

EAR - III



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Lesson Plan

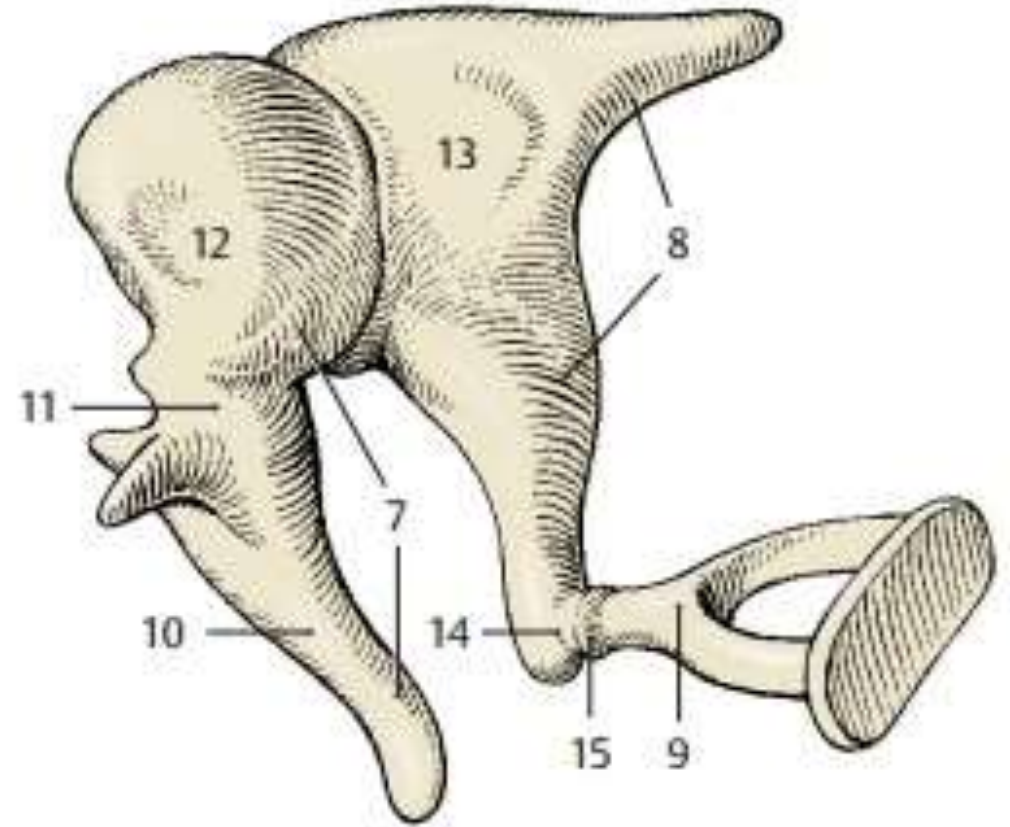
Ear Ossicles:

- Malleus
- Incus
- Stapes

Intratympanic muscles & their applied aspects

- Tensor Tympani
- Stapedius
- ❖ Arterial supply of middle ear
- ❖ Venous and Lymphatic drainage of middle ear
- ❖ Nerve supply of middle ear & its applied aspects
- ❖ Tympanic plexus

Ear Ossicles



C Auditory ossicles

Malleus

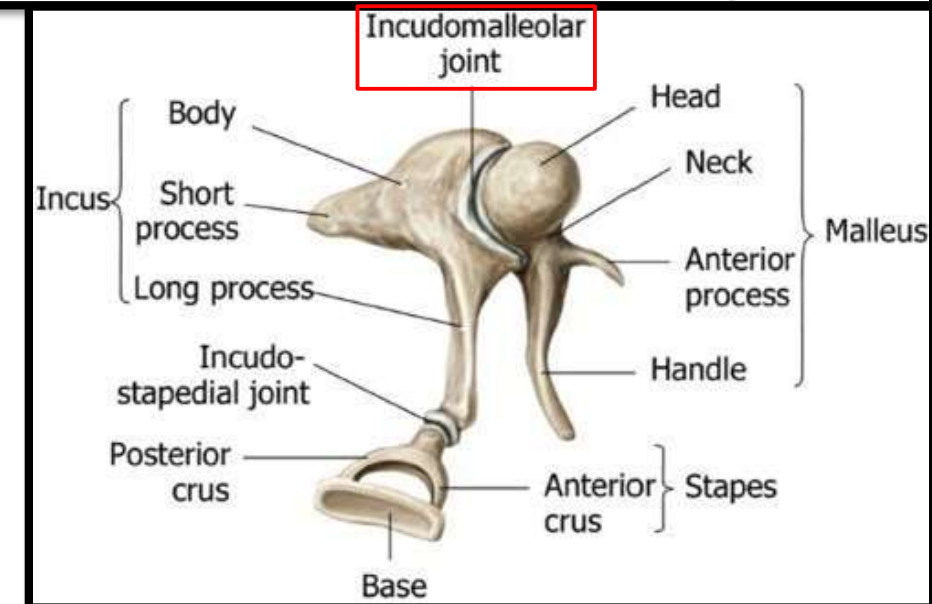
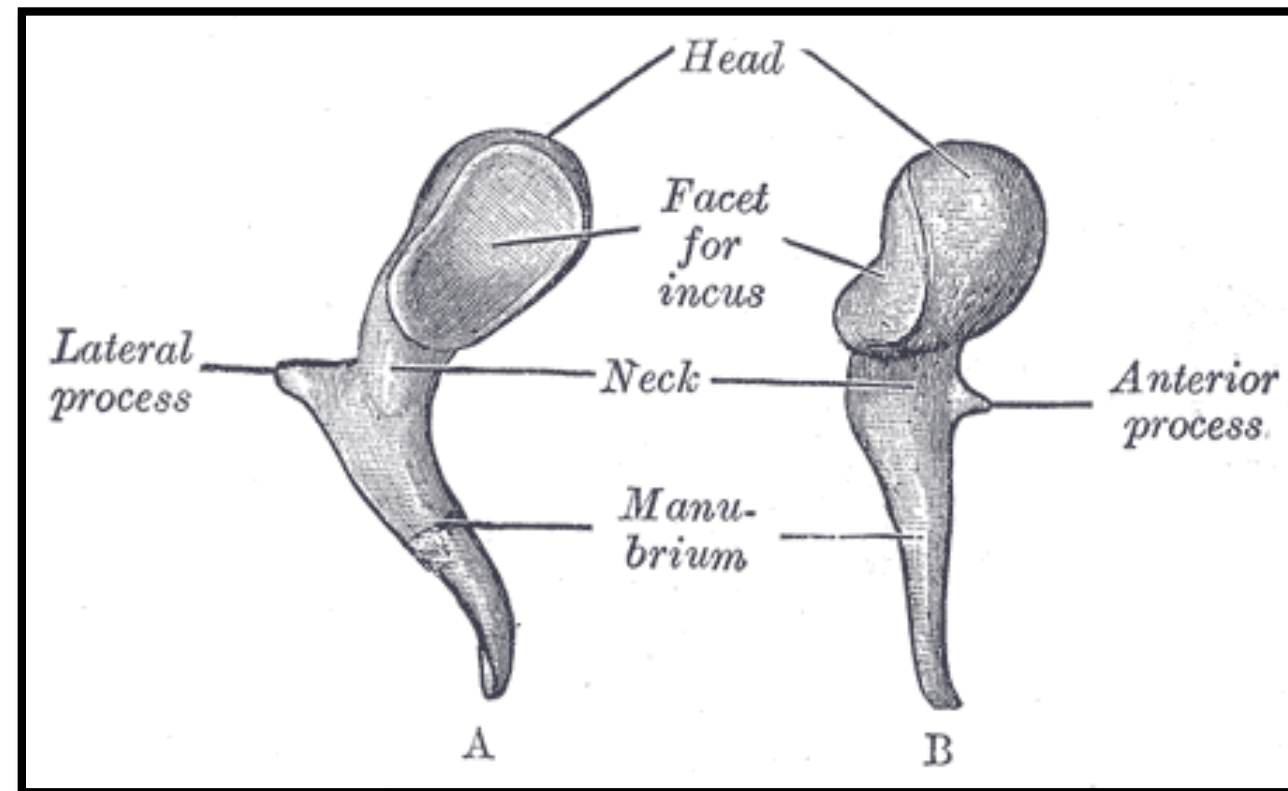
Shape- Hammer shaped.

Parts-

- Head
- Neck
- Handle (Manubrium/ Long process)
- Lateral process
- Anterior process

❖ Head articulates with body of Incus.

❖ **Incudo-malleolar** joint is **saddle** variety of synovial joint.



Incus

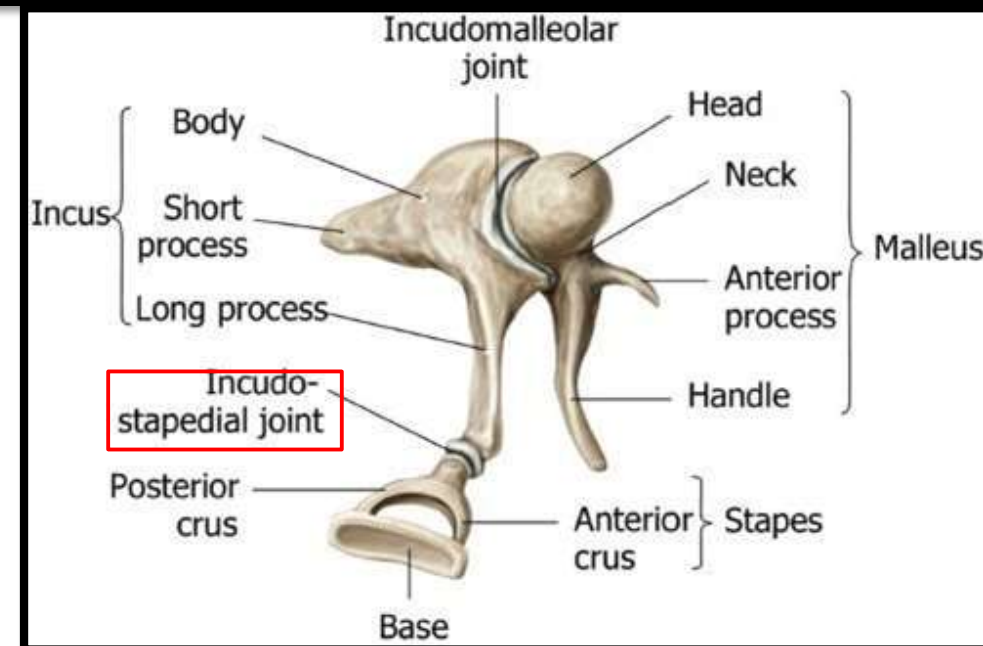
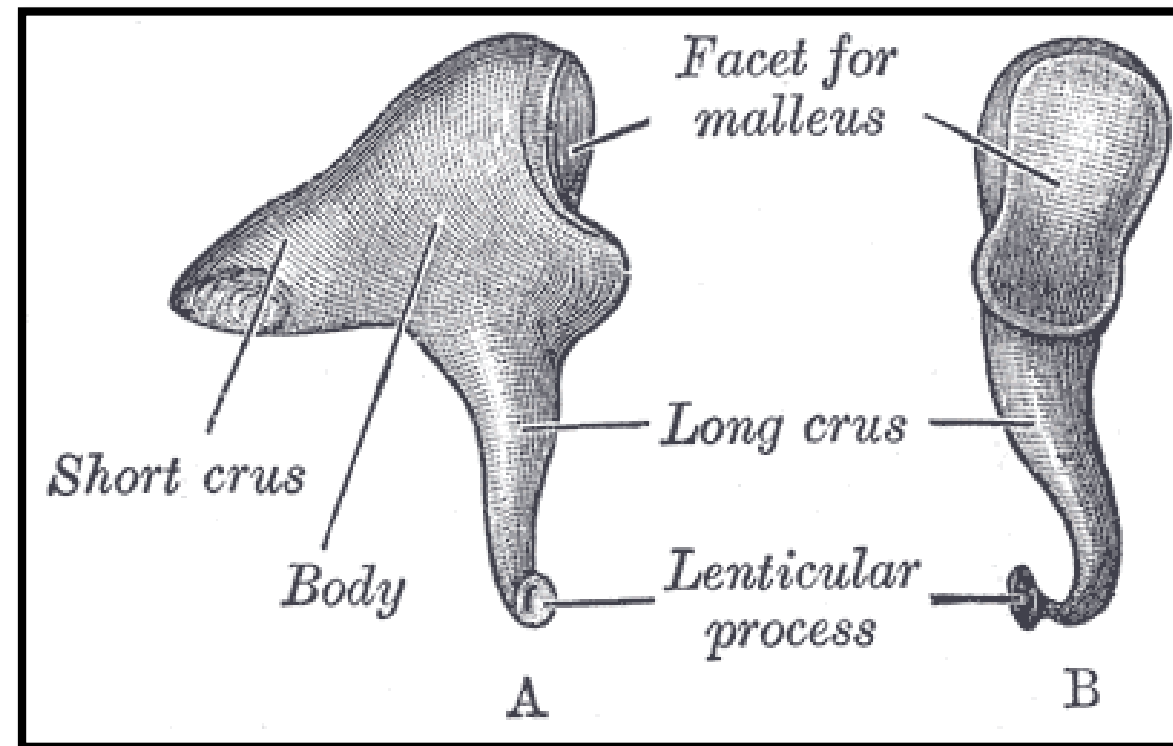
Shape- 'Anvil' shaped.

Parts-

- Body
- Short process
- Long process.

❖ Bulbous tip of long process articulates with head of Stapes.

❖ **Incudo-stapedial** joint is **Ball and Socket** variety of synovial joint.



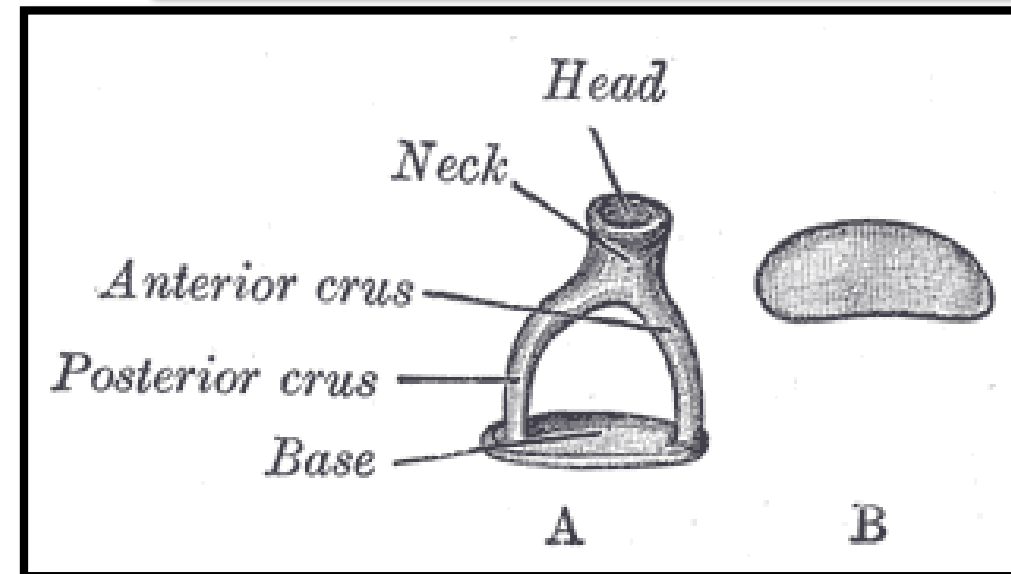
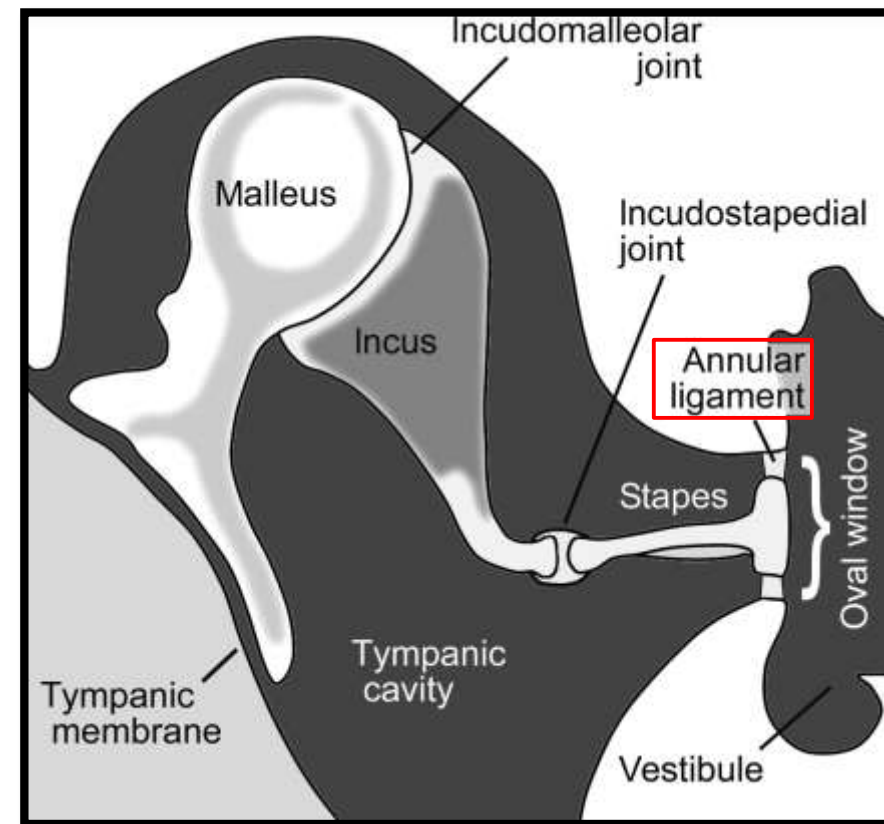
Stapes

Shape- 'Stirrup' shaped.

Parts-

- Head
- Neck
- Anterior crus
- Posterior crus
- Footplate (Base)

❖ Footplate is attached to the margin of oval window by annular ligament.



Intratympanic Muscles

- Tensor tympani
- Stapedius

Tensor Tympani- Origin-

- Cartilaginous part of auditory tube.
- Sulcus tubae.

Insertion-

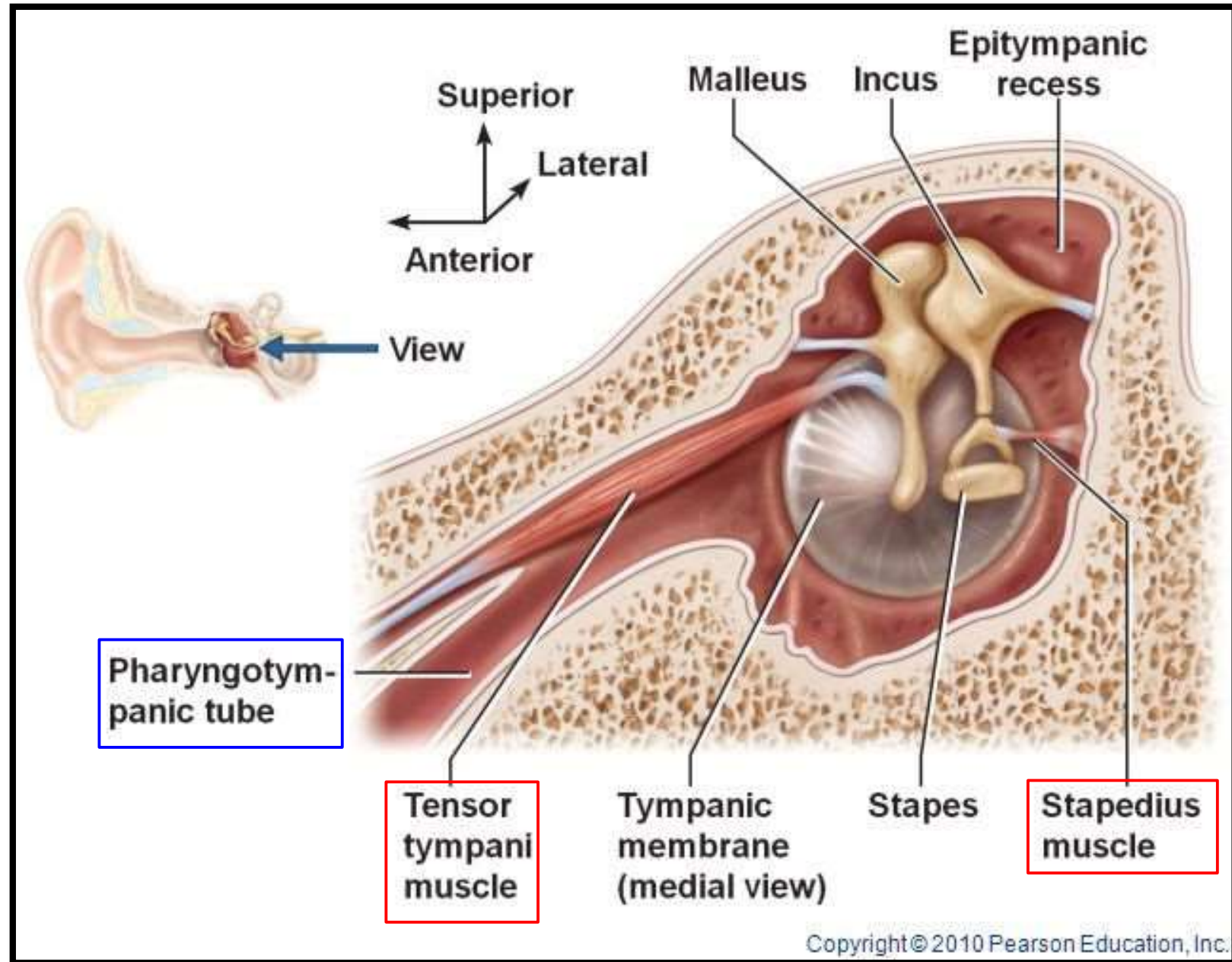
- Handle of Malleus.

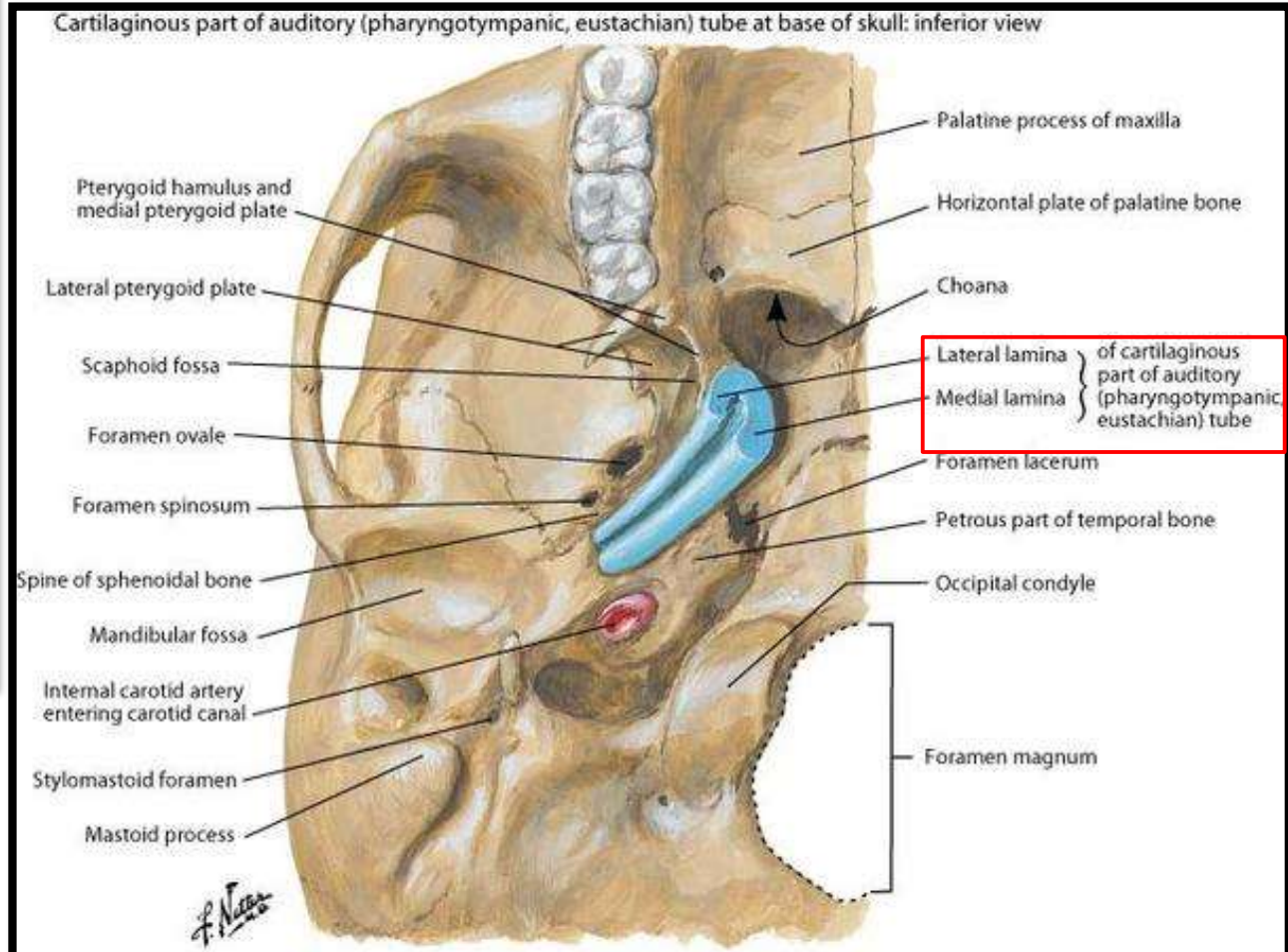
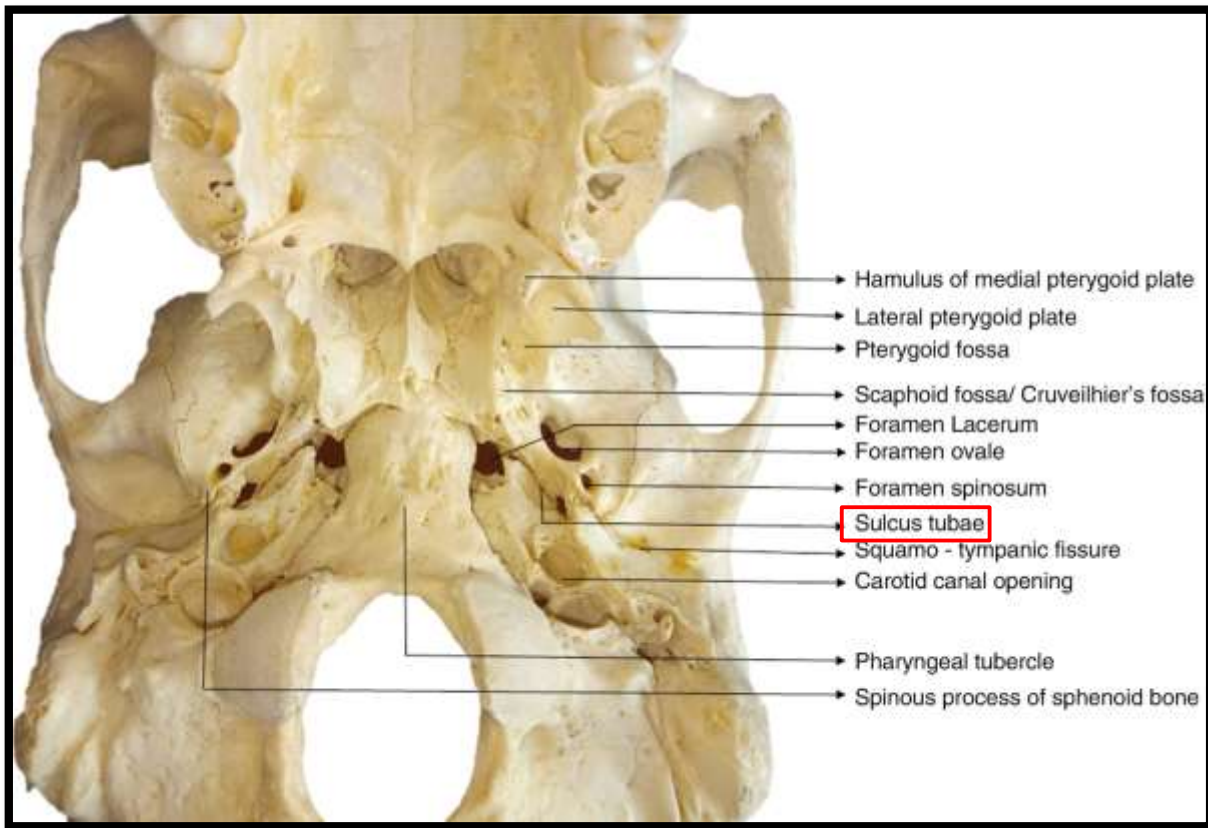
Nerve Supply-

- Nerve to Medial pterygoid.

Actions-

- Tenses the tympanic membrane.





Stapedius

Origin-

- Interior of **Pyramidal eminence**.

Insertion-

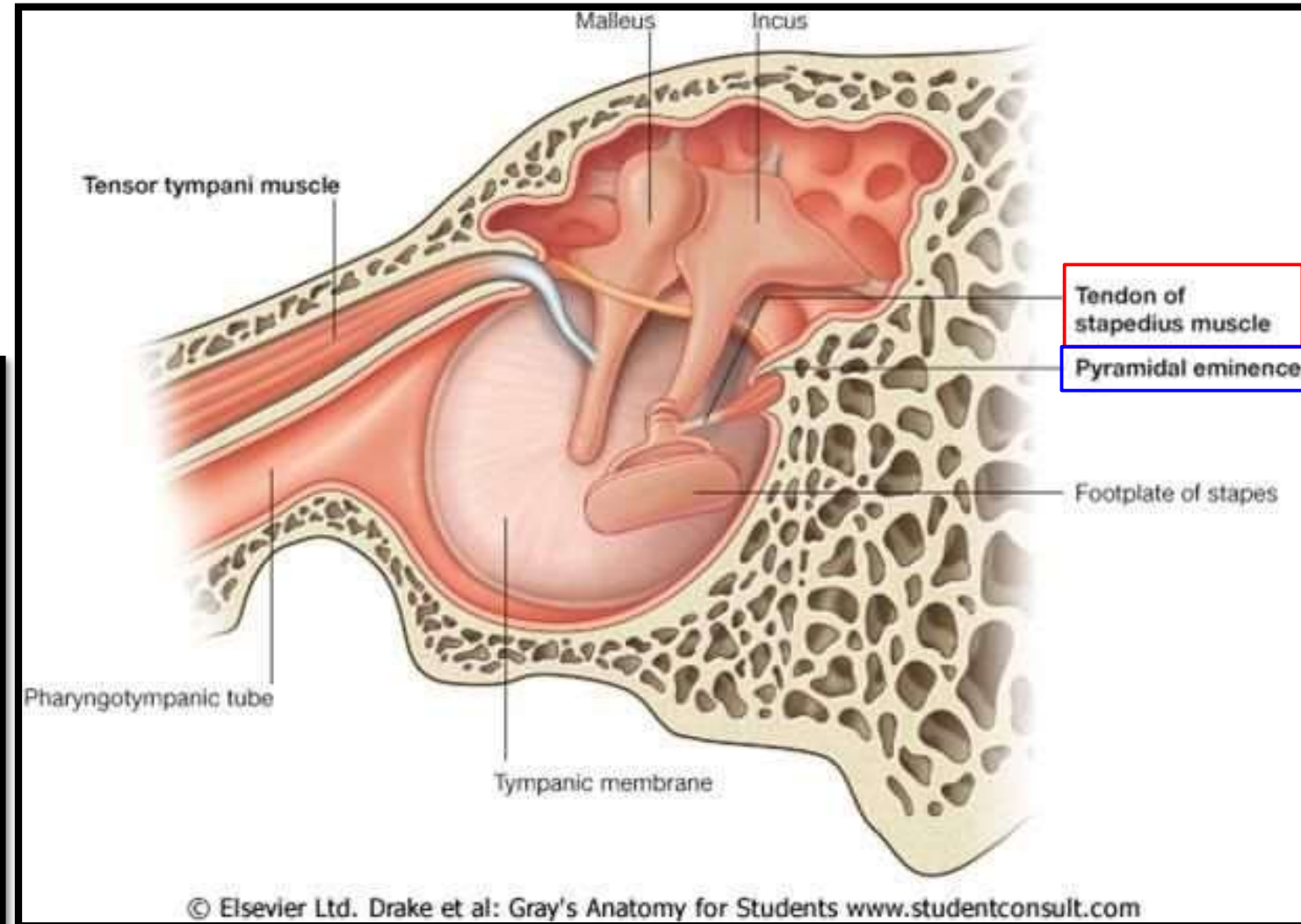
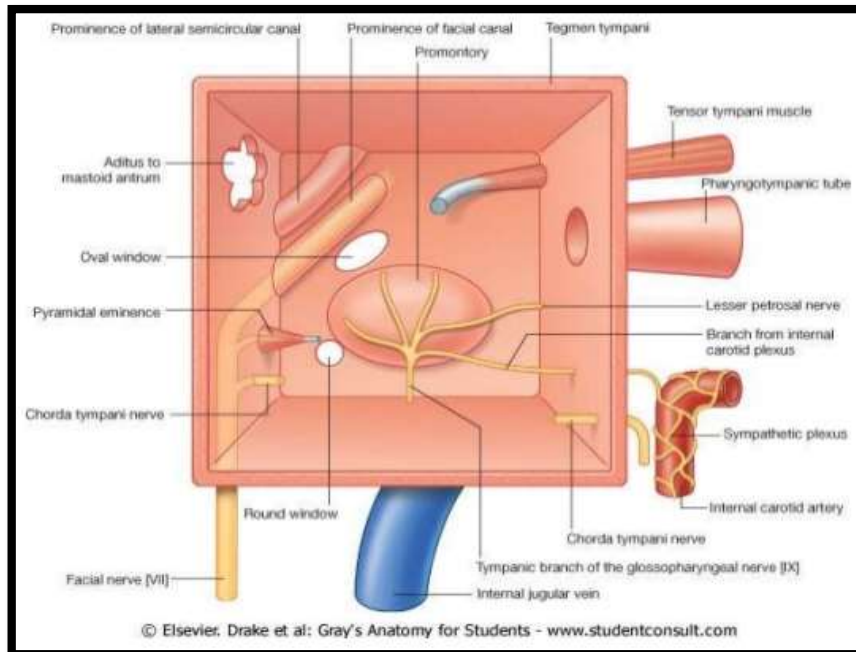
- **Neck of Stapes**.

Nerve Supply-

- **Facial nerve**

Actions-

- **Draws the stapes laterally.**



Applied Aspects

Hyperacusis-

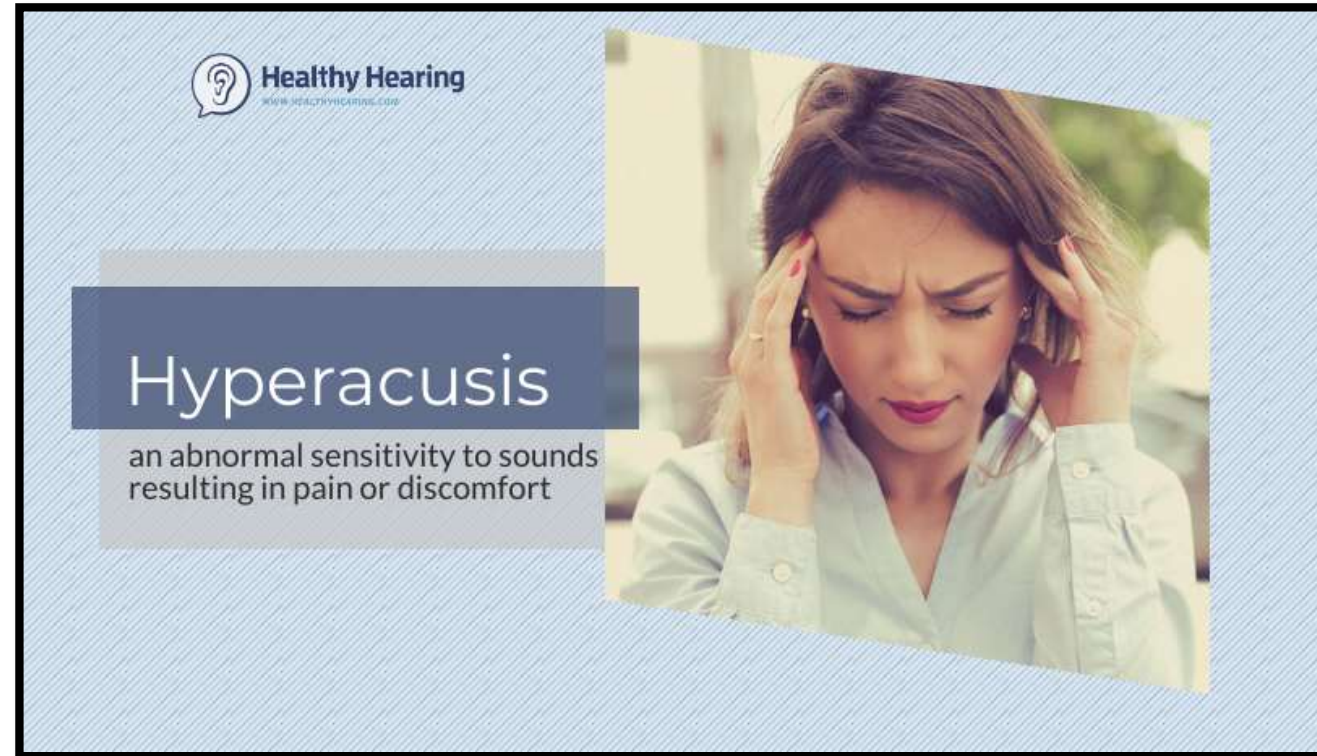
- Abnormally increased power of hearing.
- Whispering sound appears as noise.
- It occurs due to **paralysis of Stapedius** muscle.

Otosclerosis-

- Abnormal ossification of annular ligament.
- Impeded movements of Stapes.

Symptoms-

- Deafness.
- It is the most common cause of deafness in adults.



Arterial Supply of Middle Ear

6 arteries:

1. Anterior tympanic artery.
2. Stylomastoid artery.
3. Petrosal branch of middle meningeal artery.
4. Superior tympanic branch of middle meningeal artery.
5. Branch from artery of pterygoid canal.
6. Tympanic branch of Internal Carotid Artery.

Venous Drainage & Lymphatic Drainage of Middle Ear

Venous Drainage-

Into:

- Pterygoid venous plexus.
- Superior petrosal sinus.

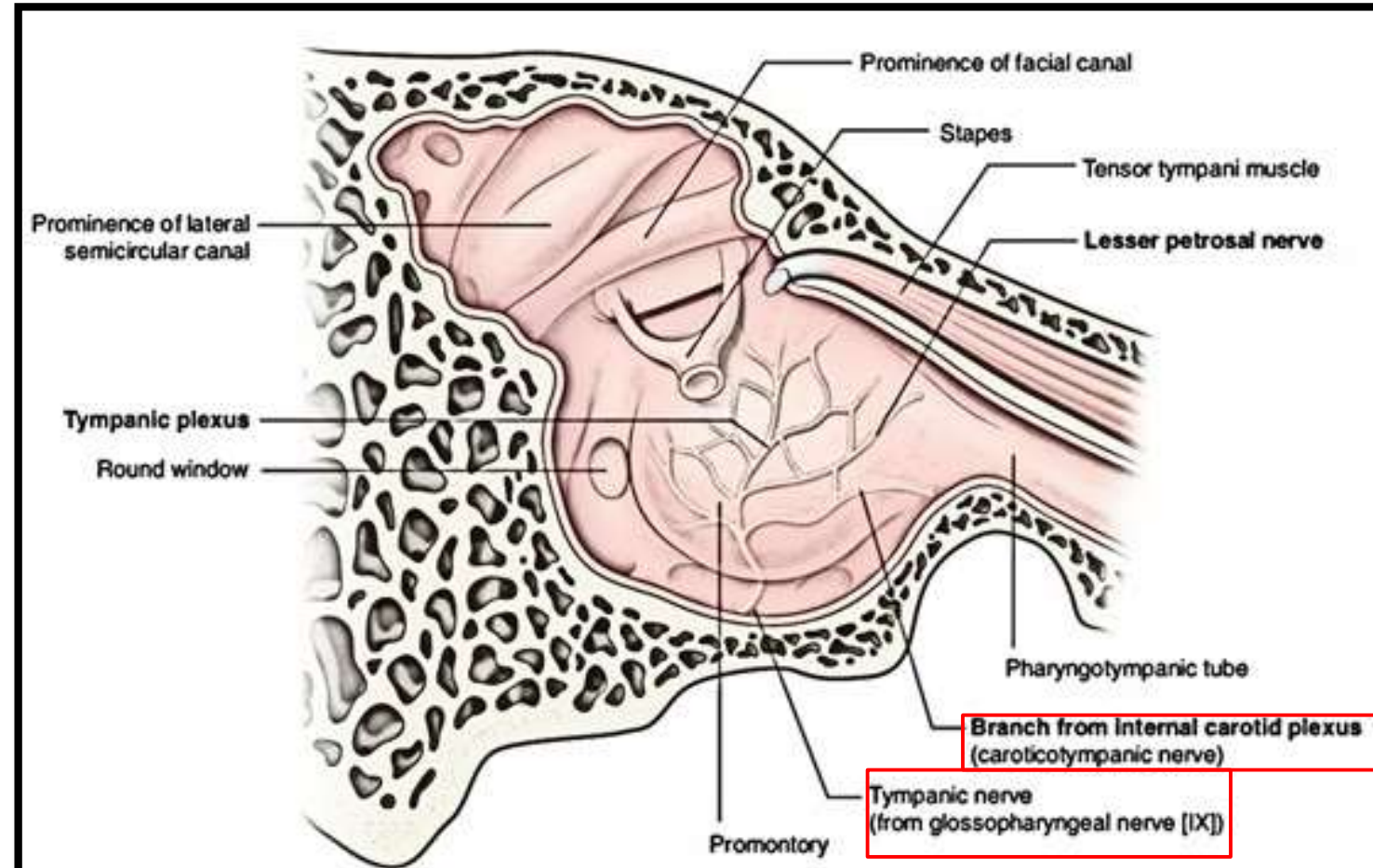
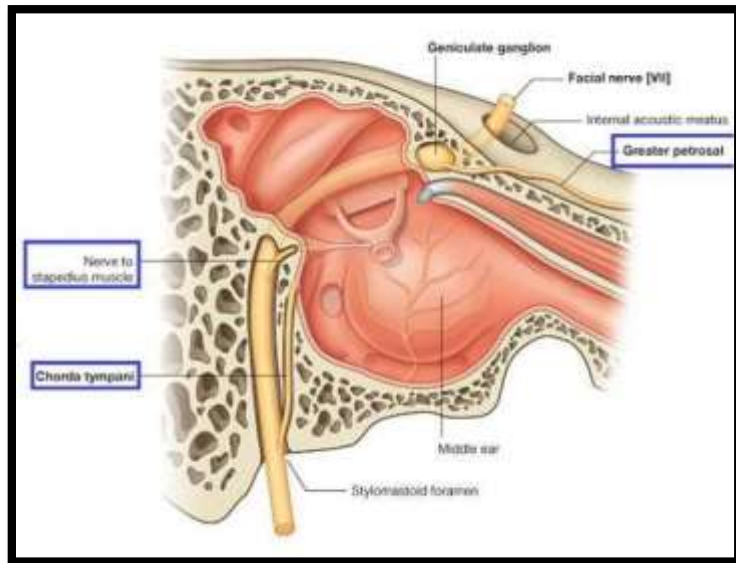
Lymphatic Drainage-

Into:

- Retropharyngeal lymph nodes.
- Parotid lymph nodes.
- Upper deep cervical lymph nodes.

Nerve Supply of Middle Ear

- Tympanic branch of Glossopharyngeal nerve.
- Superior Carotico-tympanic nerve.
- Inferior Carotico-tympanic nerve.
- Facial nerve [Motor to **Stapedius**]
- Mandibular nerve [Motor to **Tensor Tympani**].



Superior and Inferior Carotico-tympanic nerves-

- These nerves are **sympathetic nerves** and derived from sympathetic plexus around Internal Carotid Artery.
- These nerves are vasomotor.

Tympanic Plexus

❖ It is a nerve plexus.

Location-

❖ Promontory on medial wall of middle ear.

Contributing Nerves-

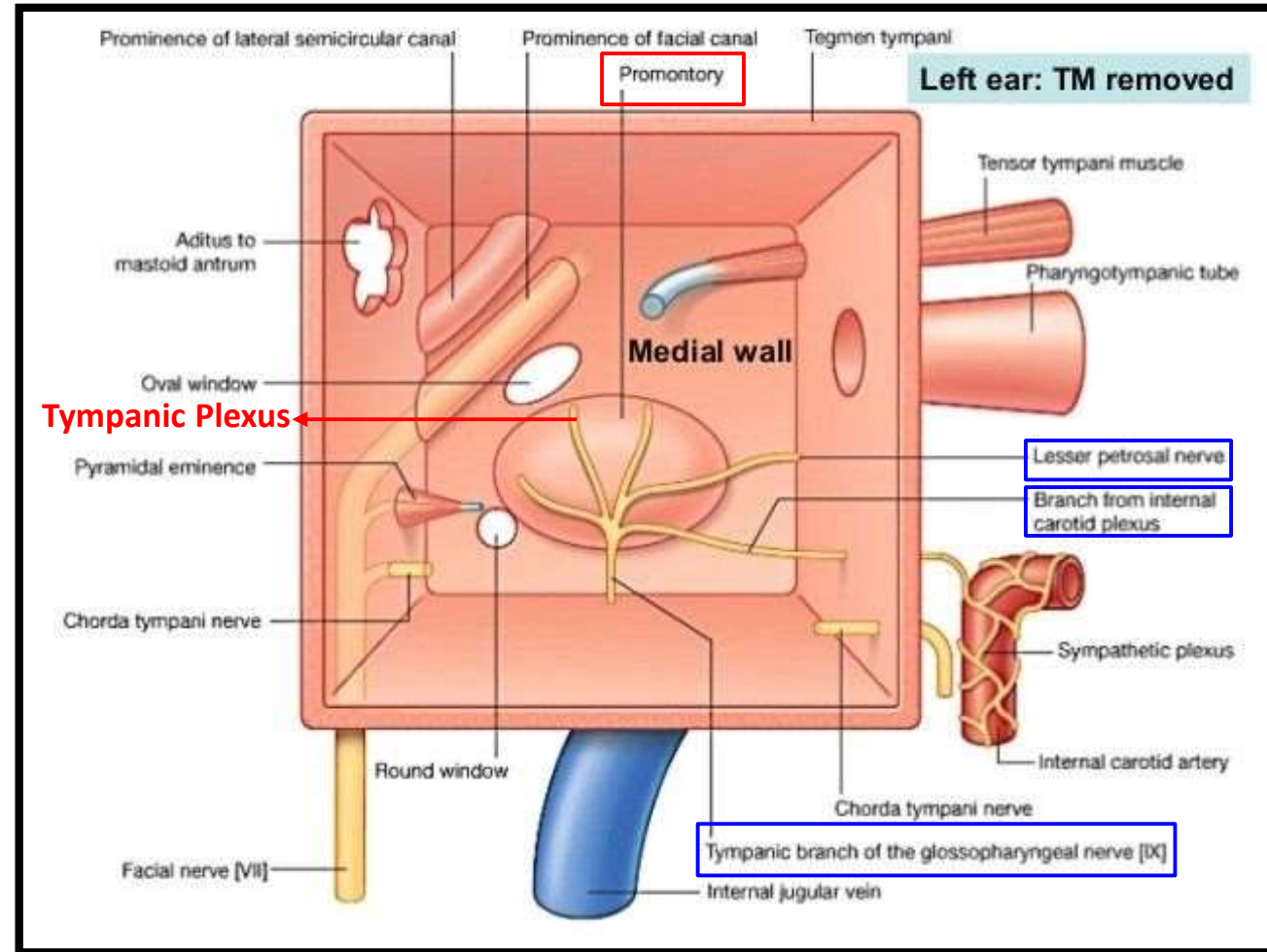
- Tympanic branch of Glossopharyngeal nerve [Jacobson's nerve].
- Superior and Inferior Carotico-tympanic nerves.
- A branch from geniculate ganglion of Facial nerve.

❖ It supplies mucous membrane of:

- Middle ear.
- Mastoid air cells.
- Bony Eustachian tube.

Branches-

- Lesser Petrosal Nerve.



Applied Aspects

Otalgia [Pain in the Ear]-

- ❖ In the ear pain can be referred from:
 - Tongue.
 - Teeth.
 - Tonsil.
 - Pharynx.
- ❖ These are the areas supplied by Trigeminal, Glossopharyngeal and Vagus nerves.
- ❖ These nerves also supply external and middle ear.



