**BASSEY MARVELLOUS**

**17/MHS01/081**

**ANA 301**

**GROSS ANATOMY OF HEAD AND NECK**

# **Question 1: Write an essay on the cavernous sinus**

The cavernous sinus within the human head is one of the [dural venous sinuses](https://en.wikipedia.org/wiki/Dural_venous_sinuses" \o "Dural venous sinuses) creating a cavity called the lateral sellar compartment bordered by the [temporal bone](https://en.wikipedia.org/wiki/Temporal_bone) of the [skull](https://en.wikipedia.org/wiki/Human_skull) and the [sphenoid bone](https://en.wikipedia.org/wiki/Sphenoid_bone), lateral to the [sella turcica](https://en.wikipedia.org/wiki/Sella_turcica). It is a network of veins that sit in a [cavity](https://en.wikipedia.org/wiki/Sinus_(anatomy)), approximately 1 x 2 cm in size in an adult. The [carotid siphon](https://en.wikipedia.org/wiki/Internal_carotid_artery#C4:_Cavernous_segment) of the [internal carotid artery](https://en.wikipedia.org/wiki/Internal_carotid_artery), and cranial nerves III, IV, V (branches V1 and V2) and VI all pass through this blood filled space.

## **ANATOMICAL BORDERS**

The cavernous sinuses are located within the middle cranial fossa, on either side of the sella turcicaof the sphenoid bone (which contains the pituitary gland). They are enclosed by the endosteal and meningeal layers of the dura mater.

The borders of the cavernous sinus are as follows:

* **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.

## **DURAL VENOUS SINUS SYSTEM**

The cavernous sinus receives blood from:

* [Superior](https://en.wikipedia.org/wiki/Superior_ophthalmic_vein) and [inferior ophthalmic veins](https://en.wikipedia.org/wiki/Inferior_ophthalmic_vein)
* [Sphenoparietal sinus](https://en.wikipedia.org/wiki/Sphenoparietal_sinus)
* [Superficial middle cerebral veins](https://en.wikipedia.org/wiki/Superficial_middle_cerebral_vein)
* [Inferior cerebral veins](https://en.wikipedia.org/wiki/Inferior_cerebral_veins)

The cavernous sinuses empty into the superior andinferior petrosal sinuses, and ultimately, into the internal jugular vein, as well as via the [emissary veins](https://en.wikipedia.org/wiki/Emissary_veins) through the [foramina](https://en.wikipedia.org/wiki/Foramina_of_the_skull) of the skull (mostly through [foramen ovale](https://en.wikipedia.org/wiki/Foramen_ovale_(skull))). There are also connections with the [pterygoid plexus](https://en.wikipedia.org/wiki/Pterygoid_plexus" \o "Pterygoid plexus) of veins via [inferior ophthalmic vein](https://en.wikipedia.org/wiki/Inferior_ophthalmic_vein), [deep facial vein](https://en.wikipedia.org/wiki/Deep_facial_vein) and emissary veins

## **CONTENTS**

Several important structures pass through the cavernous sinus to enter the orbit. The can be sub-classified by whether they travel through the sinus itself, or through its lateral wall:

|  |  |
| --- | --- |
| **Travels through cavernous sinus:** | **Travels through lateral wall of cavernous sinus:** |
| Abducens nerve (CN VI) | Oculomotor nerve (CN III) |
| Carotid plexus (post-ganglionic sympathetic nerve fibres) | Trochlear nerve (CN IV) |
| Internal carotid artery (cavernous portion) | Ophthalmic (V1) and maxillary (V2) branches of the trigeminal nerve |

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.

## **CLINICAL ANATOMY- CAVERNOUS SINUS THROMBOSIS.**

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

This most common cause of CST is infection; which typically spreads from an extracranial location such as the orbit, paranasal sinuses, or the ‘danger zone’ of the face. Infection is able to spread in this manner due to the anastomosis between the facial vein and superior ophthalmic veins.

Common clinical features include headache, unilateral periorbital oedema, proptosis (eye bulging), photophobia and cranial nerve palsies. The abducens nerve (CN VI) is most commonly affected.

Treatment is typically with antibiotic therapy. Where the cause is infection, thrombosis of the cavernous sinus can rapidly progress to meningitis.

# **Question 2: Discuss the walls of the nose**

The nasal cavity has: 1) A floor 2) A roof 3) The Lateral wall 4) A medial or septal wall

**THE FLOOR**

Consists of:

* A palatine process maxilla
* Horizontal plate palatine bone

## **THE ROOF**

It is narrow and is formed

* Anteriorly beneath the bridge of the nose by the nasal and frontal bones
* In the middle by the cribriform plate of the Ethmoid
* Located beneath the anterior cranial fossa
* Posteriorly by the downward sloping body of the sphenoid

## **THE LATERAL WALL**

It is marked by the following projections

* Superior concha
* Middle concha
* Inferior concha

The space below each concha is called a Meatus

* Inferior meatus: Consists of the the nasolacrimal duct
* Middle meatus: Consists of The Maxillary sinus, Frontal sinus, Anterior ethmoid sinus
* Superior meatus: Consists in Posterior ethmoid sinuses
* Sphenoethmoidal recess: Sphenoid sinus

## **THE MEDIAL WALL**

The nasal septum divided the nasal cavity into the right and left halves, it has osseous and cartilaginous parts.

The nasal septum consists of the perpendicular plate of the ethmoid bone (superior), the vomer (inferior), and septial cartilage (anterior).