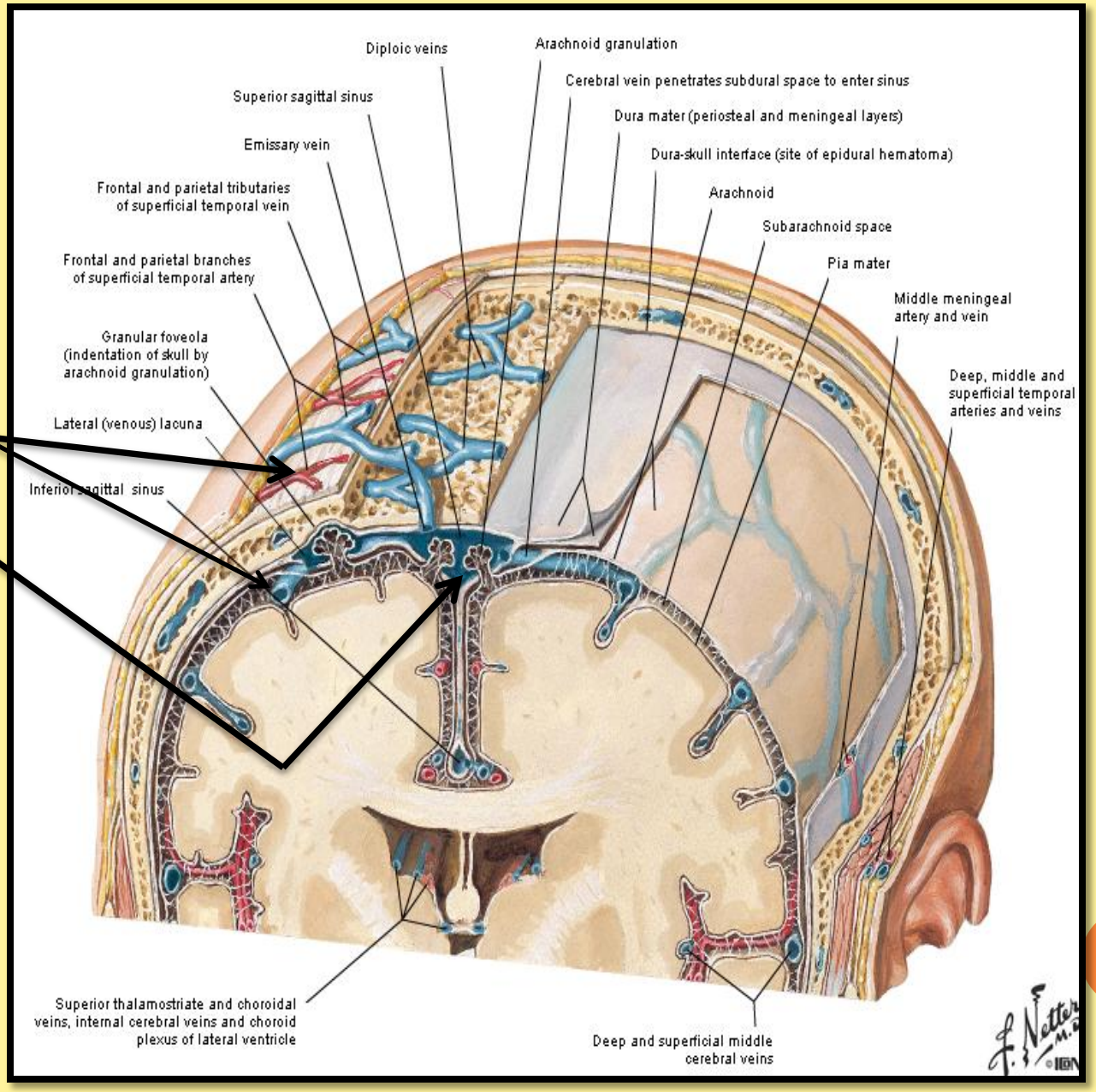
The Cranial Cavity

CONTENTS

1-The brain and its surrounding Meninges

2-Arteries

3-Veins



4-Venous sinuses

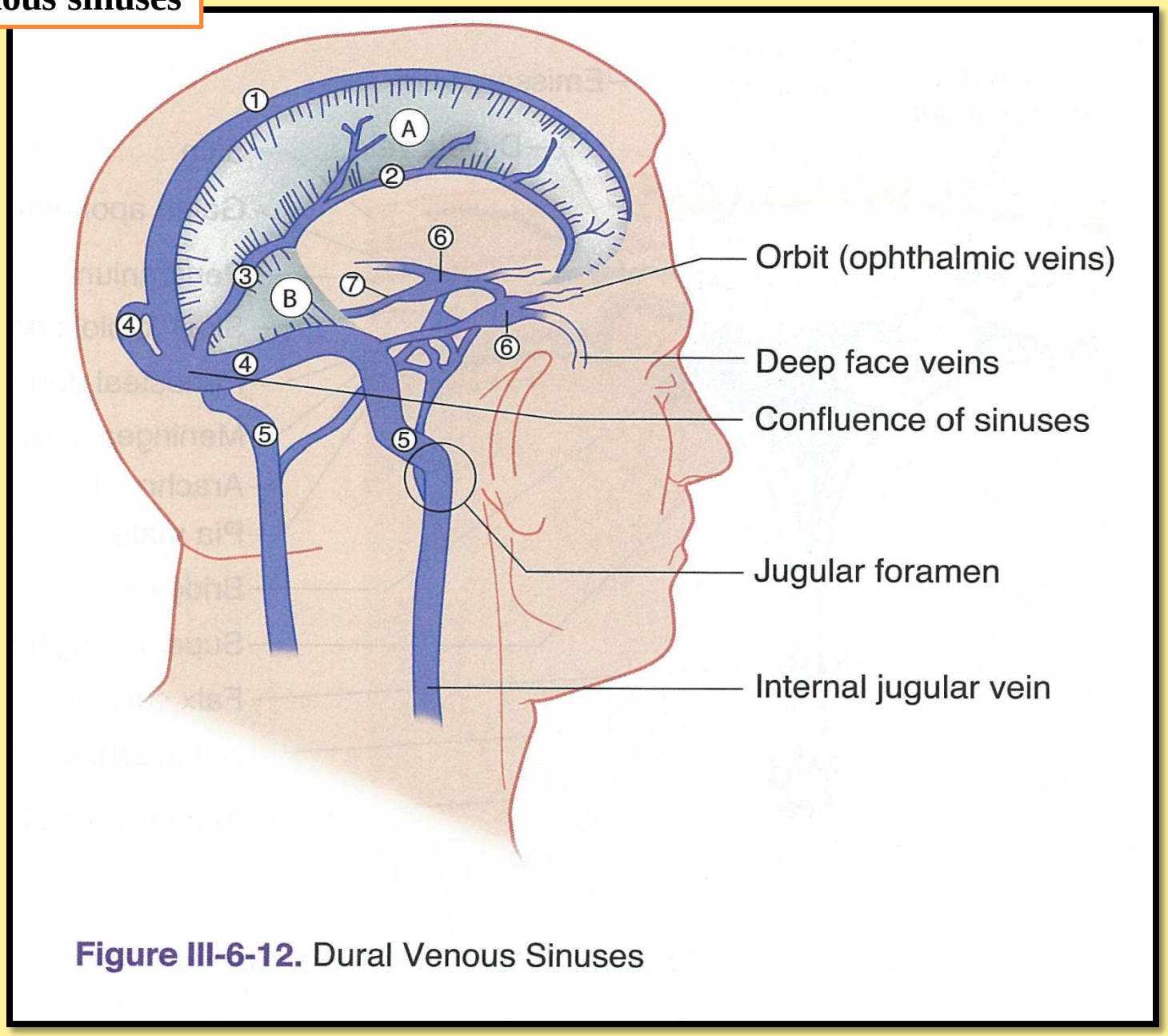
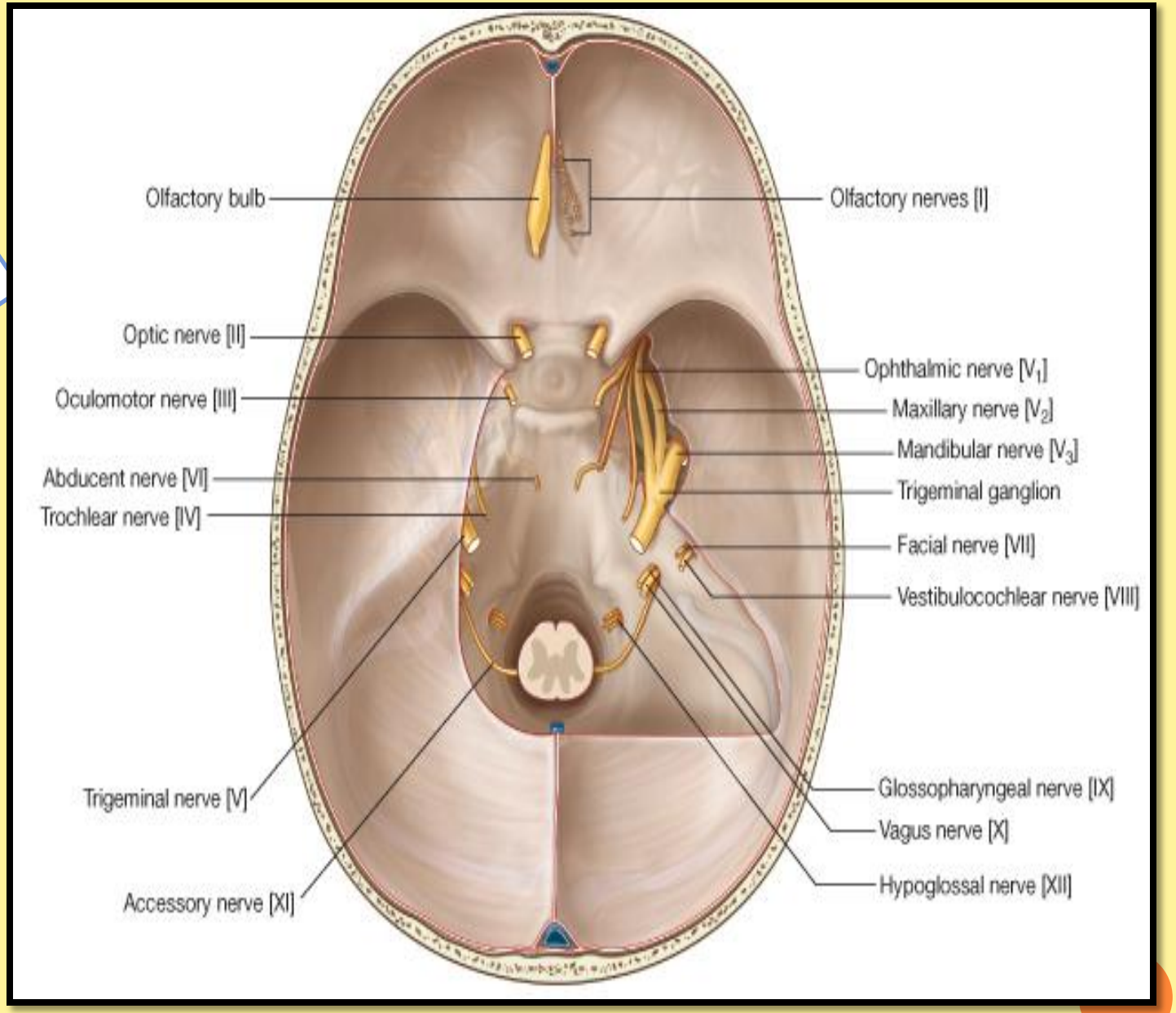


Figure III-6-12. Dural Venous Sinuses

5-Parts of the cranial nerves



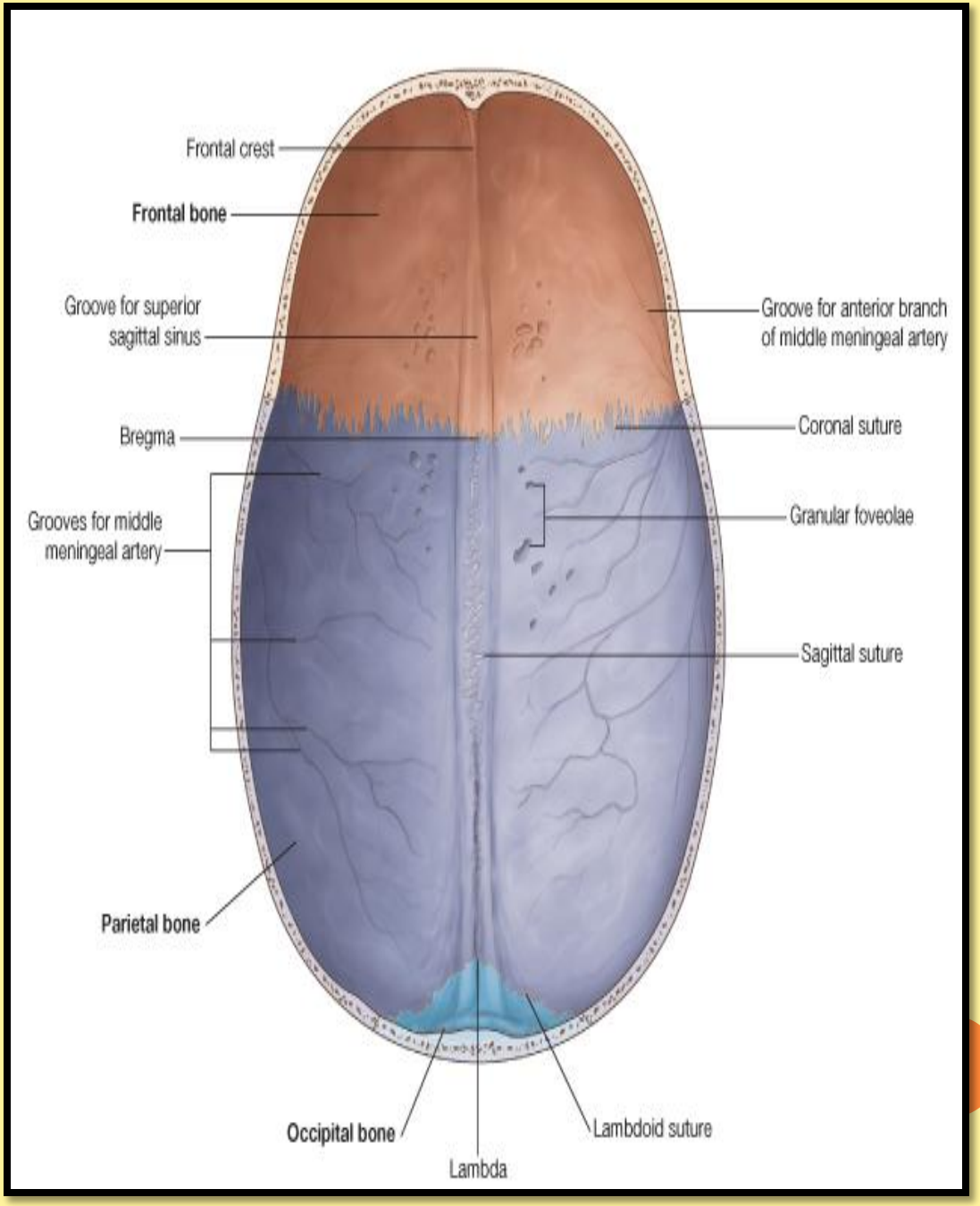
VAULT OF THE SKULL

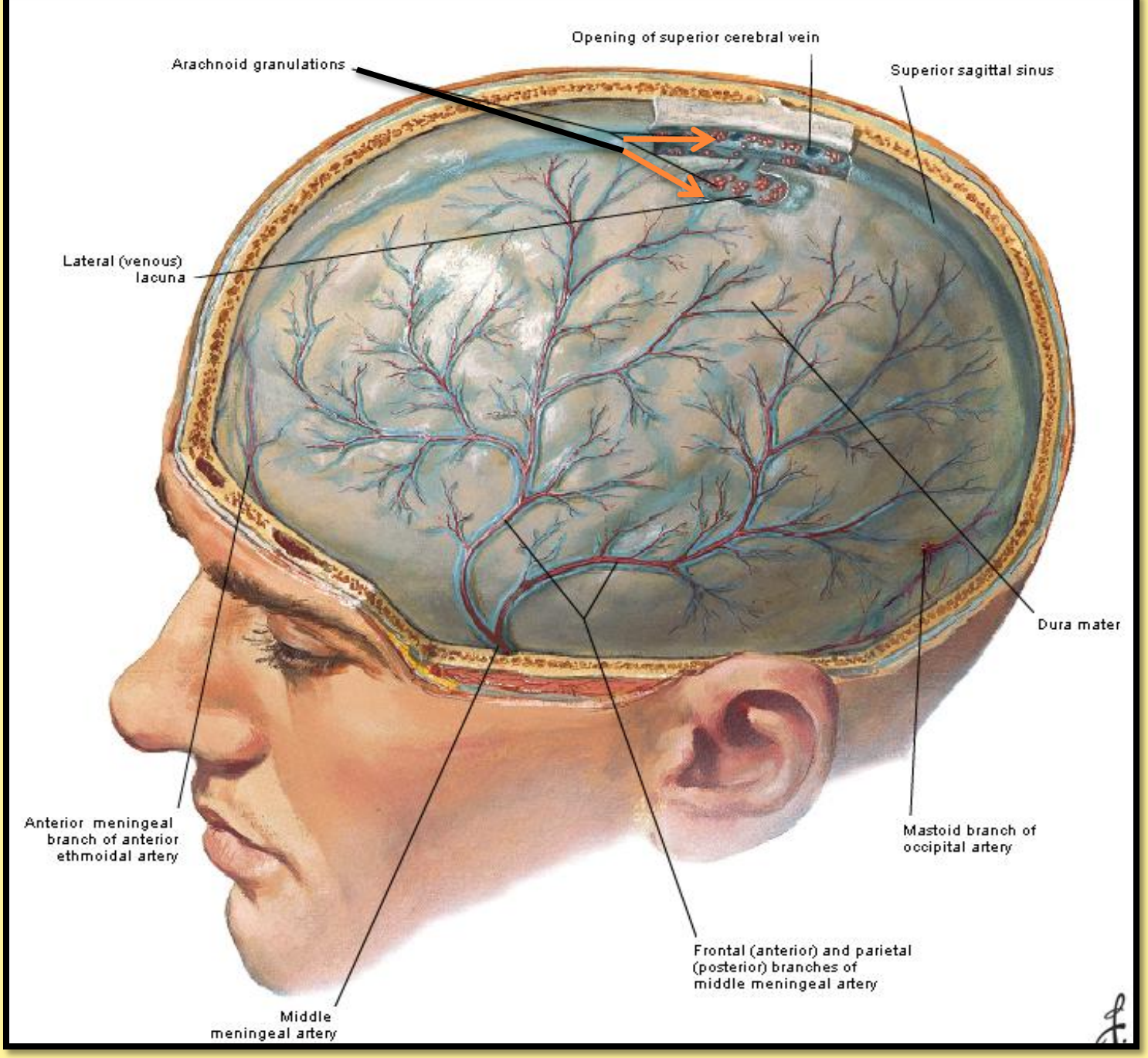
The internal surface of the vault presents:
1- The coronal
2- Sagittal
3-Lambdoid sutures

4-In the midline is a shallow **sagittal groove** containing the **SUPERIOR SAGITTAL SINUS**

5-On each side of the groove are several small pits, called **GRANULAR PITS? What for (see next slide)**

6-Grooves for the middle meningeal artery




Opening of superior cerebral vein
Arachnoid granulations
Superior sagittal sinus
Lateral (venous) lacuna
Dura mater
Anterior meningeal branch of anterior ethmoidal artery
Mastoid branch of occipital artery
Frontal (anterior) and parietal (posterior) branches of middle meningeal artery
Middle meningeal artery

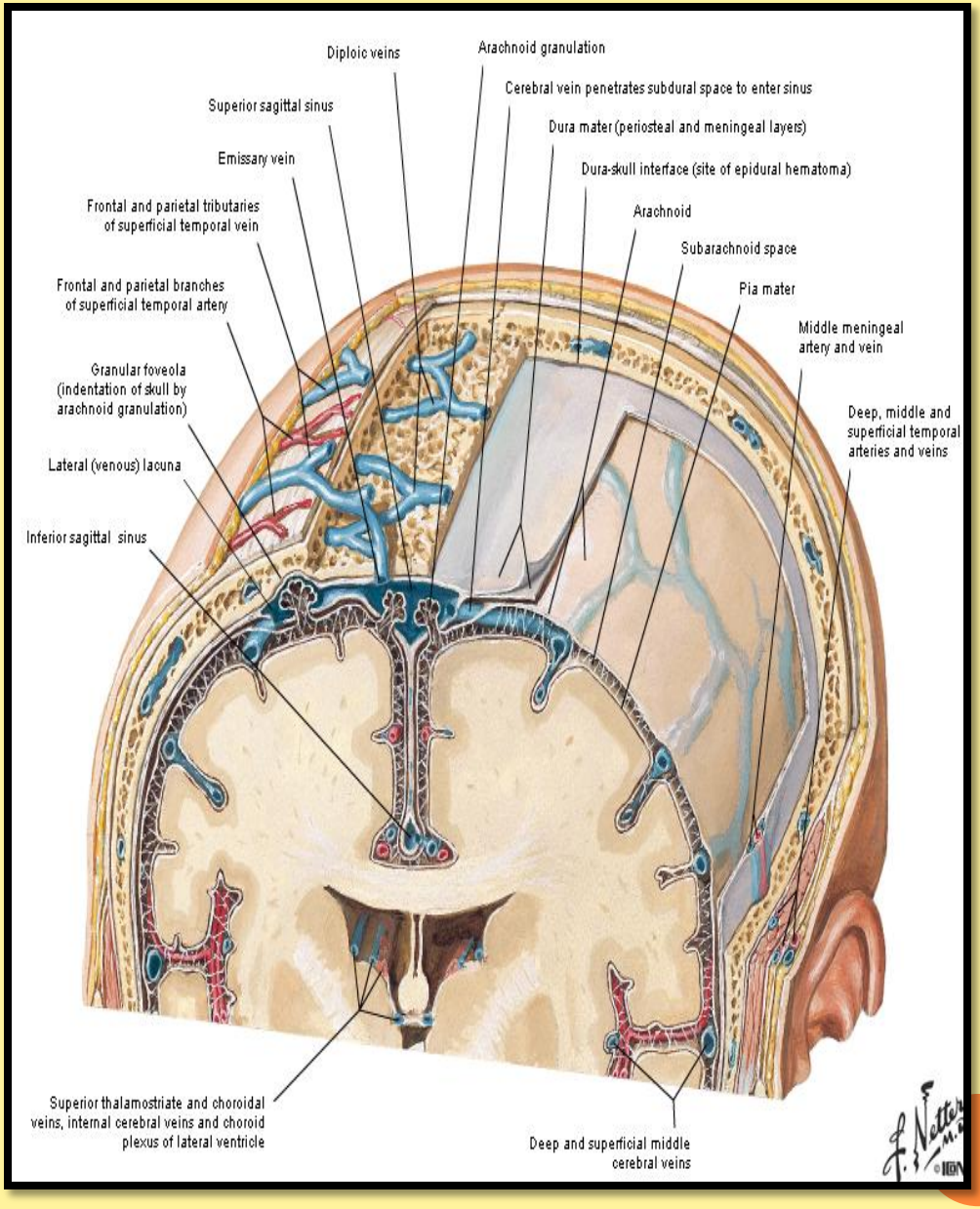
The Meninges

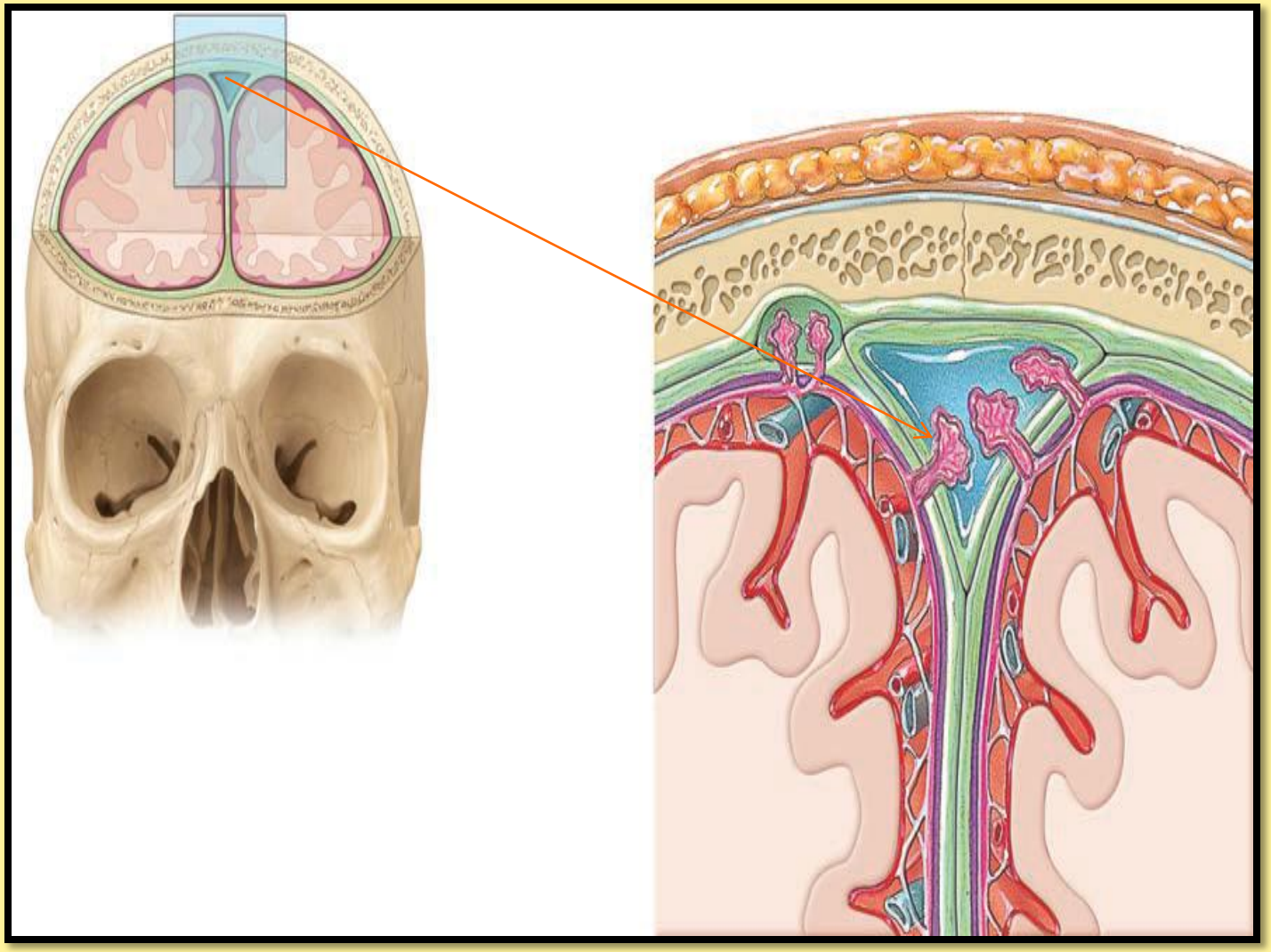
The brain in the skull is surrounded
by three membranes or meninges:

1-THE DURA MATER

2-THE ARACHNOID MATER

3-THE PIA MATER





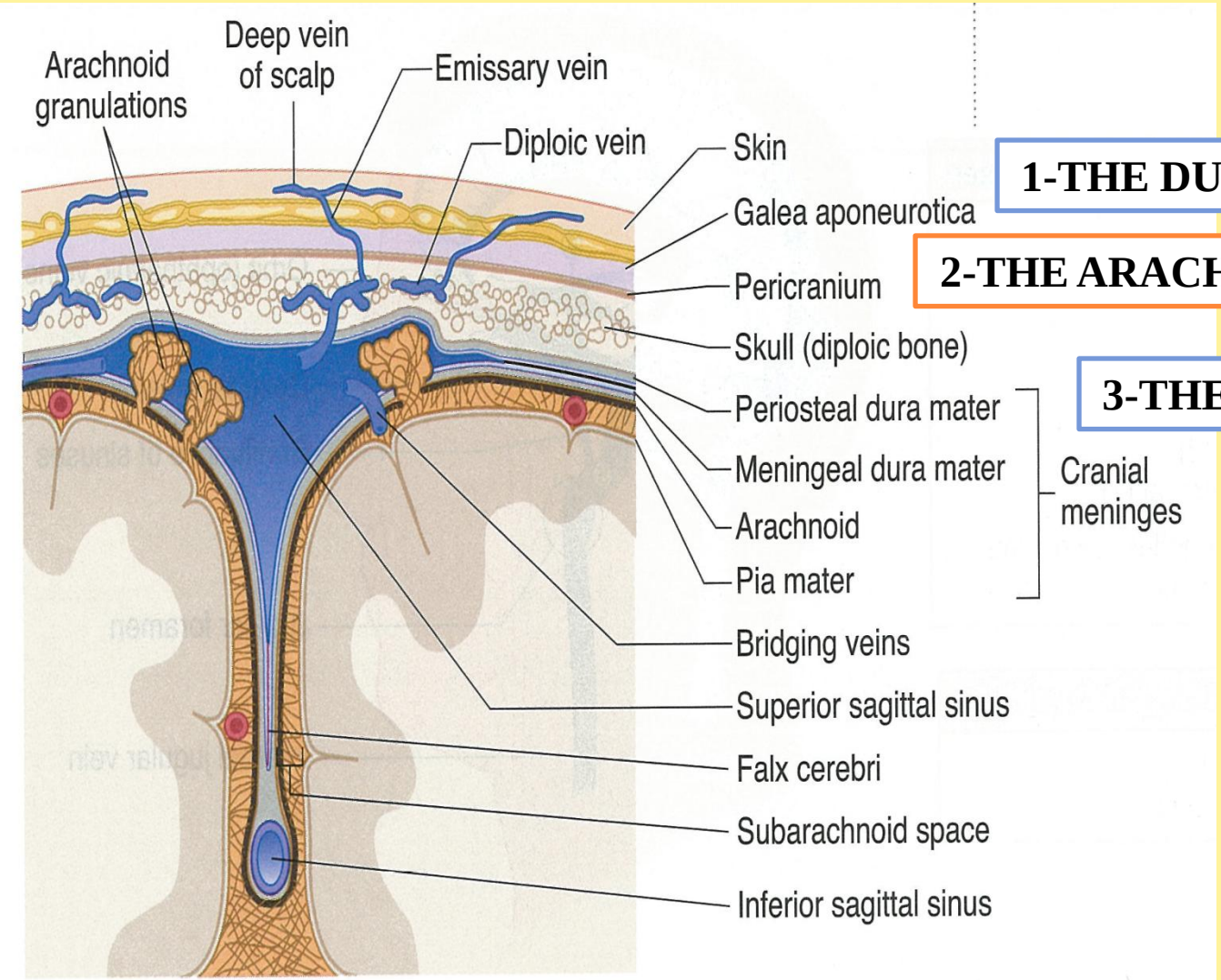


Figure III-6-11. Coronal Section of the Dural Sinuses

1-THE DURA MATER

2-THE ARACHNOID MATER

3-THE PIA MATER

1-DURA MATER OF THE BRAIN

Made of two layers:
a-The endosteal layer
b-The meningeal layer
These are closely united except along where they separate to form
VENOUS SINUSES

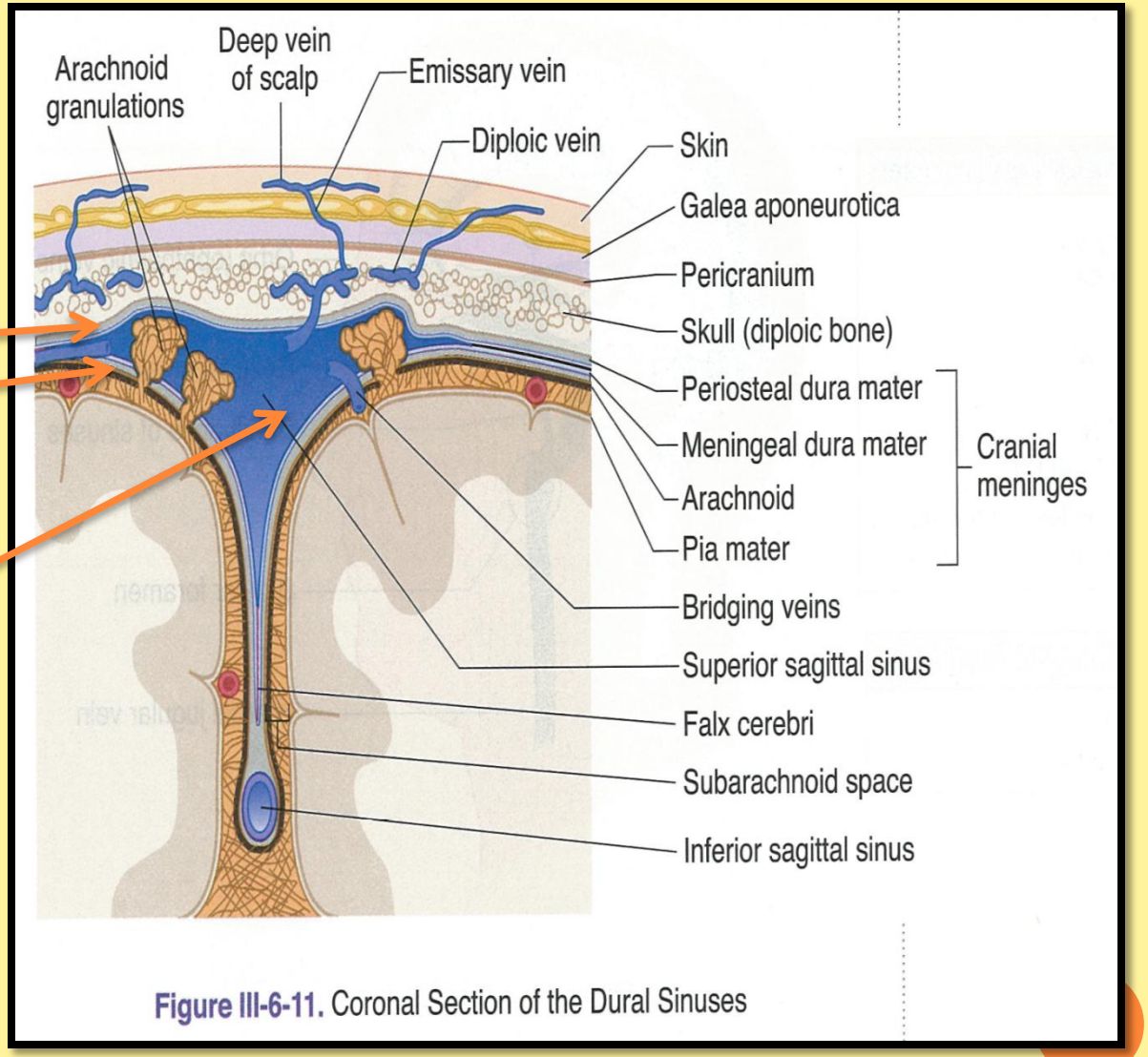


Figure III-6-11. Coronal Section of the Dural Sinuses

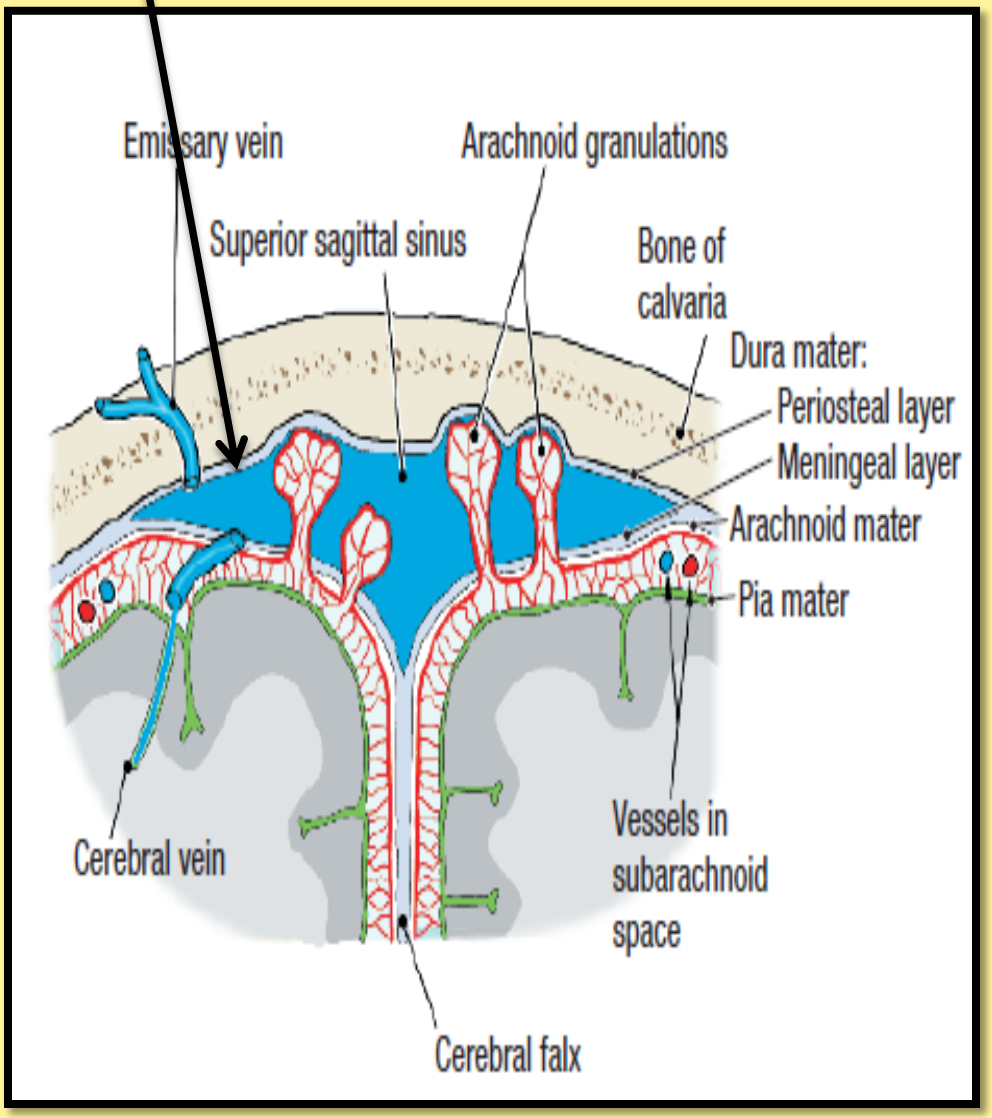
➢A-The endosteal layer

➢Is the **ordinary periosteum** covering the inner surface of the skull bones

➢It ***does not extend*** through the foramen magnum to become continuous with the dura mater of the spinal cord

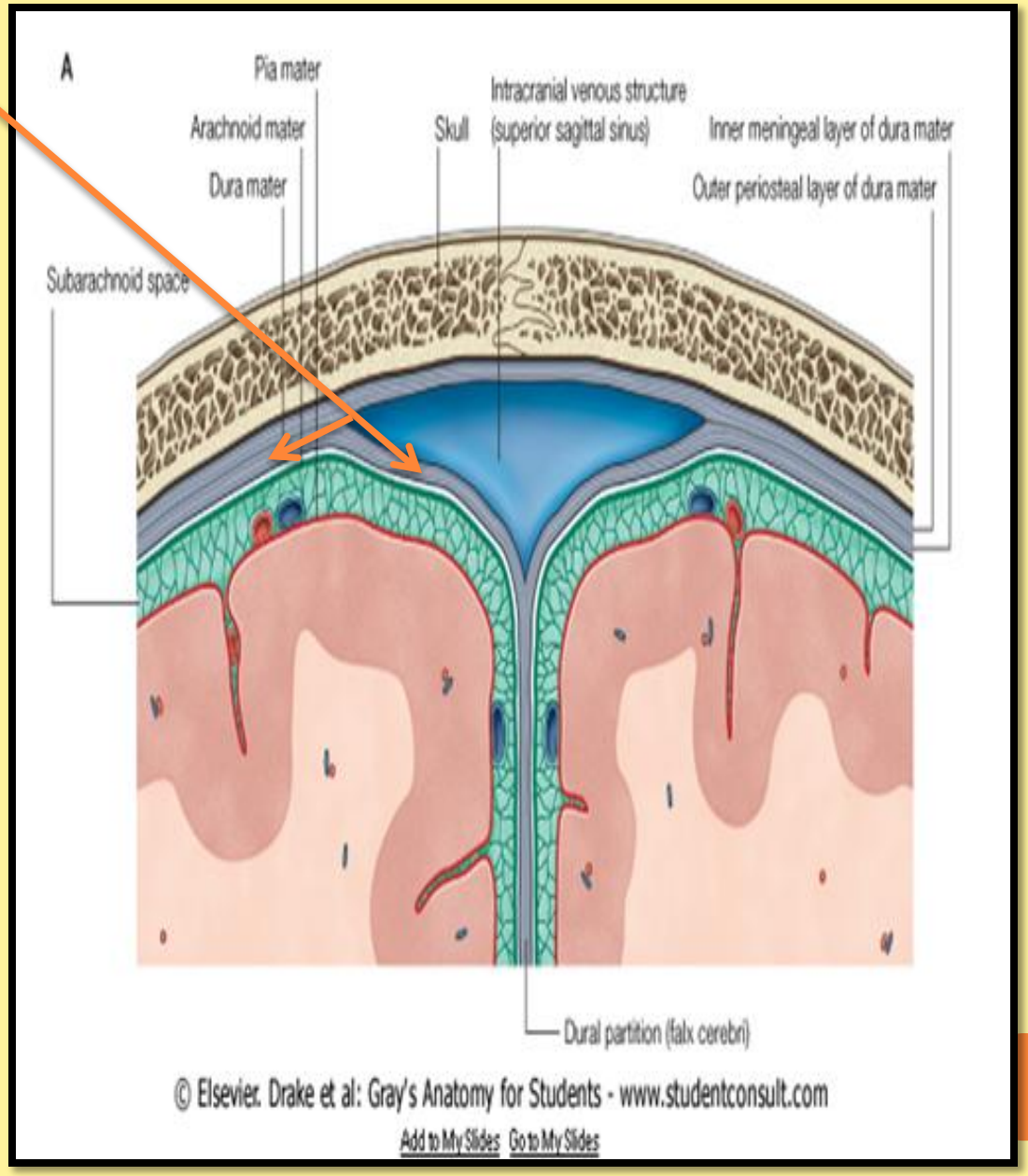
➢ Around the margins of all the foramina in the skull it becomes continuous with the periosteum on the outside of the skull bones

➢At the sutures it is continuous with the sutural ligaments.



B-The meningeal layer

- Is the dura mater proper
- It is a dense, strong, *fibrous membrane*
- covering the brain and is ***continuous through the foramen magnum with the dura mater of the spinal cord***
- It provides ***tubular sheaths for the cranial nerves*** as the latter pass through the foramina in the skull
- Outside the skull the sheaths fuse with the ***epineurium*** of the nerves



The meningeal layer sends inward

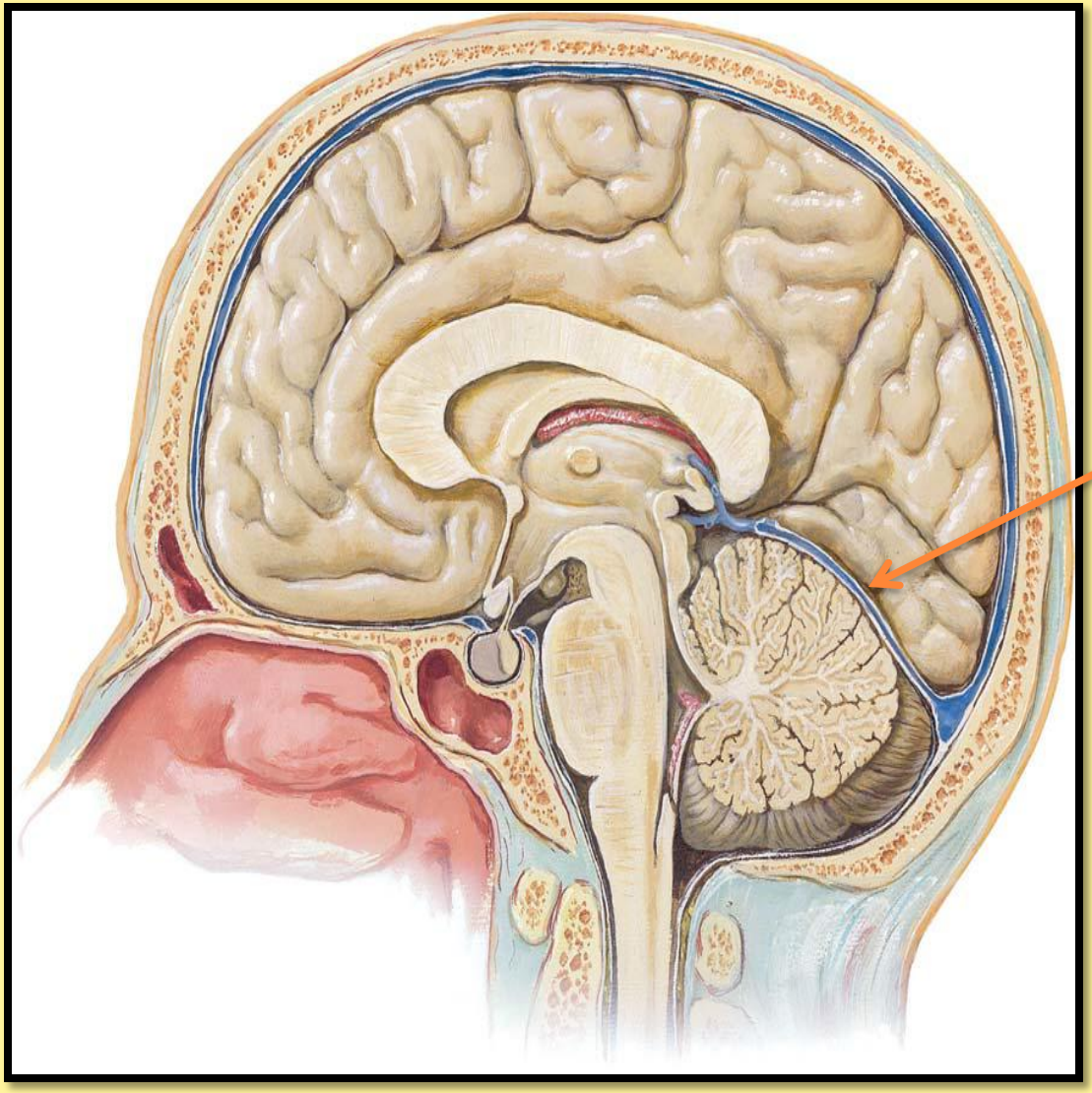
FOUR SEPTA

1-THE FALX CEREBRI

2-THE TENTORIUM CEREBELLI

3-THE FALX CEREBELLI

4-THE DIAPHRAGMA SELLAE



The meningeal layer sends

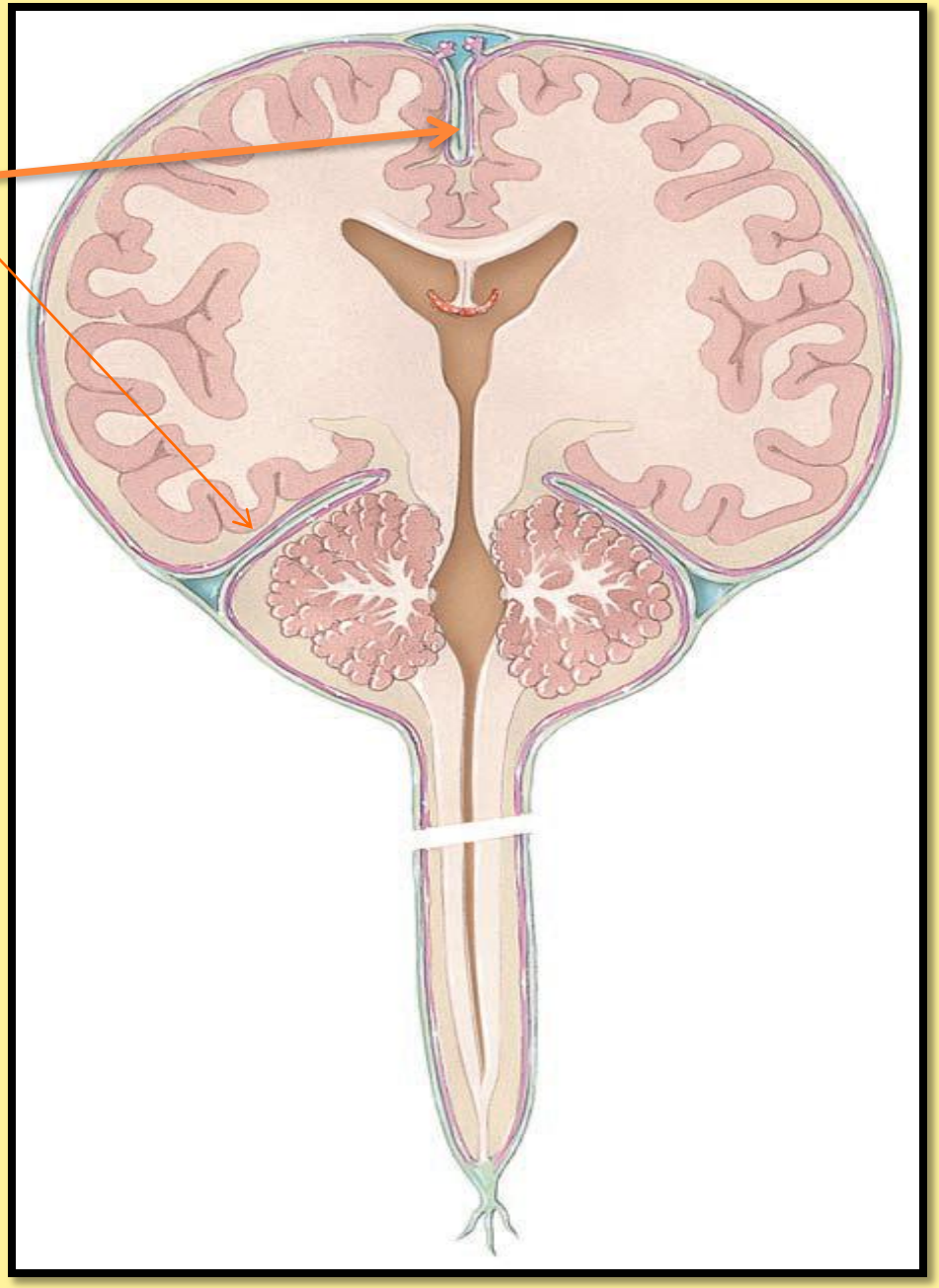
inward

SEPTA

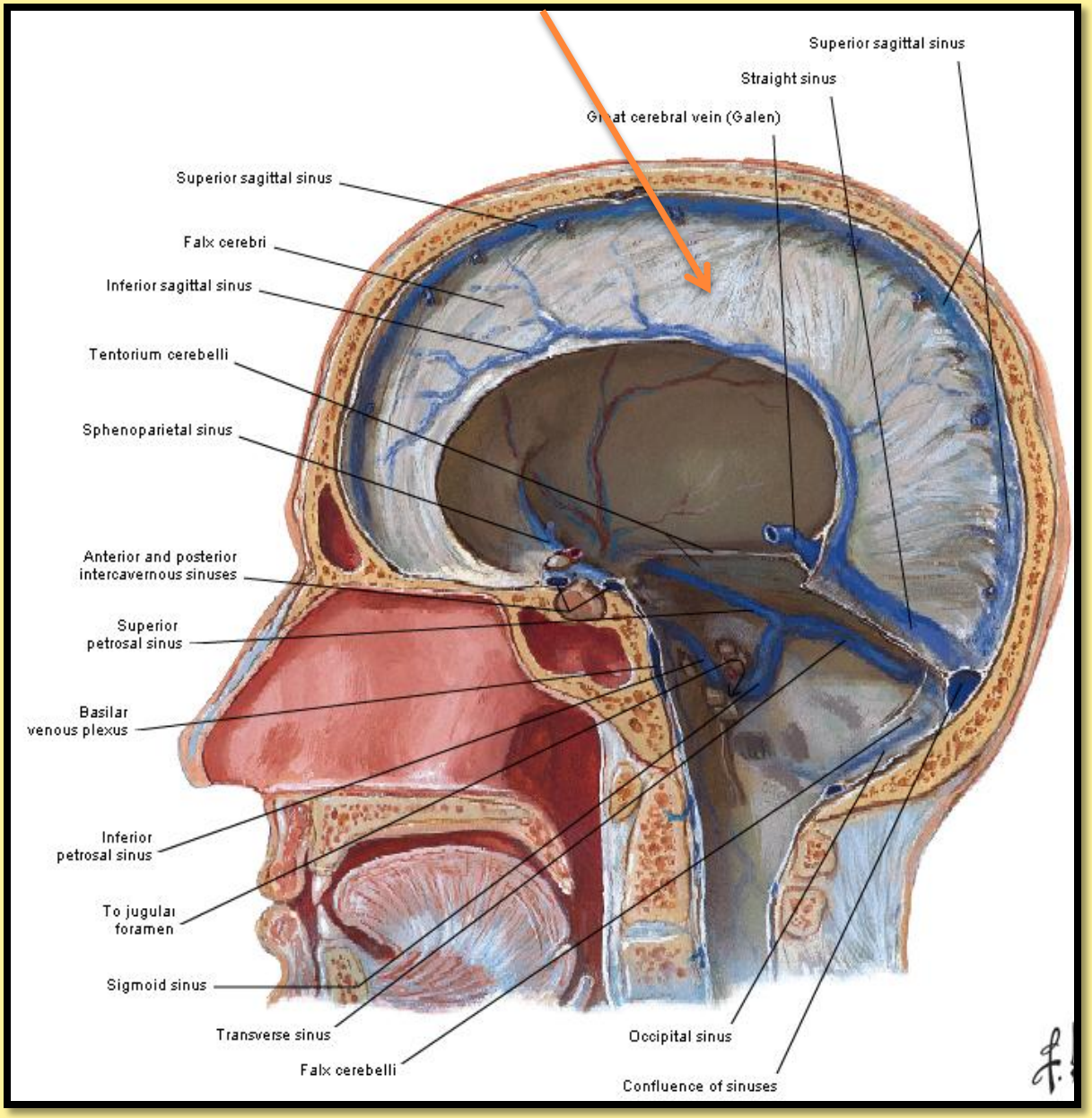
The meningeal layer sends

inward

SEPTA



1-THE FALX CEREBRI



➢Is a sickle-shaped fold of dura mater that lies ***in the midline between the two cerebral hemispheres***

➢Its narrow end **in fron**t is attached to the

THE CRISTA GALLI

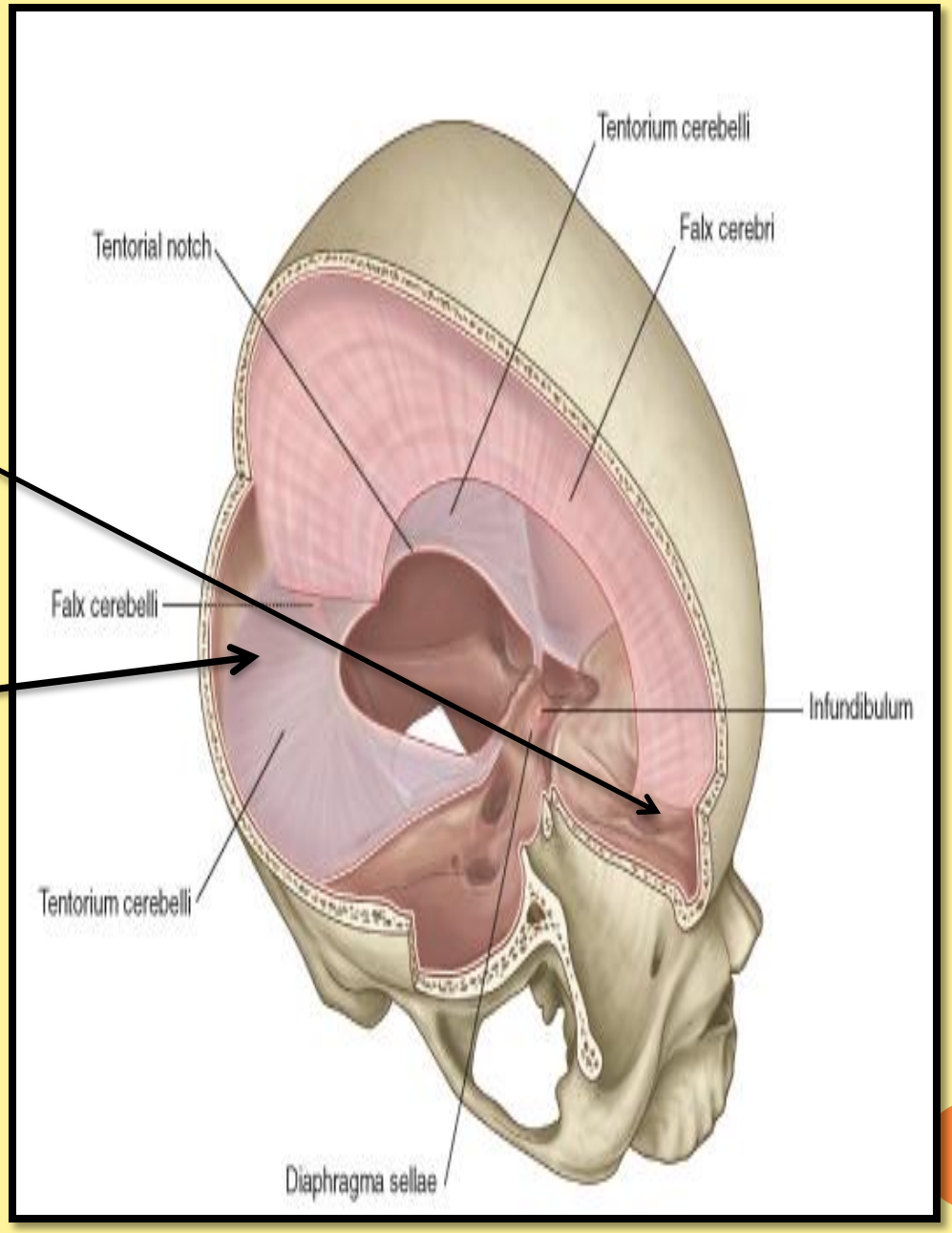
➢ Its broad **posterior part** blends in the midline with the upper surface of the

Tentorium cerebelli

➢The ***superior sagittal sinus*** runs in its ***upper fixed margin***

➢the ***inferior sagittal sinus*** runs in its lower ***concave free margin***

➢The straight sinus runs along its attachment to the ***tentorium cerebelli.***



THE TENTORIUM CEREBELLI

➢Is a crescent-shaped (or tent-shaped) fold of dura mater

- Roofs over the posterior cranial fossa

➢ It covers the upper surface of the cerebellum and supports the occipital lobes of the cerebral hemispheres.

➢In front is a gap, ***the tentorial notch***, for the passage of the midbrain

➢It has:

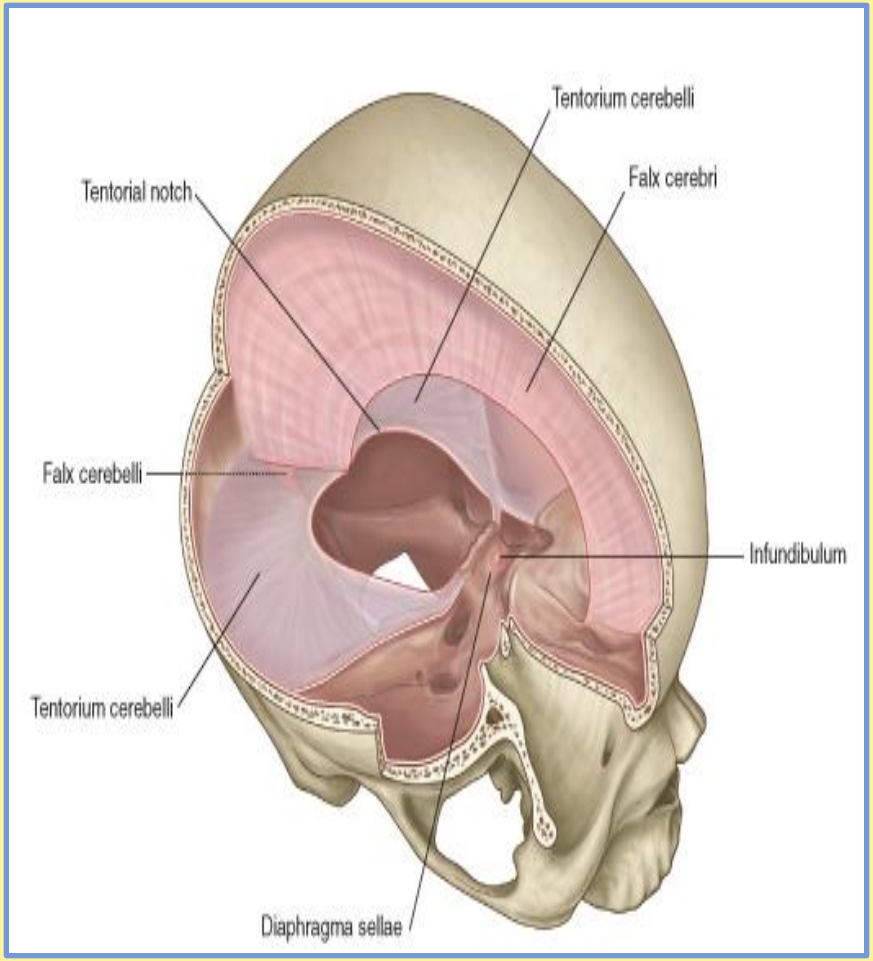
an inner free border

an outer attached or fixed border

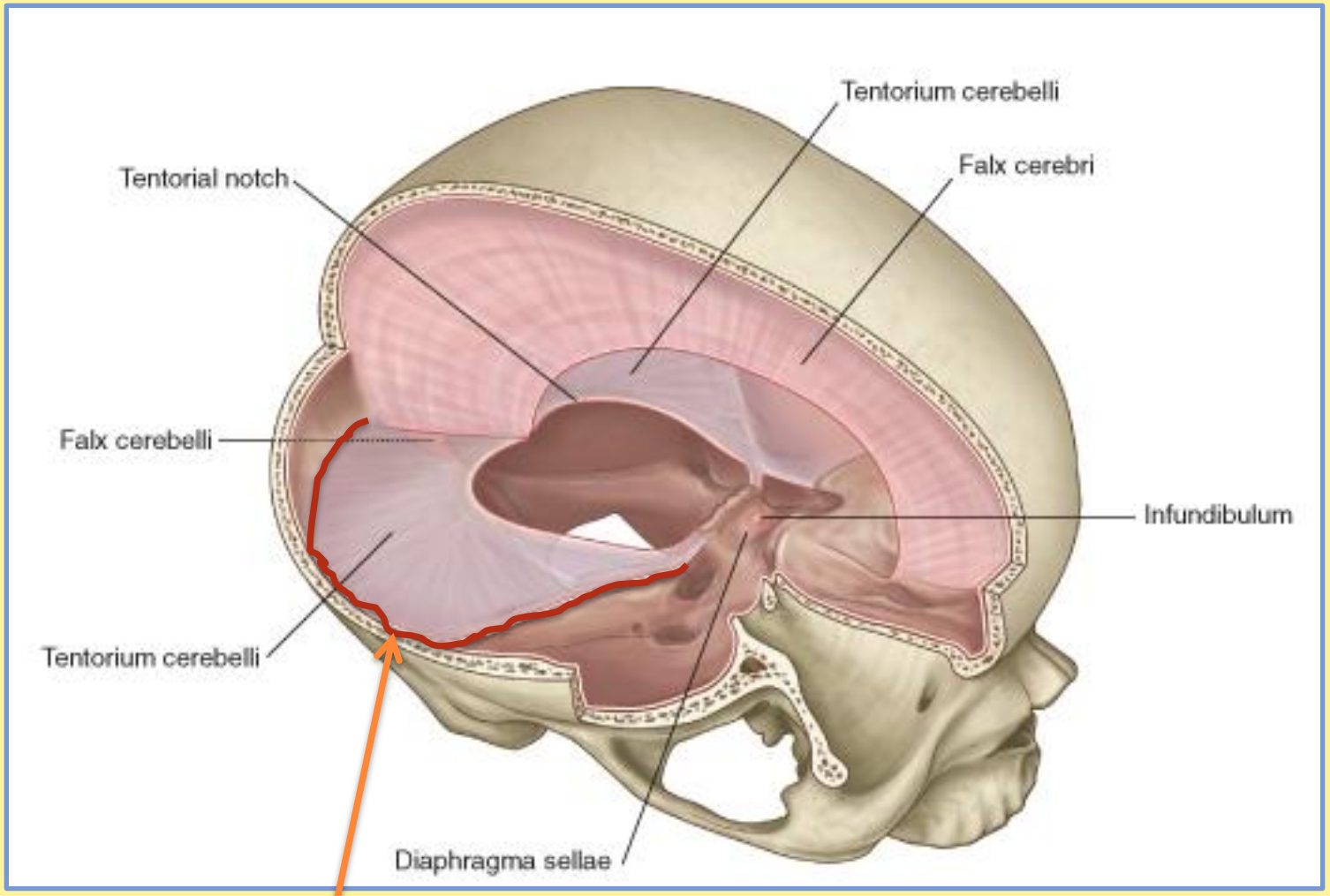
➢Divides the cranial cavity into:

1-SUPRATENTORIAL

2-INFRATENTORIAL



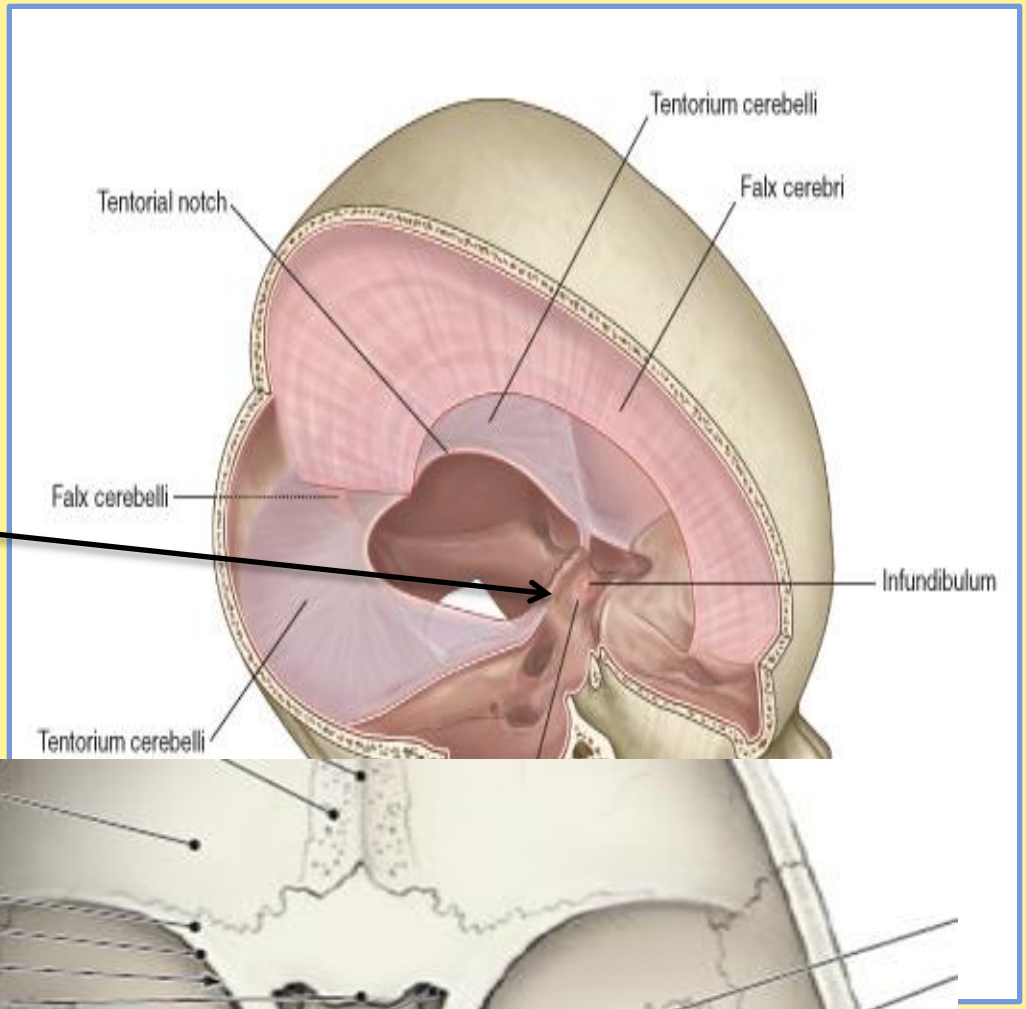
We were dividing the cranial cavity into:
anterior , middle and posterior cranial cavity . At present it is well established that we divide the cranial cavity into **supratentorial and infratentorial regions.**

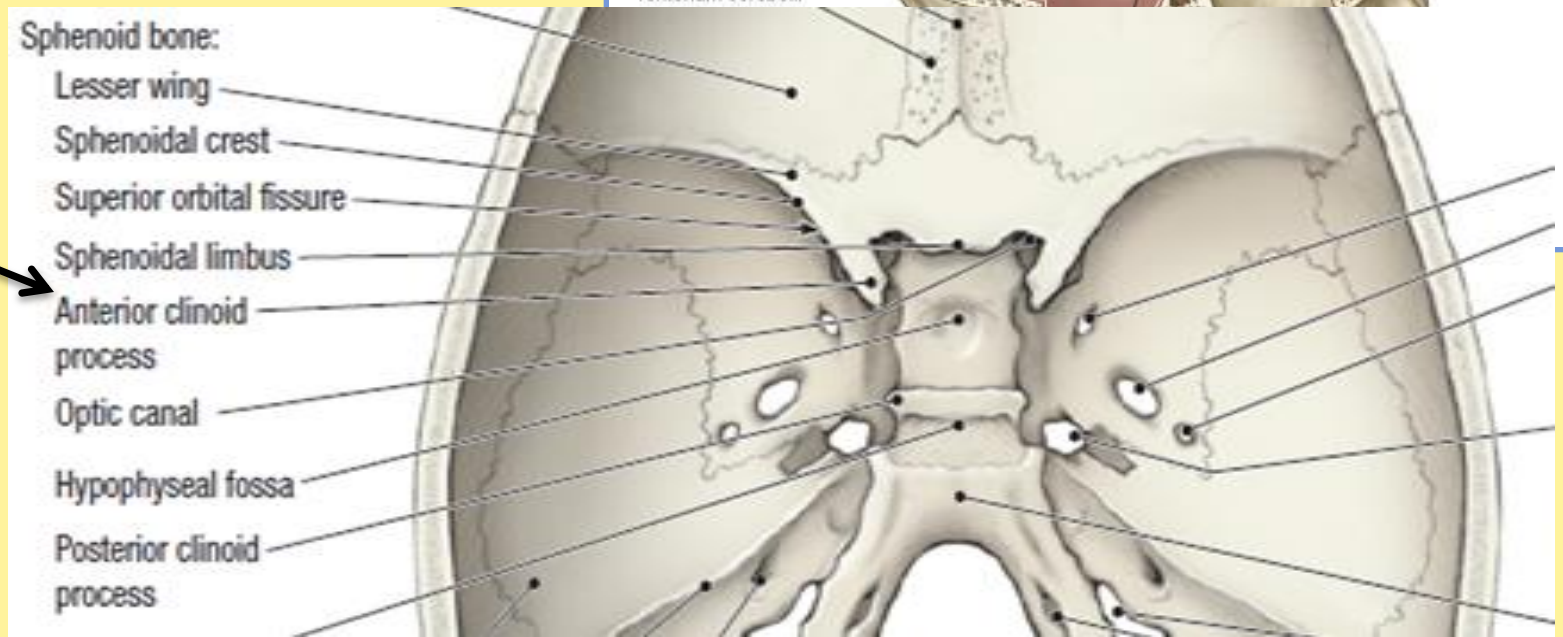


- **The fixed border is attached to:**
- the posterior **clinoid processes**
- The **superior borders of the petrous bones**
- The margins of the grooves for the transverse sinuses on the occipital bone

The free border runs forward at its two ends:

- Attached to the anterior clinoid process on each side.
- At the point where the two borders cross, the third and fourth cranial nerves pass forward to enter the lateral wall of the cavernous sinus





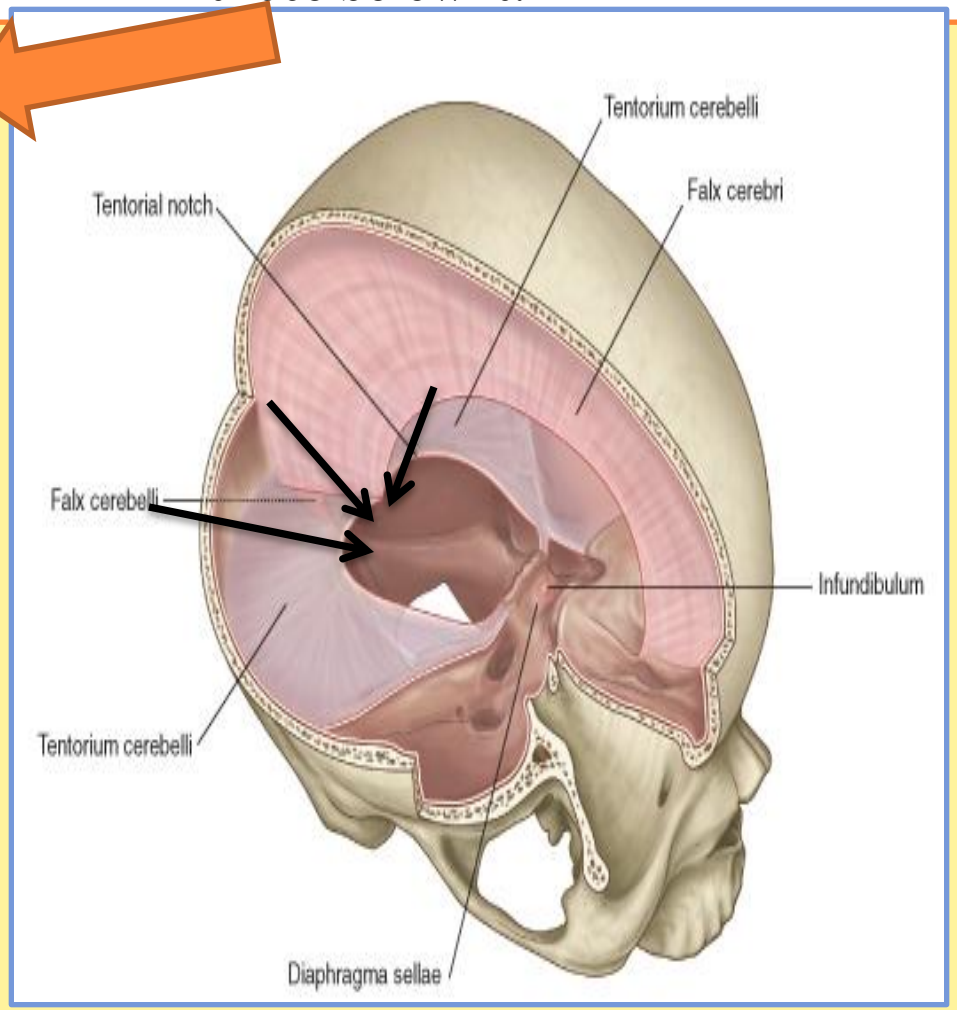
Remember that the dura is a tough structure and its tentorium as well, thus one should think about it as a real septa

Which **really** separates the structures above it from those below it.

Any intracranial mass inside the skull (tumor, bleeding…) may force its neighboring structures to herniate

?

For example



(Temporal Lobe) Herniation

Consequences

1-Compression of cranial nerve III. The ipsilateral third nerve, The first clinical sign is **ipsilateral pupil dilation**

To be explained later in the eye section

since the parasympathetic fibers that supply the constrictor pupil are located on the outside of the nerve (**III**) and are inactivated first by compression.

2-Compression of midbrain cerebral peduncles: resulting in **contralateral hemiparesis** or hemiplegia

3-Brainstem compression

The patient becomes comatose and may develop bradycardia secondary to increasing brainstem compression

It is important to understand that dura is not only a layer that covers the brain but also a though structure that divides the brain into compartments .these compartments are enclosed by the skull which means that any increased intracranial pressure may lead to herniation of some structures of the brain

طبعا ما فهمتوش.......

ميشان الله لا تحفظوا هاي الجملة

اتخيل اجتك فكرة (لا سمح الله !!!! انا عارف انكم ما بتفكروا) و هاي الفكرة كبرت كتيييرررر اكيد مارح تكسر عظم جمجمتك ...بس رح
تفتق غشاء الأم الجافية وتنحشر هناك وتموت فكرتك.
و هذذذذذذذذذذذذذذا هو تفسير تفتقت قريحته عن فكرة (بمزح)

مدام وصلت هاي الصفحة ...اكيد حفظت السلايد السابق

بطلوااااا حفظظظظظظظظظظظظظظظظظ

❖The falx cerebri and the falx cerebelli are attached to the upper and lower surfaces of the tentorium, respectively

❖The straight sinus runs along its attachment to the falx cerebri

❖the superior petrosal sinus along its attachment to the petrous bone

❖ the transverse sinus along its attachment to the occipital bone

3-THE FALX CEREBELLI

- is a small, sickle-shaped fold of dura mater that is attached to the internal occipital crest and projects forward between the two cerebellar hemispheres.
- Its posterior fixed margin contains the occipital sinus.

4-THE DIAPHRAGMA SELLAE

- Is a small circular fold of dura mater that forms the roof for ***the sella turcica***

- Attached to the ***tuberculm sellae*** anteriorly
- Attached to the ***dorsum sellae*** posteriorly

- A small opening in its center allows passage of the ***stalk of the pituitary gland***