

• Layers of tympanic membrane —

- outer epithelial layer
- Middle fibrous layer
- Inner mucosal layer -

Nerve supply of external ear

1. Pinna —

greater auricular nerve (C_{2,3})
 . supplies medial surface
 . posterior part of lateral surface

Lesser occipital (C₂) —

upper part of medial surface

Auriculotemporal nv. —

tragus, crus of helix

Auricular branch of vagus —

Concha

2. External auditory canal —

Anterior wall and roof —

Auriculotemporal

posterior wall and floor —

Auricular branch of vagus

posterior wall —

Cr. nv. - VII.

3. Tympanic membrane —

- Anterior half of lateral surface —
 Auriculotemporal

- posterior half of lateral surface —
 Auricular branch of vagus

- Medial surface -
tympanic branch of cr. nr - IX

Middle Ear

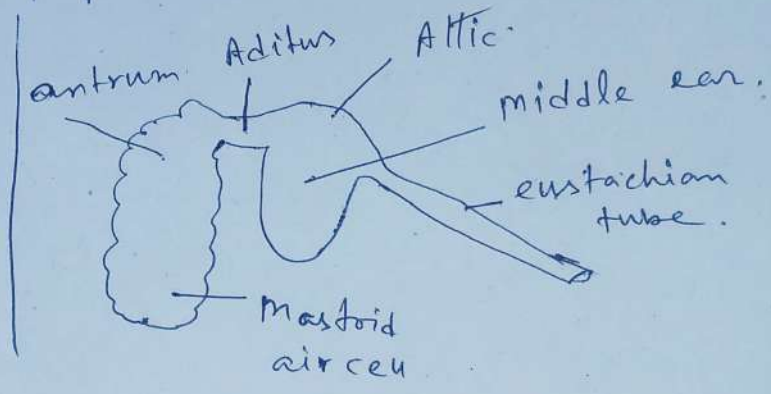
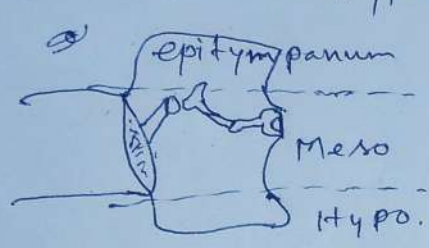
It consist of eustachian tube, aditus antrum, and mastoid air cell, and it is lined by mucus membrane and filled with air.

divisions -

Mesotympanum -

Epitympanum - (attic

Hypotympanum -



Middle ear consist of 6 sided box -

Roof - formed by a thin plate of bone called tegmen tympani

separates the tympanic cavity from middle cranial fossa.

floor - it separates tympanic cavity from jugular bulb

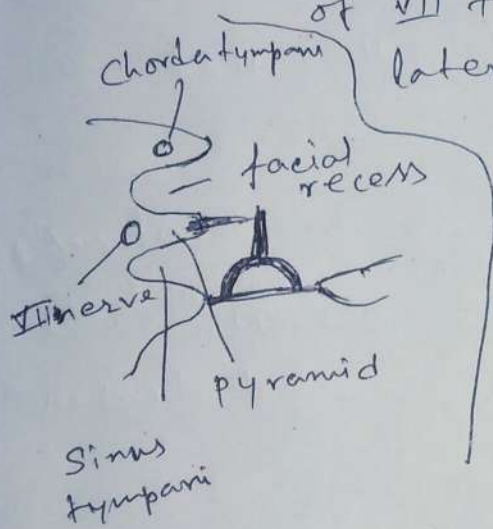
Anterior wall -

- Separates the cavity from internal carotid artery.
- It has two opening lower one is for eustachian tube, upper one is for tensor tympani muscle.

posterior wall -

- It is close to the mastoid air cells.
- Presenting \bar{c} a bony projection called ~~pyr~~ pyramid; stapedius muscle attached here.
- Aditus is an opening through which attic communicates \bar{c} antrum.
- Facial nerve runs through just behind the pyramid
- It is bounded medially by vertical part of VIIth nerve.

laterally by chorda tympani.



Medial wall -

- formed by labyrinth.
- A bulge is there ~~call~~ due to basal coil of cochlea called promontory
- oval window - fixed \bar{c} foot plate of stapes.

• round window - fenestra cochleae which is covered by secondary tympanic membrane.

• above oval window there is a canal for facial nerve

• Hook like projection called processus cochleariformis.

• ~~Levator~~ ^{tensor} tympani take turn here to get attached to the neck of malleus.

• medial to the pyramid, a deep ~~process~~ recess is called sinus tympani

Lateral wall -

• tympanic membrane.

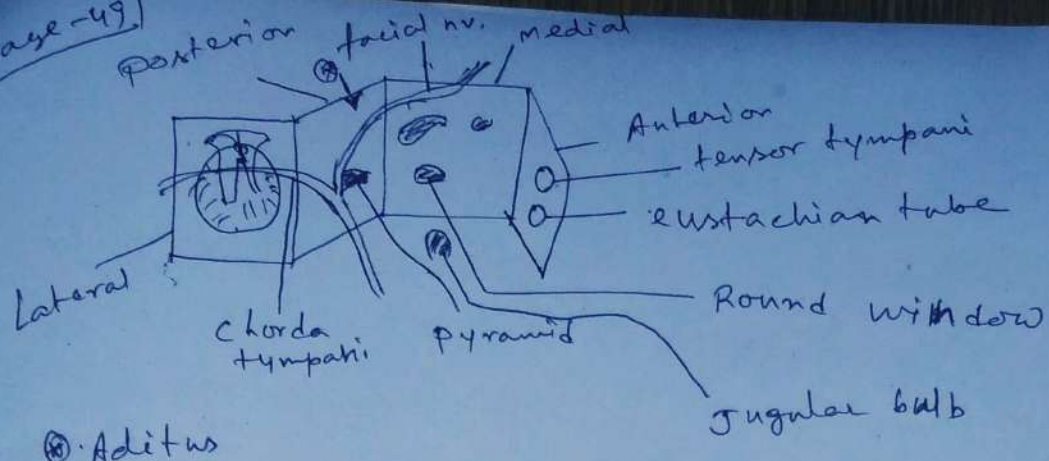
• bony outer attic wall called ~~sc~~ 'scutum'.

• Tympanic membrane is semitransparent and forms a 'window' to the middle ear. through normal tympanic membrane.

• long process of incus

• incudostapedial joint

• round window



Mastoid antrum →

Large air containing space in the upper part of mastoid.

Communicates through aditus & attic roof is formed by tegmen antri which communicates & tegmen tympani

Aditus, Antrum →

. Aditus is the opening through which attic communicates & antrum.

. facial nv crosses just below the aditus.

Mastoid and its air cell system →

Depending on development of air cell three types of mastoids are there

1. Well-pneumatized or cellular
2. Diploetic
3. Sclerotic or acellular -

Ossicles of the middle ear ⇒

1. Malleus — head, neck, handle (manubrium)
a lateral, an anterior process

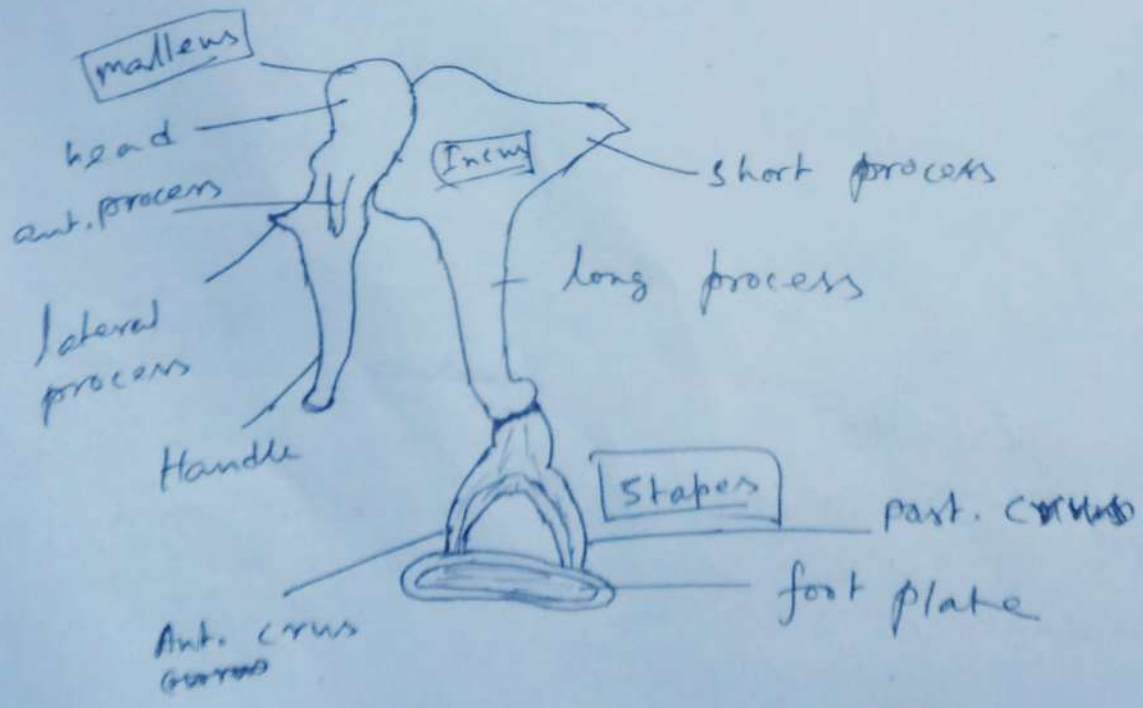
- head and neck lies in the attic
- manubrium is embedded in fibrous layer of tympanic membrane
- lateral process attached to anterior and posterior malleolar folds.

2. Incus — body and a short process

both lies in the attic
long process attached to the head of stapes.

3. Stapes —

head, neck, anterior and posterior ~~crura~~ crura and a foot plate
foot plate attached to oval window by annular ligament.



Intra tympanic muscle →

tensor tympani — to the neck of malleus and tenses the tympanic membrane

stapedius — attached to the neck of stapes preventing ~~the~~ noise trauma to the inner ear.

Chorda tympani nv →

A branch of facial nv. which enters the middle ear through posterior canaliculus and runs to the medial surface of TM. above the attachment of tensor tympani.

It carries taste from ant. 2/3rd of tongue and supplies secretomotor fibers to submaxillary and sublingual salivary gland.

lining of the middle ear →

mucous membrane of nasopharynx is continuous with middle ear, aditus, antrum, and mastoid air cells.

Blood supply →

1. Anterior tympanic branch of maxillary artery — tympanic membrane
2. stylomastoid branch of posterior auricular artery — middle ear and mastoid air cell

- 3. petrosal branch of middle meningeal artery
- 4. superior tympanic branch of middle meningeal artery
- 5. Tympanic branch of internal carotid
- 6. Branch of ~~an~~ artery of pterygoid canal.

Internal ear

Labyrinth or Internal ear maintain the hearing and balance.

two parts

- ① Bony labyrinth
- ② Membranous labyrinth.

- ⊛ Membranous part is filled with endolymph
- ⊛⊛ space between membranous part and ~~bony~~ bony part is filled with perilymph.

Bony labyrinth ⇒

It consist of 3 parts

- (i) vestibule
- (ii) Semicircular canals
- (iii) Cochlea.