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ANA 301 ASSIGNMENT

A.) CAVERNOUS SINUS

The cavernous sinus is a paired dural venous sinus located within the cranial cavity. It is divided by septa into small 'caves' – from which it gets its name. Each cavernous sinus has a close anatomical relationship with several key structures in the head, and is arguably the most clinically important venous sinus.

ANATOMICAL LOCATION AND BORDERS

The cavernous sinuses are located within the middle cranial fossa, on either side of the **sella turcica** of 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.

CONTENTS

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

The cavernous sinuses receive blood from the i.) cerebral veins ii.) the superior and inferior ophthalmic veins (from the orbit). iii.) emissary veins (from the pterygoid plexus of veins in the infratemporal fossa)

CLINICAL ANATOMY

These connections provide pathways for infections to pass from extracranial sites into intracranial locations. In addition, because structures pass through the cavernous sinuses and are located in the walls of these sinuses they are vulnerable to injury due to inflammation. Structures passing through each cavernous sinus are: i.) Internal carotid artery ii.) Abducent nerve

Structures in the lateral wall of each cavernous sinus are, from superior to inferior: the oculomotor nerve ii.) the trochlear nerve iii.) the ophthalmic nerve

B.) WALLS OF THE NOSE.

The nares serve as the entryway to the nasal cavities, which open posteriorly into the nasopharynx via the conchae. The walls of the nasal cavity include the following features:

ROOF: The roof is divided into three parts: frontonasal, ethmoidal, and sphenoidal. Each part corresponds to the underlying bone of the same name. The roof of each nasal cavity is formed in its upper third to one half by the nasal bone and more inferiorly by the junctions of the upper lateral cartilage and nasal septum. Connective tissue and skin cover the bony and cartilaginous components of the nasal dorsum.

MEDIAL WALL: This wall is the nasal septum, which is formed by the perpendicular plate of the ethmoid bone, the vomer, cartilage, and the nasal crests of the maxillary and palatine bones.

LATERAL WALL: This wall is hallmarked by three nasal conchae (superior, middle, and inferior) that project inferiorly from the wall. They divide the nasal cavity into four passages that have openings to the paranasal sinuses. It is a region of the nasopharynx essential for humidifying and filtering the air we breathe in nasally. Here we can find a structure called agger nasi. The agger nasi is also referred to as the 'nasoturbinal concha' or 'nasal ridge.' It can be described as a small mound or ridge found in the lateral side of the nasal cavity. The structure is located midway along the anterior aspect of the middle nasal concha. An abnormally enlarged form may restrict the drainage of the frontal sinus by obstructing the frontal recess area.

