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**MATRIC NUMBER: 17/MHS01/216**

**DEPARTMENT: MEDICINE AND SURGERY**

**COURSE CODE: ANA 301**

**COURSE TITLE: GROSS ANATOMY OF THE HEAD AND NECK**

**QUESTION**

1. WRITE AN ESSAY ON THE CARVENOUS SINUS
2. DISCUSS THE WALLS OF THE NOSE

**CAVERNOUS SINUS**

 The cavernous sinus is one of the dura venous sinuses located within the human head. It creates a cavity called the lateral sellar compartment with an inferior border formed by the temporal bone of the skull and lateral borders formed by the sphenoid bone.

 The cavernous sinus is a network of veins that sit in a cavity. It is a blood filled space that allows for the passage of the carotid siphon of the internal carotid artery, cranial nerves III, IV, first and second divisions of cranial nerve V and VI. Some structures are related to the cavernous sinus. Superiorly, it is related to the optic tract, optic chiasma, internal carotid artery. Inferiorly, it is related to the foramen lacerum and the junction of the body and the greater wing of the sphenoid bone. On its medial side, it is bounded by, pituitary gland, sphenoidal air sinus and temporal lobe with uncus on its lateral side. Anteriorly, it is bounded by the superior orbital fissure and the apex of the orbit. Posteriorly, by the apex of the petrous part of the temporal bone.

 The cavernous sinus receives blood from the superior ophthalmic vein, inferior ophthalmic vein, sphenoparietal sinus, superficial middle cerebral veins and the inferior cerebral veins. On the other hand, blood leaves the sinus via superior petrosal sinus, inferior petrosal sinus and emissary veins, through the foramina of the skull especially the foramen ovale. The cavernous sinus also has connections with the pterygoid plexus of veins through the inferior ophthalmic vein, deep facial vein and emissary veins.

 CONTENTS OF THE CAVERNOUS SINUS

Apart from the blood which passes through the venous sinus, some other structures such as the cranial nerves and their branches also pass through the cavernous sinus. The occulomotor nerve, trochlear nerve, ophthalmic and maxillary divisions of the trigeminal nerve, pass through the outer lateral wall of the sinus. The abducens nerves, internal carotid artery accompanied by the internal carotid plexus, pass through its medial wall. These nerves with the exception of maxillary division of the trigeminal nerve pass through the cavernous sinus to the orbital apex of the superior orbital fissure. The maxillary division of trigeminal nerve travels through the lower portion of the sinus and exits via the foramen rotundum.

 The optic nerve lies just above and outside the cavernous sinus. It is superior and lateral to the pituitary gland and then enters the orbital apex through the optic canal.

 FUNCTION OF CAVERNOUS SINUS

 The cavernous sinus is a venous sinus, hence, it is involved in venous drainage. As it receives blood from the superior and inferior ophthalmic veins and from the superficial cortical veins, it is connected to the basilar plexus of veins posteriorly. The cavernous sinus drains through the superior and inferior petrosal sinuses or into the internal jugular vein through the sigmoid sinus. In some cases, it drains through the emissary veins into the pterygoid plexus.

 CLINICAL SIGNIFICANCE

1. It is the only anatomic location in the body in which an artery travels completely through a venous passage.
2. The paired cavernous sinuses form the lateral borders of the pituitary gland. Hence cavernous sinus syndrome, which is as a result of compression, may occur due to the growth of an abnormal pituitary adenoma.
3. Infections in the cavernous sinus may occur from an external facial injury as a result of its connection with the facial vein.
4. Metastic tumors, extended nasopaharyngeal tumors, aneurysms, pituitary apoplexy, meningioma could be a major cause of the cavernous sinus syndrome.

**THE WALLS OF THE NOSE**

The nose is the most protruding part of the face. It is the first organ of the repiratory system and bears nostrils. It is also the principal organ of the olfactory system. Its cavity is divided by the nasal septum, which is a cartilage. The nasal cartilages and bones define the shape of the nose.

 The nasal cavity is a large air-filled space above and behind the nose in the middle of the face. Each of the cavities or fossae formed from the division by the septum is a continuation of the nostrils. The nasal cavity is the uppermost part of the respiratory system and it provides the nasal passage for inhaled air from the nostrils to the nasopharynx and then to other parts of the respiratory system. The nasal cavities are bounded by walls; the lateral walls, the roof and the floor.

 The lateral wall consists mainly of the maxilla. Some other smaller contributions are made from the perpendicular plate of the palatine bone, the medial pterygoid plate, the labyrinth of ethmoid and the inferior conchae. The ostia, which connect the paranasal sinuses to the nasal cavity, are able to communicate with the nose through the lateral nasal wall, via the semi-lunar depression in it known as the semilunar hiatus. The hiatus is bound laterally by a projection known as the uncinate process. This region is then called the ostiomeatal complex.

 The roof 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. The bony and cartilaginous compartment nasal dorsum is covered by connective tissue and skin.

 The floor of the nasal cavity also forms the roof of the mouth. It is made up of bones of the hard palate, the horizontal plate of the palatine bone posteriorly and palatine process of the maxilla anteriorly. The walls of the nasal cavity are lined by the respiratory epithelium except the most anterior part which is the nasal vestibule. It is line by the same stratified squamous epithelium of the skin.