Lesson Plan

- Introduction
- External Ear

PINNA
- Lateral Surface
- Applied aspects
- Nerve supply
- Arterial supply
- Venous & Lymphatic drainage

EXTERNAL AUDITOTY MEATUS
- Introduction
- Cartilaginous part
- Bony part
- Arterial supply
- Nerve supply

TYMPANIC MEMBRANE
- Introduction
- Layers
- Parts
- Surfaces
- Arterial supply
- Venous drainage
- Nerve supply
Introduction

• Ear is the organ for special sensation of hearing.

• It also plays important role in maintaining the equilibrium of the body.

PARTS - 3
• External Ear.
• Middle Ear.
• Internal Ear.
External Ear

- It consists of:
  - Pinna (Auricle).
  - External auditory meatus (External acoustic meatus).
Pinna (Auricle)

- It collects and directs the sound waves to the external auditory meatus.
- It is made up of elastic cartilage covered with skin.
- Its cartilage is continuous with cartilage of External auditory meatus.

Surfaces - 2
- Lateral (Facial surface)
- Medial (Cranial surface)
Lateral Surface of Pinna

- It presents the following features:

**Concha-**
- A large depression that leads into external auditory meatus.

**Helix-**
- Peripheral rim of pinna.
- It has two limbs: anterior and posterior.
- Its anterior limb ends as crus of helix.

**Antihelix-**
- A prominent ridge in front and parallel to the posterior part of helix.
Lateral Surface of Pinna contd...

Tragus-
• A triangular flap of cartilage in front of concha.

Antitragus-
• A small elevation opposite to the tragus.

Cymba Concha-
• It is a small area of concha above the crus of helix.
• It corresponds to Suprameatal triangle (Mc Ewen’s Triangle).

Lobule-
• It hangs below the antitragus.
• It is made up of fibrofatty tissue covered with skin.
• There is no cartilage in the lobule.

Incisura Terminalis-
• It is a gap between tragus and crus of helix.
• There is no cartilage in this gap.
Applied Aspects

Pinna as a graft-
• Pinna is used as a graft material in several plastic surgeries.

Surgery of external auditory meatus-
• For this, incision is given in the region of incisura terminalis.
Nerve Supply

Motor supply-
• Facial nerve.

Sensory supply-
Lateral Surface-
Lower 1/3rd—Great Auricular Nerve (C2, C3)/
Upper 2/3rd—Auriculotemporal nerve.
Concha—by Auricular branch of Vagus (Alderman’s Nerve/Arnold’s Nerve)

Medial Surface-
Lower 1/3rd—Great Auricular Nerve (C2, C3)
Upper 2/3rd—Lesser Occipital Nerve.
Eminentia Concha—by Auricular branch of Vagus (Alderman’s nerve/Arnold’s Nerve)
Arterial Supply

**Posterior Auricular Artery**-
- It is a branch of external carotid artery.

**It supplies:**
- Medial surface &
- Posterior part of lateral surface

**Superficial Temporal Artery**-
- It is one of the terminal branches of External Carotid Artery.

**It supplies:**
- Anterior part of lateral surface.
- Upper part of cranial surface is also supplied by few branches of Occipital artery.
Venous & Lymphatic Drainage

Venous Drainage-
• Superficial Temporal vein &
• External Jugular Vein.

Lymphatic Drainage-
• Preauricular lymph nodes.
• Postauricular (Mastoid) lymph nodes.
• Upper group of deep cervical lymph nodes.
External Auditory Meatus
[External Acoustic Meatus]
Introduction

• External auditory meatus is an osseocartilaginous canal.

Extent-
• From bottom of concha to the tympanic membrane.

Length- ~ 24 mm (along its posterior wall)
• Its anterior wall and floor are longer than the posterior wall and roof.

Parts- 2
• Outer Cartilaginous part
• Inner Bony part
Cartilaginous Part

• It is outer 1/3rd part.

**Length** - ~ 8mm

**Direction** - Upwards, Backwards and Medially (UBM)

• Its cartilage is the continuation of the cartilage of auricle.

• Its covering skin contains hair and ceruminous (pilosebaceous) glands.

• These glands secrete ear wax.
Bony Part

• It forms the inner 2/3rd.

Length - ~ 16 mm
Direction - Downwards, Forwards and Medially (DFM)

• This part presents a narrowing called isthmus, about 20 mm deep to concha.
• This part is not fully developed in newborn and is represented by a ring of bone.
• Its covering skin is continuous with the outer layer (cuticular layer) of the tympanic membrane.
• This skin is devoid of hair and ceruminous glands.
• Anterior wall presents a foramen called foramen of Huschke.
• This foramen is normally present up to the age of 4 years.
Arterial Supply

- Posterior Auricular Artery
- Deep Auricular Artery
- Anterior Auricular Artery
Nerve Supply

Auriculotemporal Nerve-
- Supplies:
  - Anterior wall
  - Roof

Auricular branch of Vagus-
- Supplies:
  - Posterior wall
  - Floor
Tympanic Membrane
[Ear Drum]
Introduction

• It is a thin semi-transparent membrane which forms the partition between external auditory meatus and middle ear.

Shape- oval shaped

• It is placed obliquely making an angle of ~55° with the floor of external auditory meatus.

• It faces downwards, forwards and laterally (DFL)
Layers

There are 3 layers in tympanic membrane (from lateral to medial):
1. Outer Cuticular layer
2. Middle Fibrous layer
3. Inner Mucosal layer

Outer Cuticular Layer-
It consists of stratified squamous epithelium.

Middle Fibrous Layer-
It encloses handle of Malleus

Inner Mucosal Layer-
It consists of low columnar epithelium.
2

• **Pars Tensa**
• **Pars Flaccida (Sharpnel’s Membrane)**

**Pars Tensa**-
• It is the **large part** of tympanic membrane.
• Its inner surface has attachment of handle of Malleus.
• Its periphery is thickened to form fibrocartilaginous rim.
• Fibrocartilaginous rim presents a notch above.
• From the notch, anterior and posterior malleal folds pass to get attachment to the lateral process of Malleus.

**Pars Flaccida (Sharpnel’s Membrane)**-
• It is the **small part** of tympanic membrane, triangular in shape.
• It is above the lateral process of malleus between anterior and posterior malleal folds.
Surfaces

2
• Lateral surface
• Medial surface

Lateral Surface-
• It is concave.
• It is directed downwards, forwards and laterally (DFL).

Medial Surface-
• It is convex.
• The point of maximum convexity is called ‘Umbo’.
• It has attachment of handle of Malleus up to the centre.
• Handle of Malleus is crossed medially by the Chorda Tympani Nerve.
• Chorda Tympani Nerve runs between the fibrous and mucosal layers at the junction of pars tensa and pars flaccida.
Arterial Supply

Lateral Surface-
Supplied by:

• Deep Auricular Artery.

Medial Surface-
Supplied by:

• Anterior Tympanic Artery
• Posterior Tympanic Artery
Venous Drainage

**Outer Surface**-
Drains into:
- External Jugular Vein.

**Inner Surface**-
Drains into:
- Transverse Sinus and
- Pterygoid Venous Plexus.
Nerve Supply

Lateral Surface-

Anterior ½-
• Auriculotemporal Nerve.

Posterior ½-
• Auricular branch of Vagus

Medial Surface-
• Tympanic branch of Glossopharyngeal Nerve
thank you