

# Meninges and the dural sinus

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# Protections of the brain

- Skull
- Meninges
- Cerebrospinal fluid
- Blood brain barrier

# Cranial Meninges - 3 layer protective membrane

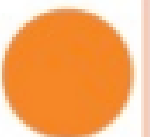
## 1. Dura Mater - Composed of two layers:

- a) Periosteal - outer layer, attaches to bone.
- b) Meningeal - inner layer, closer to brain.

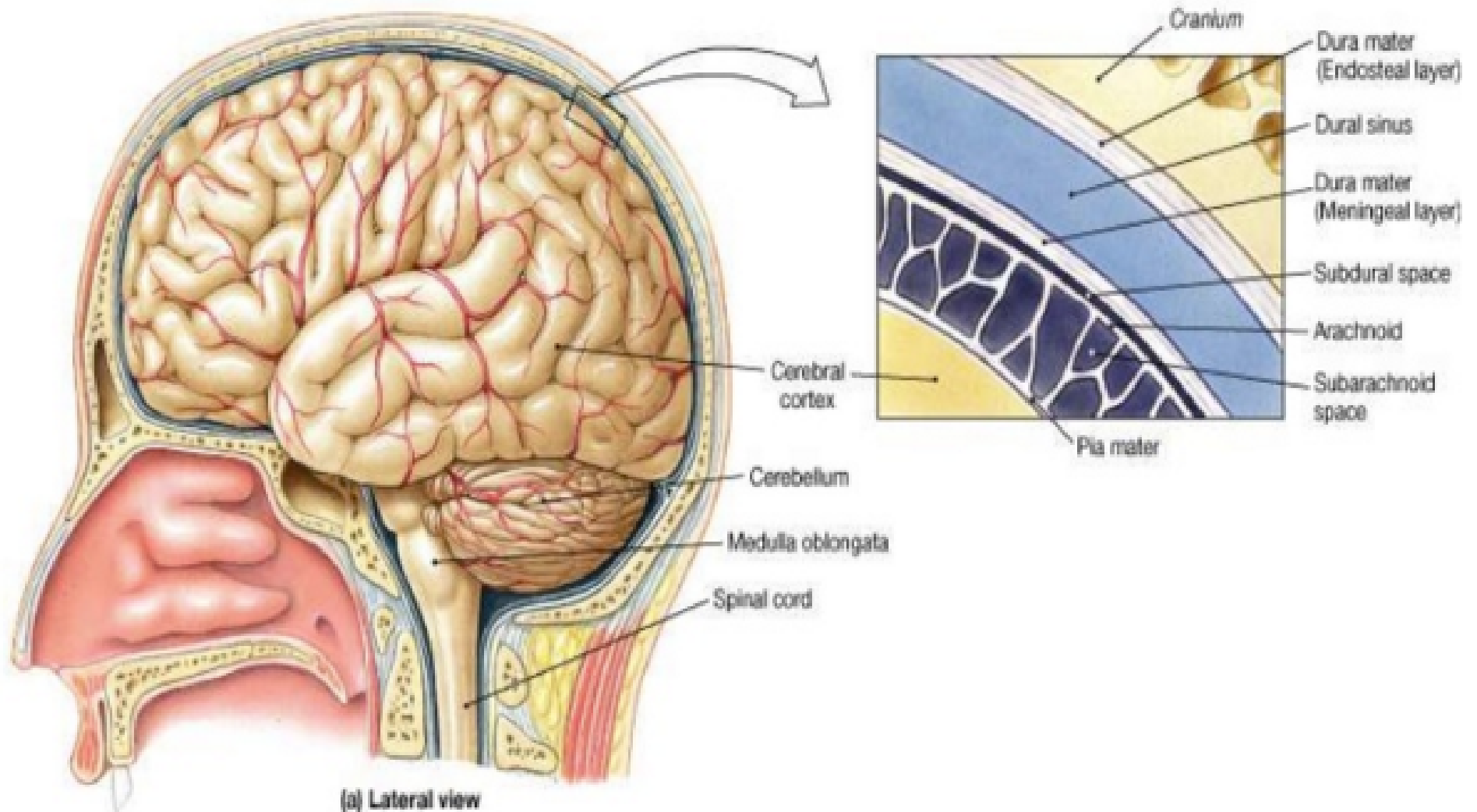
*Two layers fused, except to enclose the dural sinuses*

## 2. Arachnoid Layer - 'spider' web like.

## 3. Pia Mater - delicate, follows convolutions.



# The Meninges



**Superior sagittal sinus  
(Dural venous sinus)**

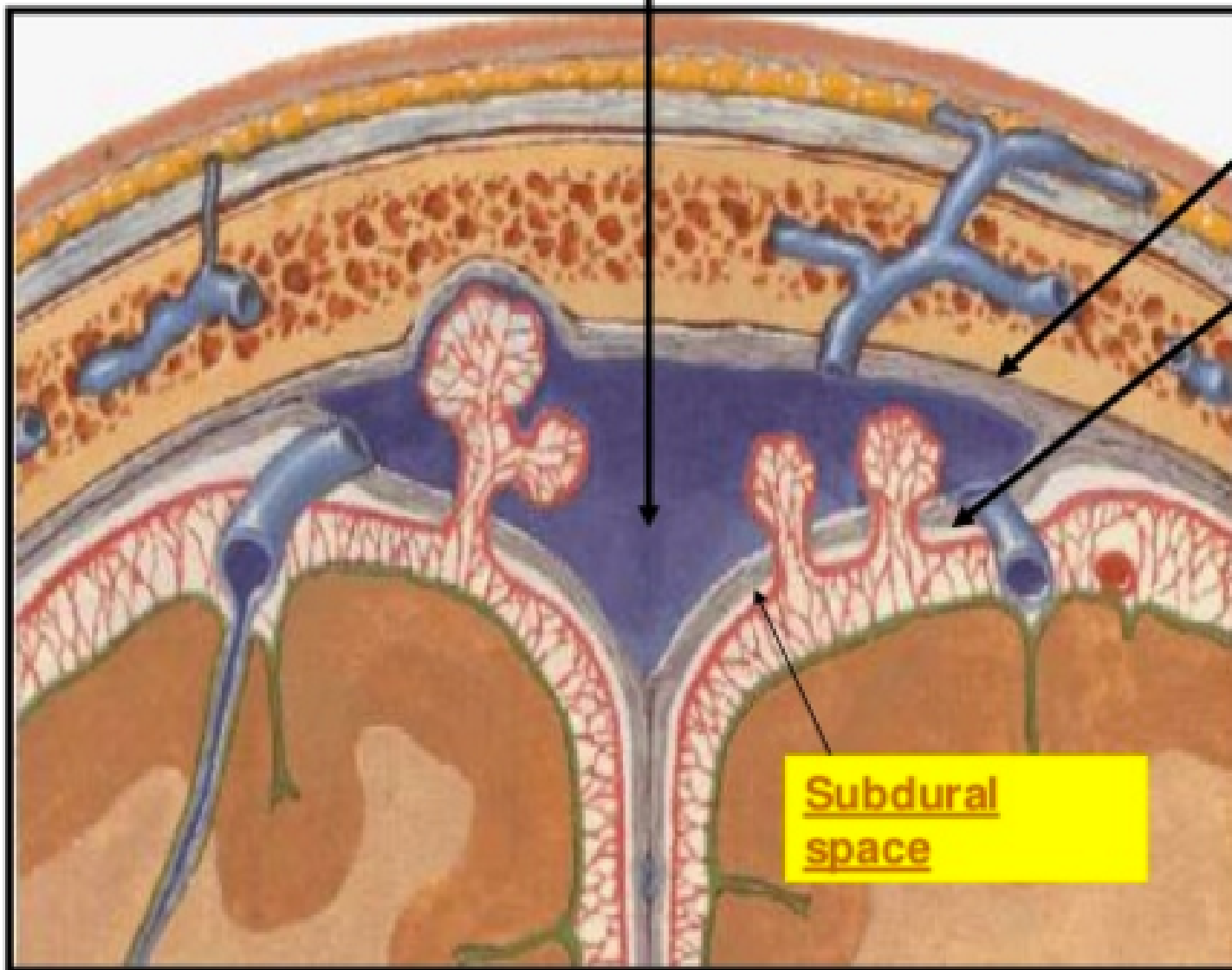
**Dura mater**

**Endosteal  
layer**

**Meningeal  
layer**

They are closely  
united except  
along certain  
lines; they are  
separated to  
form **venous  
sinuses**

**Subdural  
space**

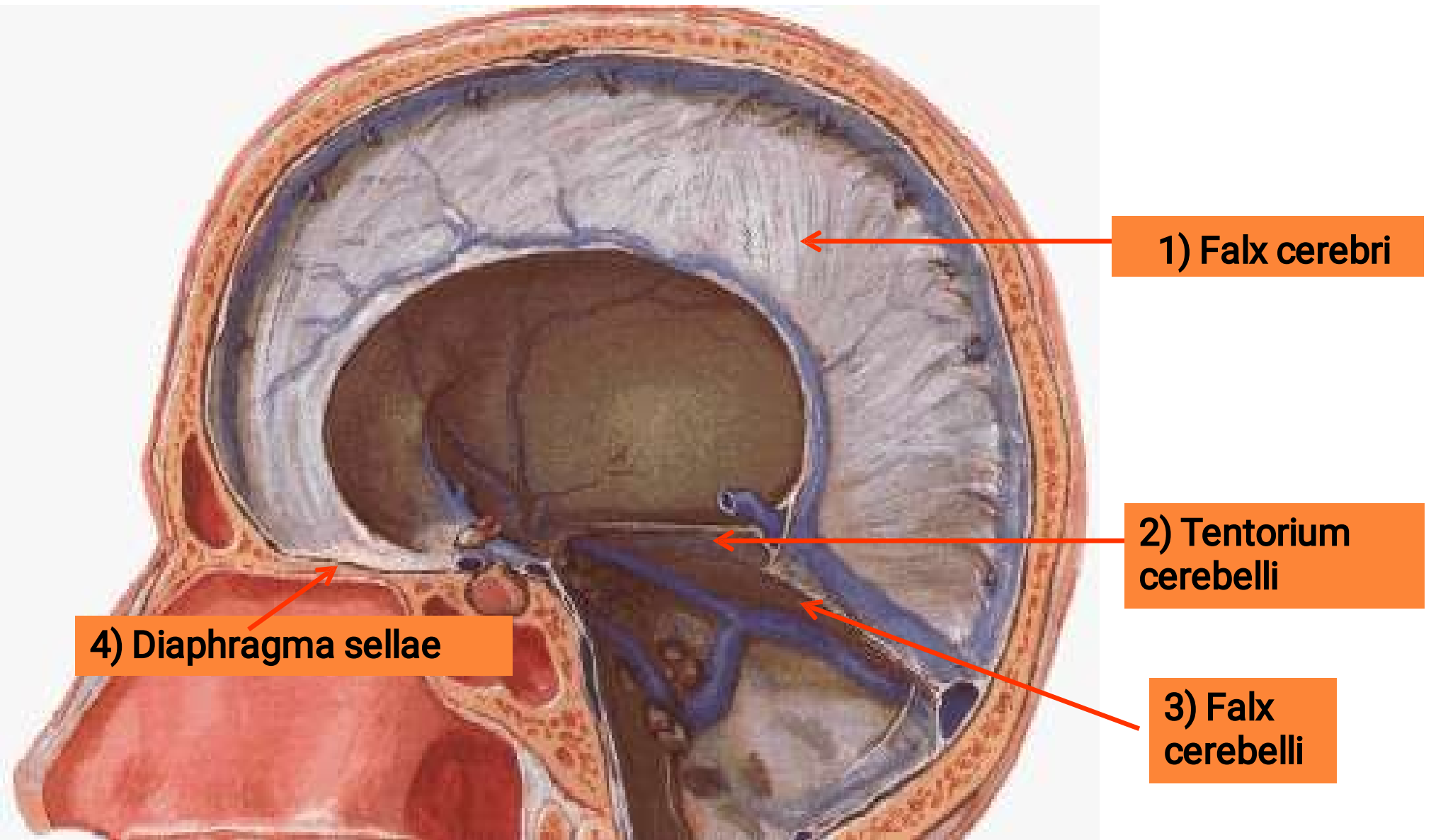


**Coronal section of the upper part of the head**

# Dura Mater

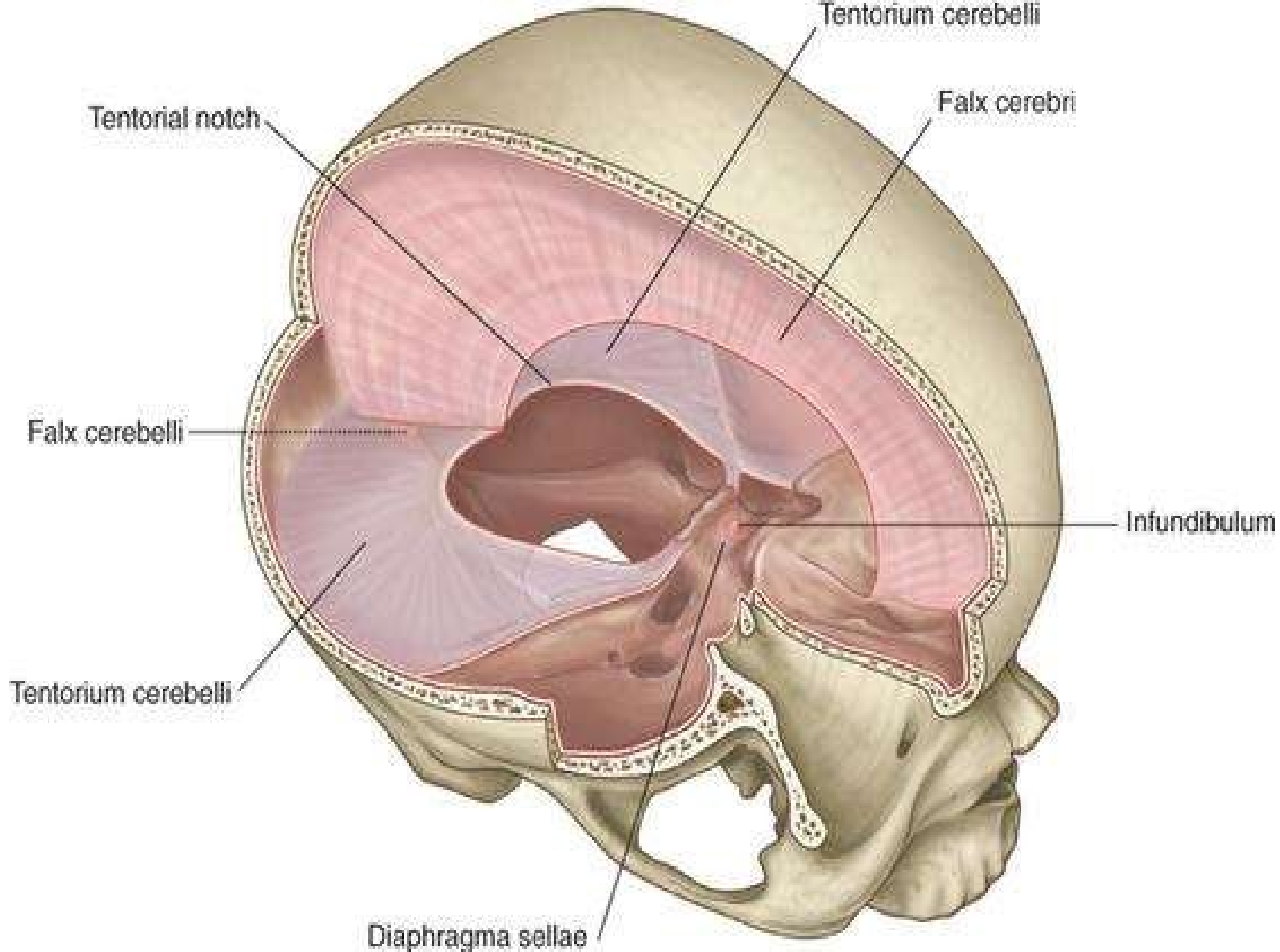
- *Thick dense inelastic membrane and the outermost layer of the meninges*
- *Bilaminar:*
  - *Endosteal layer (outer)*
  - *Meningeal layer (inner)*
- *These are closely united except along certain lines, where they separate to form venous sinuses.*

- Dura mater septa:
  1. Falx cerebri
  2. Falx cerebelli
  3. Tentorium cerebelli
  4. Diaphragma sella



**Sagittal section showing the duramater**



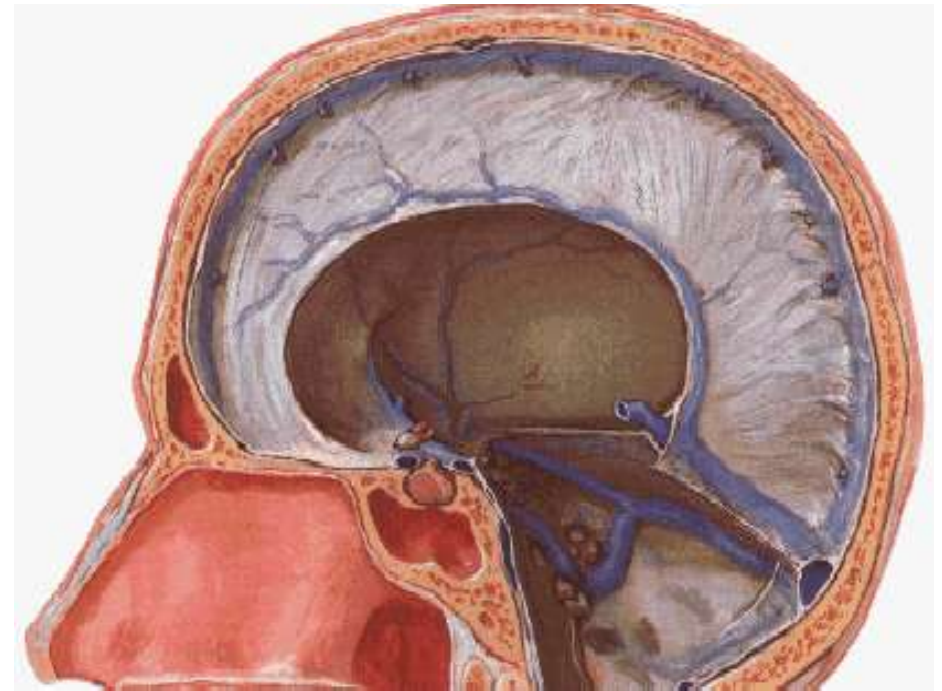


Drake: Gray's Anatomy for Students, 2nd Edition.

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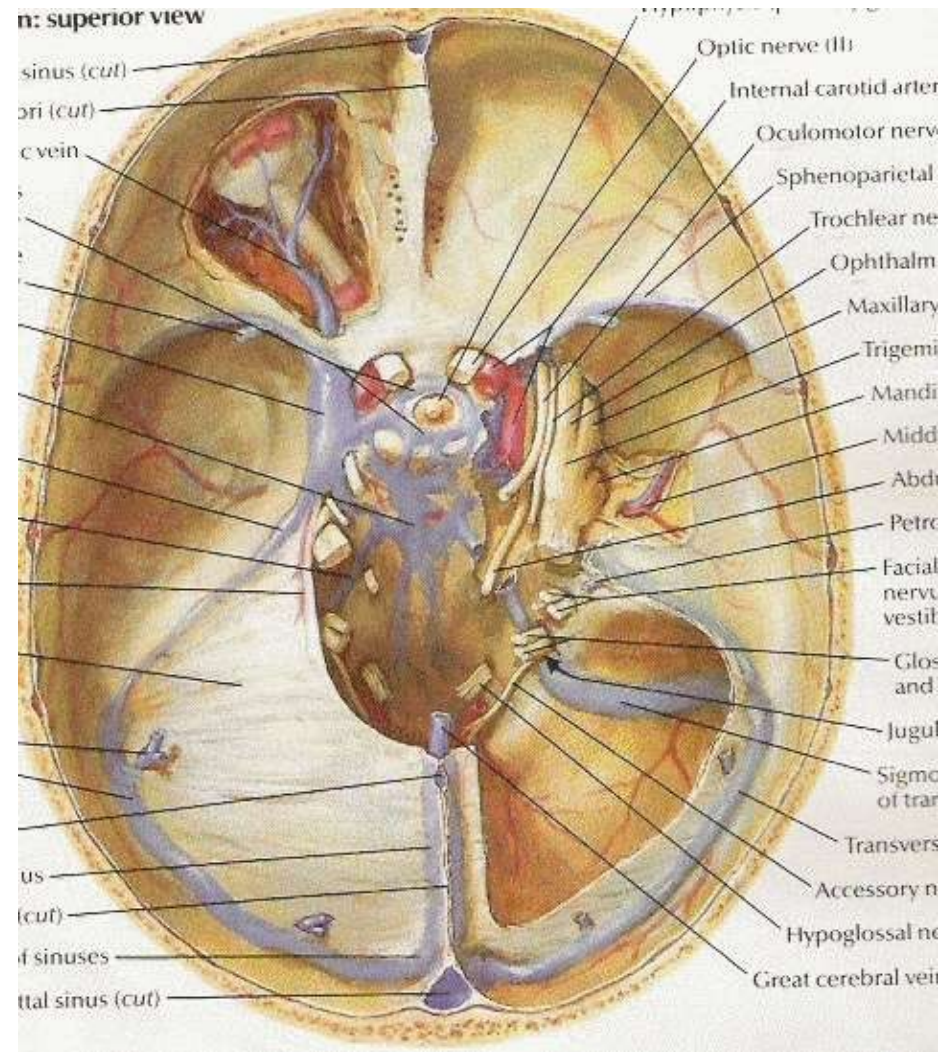
# The Falx Cerebelli

- 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.



# The Diaphragma Sellae

- The diaphragma sellae is a small circular fold of dura mater that forms the roof for the sella turcica.
- A small opening in its center allows passage of the stalk of the pituitary gland



# Dural Nerve Supply

- Branches of the trigeminal, vagus, and first three cervical nerves and branches from the sympathetic system pass to the dura.
- The dura is sensitive to stretching, which produces the sensation of headache.

# Dural Blood Supply

- Dural Arterial Supply
- The dura mater's arteries supply from the internal carotid, maxillary, ascending pharyngeal, occipital, and vertebral arteries.
- From a clinical standpoint, the most important is the *middle meningeal artery*, which is commonly damaged in head injuries.

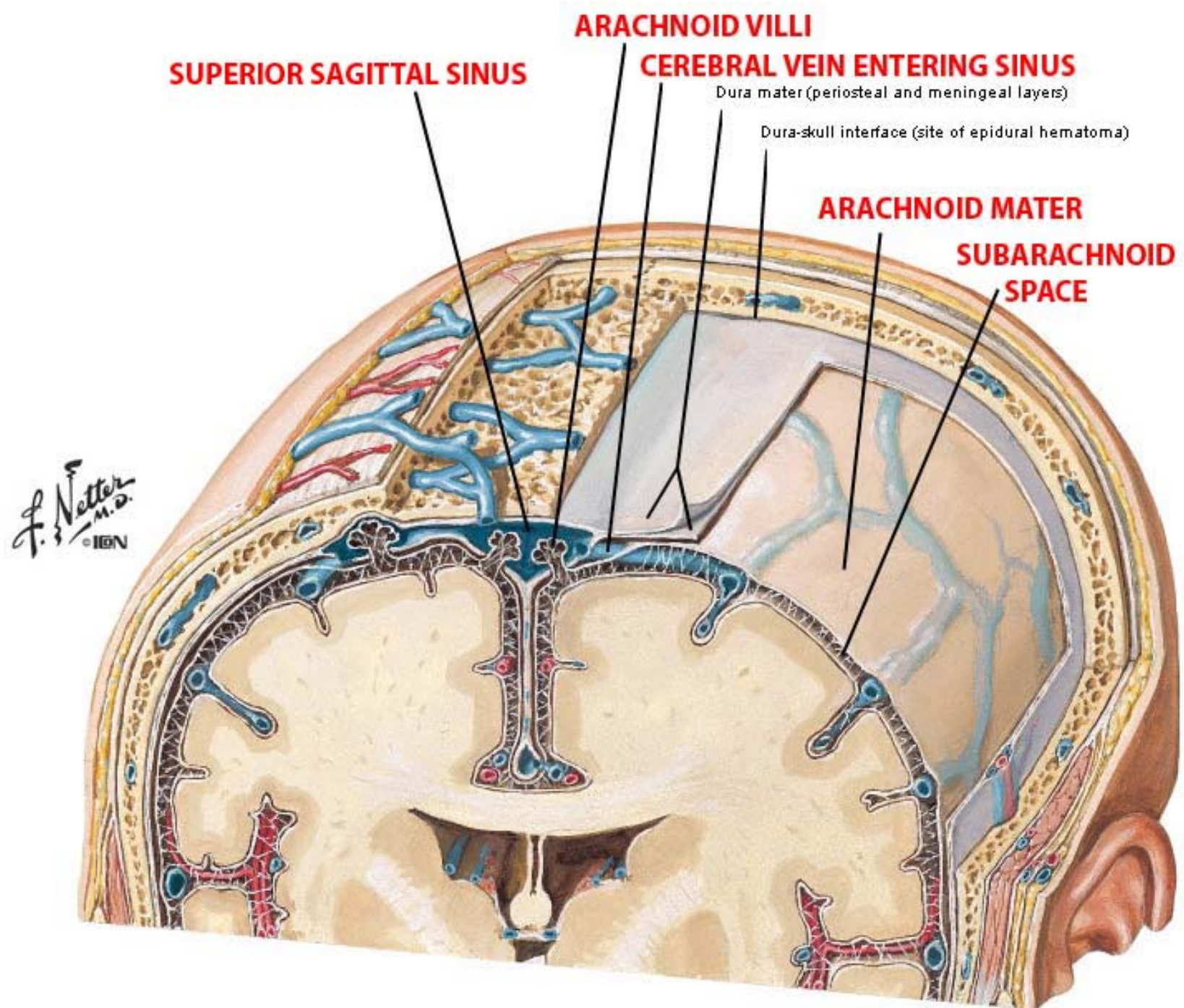
# Dural Blood Supply

- Dural Venous Drainage
- The meningeal veins lie in the endosteal layer of dura.
- The middle meningeal vein follows the branches of the middle meningeal artery and drains into the pterygoid venous plexus or the sphenoparietal sinus.
- The veins lie lateral to the arteries.

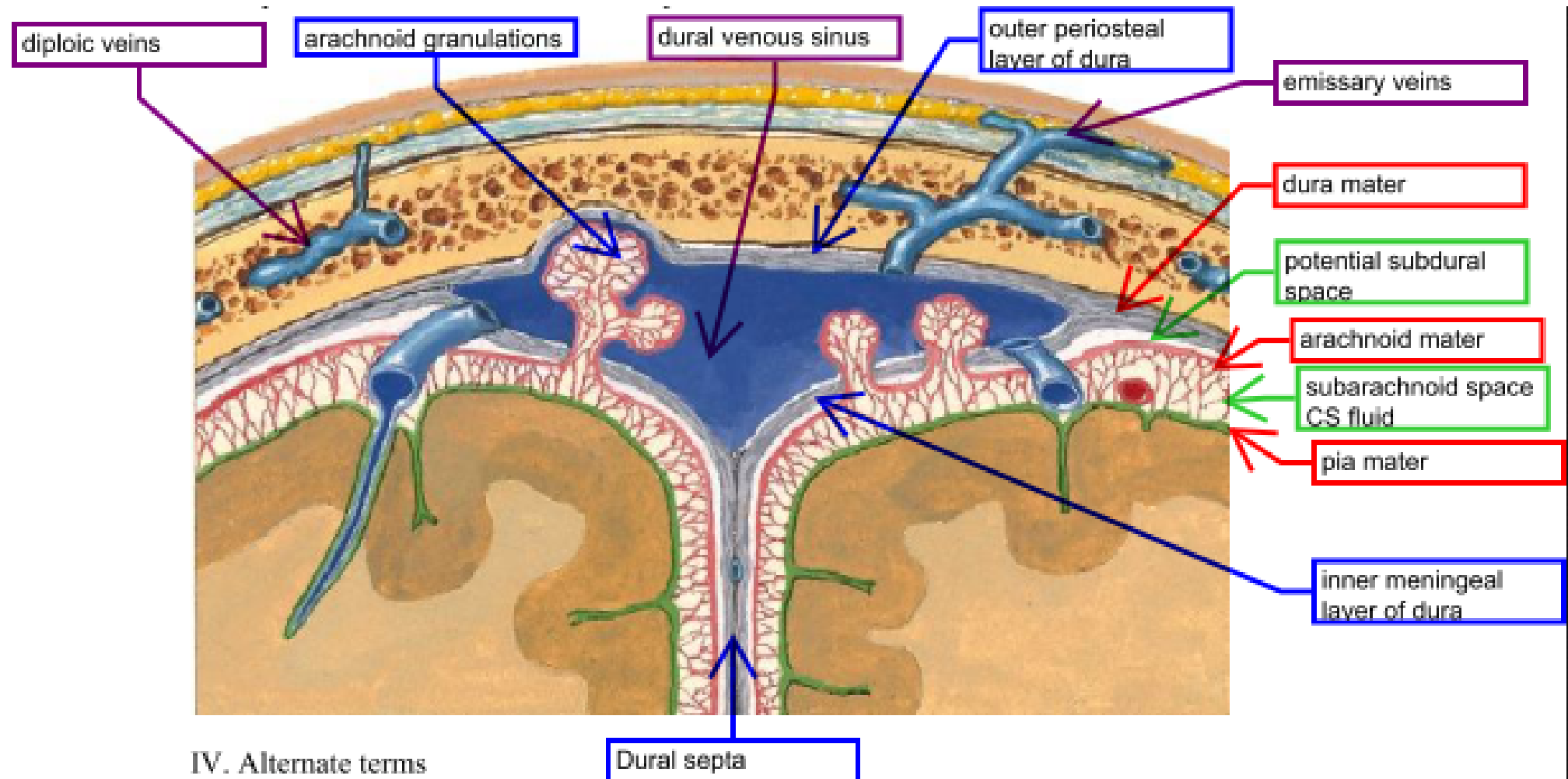
# The venous sinuses...

- The venous sinuses of the cranial cavity are **blood-filled spaces situated between the layers of the dura mater** they are lined by endothelium. Their walls are thick and composed of fibrous tissue; they have no muscular tissue. The sinuses have no valves.
- Absorb the C.S.F through the arachnoid granulation tissue & Receive blood from cerebral veins and from valveless emissary veins







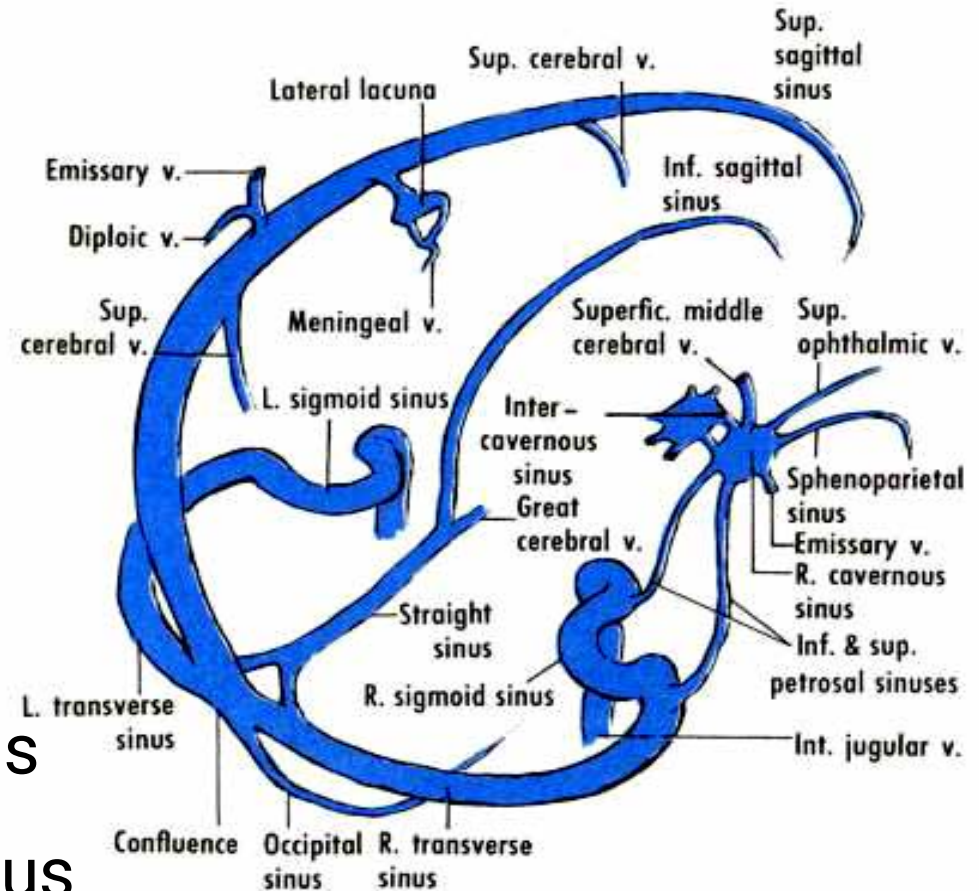


# Classification of Dural sinuses:

The venous sinuses are classified into paired and unpaired groups:

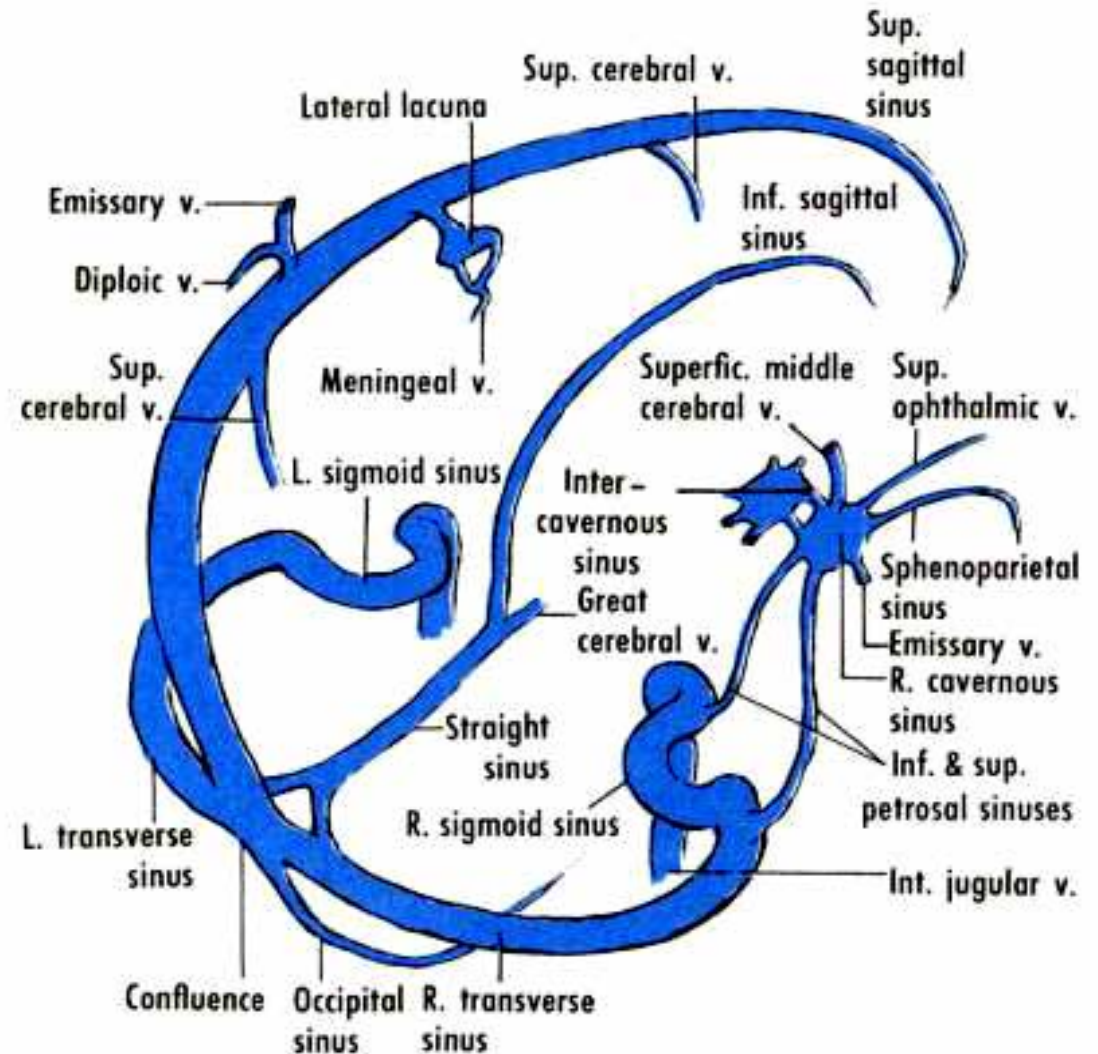
## *Unpaired sinuses:*

1. Superior sagittal sinus
2. Inferior sagittal sinus
3. Straight sinus
4. Occipital sinus
5. Anterior intercavernous sinus
6. Posterior intercavernous sinus
7. Basilar venous plexus



## *Paired sinuses:*

1. Transverse
2. Sigmoid sinus
3. Cavernous sinus
4. Superior petrosal sinus
5. Inferior petrosal sinus
6. Spheno-parietal sinus
7. Petro-squamous
8. Middle meningeal



## The dural sinuses and dural folds

