

Anatomy, skull 2

Vault
(Calva) and
Cranial
fossa's
Talib jawad
2023- may

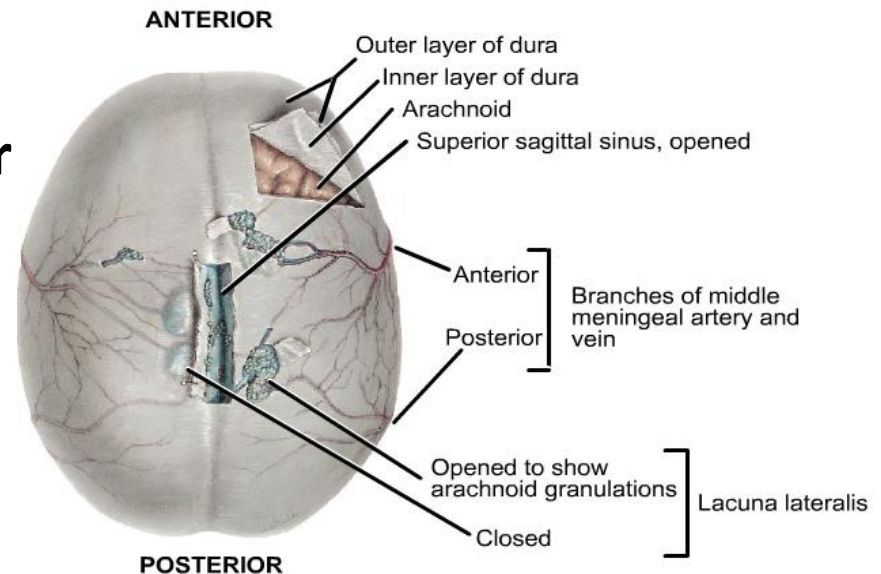
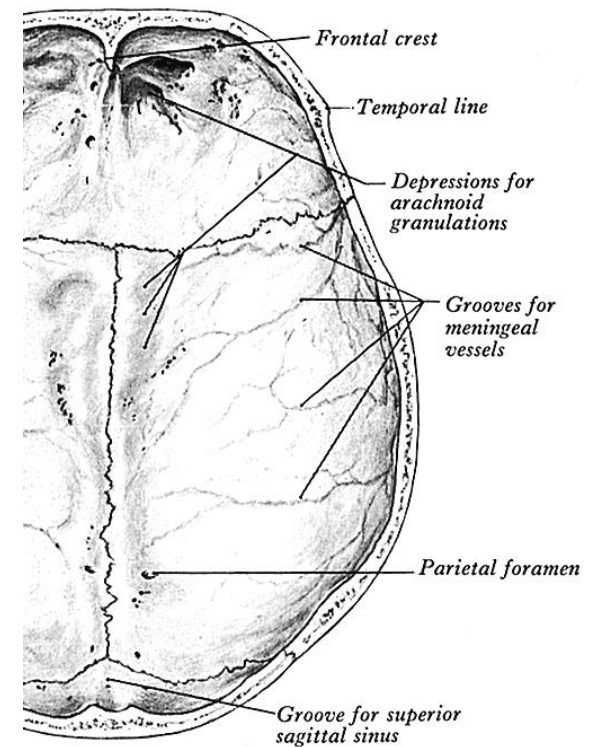


Objectives

- **Describe the inner surface of the vault of the skull**
- **Mention the meninges and arachnoid granulation**
- **Study the 3 cranial fossa's , boundaries and bone marking**
- **Identify foramina and structure's passes through**

Vault (Calva) of the skull

- Calva :includes most of the **frontal** and **parietal** bones and the upper **occipital squama** and hence the coronal, sagittal and lambdoid sutures ((unless fusion))
- numerous **vascular furrows** (اخدود) and cerebral **grooves**. Superior **Sagittal groove** (for superior sagittal sinus.)
- **Granular pits** : (lateral lacunae) for **arachnoids granulation**
- **Grooves for middle meningeal vessels**



ANTERIOR

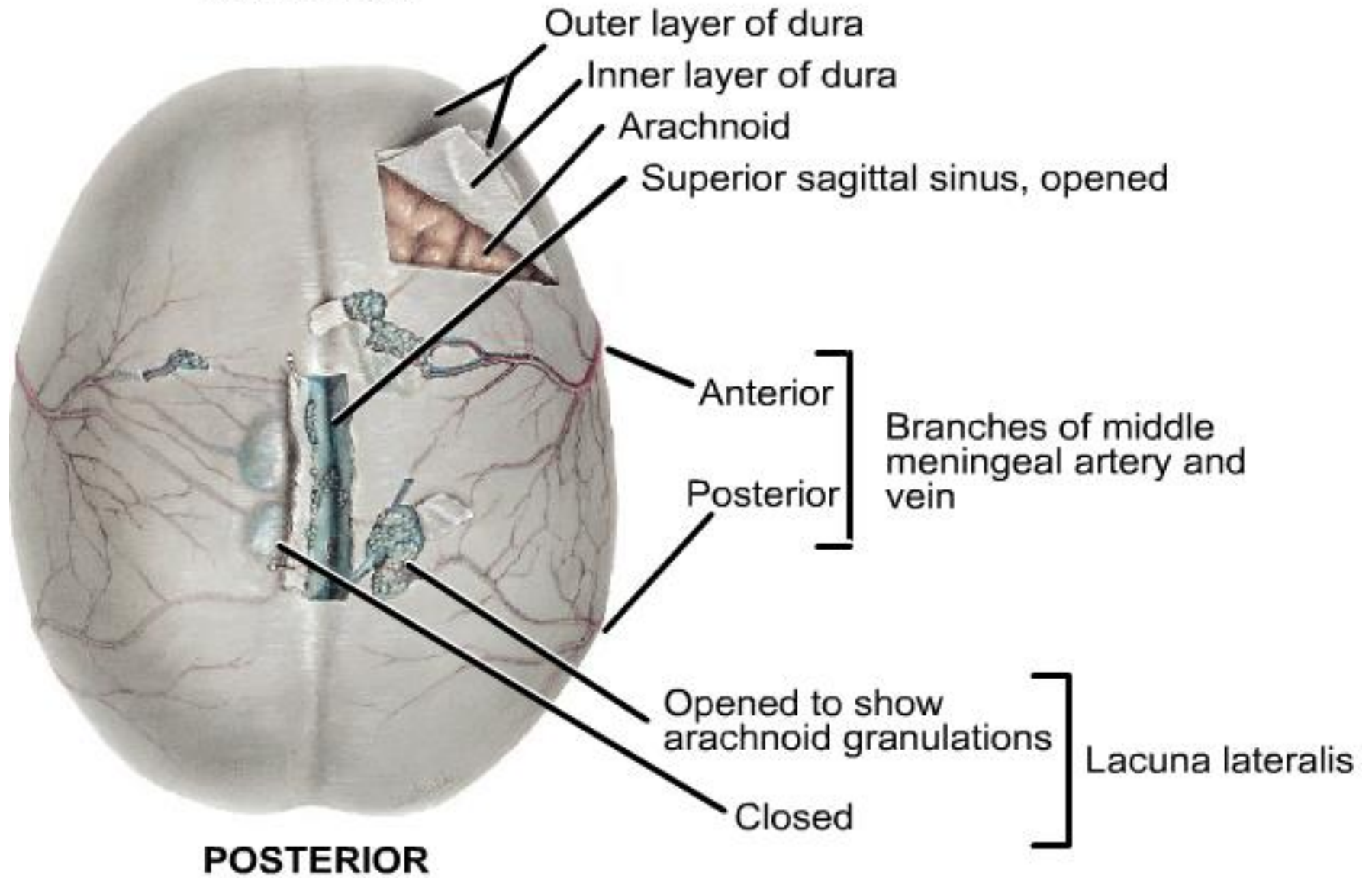
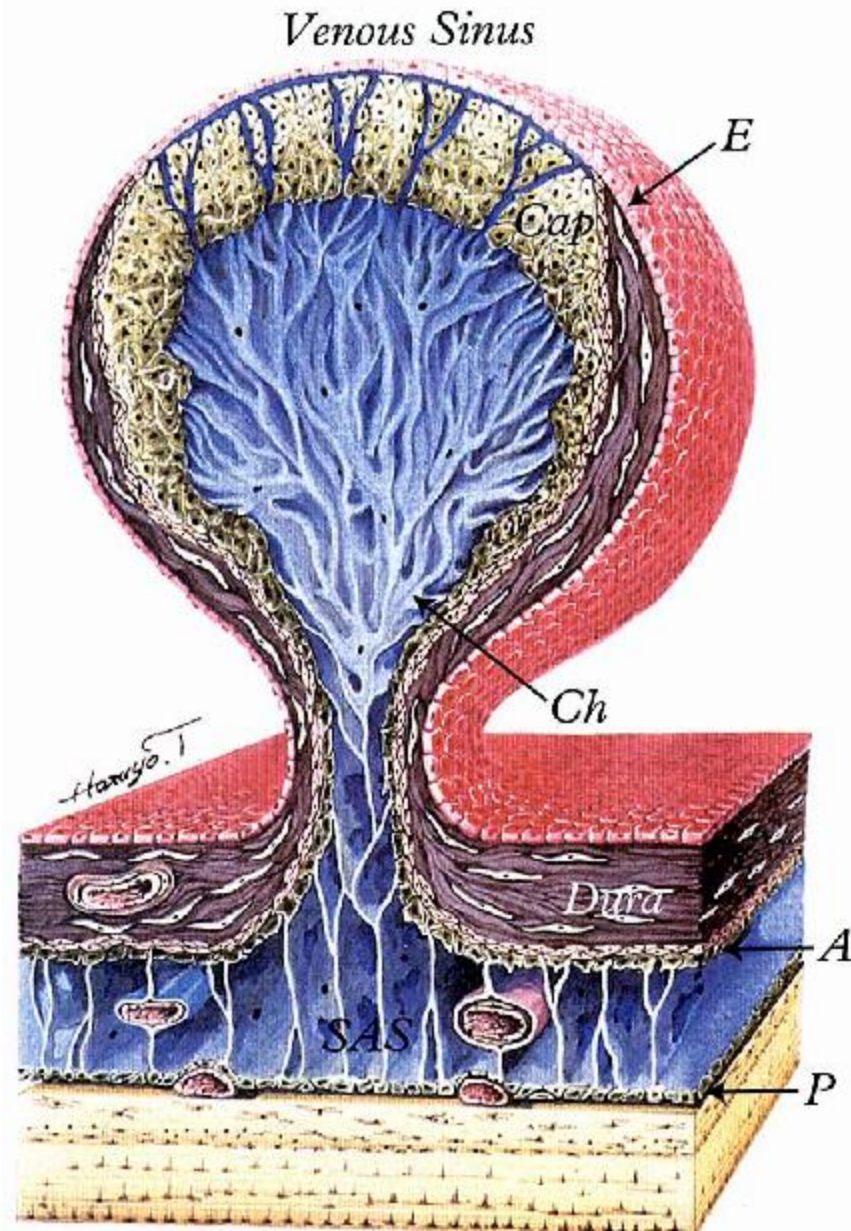


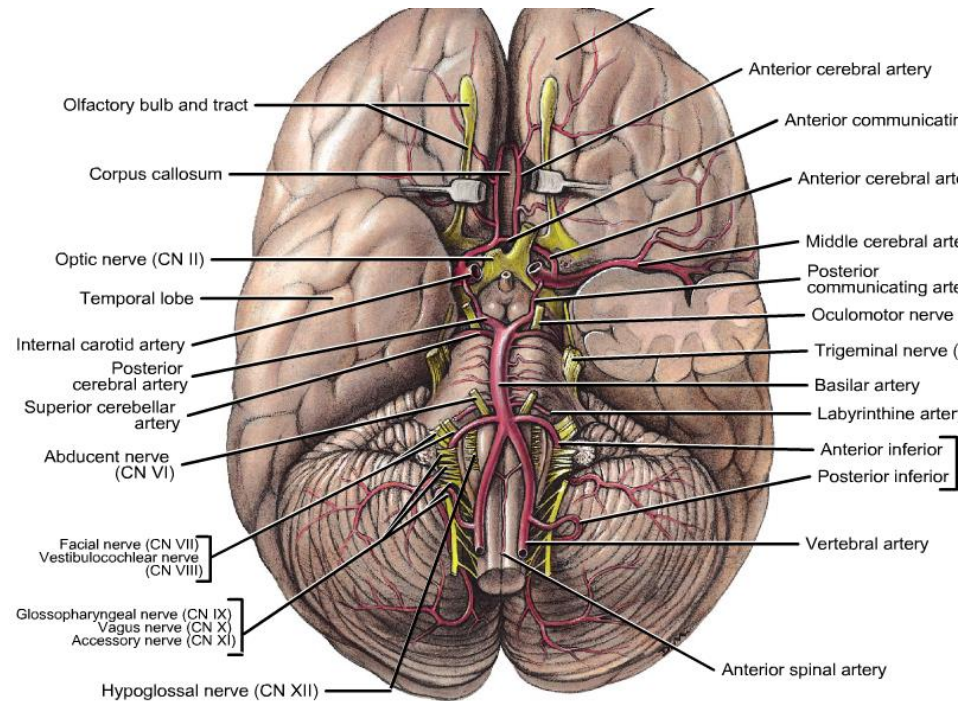
Diagram of an arachnoid granulation.

- The subarachnoid space (SAS) between
- the arachnoid (A) and pia mater (P) is highly trabeculated and is continuous with
- the channel (Ch) in the centre of the granulation. Narrow channels traverse the cap region of the granulation to come into contact with the endothelium (E) of the venous sinus. It is through the endothelium that the fluid finally drains.



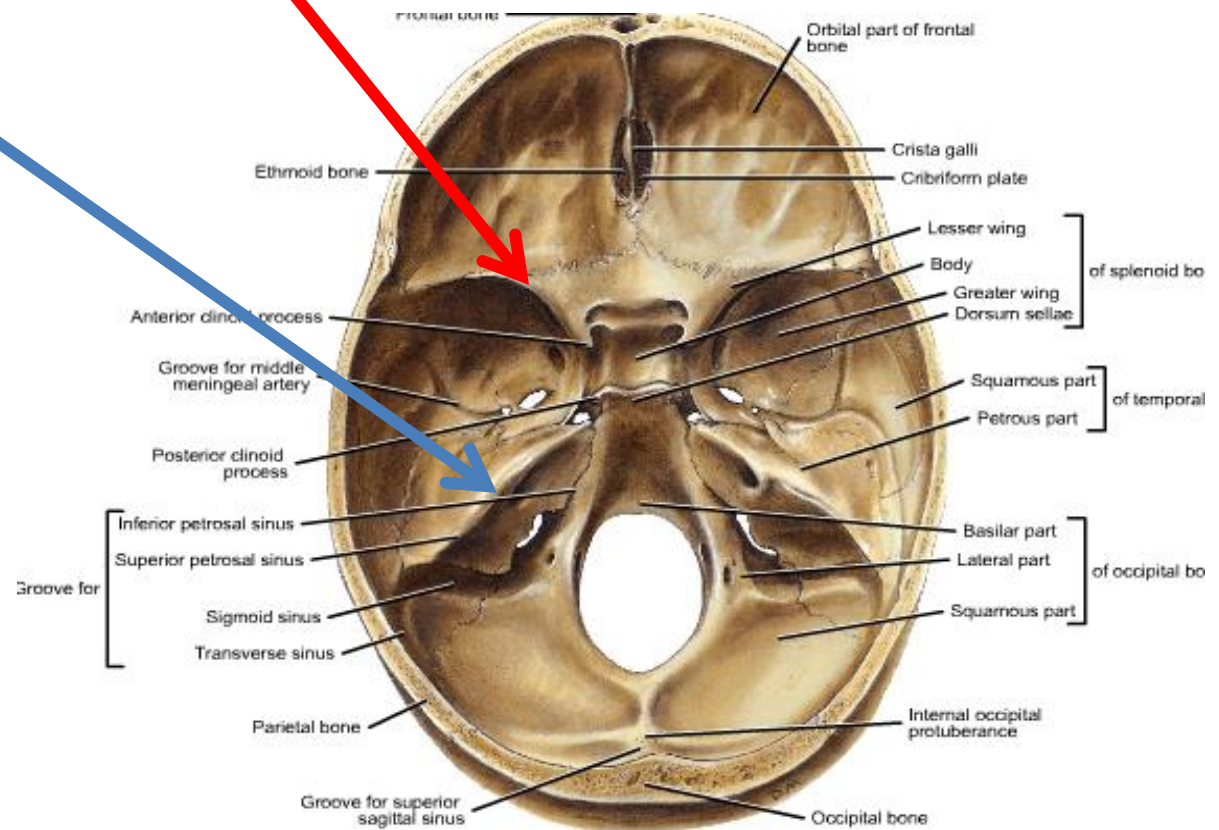
Cranial cavity

- Surrounding meninges
- Brain
- Cranial nerves
- Arteries
- Veins
- Venous sinuses



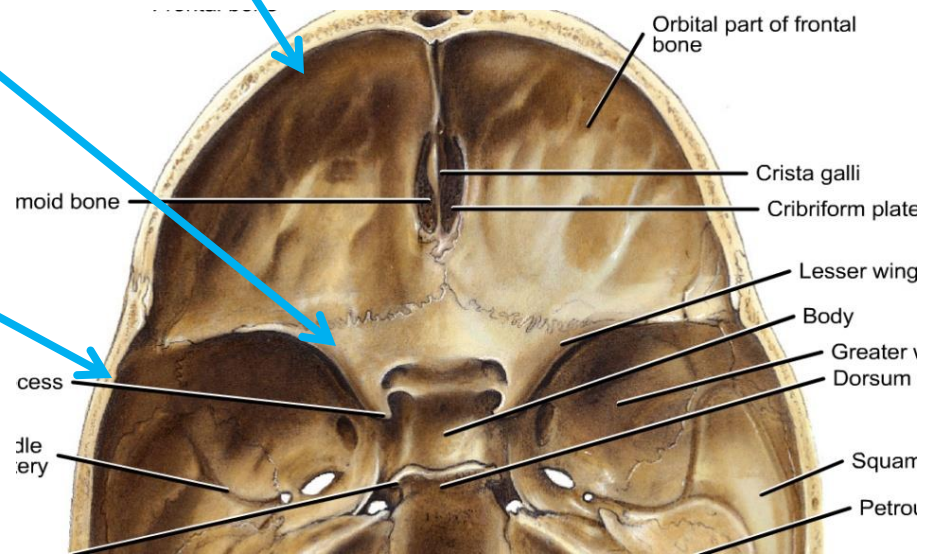
Base of the skull

- Divided by the :-
- Lesser wing of sphenoid bone
- Petrous part of temporal bone

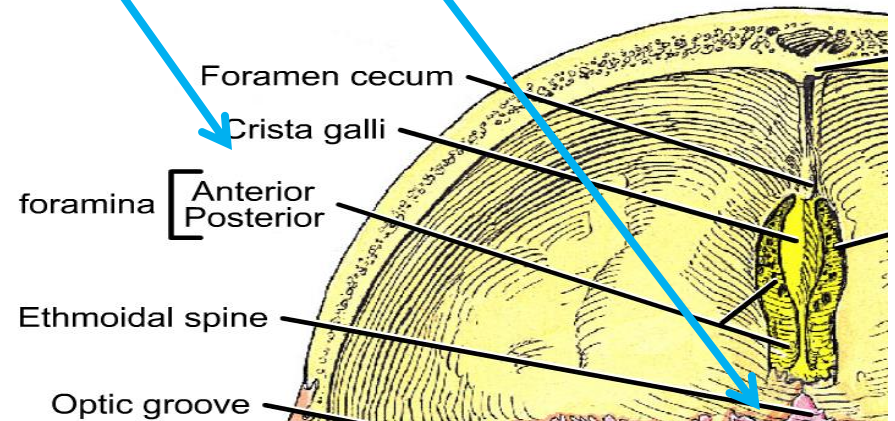


Anterior cranial fossa

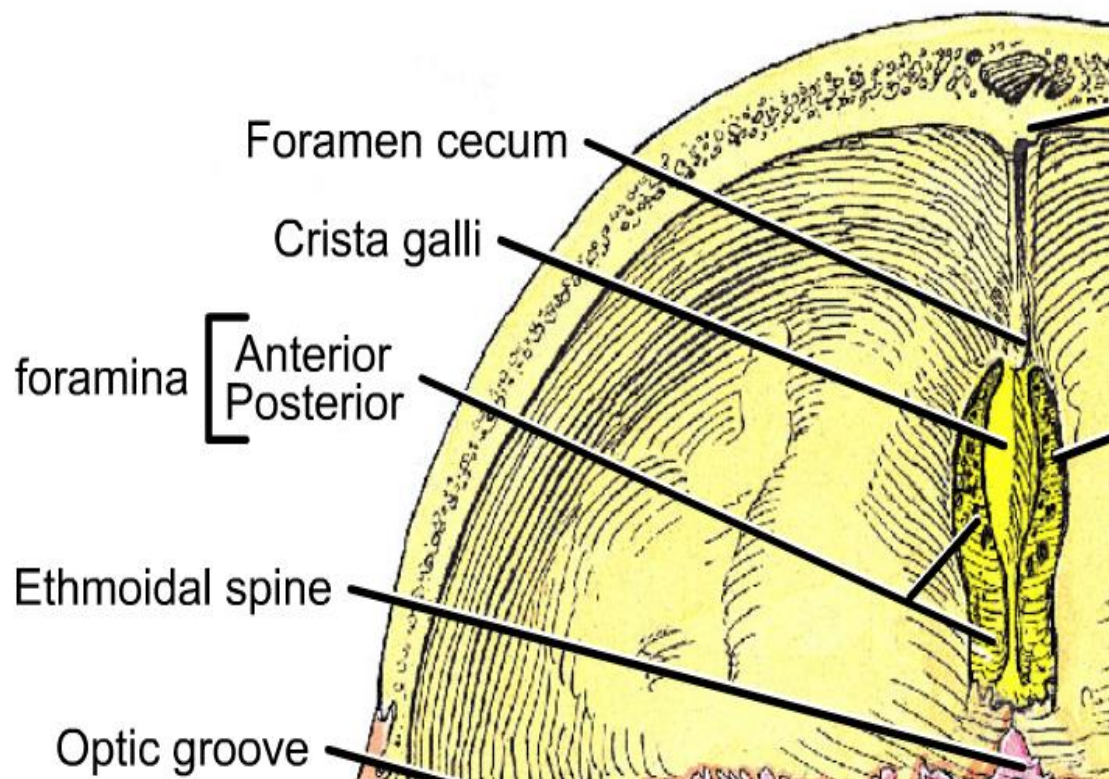
- Lodges frontal lobe of cerebral hemisphere
- Surrounded :-
 - inner surface of the **frontal** bone
 - **lesser wing** of sphenoid bone (end laterally by **pttrion** the anteroinferior angle of parietal)

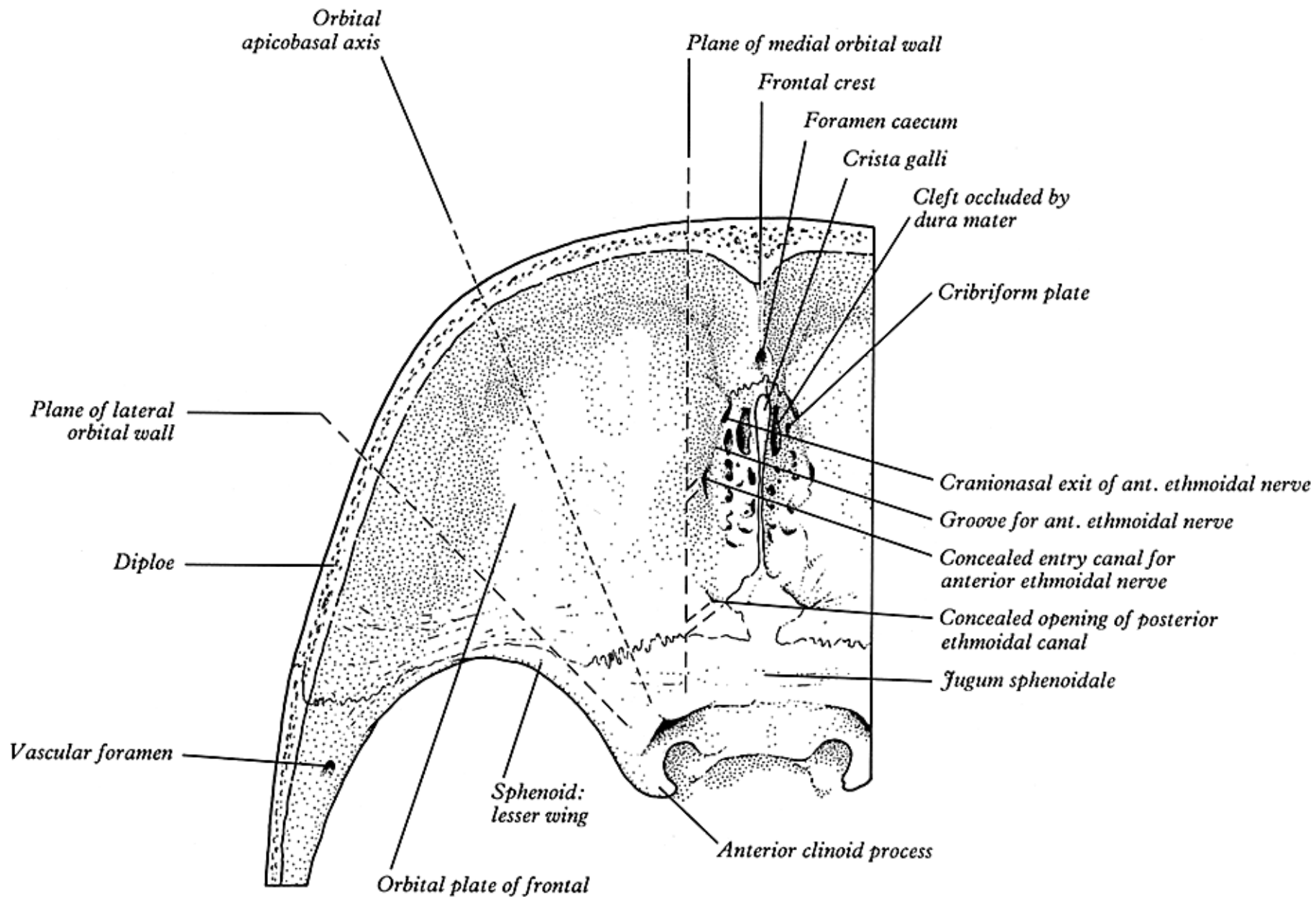


- **Crista galli** : (ethmoidal)for attachment of falx cerebri ,
- **Anterior clinoid process**: medial end of lesser w. give attachment for tentorium cerebelli
- Posteriorly limited by groove for optic chizma
- Floor :frontal bone and ethmoid
- Foramen cecum: in front crista galli (vein from nose to superior Sagital sinus)



- Two foramina : anterior and posterior ethmoid
- Olfactory bulbs : on two cribriform plate



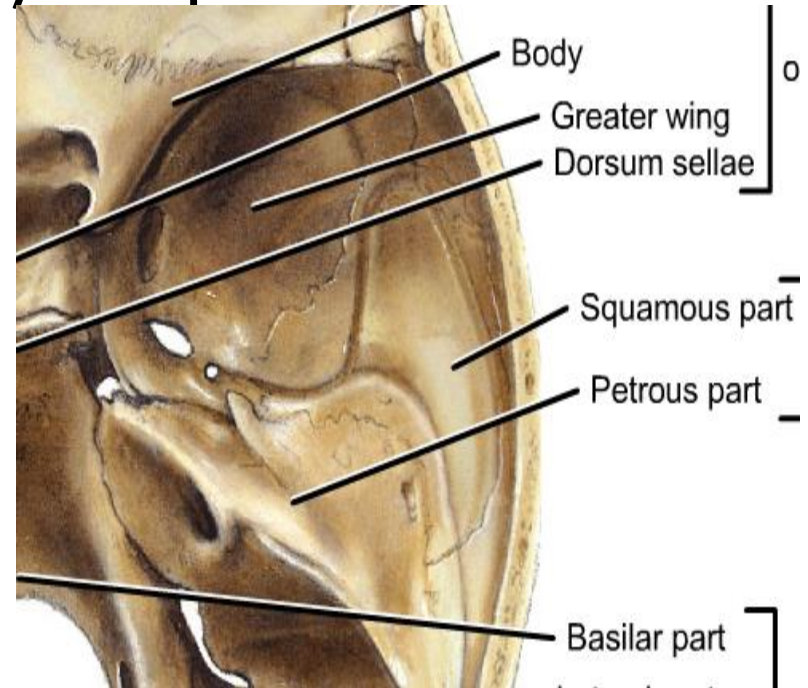


Middle cranial fossa

Middle

Formed of two portions :-

- ❑ Small median part : by body of sphenoid
- ❑ Expanded lateral part :
Squamous temporal and
greater wing



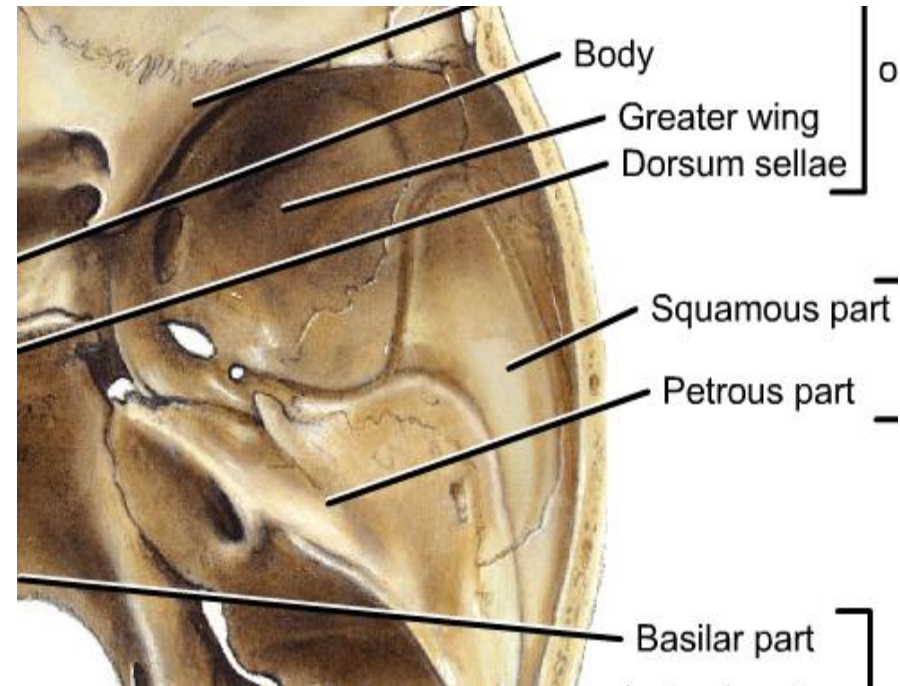
Boundaries :

- ❖ Anteriorly : Lesser wing
of sphenoid
- ❖ Posteriorly: Petrous part of temporal bone :

❖ floor :-Squamous of greater wing of sphenoid + temporal bone

Middle

❖ medially :Body of sphenoid:
bound fossa (Hypophysis cerebra).

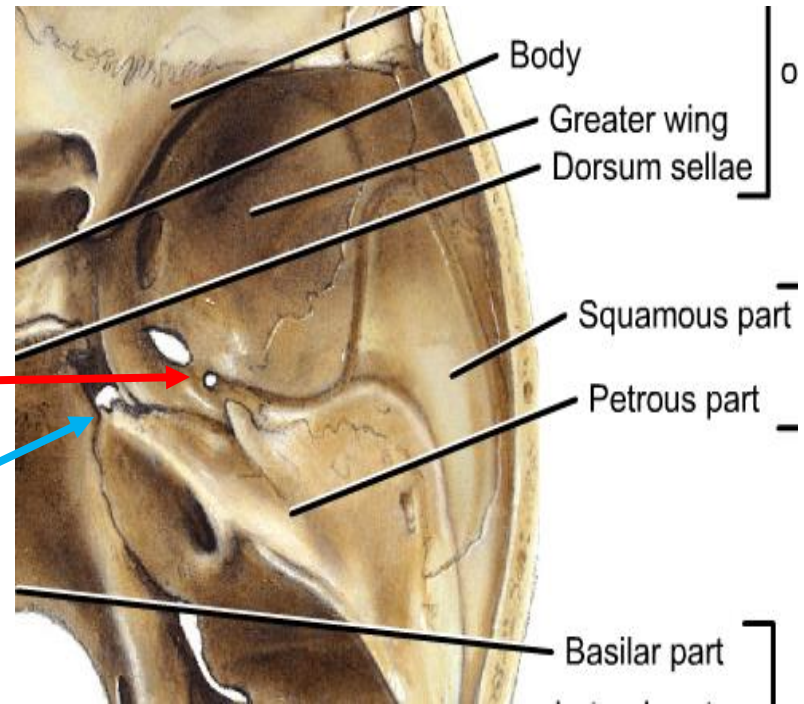


***The middle cranial
fossa lodges temporal
lobes of the brain***

Foramena :

- *F.Rotundum*: maxillary
- *F.Ovale* : mandibular n., lesser petrosal n., meningeal branch of mandibular n.
- *F.Spinosum* : middle meningeal artery
- *Lacerum*: small vessels + cartilage + fibrous tissue + gr. Petrosal n.

The middle cranial fossa form medial wall of temporal fossa
-Infra temporal crest in its inferior surface



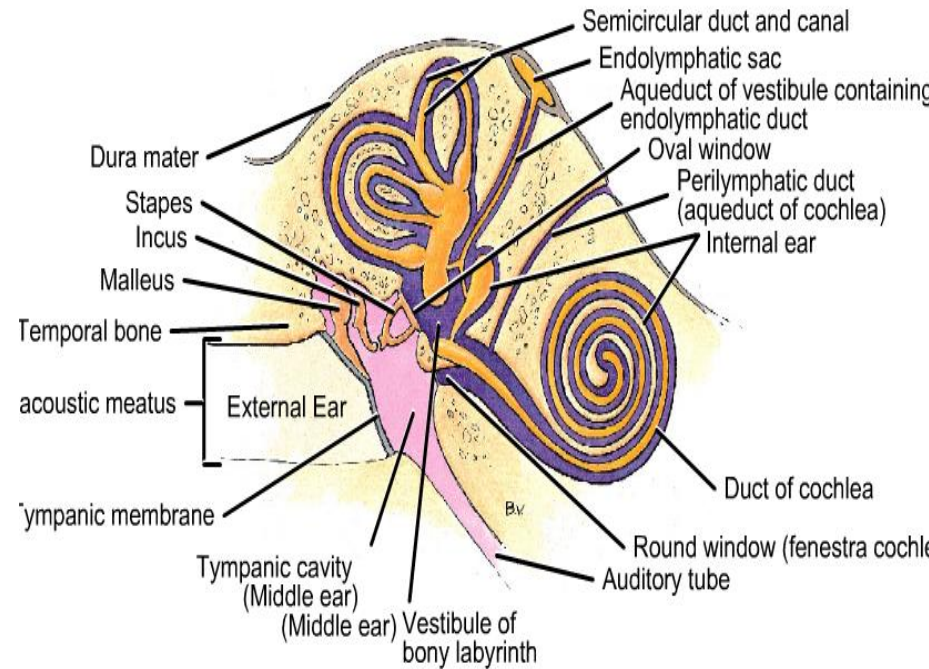
Foramen lacerum: between **Petrous**, and **sphenoid** bone

- Carotid canal: from inferior of Petrous temporal bone, superior to **foramen lacerum**. transmit internal carotid artery
- Impression for trigeminal ganglion



■ *Arcuate eminence:*

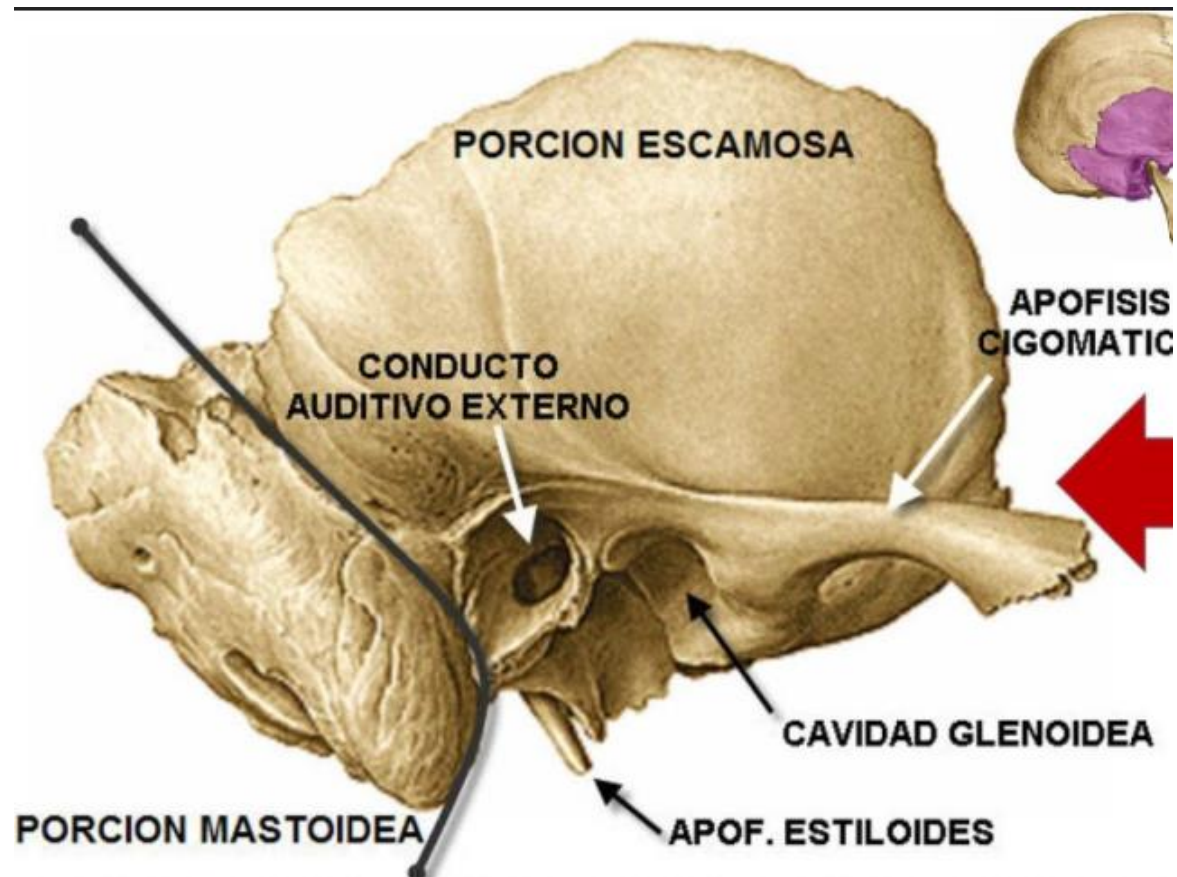
Small elevation on anterior surface of petrous bone caused by superior semicircular canal



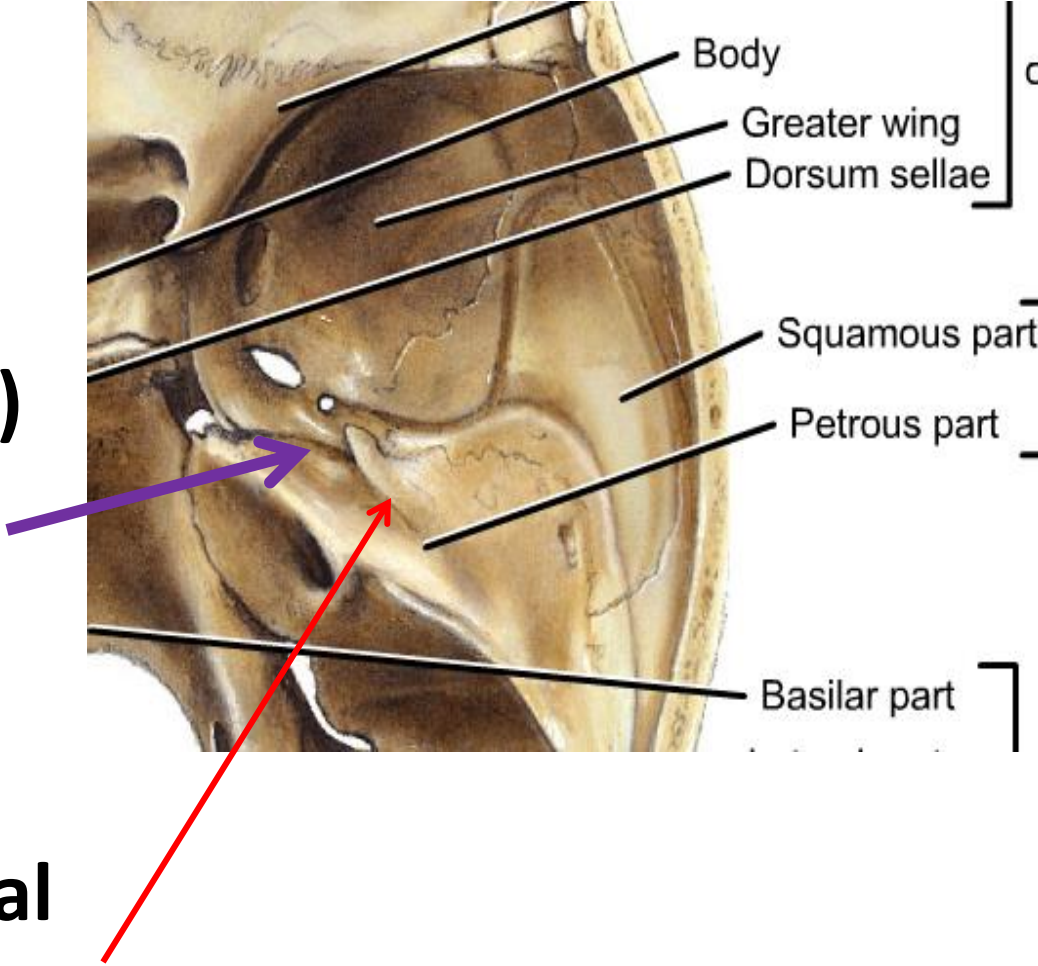
▪ Tegmen tympani:

Is a bony plate

covers mastoid untrum



- **Grove for greater Petrosal nerve medially**
 Br. Of facial n. (paras.)
 inter to F. Lacerum
 Join deep petrosal nerve (symp) to form
 Nerve of ptregoid canal



- **Grove for lesser petrosal n. to foramen ovale**

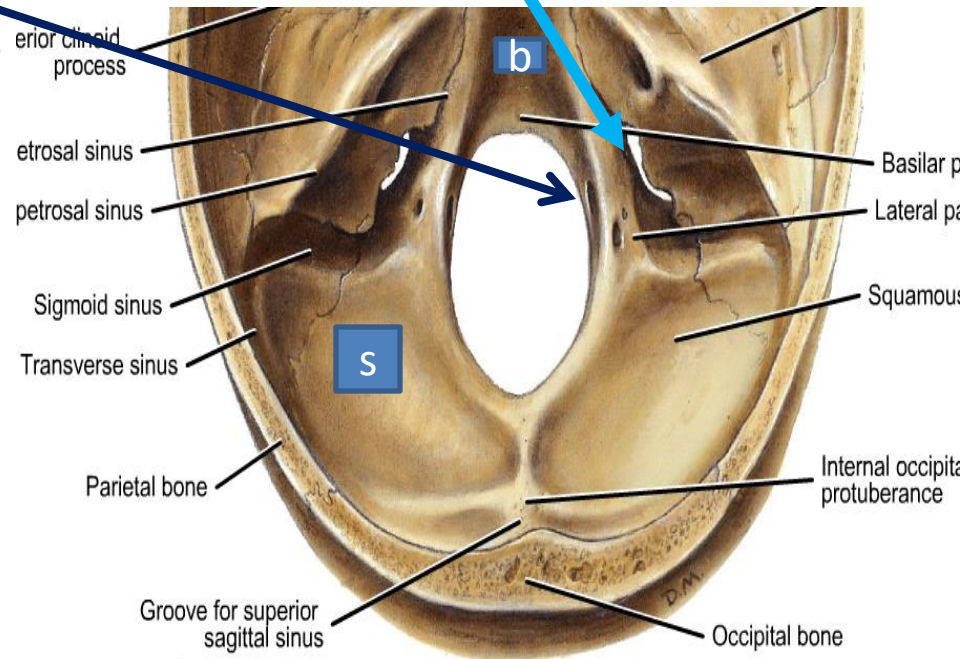
Posterior cranial fossa:

- ❖ **Lodges hind brain (cerebellum, pons + medulla oblongata),**
- ❖ **Foramen magnum : for medulla oblongata, meninges, vertebral a. + spinal accessory n.**
- ❖ **Hypoglossal canal : superior medial to magnum**
- ❖ **Jugular foramen : between**

Occipital condyl + petrous

Jugular foramen transmit:

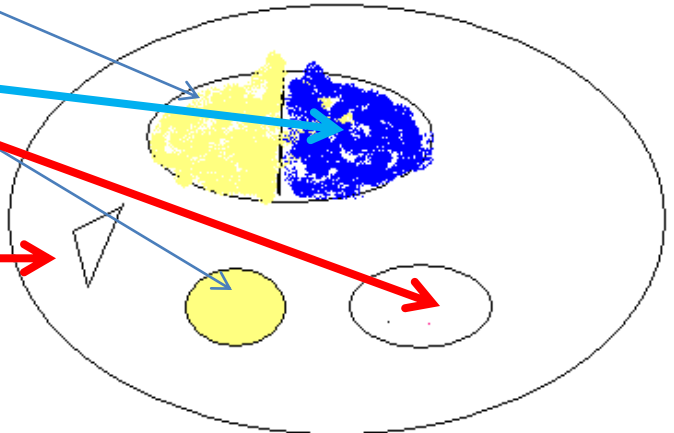
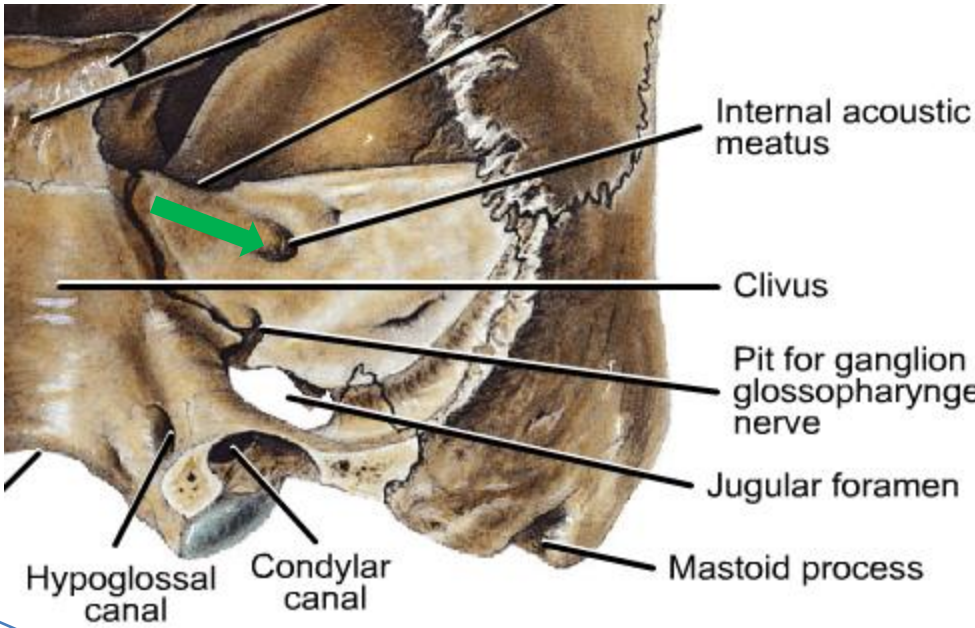
- inferior petrosal sinus**
- ix, x, xi cranial nerves**
- sigmoid sinus , become Sigmoid inside foramen**



Internal acoustic meatus : posterior surface to Petrous bone ;

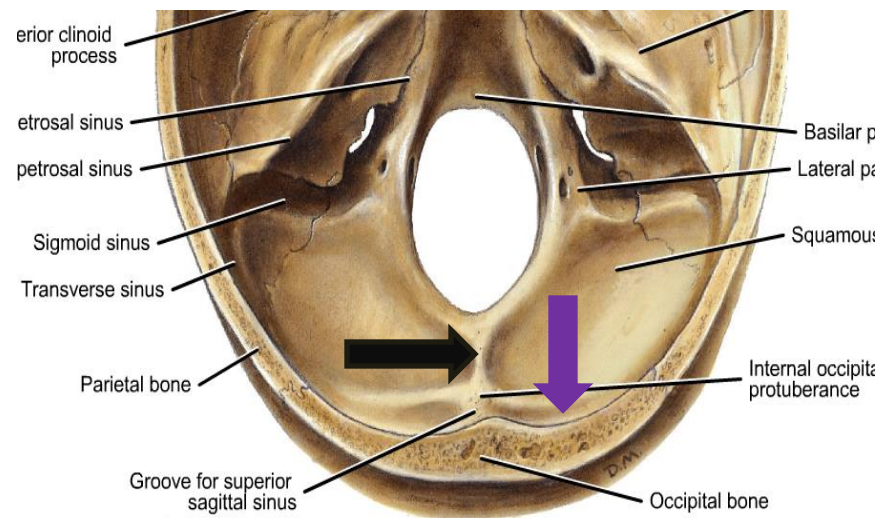
transmit :

- a. Vestibulocochlear nerve
- b. Cochlear nerve
- c. Facial sensory and motor
- C- labyrinthine artery



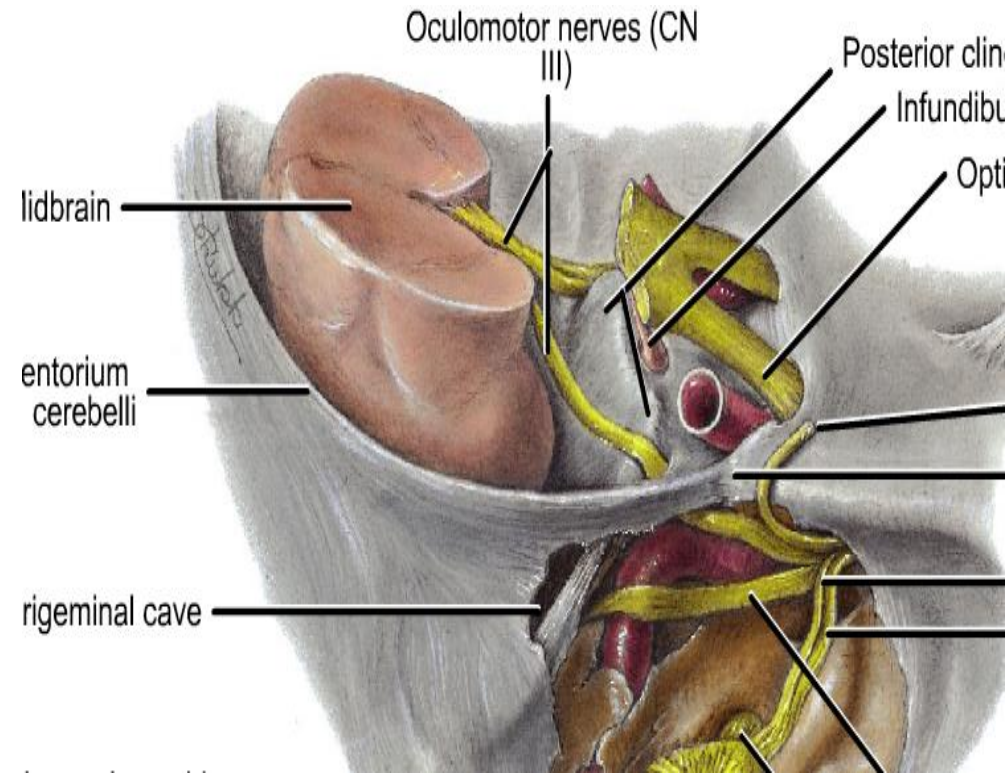
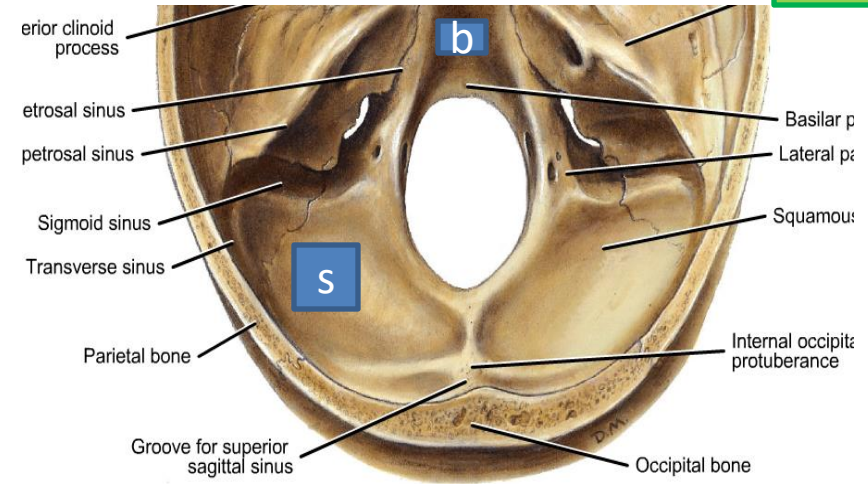
❑ Internal occipital crest
to it attach falx cerebelli
covered by occipital
sinus

❑ Transverse sinus groove :
become
sigmoid at mastoid
process
to drain to internal
jugular
vein.



Boundaries :-

- **Anteriorly: Petrous temporal bone**
- **Posteriorly : Squamous of occipital b.**
- **Floor : Squamous, basilar, and condylar of occipital b.**
- **Roof : tentorium cerebelli**



• ***Prof. Dr. Talib***

Jawad