

Radiology of **TEMPORAL BONE**

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WHY??

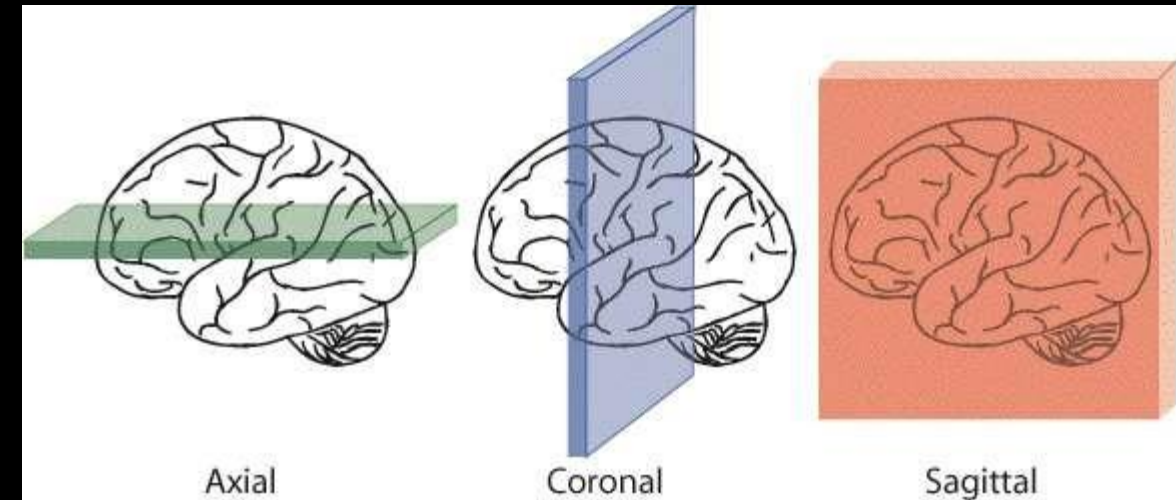
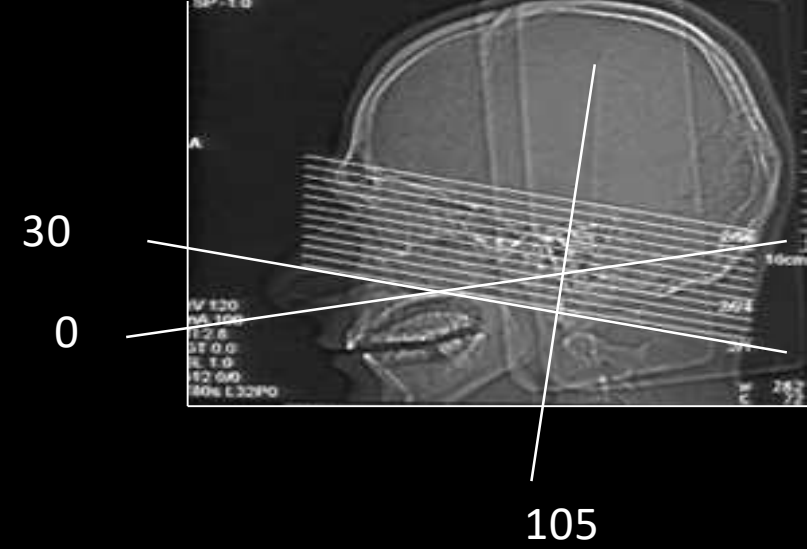
- Identify anatomy
- Operative planning
- Risk assessment
- Informed consent

Informations

- Aeration
- Position of dura, Facial Nerve and Vessels
- Labyrinth
- Extension of disease
- Evidence of previous surgery

Planes of scanning

- Axial
 - 30 Degrees to anthropological base line
 - Parallel to lateral SCC.
 - Best displays inner & middle ear.
 - Sections parallel to the hard Palate
- Coronal plane
 - patient head extended in prone or supine with 105 degree
 - plane is perpendicular to the lateral SCC
 - Sections are parallel to posterior wall of maxillary sinus
- Saggital plane



Planes

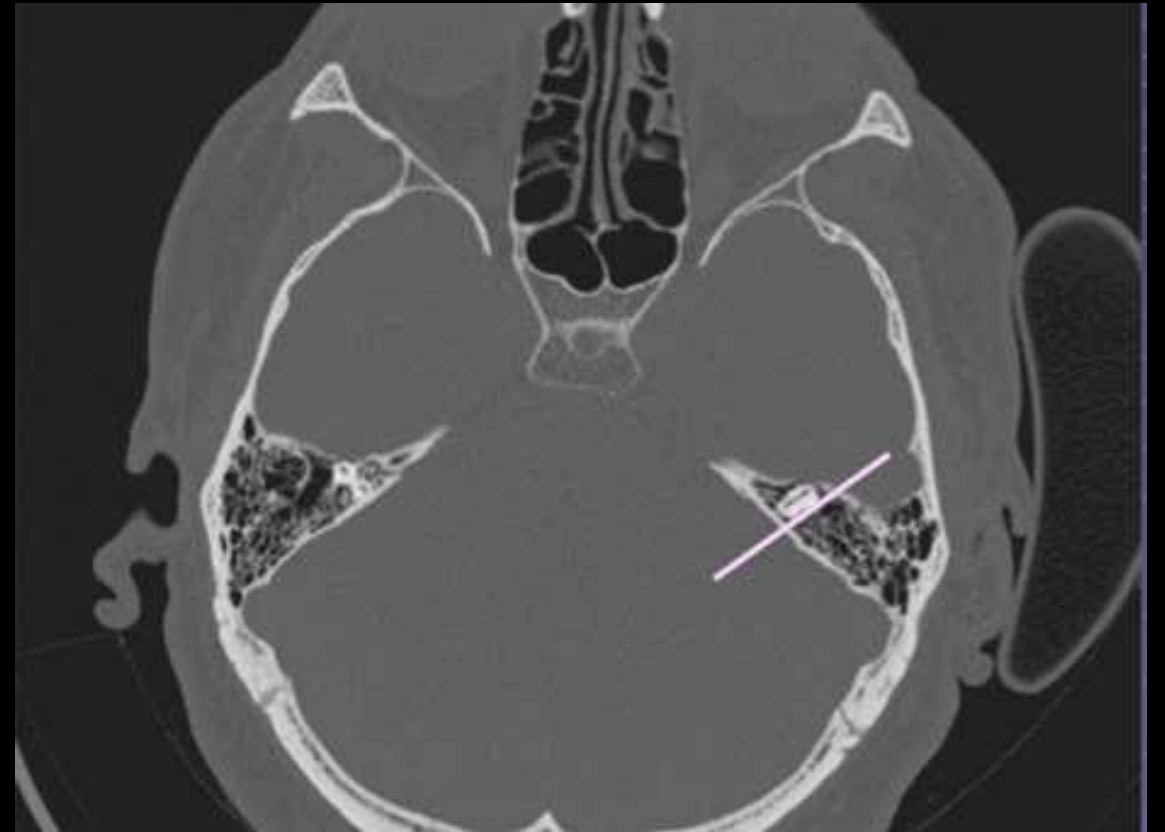
- Pöschl plane approximates the plane of the sSCC
- Stenvers plane is perpendicular to both the axial plane and the Pöschl plane

AXIAL CUTS

- Superior SCC
- Posterior SCC
- Vestibular aqueduct
- IAC
- Facial
- LSCC

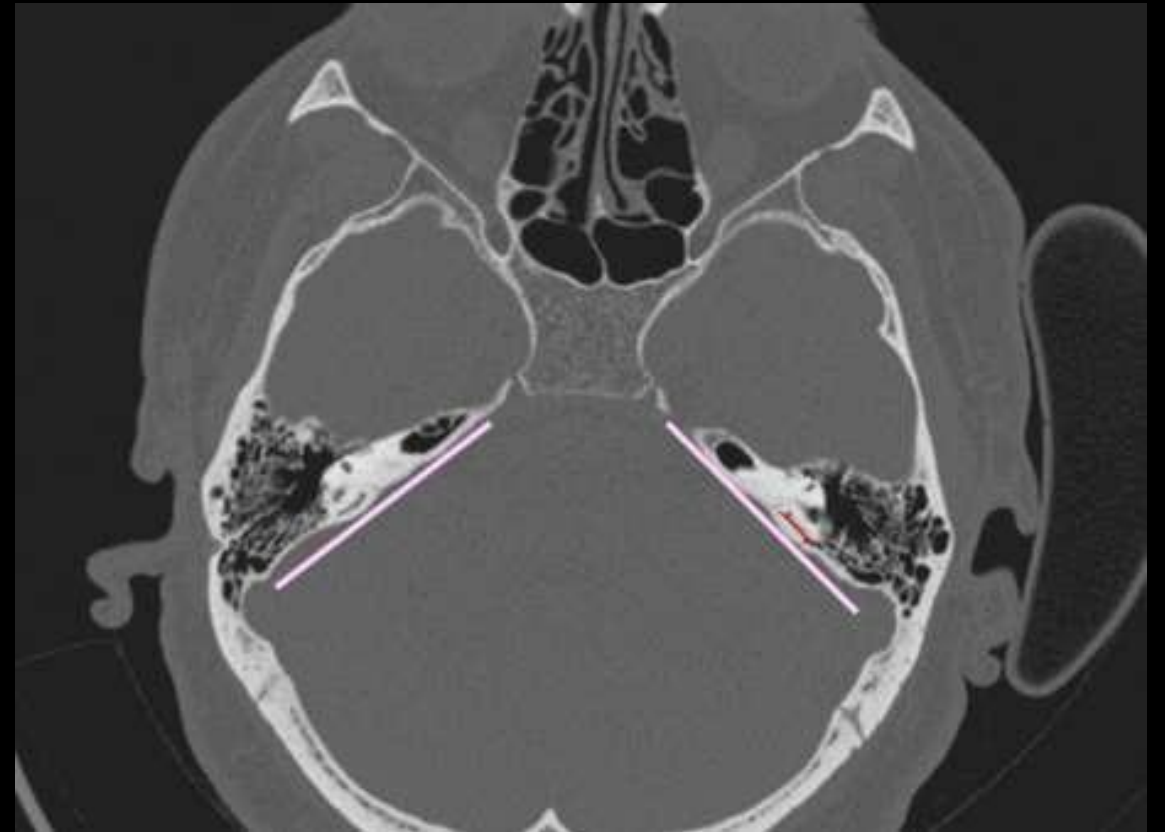
Superior SCC

- Start Superiorly
- Superior SCC comes into view
- Seen perpendicular to long axis of temporal bone



Posterior SCC

- Posterior SCC appears
Parallel to
Petrous temporal bone

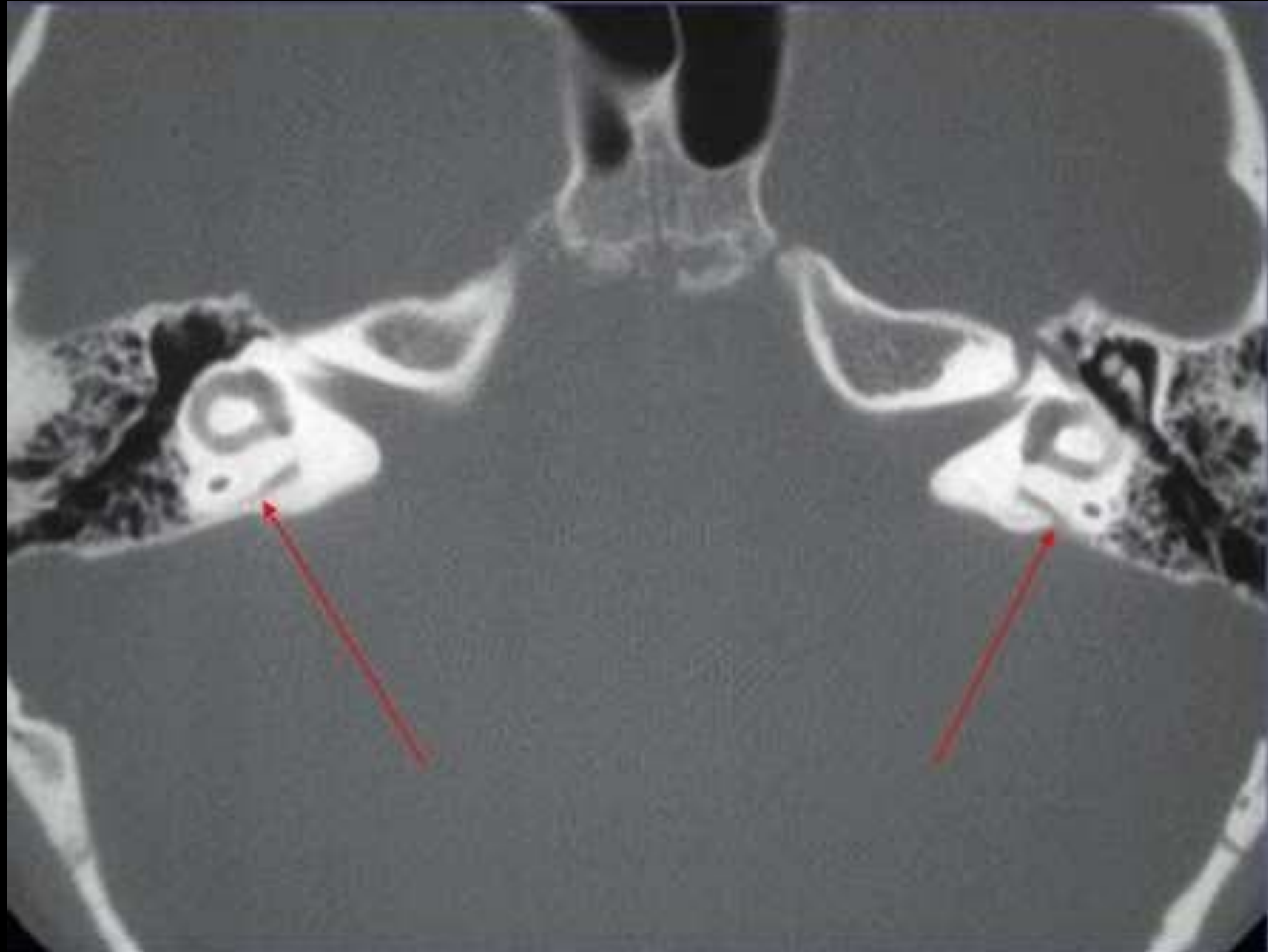


Vestibular Aqueduct

- Vestibular aqueduct

Veers Ventrally

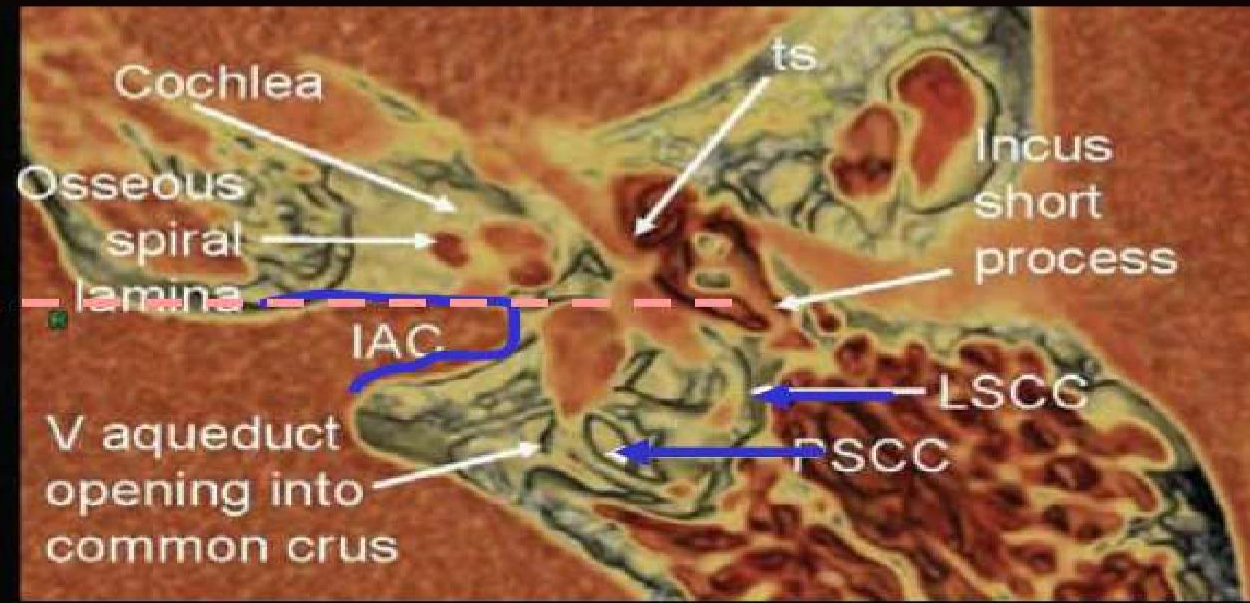
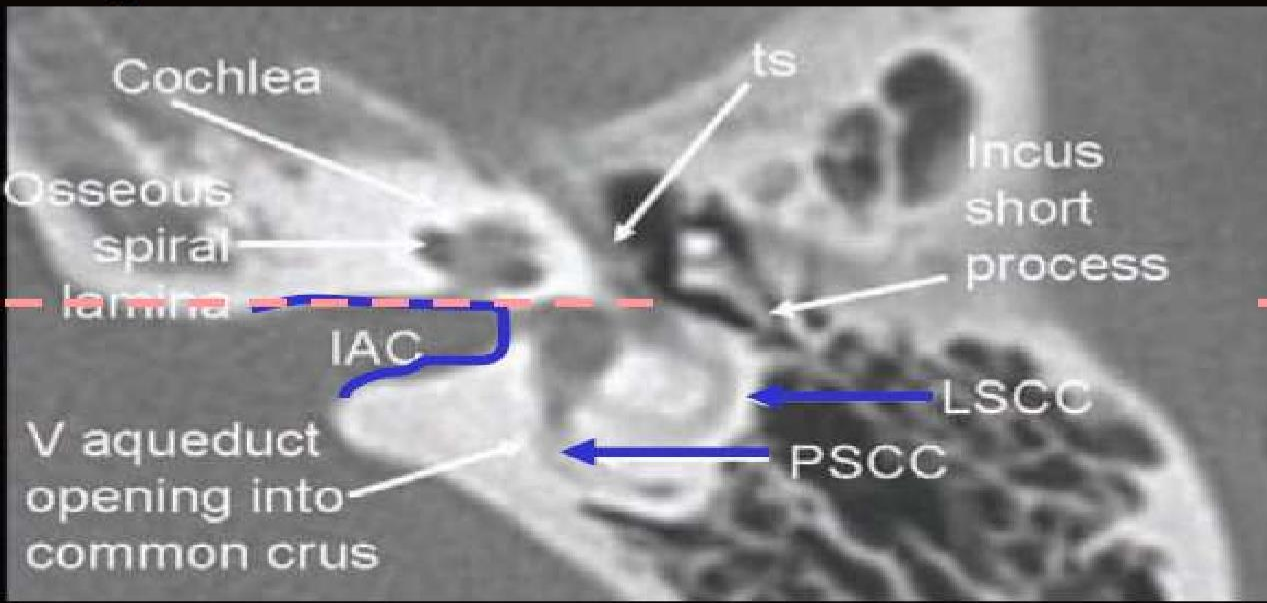
Onto the posterior cranial fossa surface of
Temporal bone



Internal Auditory Canal

- It is next to appear
- All structures anterior to it are cochlear
- Posterior to it are vestibular

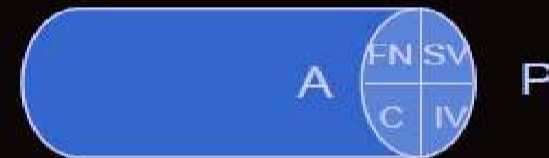
Axial: relationship of IAC to vestibular system

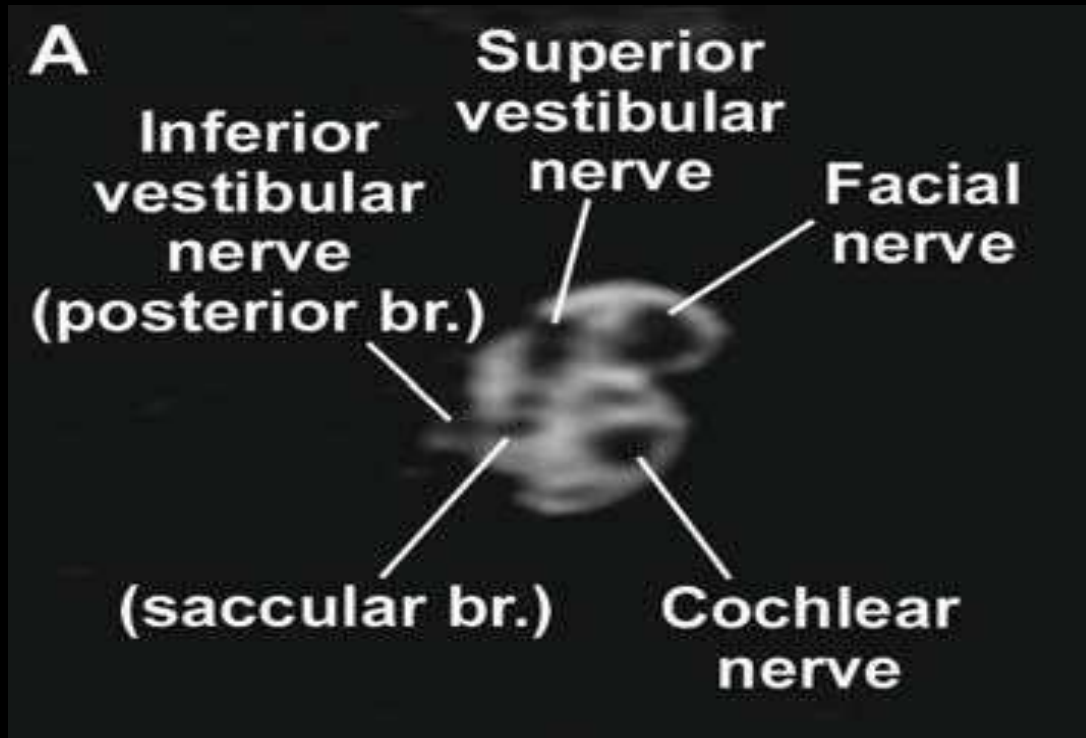
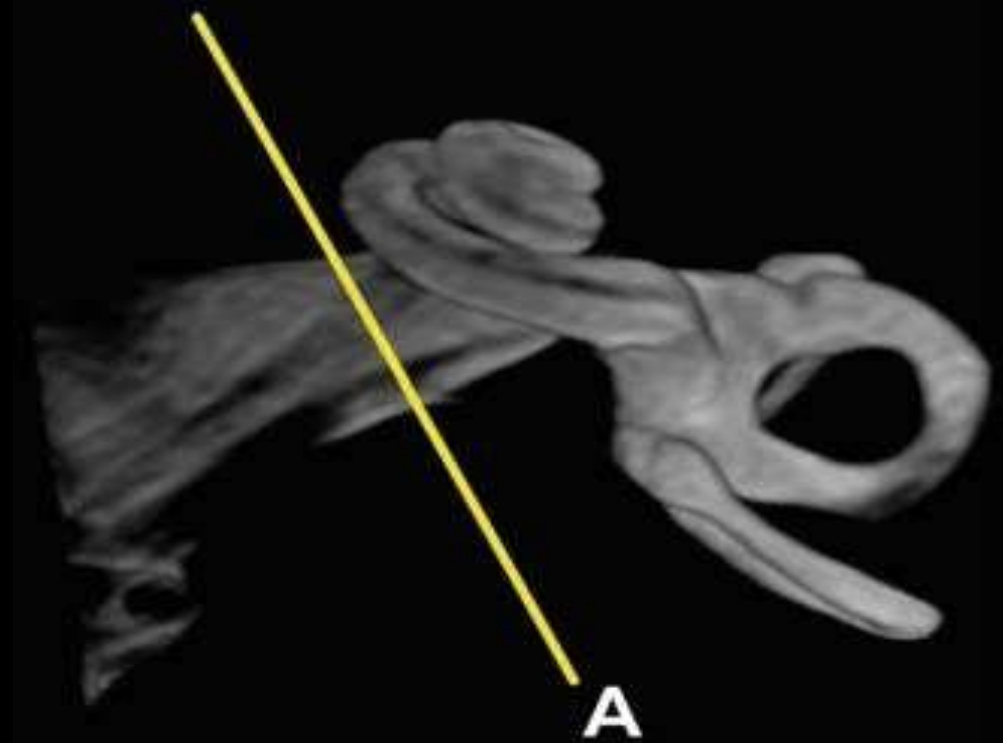


- Internal auditory canal (IAC)

- Note:

- ▣ Structures anterior to IAC are cochlear
- ▣ Structures posterior to IAC are vestibular

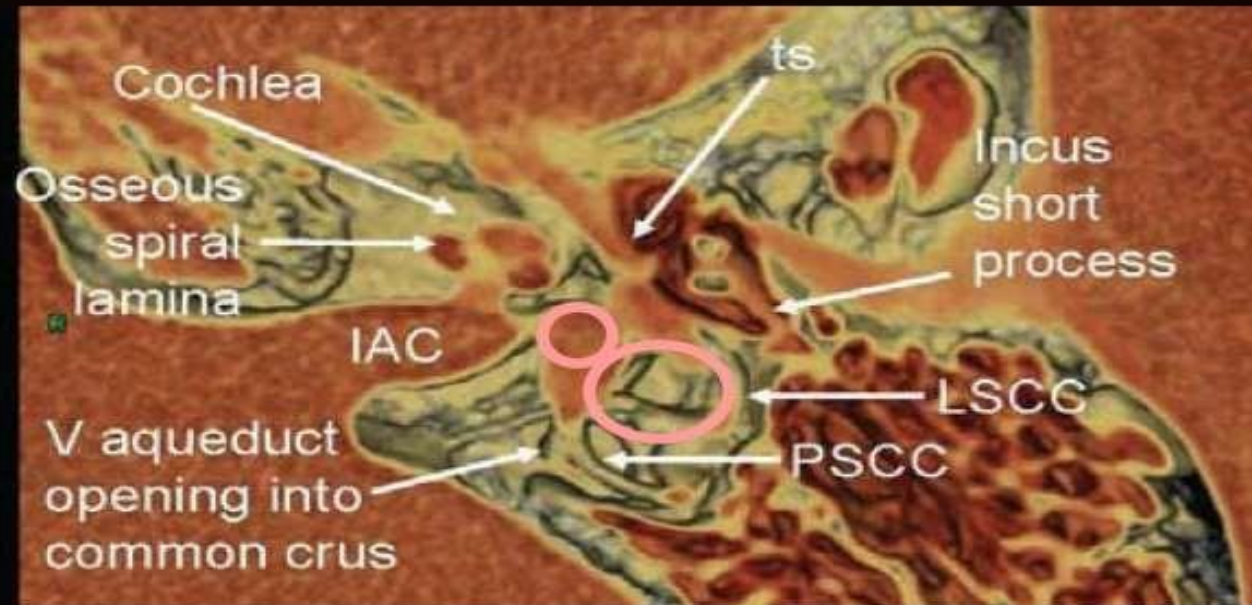




Lateral SCC

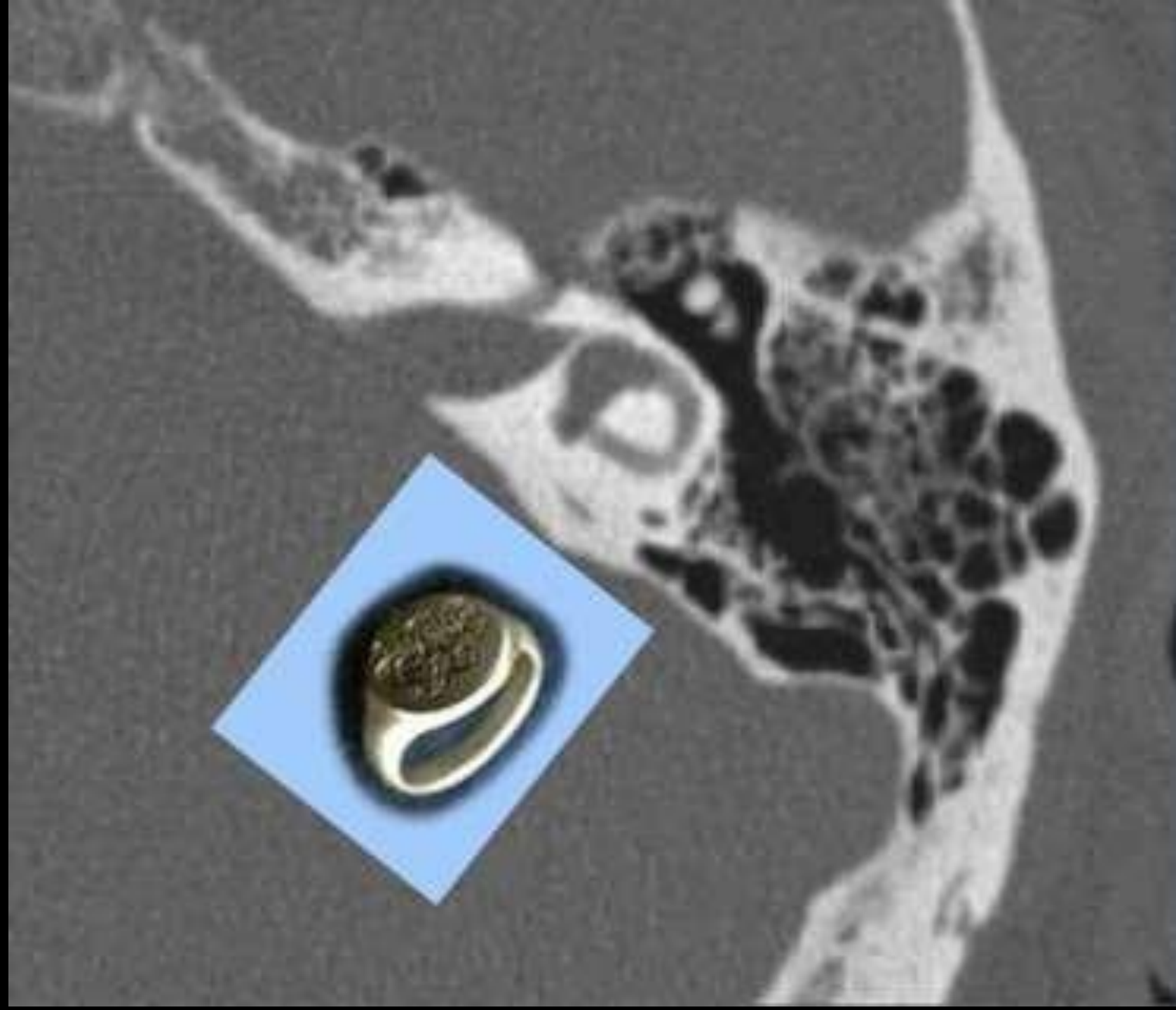
- Signet ring appearance

Axial: Vestibule and LSCC



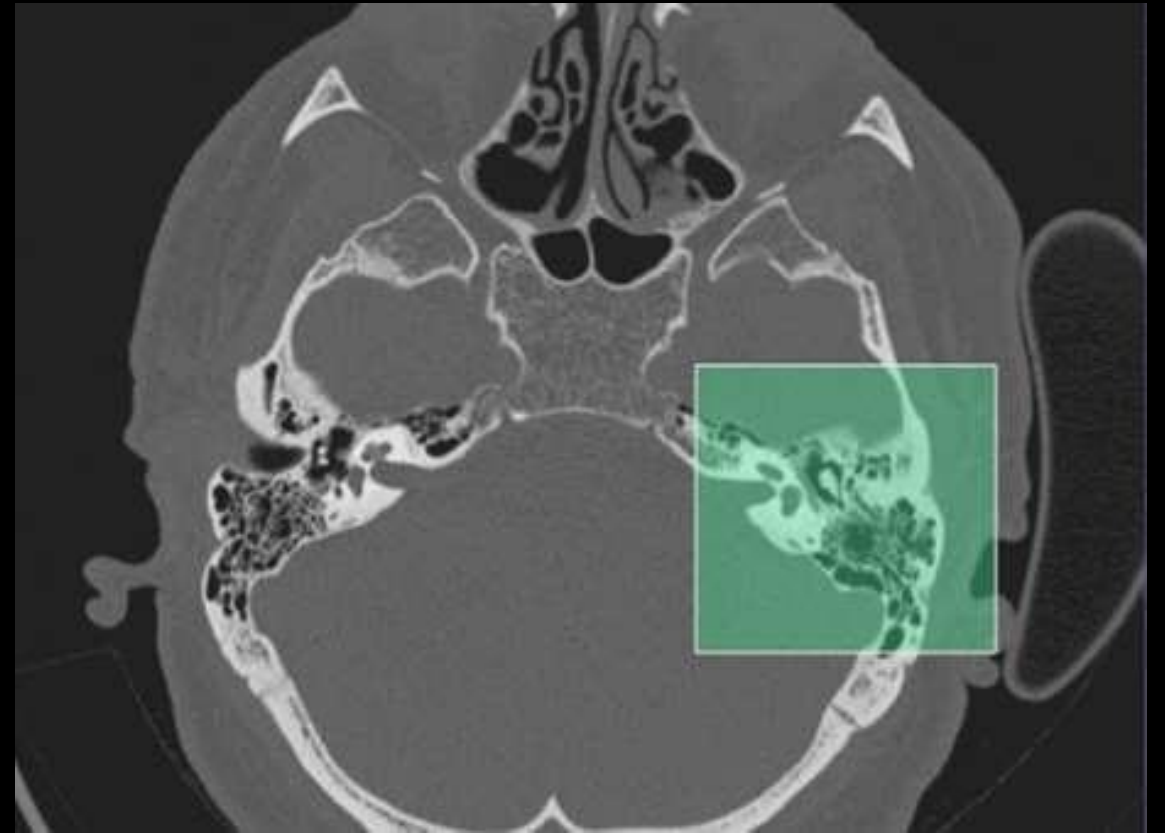
- What do the structures in the box resemble?
 - ▣ Signet ring!
 - ▣ Corresponds to Vestibule and LSCC





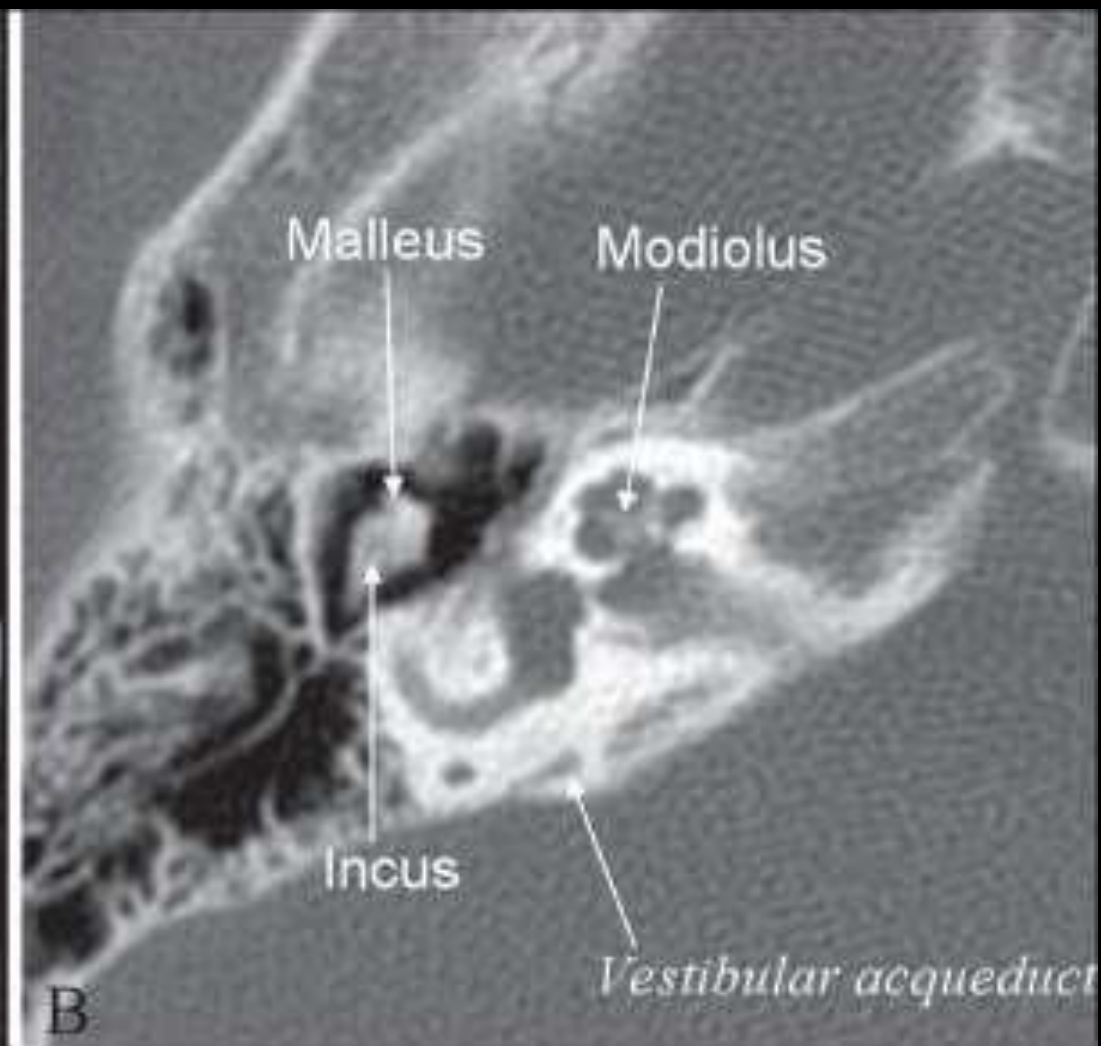
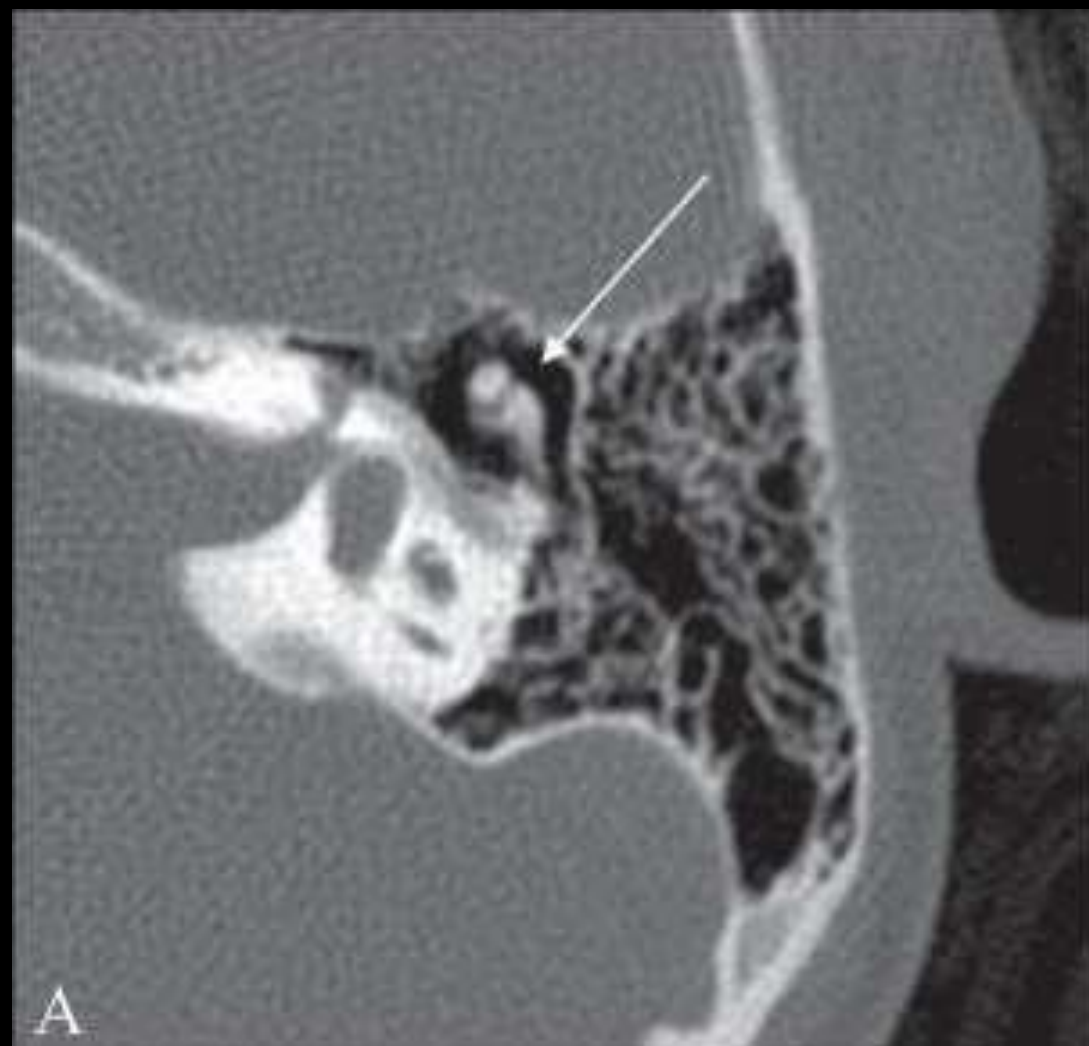
Ossicles

- Ice cream cone appearance



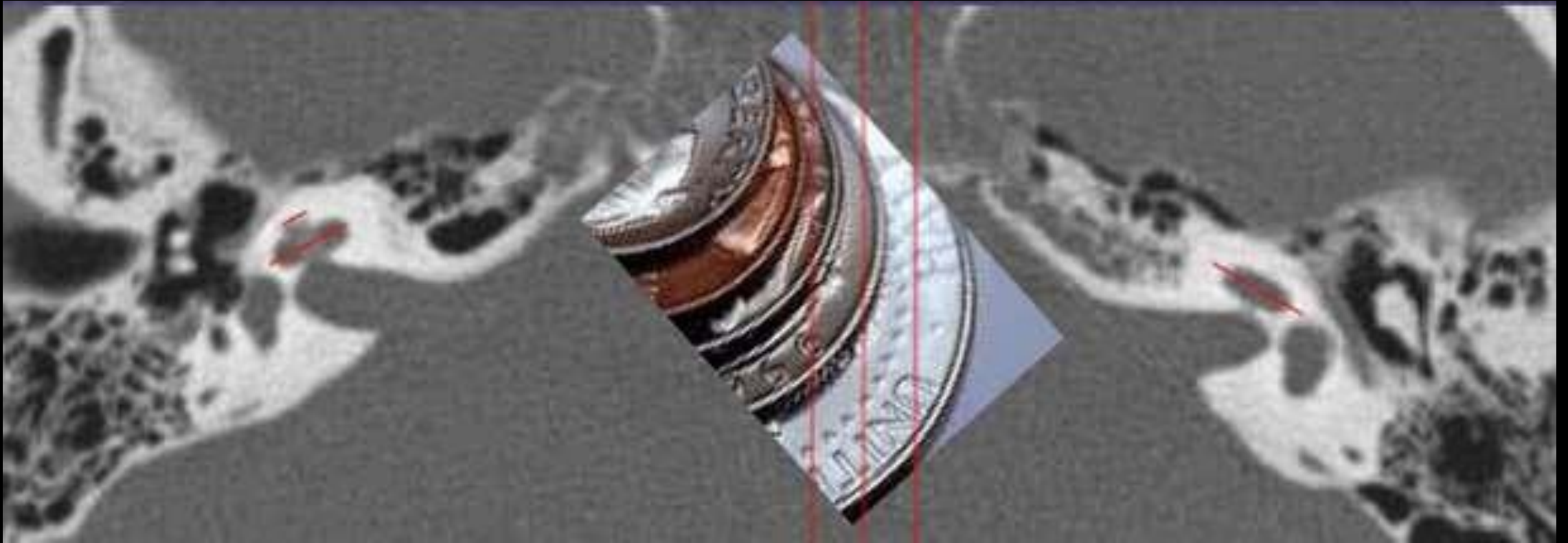


- The ice-cream cone sign represents the normal appearance of the malleus and incus on an axial high-resolution CT scan (HRCT) image of the temporal bone .
- The ball (scoop) of the ice cream is formed by the head of malleus and the cone is formed by the body of the incus.
- The space between the ice-cream cone and the scutum is called Prussak's space.

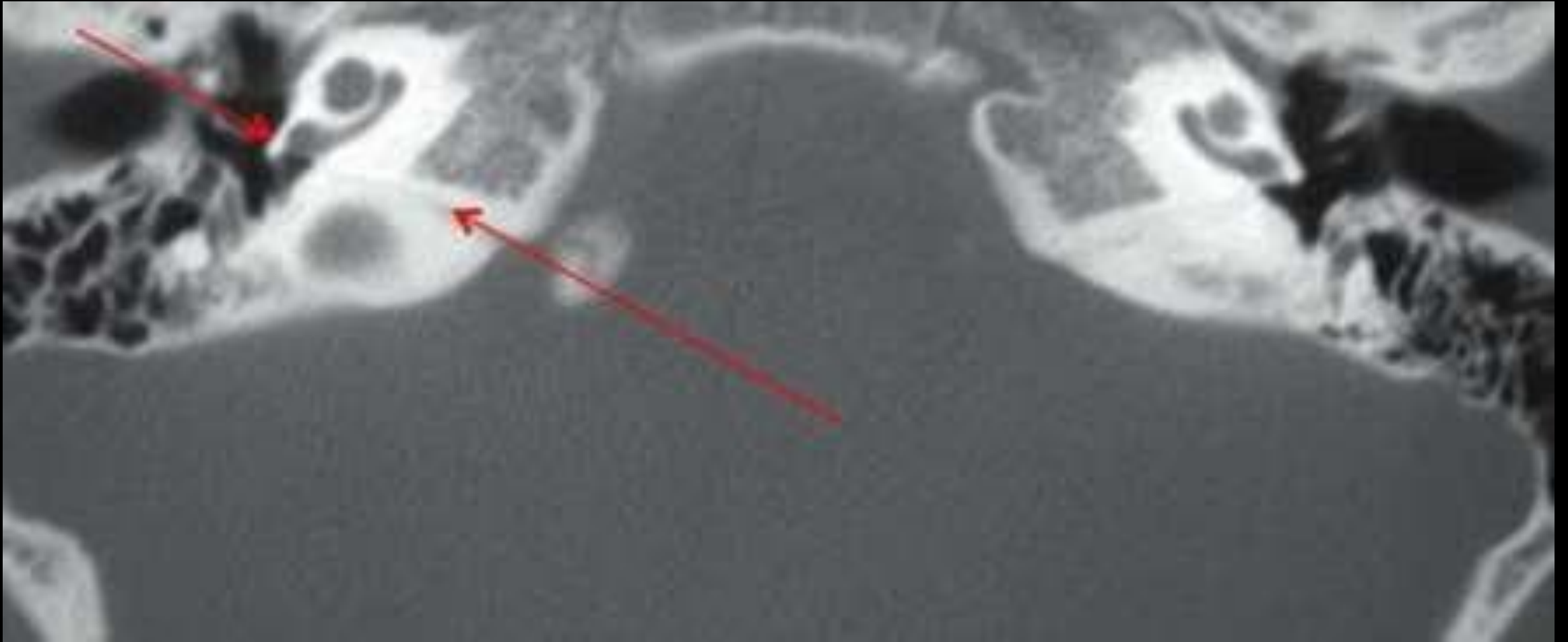


Cochlea

- Stack of coins



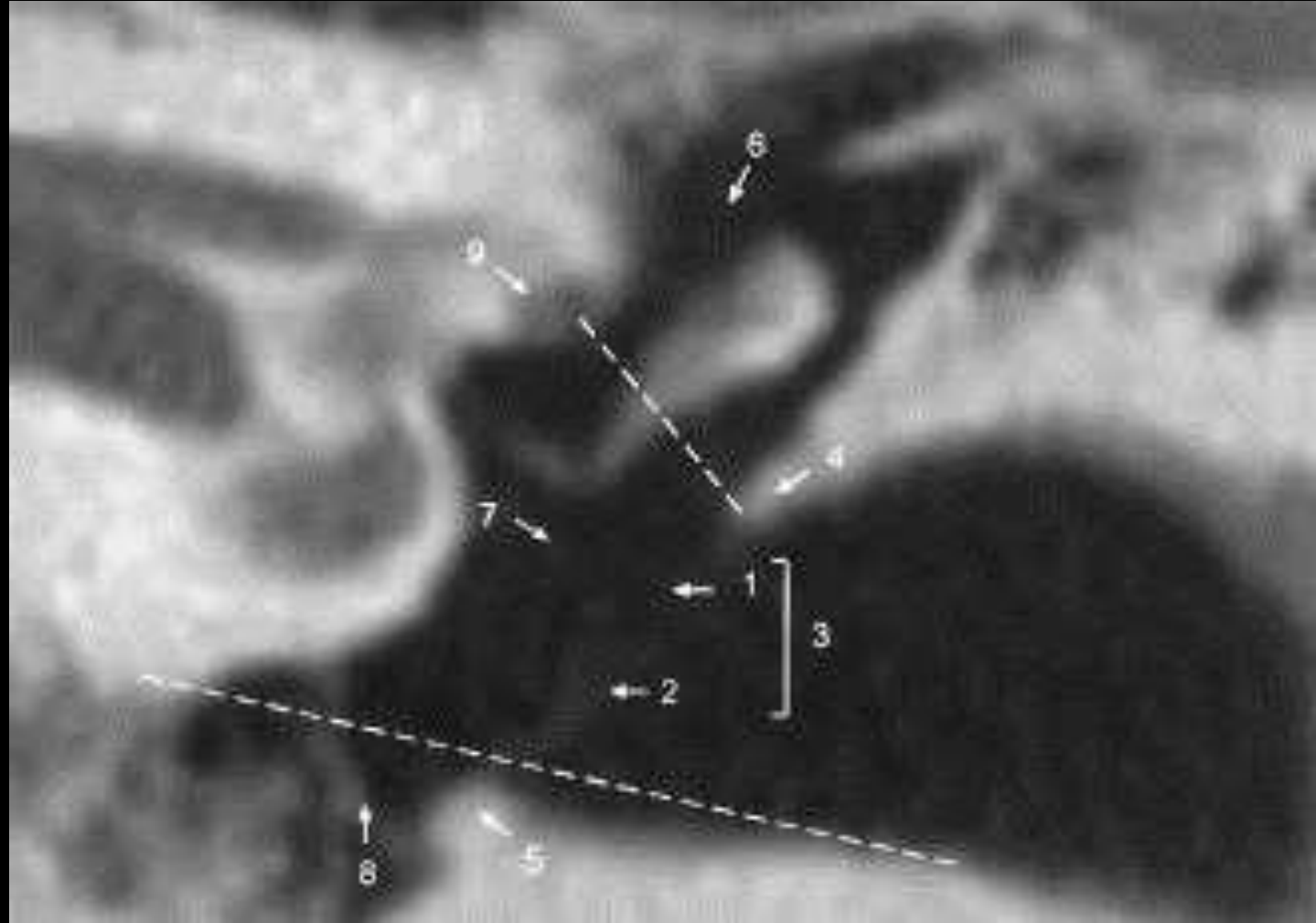
Cochlear aqueduct



CORONAL

Middle Ear

- Three compartments in coronal plane.
- A line drawn from lower edge of the scutum to the tympanic portion of the facial nerve - epi/mesotympanum.
- parallel to the floor of the external auditory canal
meso/hypotympanum

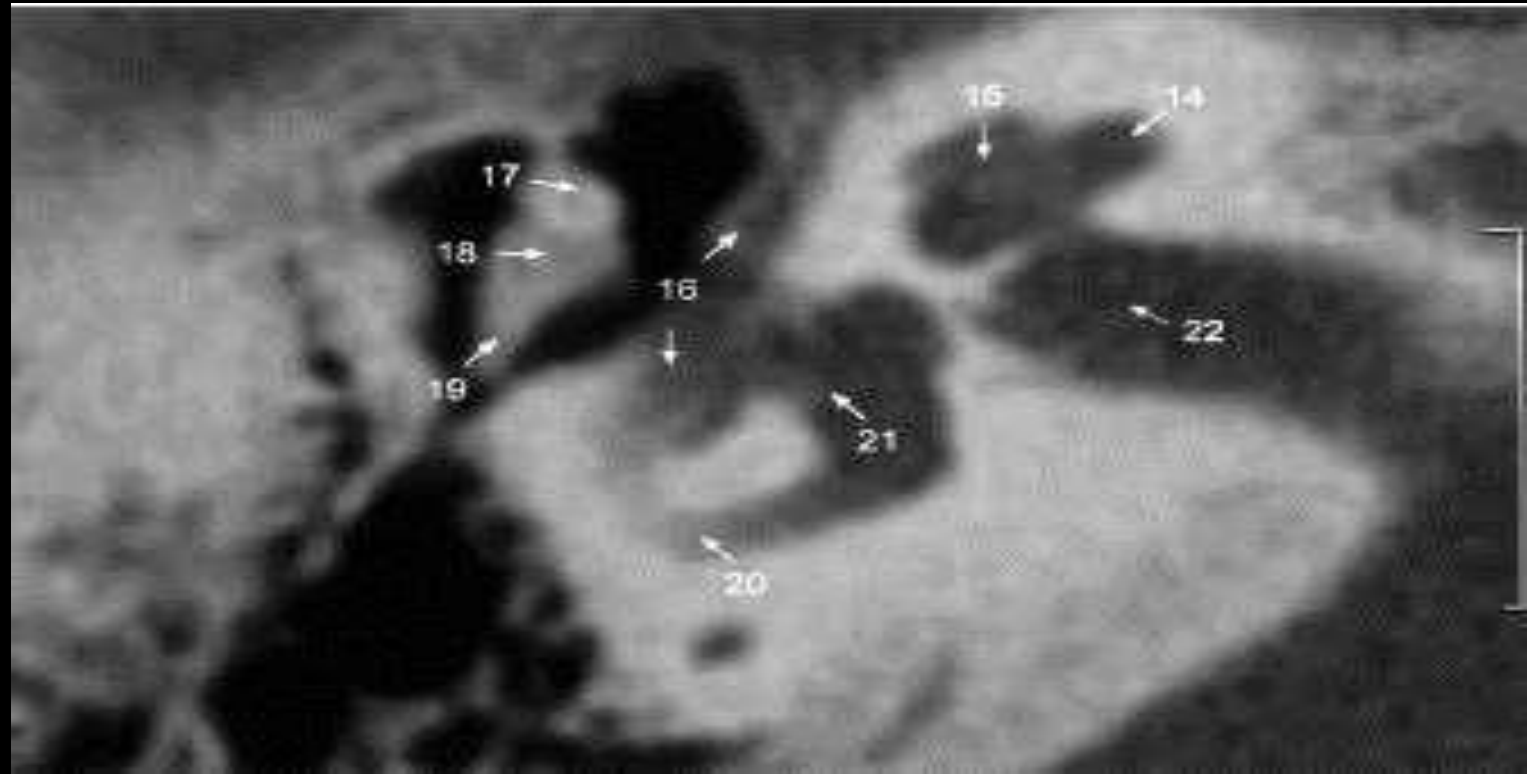


Epitympanum

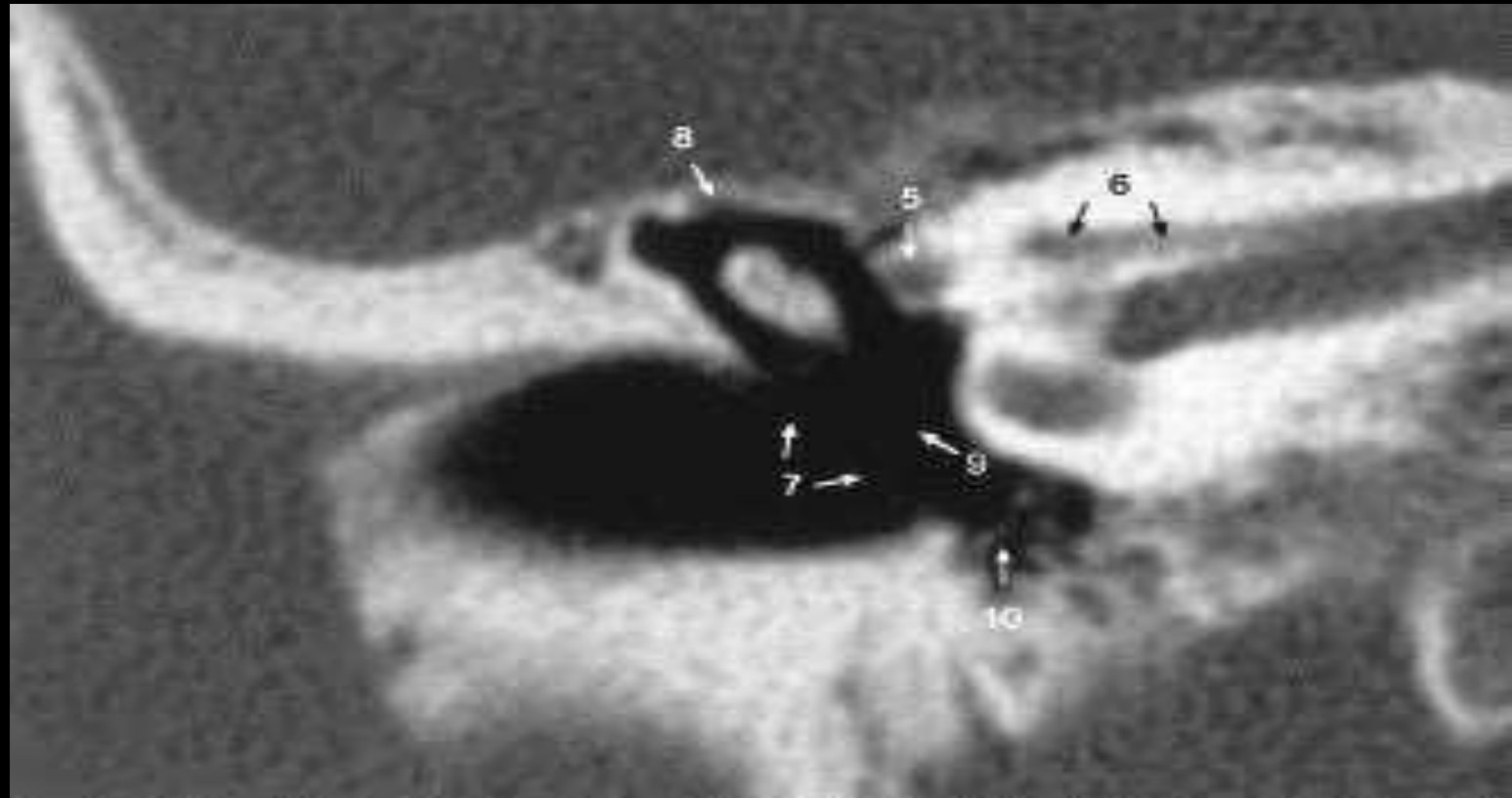
It contains :

- Head of the malleus
- Malleo-incudal articulation
- Body and short process of the incus,
- Short process of Incus projects posteriorly towards aditus.

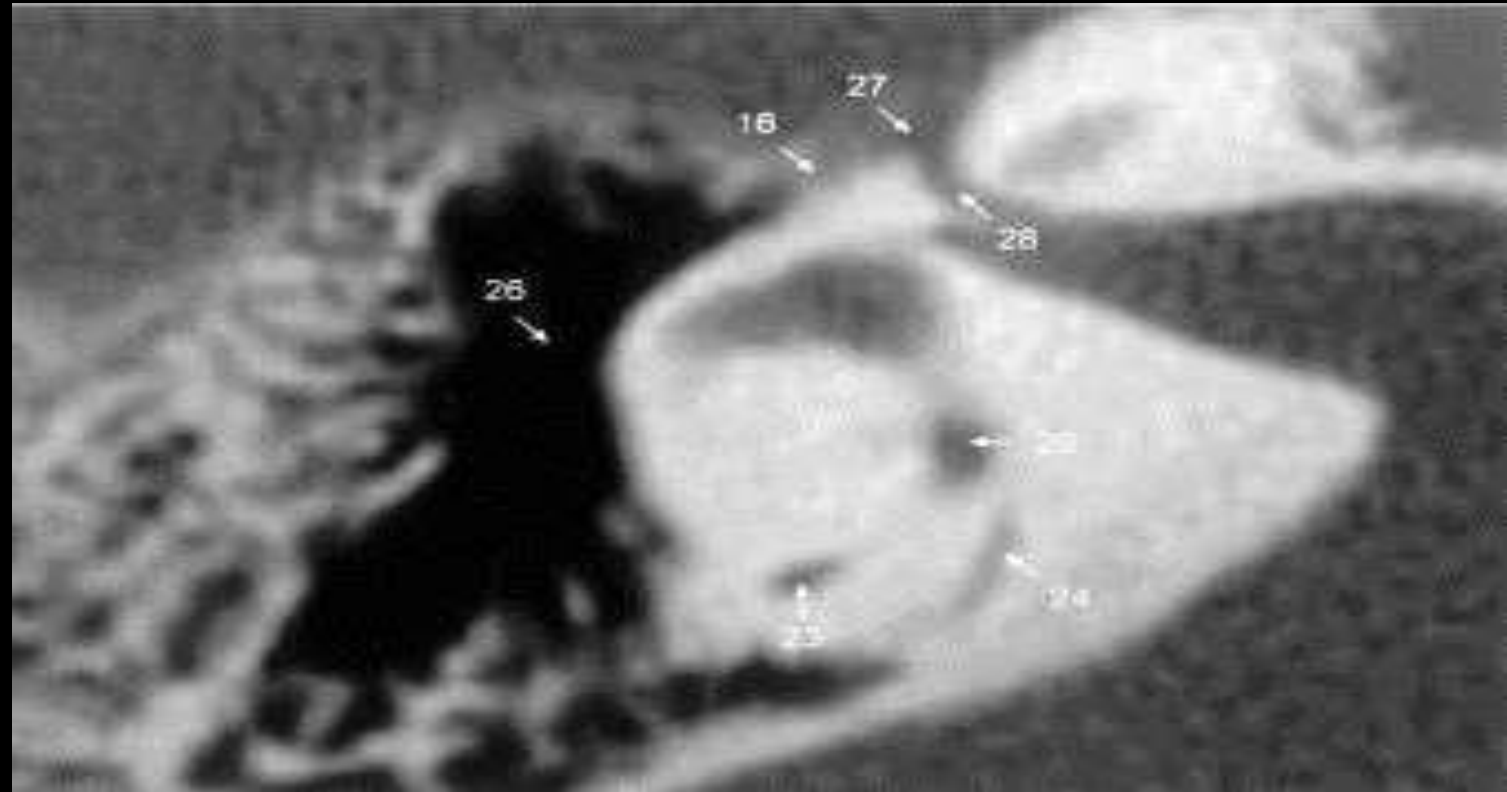
These structures are best demonstrated on axial images.



- Tegment tympani – roof of epitympanum – barrier between middle cranial fossa and middle ear cavity.
- Best evaluated on coronal images

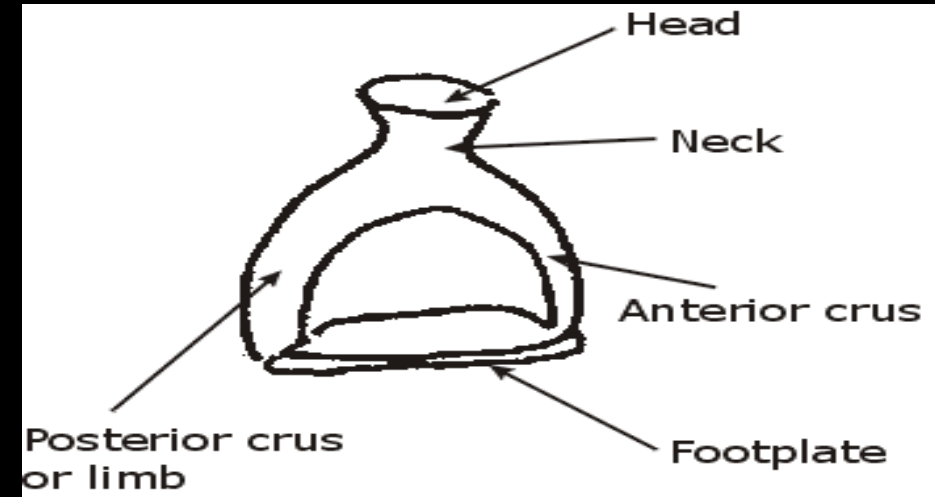
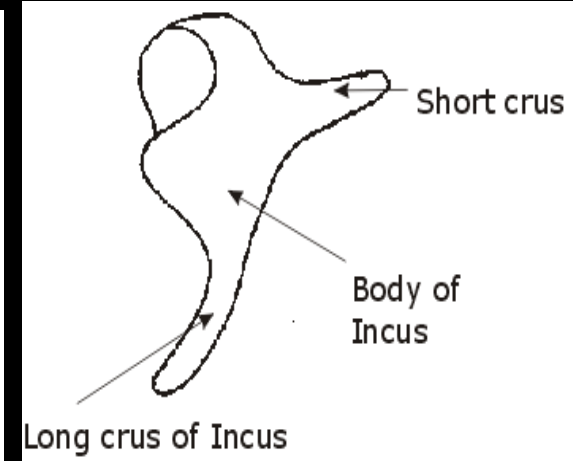
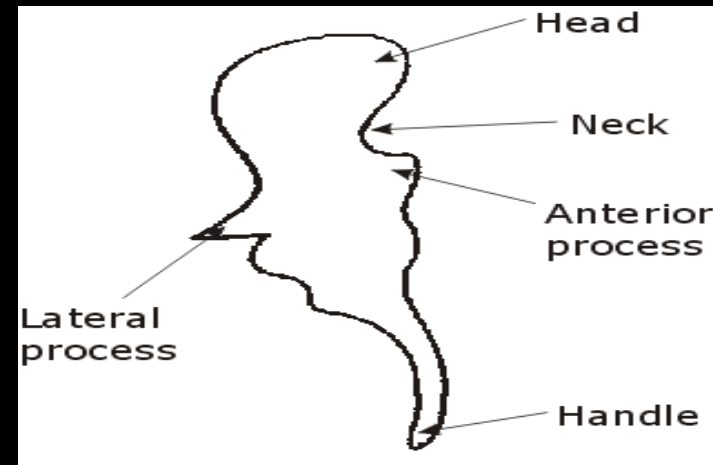


- Posteriorly the epitympanum opens into the mastoid antrum via the aditus ad antrum; demonstrated on both the axial and coronal images

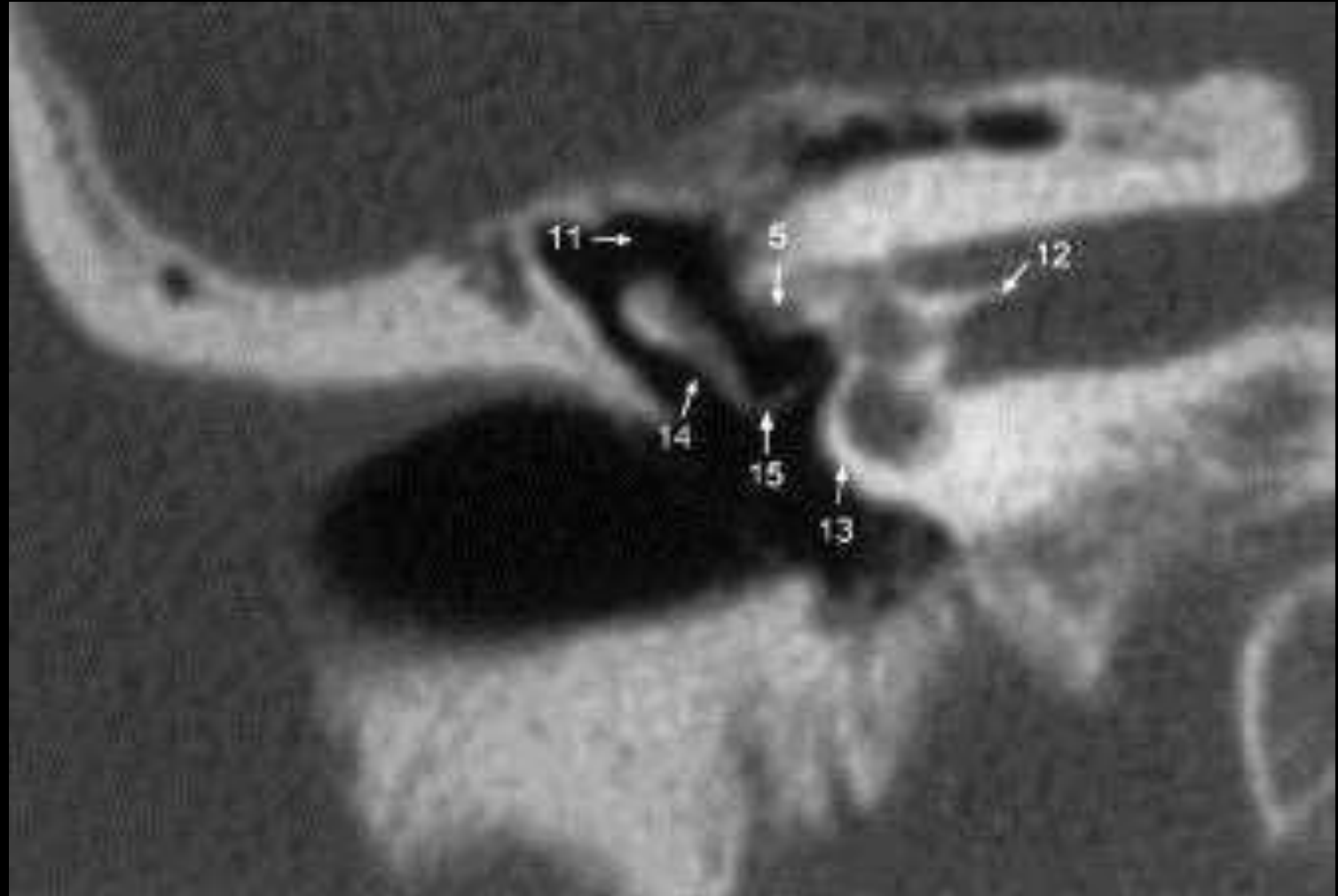


Mesotympanum

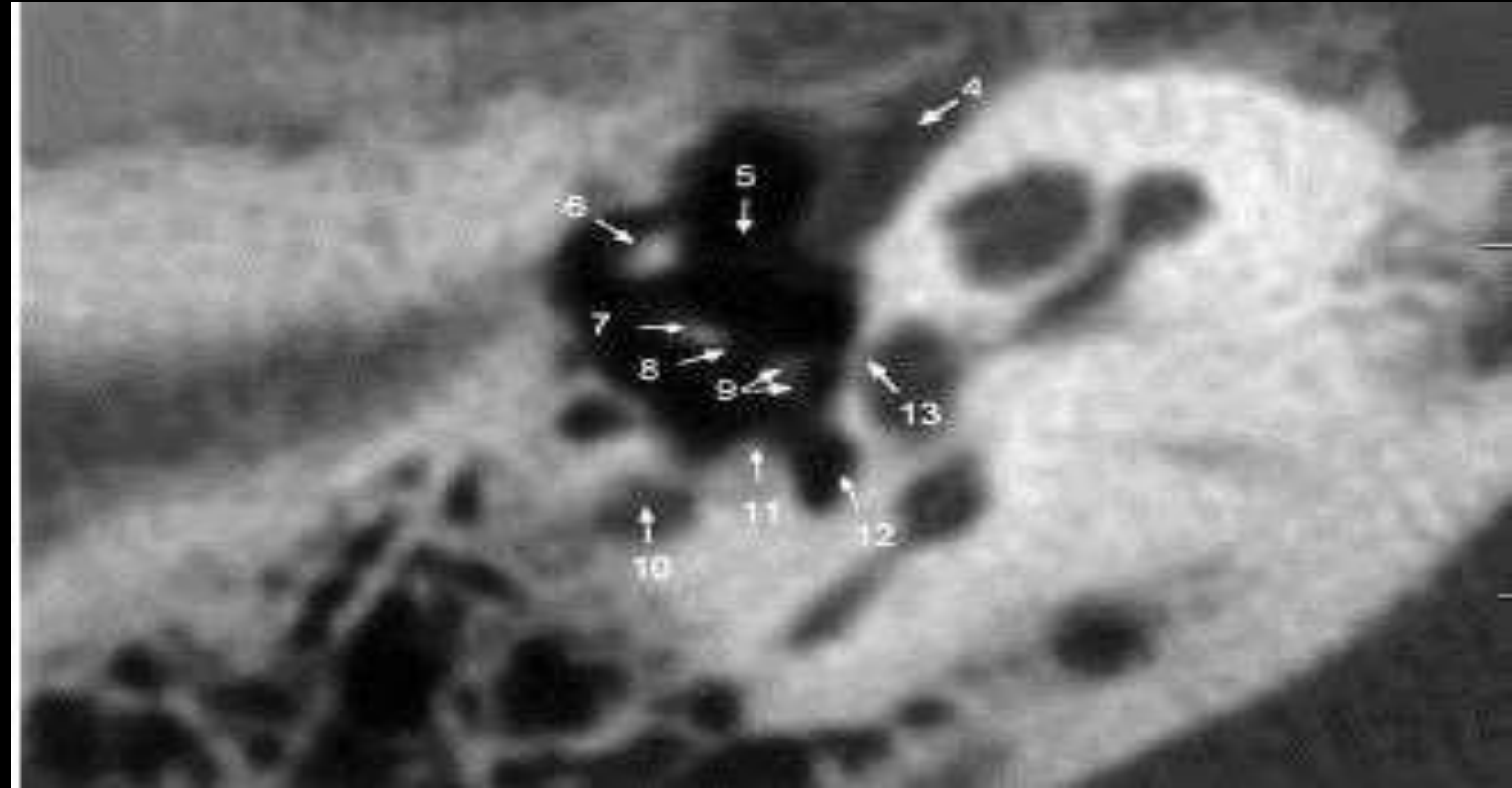
- The mesotympanum contains the ossicular chain
- Oval and round window
- Long process of the Incus
- Stapes
- Handle of Malleus
- Facial nerve Canal



- On coronal images the long process of incus is vertically oriented parallel to the long process of malleus, continuing as the rounded lenticular and the facet to articulate with the head of the stapes



- The stapes hub and crura are best demonstrated on axial images at the level of the oval window
- The stapes footplate sits in the oval window niche and cannot always be discretely identified on CT.



Thank You
