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17/MHS01/134

300 LEVEL

MEDICINE AND SURGERY

GROSS ANATOMY OF HEAD AND NECK

ANA301

ASSIGNMENT 2

## QUESTIONS

1. Write an essay on the cavernous sinus
2. Discuss on the walls of the nose

## ANSWERS

### 1. Cavernous sinus

It is a paired dural venous sinus located within the cranial cavity. It is divided by septa into small caves.

Each cavernous sinus has a close anatomical relationship with several key structures in the head, and is arguably the most clinically important venous

sinus.

The dural venous sinuses are channels between the two layers of dura mater which are responsible for the venous drainage of the brain, skull, orbit and internal ear.

The cavernous sinuses are located within the middle cranial fossa, on either side of the sella turcica of the sphenoid bone. They are enclosed by the endosteal and meningeal layers of the dura mater.

The borders of the cavernous sinus include:

Anterior – superior orbital fissure.

Posterior – petrous part of the temporal bone.

Medial – body of the sphenoid bone.

Lateral – meningeal layer of the dura mater running from the roof to the floor of the middle cranial fossa.

Roof – meningeal layer of the dura mater that attaches to the anterior and middle clinoid processes of the sphenoid bone.

Floor – endosteal layer of dura mater that overlies the base of the greater wing of the sphenoid bone.

The cavernous sinus is the only site in the body where an artery (internal carotid) passes completely through a venous structure. This is thought to allow for heat exchange between the warm arterial blood and cooler venous circulation.

### Dural Venous Sinus System

Each cavernous sinus receives venous drainage from:

A. Ophthalmic veins (superior and inferior) – these enter the cavernous sinus

via the superior orbital fissure.

B. Central vein of the retina – drains into the superior ophthalmic vein, or directly into the cavernous sinus.

C. Sphenoparietal vein – empties into the anterior aspect of the cavernous sinus.

Superficial middle cerebral vein – contributes to the venous drainage of the cerebrum

Pterygoid plexus – located within the infratemporal fossa.

It is important to note that the superior ophthalmic vein forms an anastomosis with the facial. Therefore, the ophthalmic veins represent a potential route by which infection can spread from an extracranial to an intracranial site.

The cavernous sinuses empty into the superior and inferior petrosal sinuses and ultimately, into the internal jugular vein. The left and right cavernous sinuses are connected in the midline by the anterior and posterior intercavernous sinuses. They travel through the sella turcica of the sphenoid bone.

What travels through the cavernous sinus?

A. Abducens nerve (CN VI)

B. Carotid plexus (post-ganglionic sympathetic nerve fibres)

C. Internal carotid artery (cavernous portion)

What travels through the lateral wall of cavernous sinus?

A. Oculomotor nerve (CN III)

B. Trochlear nerve (CN IV)

## C.Ophthalmic (V1) and maxillary (V2) branches of the trigeminal nerve

### Clinical significance

Cavernous sinus thrombosis (CST) refers to the formation of a clot within the cavernous sinus.

2.The roof of the nasal cavities is curved and narrow, except at its posterior end, where the hollow body of the sphenoid forms the roof. It is divided into three parts (frontonasal, ethmoidal, and sphenoidal) named from the bones forming each part

- The floor of the nasal cavities is wider than the roof and is formed by the palatine processes of the maxilla and the horizontal plates of the palatine bone.
- The medial wall of the nasal cavities is formed by the nasal septum.
- The lateral walls of the nasal cavities are irregular owing to three bony plates, the nasal conchae, which project inferiorly, somewhat like louvers.