Dural Venous Sinuses

CAVERNOUS SINUS

Dr Maan Al-Abbasi
Skull bones coverings

- Scalp
- Pericranium
- Diploe
- Dura
Skull bones coverings

- Diploe
- Outer table
- Inner table
- Endocranium + Dura
- Arachnoid
- Piamater
TENTORIUM CEREBELLI
Emissary vein

Diploeic vein

Cerebral vein

Sup.Sag. Sinus

CSF through Archnoid granulation
Diploic veins

Posterior temporal

Occipital

Anterior temporal

Frontal
Dural Venous Sinuses

• Venous channels situated between inner & outer layers of Dura mater
• Drain the venous blood of the brain & bones of the skull.
• Transmit the venous blood to the internal jugular vein.
• Communicates with the internal vertebral venous plexus through the foramen magnum
• Also communicates with the scalp veins through the emissary veins
• Valveless
Single:
1. Superior sagittal
2. Inferior sagittal
3. Straight
4. Occipital
5. Ant. Intercavernous
6. Post. Intercavernous
7. Basilar venous plexus
Paired:

1. Transverse
2. Sigmoid
3. Cavernous
4. Sup. Petrosal
5. Inf. Petrosal
6. Sphenoparietal
7. Petrosquamous
8. Middle meningeal
Confluence of veins
Sup. Sag.Sinus
Falx. Cerebri
Inf. Sag.Sinus
Great Cerebral Vein
Falx. Cerebelli
Straight sinus: It lies at the junction of the
Straight sinus

It receives:
1- inferior sagittal sinus
2- great cerebral vein

It ends at internal occipital protuberance by becoming the left transverse sinus.

It receive the superior petrosal sinuses, the inferior cerebral and cerebellar veins, and the diploic veins.
Wall of groove for Sigmoid sinus
Mastoid antrum
Facial n.
occipital sinus

- It is the smallest dural sinus & is situated in the attached margin of the falx cerebelli
- It continues with the internal vertebral plexus
Cavernous sinus

Relations:
Medially
• Sphenoid air sinus
• Pituitary gland

Laterally
• Trigeminal ganglion
• Uncus of temporal lobe
Cavernous sinus

• Communicate
• Spongy appearance
O TOM CAT

- O: oculomotor nerve
- T: trochlear nerve
- O: ophthalmic nerve
- M: maxillary nerve
- C: internal carotid artery
- A: abducent nerve
- T: trochlear nerve
Meningitis
Brain abscess

Superficial middle cerebral vein
Inferior cerebral vein
Sphenoparietal sinus

Cavernous sinus

Superior and Inferior petrosal sinus

Superior and Inferior ophthalmic veins

Face
Nose
Paranasal sinuses
Orbit

Otitis media
(Labyrinthine veins)
Mastoid abscess
(Mastoid emissary vein)
Quiz/ Name the routes of communication between the cavernous sinus and the veins of the face.

1. Superior ophthalmic veins
2. Deep facial vein
3. Pterygoid plexus of veins
4. Emissary vein through the foramen Ovale
Routes of communication between the cavernous sinus and the veins of the face
Tributaries of cavernous sinus

A. Anteriorly
• Ophthalmic vein
• Spheno-parietal sinus

B. Posteriorly
• Superior petrosal sinus
• Inferior petrosal sinus

C. Medially
• Anterior & posterior intercavernous sinuses

D. Superior
• Superficial middle cerebral vein
• Veins from inferior surface of brain

E. Inferior
• Emissary vein through the carotid canal which connects the sinus with internal jugular vein
• Emissary vein through the foramen ovale which connects the sinus with pterygoid venous plexus
The flowing of the blood in dural sinus

- Sup. sagittal sinus
- Inf. sagittal sinus → Straight sinus → Confluence of sinus → Transverse sinus
- Sup. petrosal sinus
- Cavernous sinus → Inf. petrosal sinus
- Sigmoid sinus
- Internal jugular vein
Cavernous sinus Thrombosis

**Causes:**
- Bacterial infection that has spread from the sinuses, teeth, ears, eyes, nose, or skin of the face

**Symptoms:**
- Bulging eyeball, usually on one side of face
- Cannot move the eye in a particular direction
- Drooping eyelids
- Headaches
- Vision loss
Blood supply of brain

Brain – Internal carotid
  - Vertebral art.
  - Choroid plexus

Skull – Mid.Meningeal art.
  (Foramen spinosum)
  Br. of 1st part Max.art.
  (Ext. Carotid art.)

Venous drainage of brain

Brain – Ext.cerebral veins
  - Inter. cerebral veins
  - Terminal veins
    - Great cerebral vein
      (Union of 2 int.cereb.veins)
    - Basal veins
      (Drain into Grt.Cereb.vein)

Skull – Diploic veins
  - Emissary veins

Ventricles - CSF

Ultimately drain into
Venous sinuses

Internal Jugular Vein