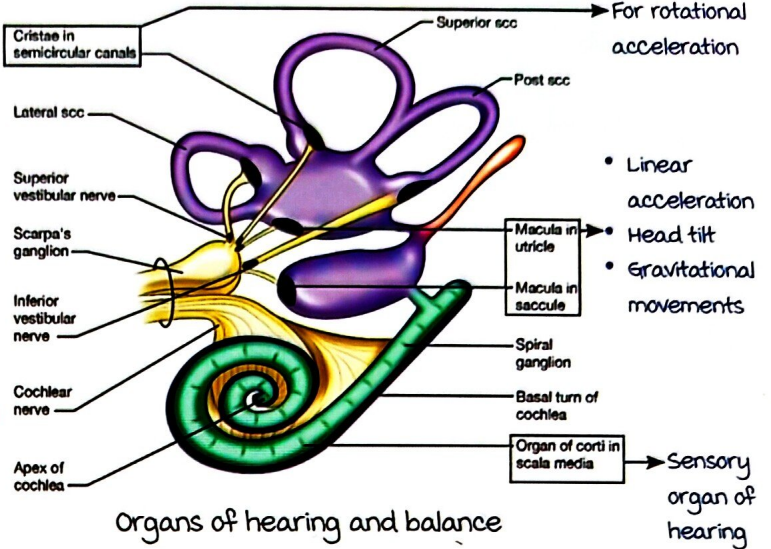
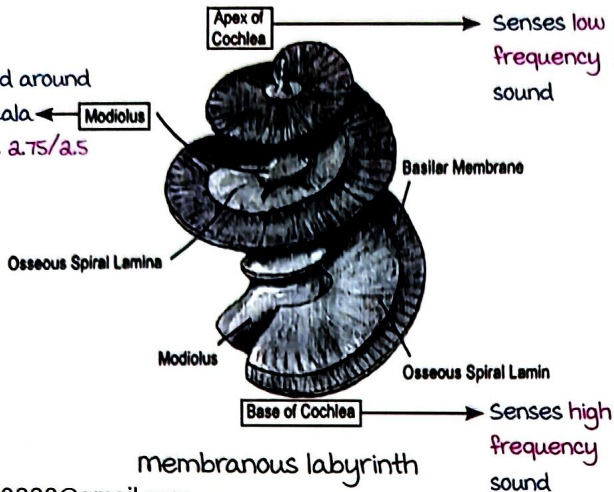
The 3 semicircular canals open into utricle through 5 openings.



membranous labyrinth



Bony pyramid around which the Scala media takes 2.75/2.5 turns.



membranous labyrinth

Organs of hearing and balance

- Linear acceleration
- Head tilt
- Gravitational movements

Sensory organ of hearing

khanirfan0392@gmail.com

Note :

- All of membranous labyrinth except organ of Corti help with balance.
- Hearing loss + Imbalance → Indicative of inner ear pathology.

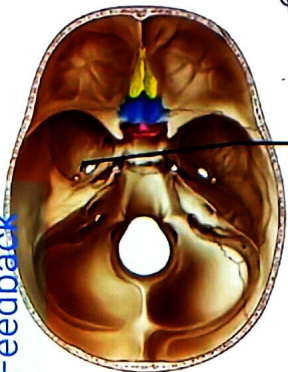
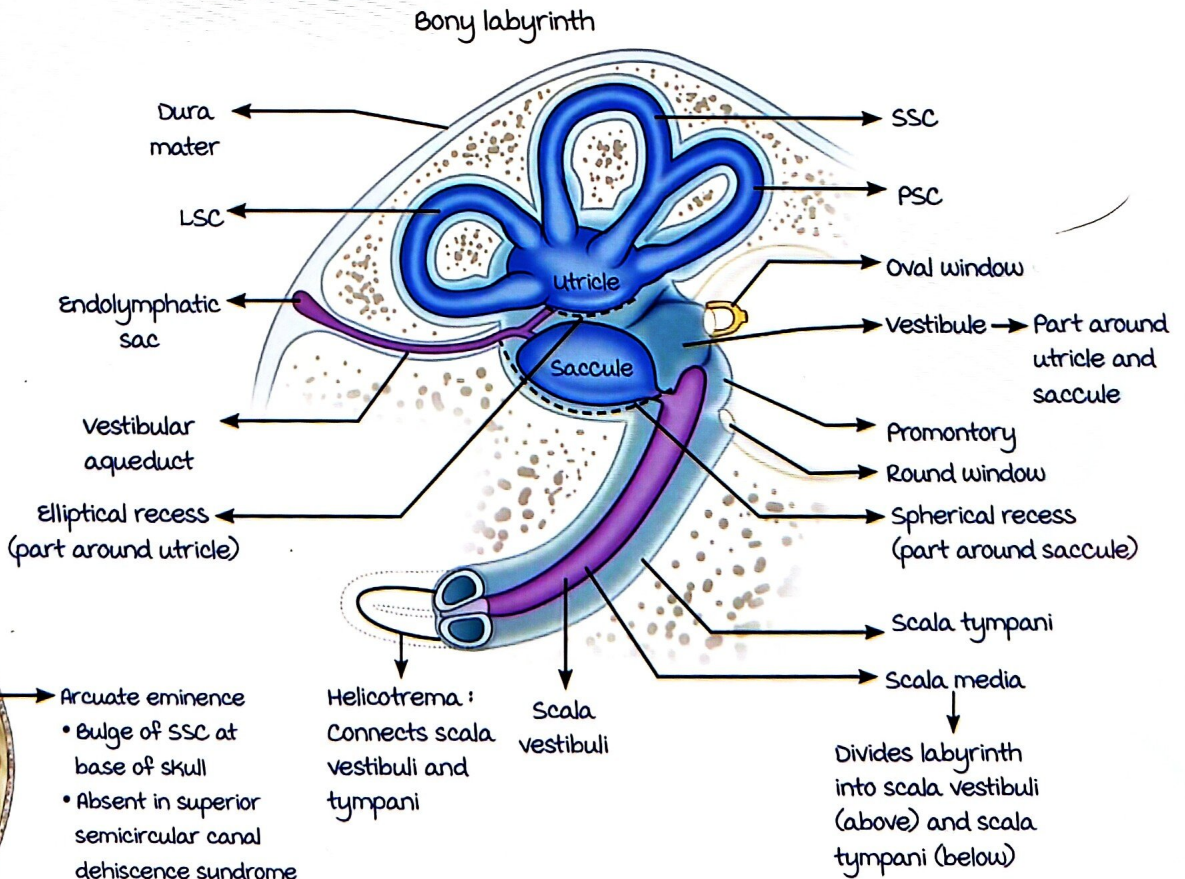
Bony Labyrinth

00:18:18

Embryology :

- Development : From mesoderm by **enchondral ossification**.
- Enchondral ossification : Cartilage develops into bone.

Parts :



Arcuate eminence
• Bulge of SSC at base of skull
• Absent in superior semicircular canal dehiscence syndrome

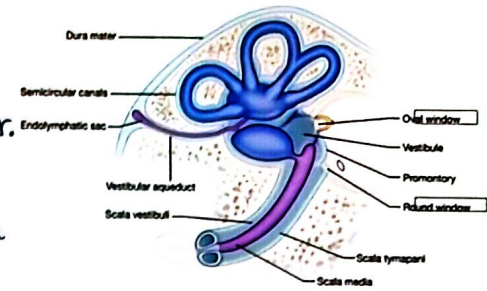
Base of skull

Feedback

Connections between middle ear and inner ear

Oval Window :

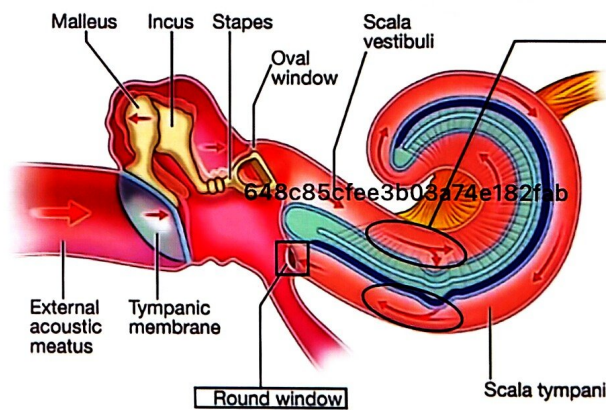
- Covered by footplate of stapes.
- Connects middle ear to the **vestibule** of inner ear.
- Function : Transmits sound to **scala vestibuli** (movement of stapes causes vibration in scala vestibuli).
- Abnormalities :
 - a. **Otosclerosis** : D/t fixation of footplate of stapes.
 - b. **Vertigo** : Hypermobility of footplate of stapes → Stimulates maculae in utricle and saccule.
 - c. **Meniere's disease** (Endolymphatic hydrops) : ↑ in endolymph → Dilatation of utricle and saccule → Close proximity with footplate → Stimulated → Imbalance/vertigo.



Oval window and round window

Round Window :

- Covered by secondary tympanic membrane.
- Connects the middle ear to **scala tympani**.
- Function : Transmission of sound.
- Clinical Significance :
 1. **Cochlear Implant** (Artificial sense of hearing) :
 - Electrodes passed through : **Round window**.
 - Replaces : Organ of Corti.
 - Placed in : **Scala tympani**.
 - Stimulates : **Cochlear nerve** (8th nerve).
 2. **Drugs** (Gentamicin, steroids) are injected through the round window.



Sound transmission : Inner ear

Note :

- Oval window is not preferred for passing of electrodes in cochlear implant.
- Electrodes passed through oval window → Stimulate vestibule → Utricle and saccule stimulated → Vertigo.

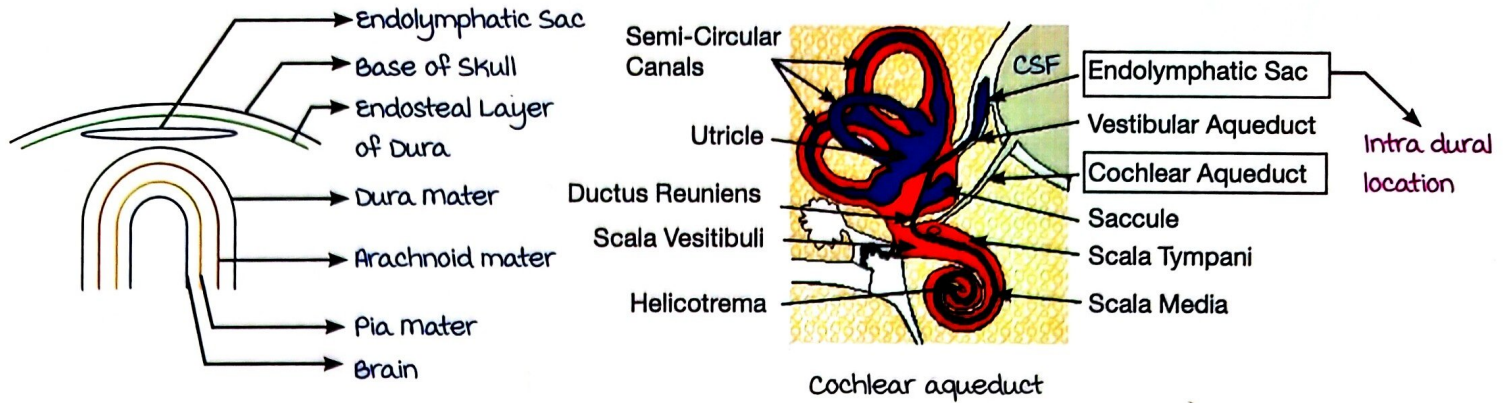
Connections between inner ear and brain

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1. Internal acoustic meatus (passage for 7th, 8th cranial nerves).
2. Cochlear aqueduct (Transfer CSF into inner ear for perilymph production).



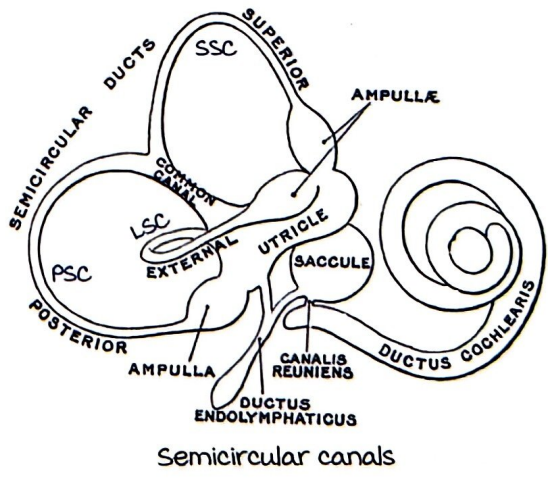
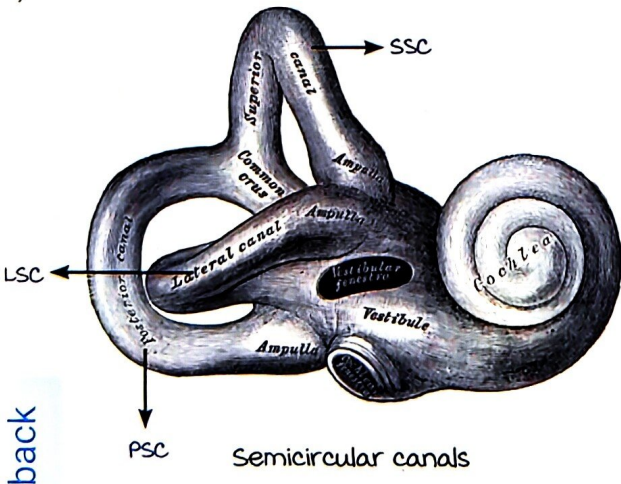
Clinical significance :

- Spread of infection from brain to inner ear or vice versa (meningitis ↔ Labyrinthitis).
- Patient with meningitis → Recovered → Do **BERA before discharge** (Brainstem Evoked Response Audiometry).
- (Child > adult since hearing loss in a child needs early intervention and hearing rehabilitation).

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Identification of semicircular canals :

- Lateral semicircular canal goes in lateral direction.
- Crus commune: Can be used to identify posterior and superior semicircular canals.
- Posterior semicircular canal can be identified with the lateral semicircular canal bisecting it.



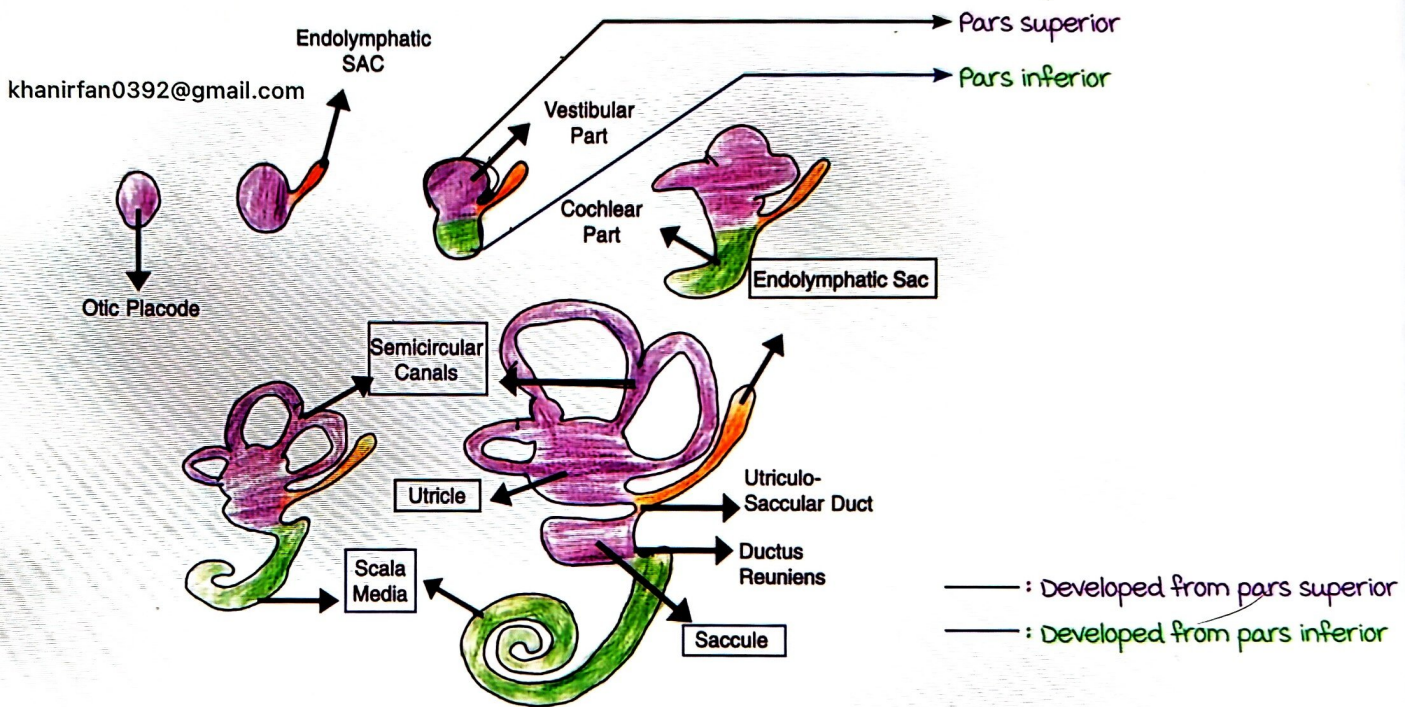
Feedback

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Congenital abnormalities

Inner ear development : Fully complete at 20 weeks (5 months) of intrauterine life.

Derivatives of pars superior	Derivatives of pars inferior
Superior semicircular canal	Sacculle
Lateral semicircular canal	Scala media
Posterior semicircular canal	-
Utricle	-
Endolymphatic sac	-



Defects :

most congenital anomalies occur due to defect in pars inferior as pars inferior develops later.

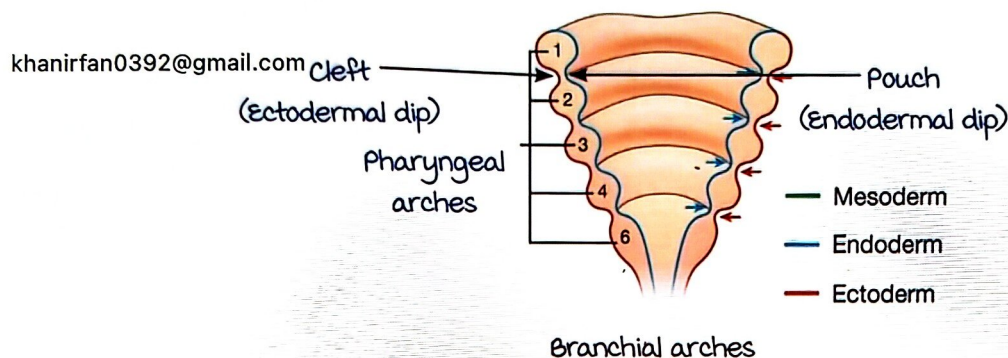
Defect	Features
Scheibe aplasia	<ul style="list-style-type: none"> m/c congenital abnormality. Defect : Sacculle + Cochlea.
mondini aplasia	Cochlea has only 1.5 turns.
Alexander aplasia	Defect in basal turn of cochlea.
Michel aplasia	<ul style="list-style-type: none"> Complete absence of bony and membranous labyrinth. Absolute C/I for cochlear transplant.

CLINICAL EMBRYOLOGY OF EXTERNAL AND MIDDLE EAR

External & Middle Ear development

00:00:30

- Developing fetus : Has 6 branchial arches of which 5th arch disappears.
- Each arch : Has ectodermal (Outside) & endodermal (Inside) lining.



Hillocks of His :

- 6 mesodermal thickenings : Around 1st cleft.
- Fuse to form : Pinna (Single elastic cartilage).
 - 1st arch → Development of tragus.
 - 2nd arch → Rest of the pinna.



Hillocks of His



Small part of ascending crux of helix (1st arch derivative)

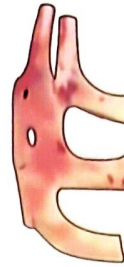
Developmental disorders :

Preauricular sinus	Accessory auricle/tags	microtia	Anotia
<ul style="list-style-type: none"> • Fusion defect of the auricular tubercle. • m/c site: Root of helix. 		<ul style="list-style-type: none"> • malformed/ underdeveloped pinna 	Absent pinna
<p>Preauricular sinus</p>	<p>Accessory auricle/tags</p>	<p>microtia</p>	<p>Anotia</p>

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management of microtia/anotia :**Pinna reconstruction :**

- AKA otoplasty/pinnoplasty.
- Graft used : **Costal (Rib) cartilage**.
- Not done **before 6 years**.
 - Opposite pinna reach adult size by 6 years → Reference for symmetrical reconstruction.
 - Costal cartilage attain full development, only by 6 yrs.



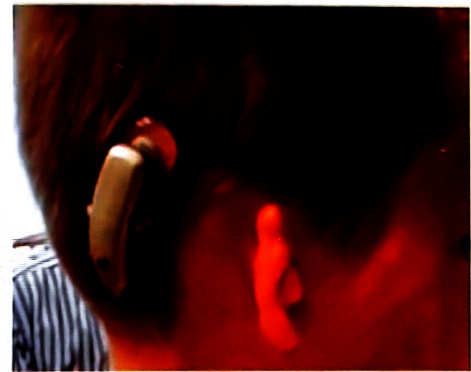
Pinna reconstruction

Pinna cartilage framework

khanirfan0392@gmail.com

Bone anchored hearing aid (BAHA) :

- Indication : Patients who cannot afford surgery but hearing needs to be saved.
- Use : Congenital or external abnormalities of pinna or external auditory canal (EAC).



BAHA

EXTERNAL AUDITORY CANAL (EAC)

- medial extension of the 1st pharyngeal cleft.
- At birth : **Only cartilaginous part present**.
- External acoustic meatus : Develops from 1st arch.

Collaural fistula :

- Connection b/w neck and external auditory canal.
- 1st cleft developmental abnormality.
- Fistula : 2 openings
 - External opening : B/w angle of mandible & sternocleidomastoid.
 - Internal opening : Floor of external auditory canal.
 - Closely related to the **facial nerve**.
- management :



Collaural fistula

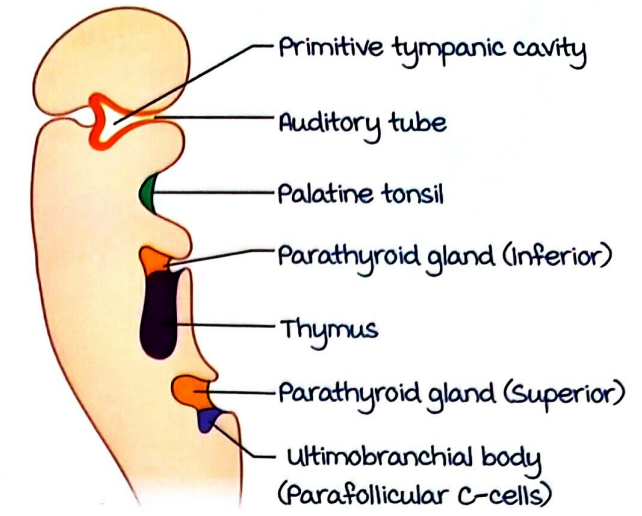
Repeated infection : excision of fistula tract (may injure facial nerve).



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Tympanic membrane :

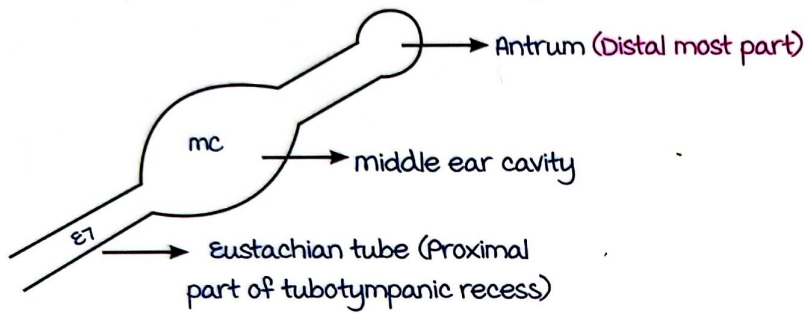
- Develops from **all 3 layers** : (mesoderm, ectoderm, endoderm).
 - Cleft grows inward and pouch grows outward.
- middle layer : Fibrous in nature.



Tympanic membrane development

MIDDLE EAR CLEFT

- **Eustachian tube + middle ear cavity + mastoid antrum.**
- Develops from 1st pouch (Aka tubotympanic recess).



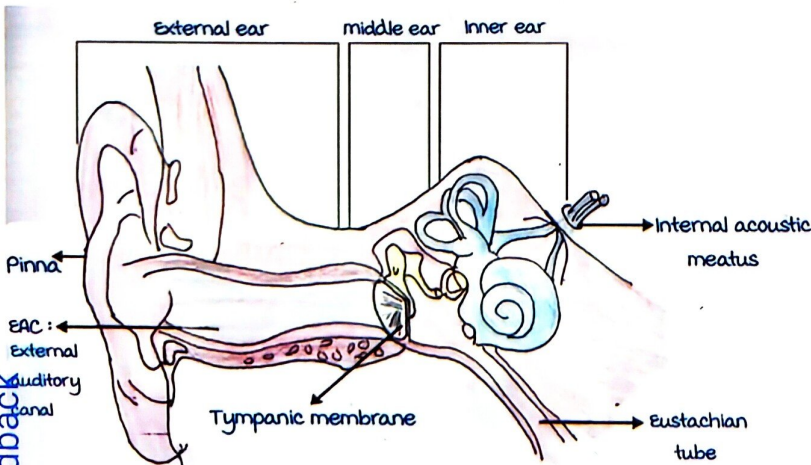
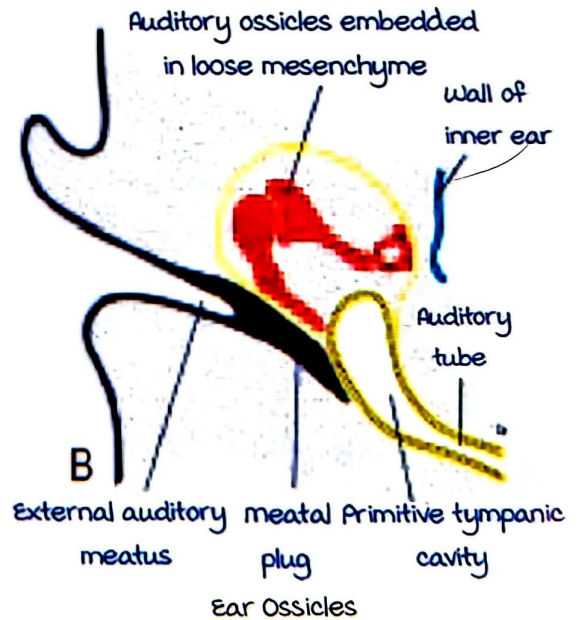
- mastoid antrum : Largest air cell.

Ear Ossicles

- Development : Lateral extension of 1st pouch → Entrapment of mesoderm of 1st and 2nd arch.
 - 1st arch → malleus & incus.
 - 2nd arch → Stapes suprastructure.

Note:

- Stapes footplate present at the junction of inner ear & middle ear.
- Develops from otic capsule (AKA bony labyrinth).



Structure of ear

Feedback

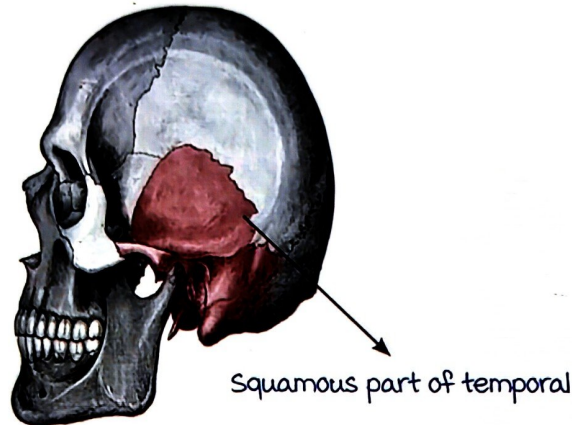
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Mastoid

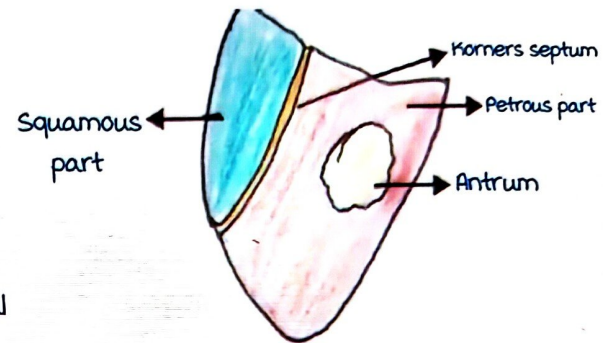
Development :

- Lateral/superficial : Squamous part of temporal.
- medial/deep : Petrous part of temporal.

Both parts meet to form petrosquamosal suture (usually disappears).



Development of mastoid



Korner's septum

Korner's septum :

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- **Persistent petrosquamosal suture.**
- **Clinical significance :** Incomplete clearance of disease.

Note :

- medial most wall of antrum : Around 1.5 cm deep from skin surface.

mastoid antrum :

- **Largest** air cell.
- Present in deep/petrous part of temporal bone.
- medial to medialmost wall of mastoid antrum : Posterior cranial fossa.
- Indication for stoppage of surgery during clearance.
- Further drilling → Lead to injury of posterior cranial fossa.
- mastoid tip → Develops around **2 years**.

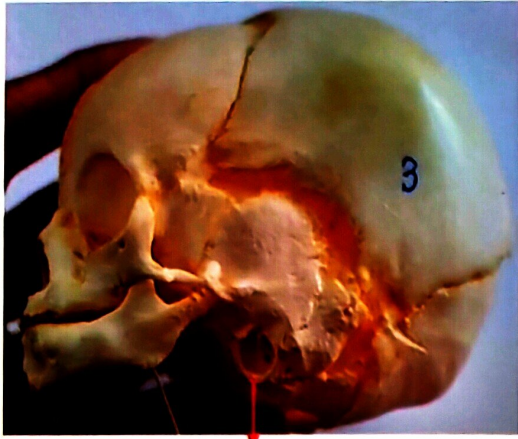
Note :

- Organ of corti → Completely developed by **20 weeks/5 months**.
- middle ear and inner ear completely developed by birth.

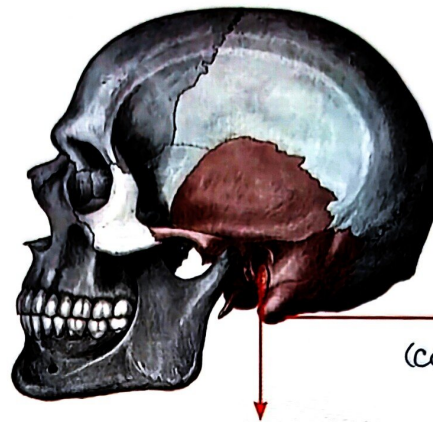


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Comparison between fetal skull and adult skull :



Tympanic membrane seen directly
(After removal of cartilaginous part
of pinna)



Bony external auditory canal is seen

Clinical significance :

Post auricular abscess in child <2 yrs.

- Incision given : Superior and horizontal (To avoid damage to facial nerve exiting via stylomastoid foramen).



Post auricular abscess

khanirfan0392@gmail.com

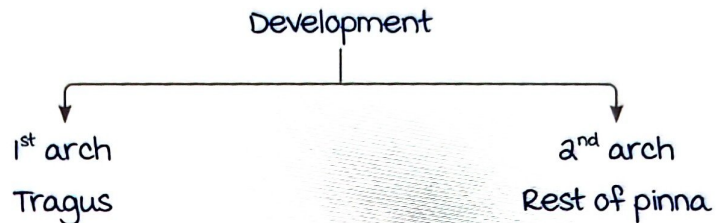
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CLINICAL ANATOMY AND DISEASES OF PINNA

Anatomy and Applied Aspects

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Embryology :



khanirfan0392@gmail.com

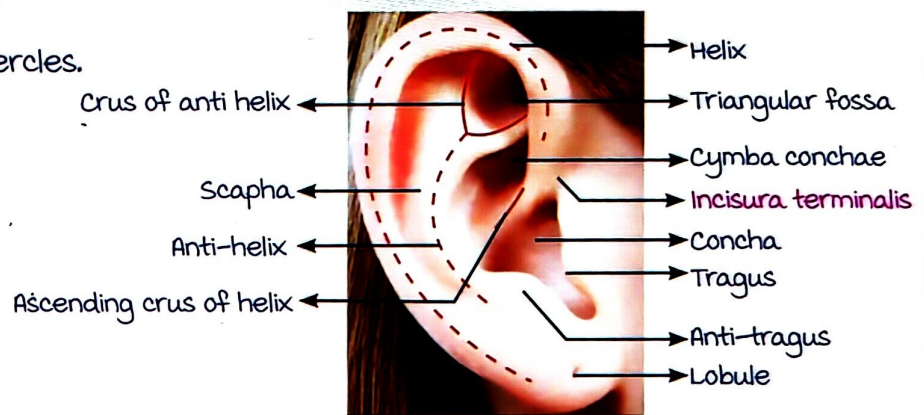
Preauricular Sinus :

- Fusion abnormality of auricular tubercles.
- **m/c** site : Root of helix.

Helix : Outer rim of pinna.

Lobule :

- Lower part of pinna.
 - Site for piercing (safest).
- Only fat, no cartilage.



Note : If piercing done on cartilage → Infection → Perichondritis.

Antihelix :

- Has two crura.
- Area between the 2 crura : Triangular fossa.

Scapha : Area b/w helix and anti-helix.

Anti-tragus : Projection on anti-helix opposite the tragus.

Concha :

- Bowl-like area behind External Acoustic meatus (EAM) and in front of anti-helix.
- Ascending crura of helix divides it into 2 parts.
- Superior part : **Cymba conchae**.

Incisura terminalis :

- Gap between tragus and helix.
- Devoid of cartilage.
- Significance : Site of intercartilaginous **incision** in endaural approach.

Called **Lempert's incision**

↓
widens the area for approach

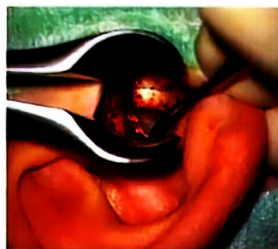
Note :

- Pinna is a single elastic cartilage.
- Skin on **lateral** side of pinna : Tightly adherent to perichondrium (D/t lack of subcutaneous tissue).
- In post-aural approach : Give incision behind pinna → Retract pinna forward → Reach EAM.

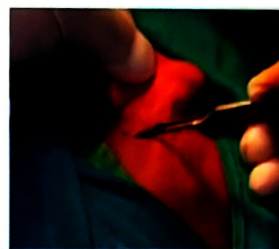
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Incisura terminalis



Endaural approach

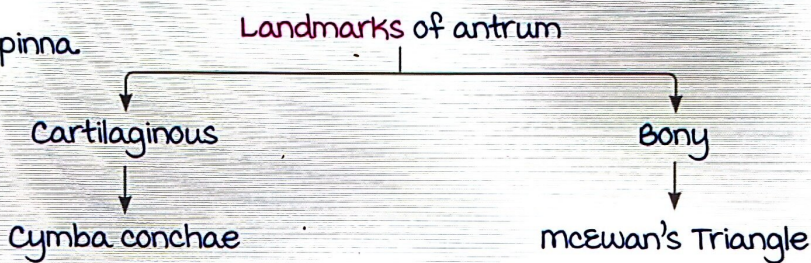


Post-aural approach

khanirfan0392@gmail.com

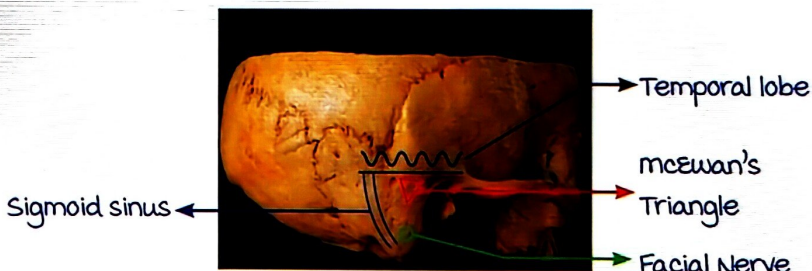
mastoid antrum :

Location : medial to the pinna.



Significance of mcEwan's triangle :

- Site for **drilling** during Sx
- Avoids injury to sigmoid sinus, base of skull, and facial nerve.



mcEwan's triangle and important structures around mastoid

Darwin's tubercle :

- Atavistic feature.
- **Site** : Junction of upper 1/3rd & lower 2/3rd of helix
- Significance : used as identification mark.



Darwin's tubercle

Diseases of the Pinna

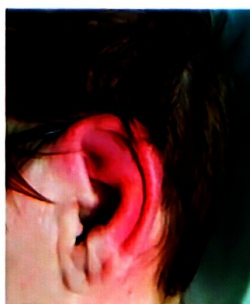
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Perichondritis :

Infection and inflammation of perichondrium.

Appearance :

- Cartilage : Congested. (Infection spreads to the whole cartilage).
- Lobule : Spared.



Perichondritis

Feedback

----- Active space ----- Cause : Injury (Piercing) → Infection.

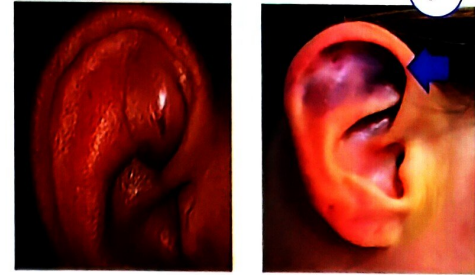
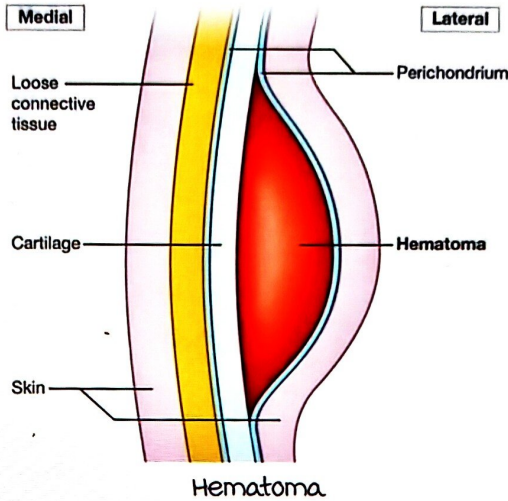
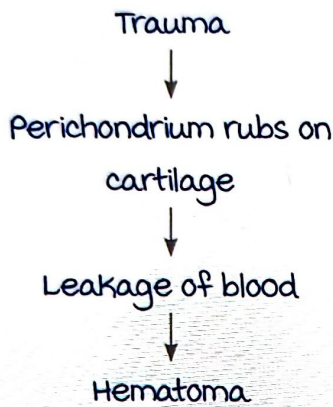
m/c Organism : Pseudomonas.

Treatment : Oral Ciprofloxacin.

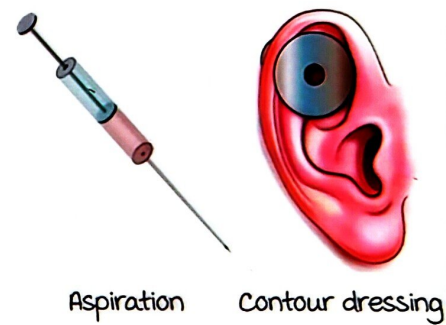
Hematoma :

Collection of blood b/w perichondrium & cartilage.

Etiopathogenesis :



Hematoma



Aspiration

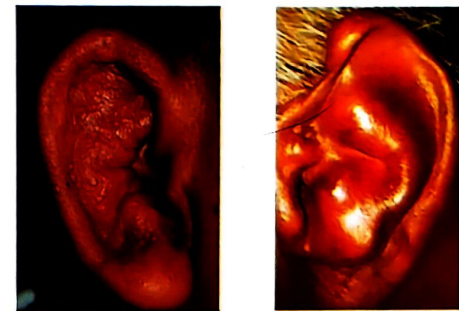
Contour dressing

management :

1. Aspiration
2. Contour dressing :
 - To prevent recurrence.
 - Buttons stitched on both sides of pinna.

Cauliflower ear :

- Complication of repeated hematoma.
- Irregular shape.
- Also known as Boxer's ear/Wrestler's ear/Pugilistic ear.
- Pathogenesis : Cartilage proliferation/ chondroblast invasion in hematoma.
- Treatment : Plastic surgery (For cosmesis).



Cauliflower ear/Boxer's ear

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Avulsion of Pinna :

Cause : Trauma

management :

- Wash → Debride → Reattach (microvascular anastomosis).
- If skin has detached
 - ↓
 - Debridement is needed
 - ↓
 - Reattach cartilage to the amputated stump
 - ↓
 - Bury cartilage into retroauricular skin pocket (Survival of graft is ↑)



Avulsion of Pinna