NAME: OFOEGBU, EBUBECHUKWU .C.

MATRIC NUMBER: 17/MHS01/232

COURSE CODE: GROSS ANATOMY OF HEAD AND NECK

DEPARTMENT: MEDICINE AND SURGERY

LEVEL: 300

Question 1) **Write an essay on the cavernous sinuses**.

The dural venous sinuses include the superior sagittal, inferior sagittal, straight, transverse, sigmoid, and occipital sinuses, the confluence of sinuses, and the cavernous, sphenoparietal, superior petrosal, inferior petrosal, and basilar sinuses.

CAVERNOUS SINUSES

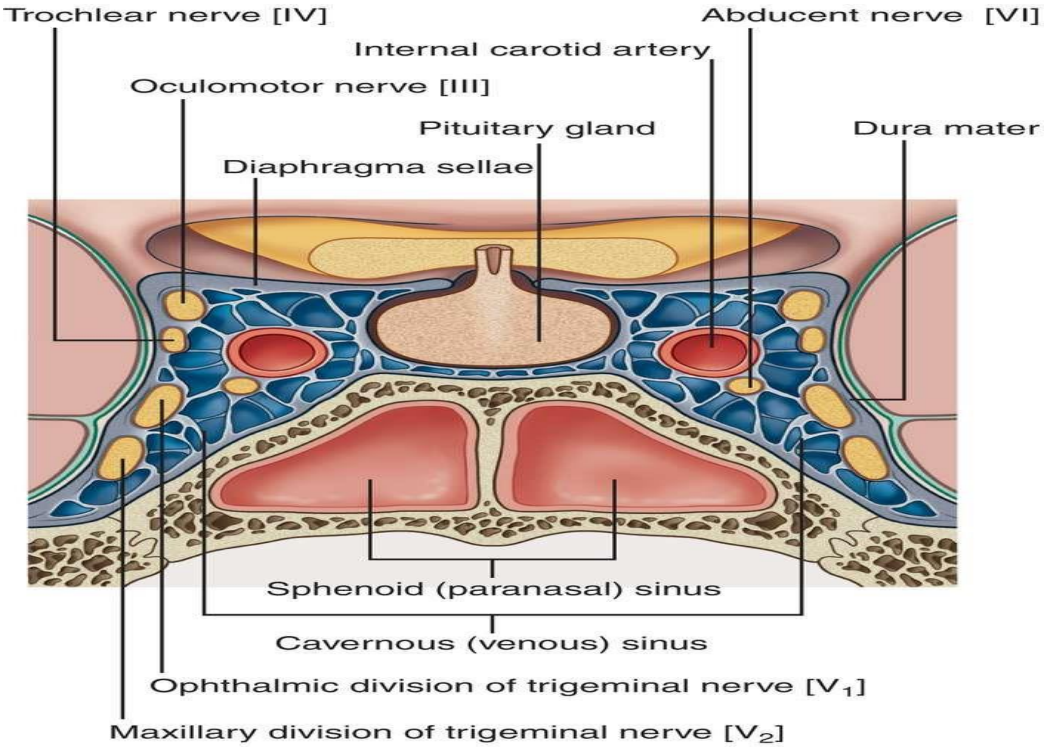


Diagram of the cavernous sinus

The cavernous sinus, a large venous plexus, is located on each side of the sella turcica on the upper surface of the body of the sphenoid, which contains the sphenoid (air) sinus. They are enclosed by the endosteal and meningeal layers of the dura mater.

The borders of the cavernous sinus are:

i) Superior Orbital fissure anteriorly.
ii) The Petrous part of the temporal bone posteriorly.
iii) The body of sphenoid medially.
iv) The meningeal layer of the dura mater running from the roof of the middle cranial fossa, laterally.
v) The roof is formed by the meningeal layer of the dura mater that attaches to the anterior and middle clinoid processes of the sphenoid bone.
vi) The floor is formed by the endosteal layer of the dura mater that overlies the base of the greater wing of sphenoid bone.

The cavernous sinuses receive blood not only from cerebral veins, but also from the ophthalmic veins (from the orbit) and emissary veins (from the pterygoid plexus of veins in the infratemporal fossa). 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 that Travel through the cavernous sinus	**Strctures that Travels through the lateral wall of the cavernous sinus**
Abducent nerve [CNVI]	Oculomotor nerve [CNIII]
Carotid plexus (post-ganglionic sympathetic nerve fibers).	Trochlear nerve [CNIV]
Internal Carotid artery	Ophthalmic and maxillary divisions of trigeminal nerve [CNV].

Connecting the right and left cavernous sinuses are the **intercavernous sinuses** on the anterior and posterior sides of the pituitary stalk. Sphenoparietal sinuses drain into the anterior ends of each cavernous sinus. These small sinuses are

along the inferior surface of the lesser wings of the sphenoid and receive blood from the diploic and meningeal veins.

Clinical Significance

1. Cavernous Sinus Thrombosis (CST): this refers to the formation of a clot within the cavernous sinus. This most common cause of CST is infection, which spread from an extra-cranial location such as paranasal sinuses etc. This Abducent nerve is the most affect and thrombosis of the cavernous sinus can rapidly progress to meningitis.

Question 2) **Discuss the walls of the nose.**

THE NOSE

The nose is the part of the respiratory tract superior to the hard palate and contains the peripheral organ of smell. It includes the external nose and nasal cavity, which is divided into right and left halves by nasal septum.

The nasal skeleton has four functions:

- Warms and humidifies the inspired air.
- Removes ad traps pathogens and particulate matter from the inspired air.
- Responsible for sense of smell.
- Drains and clears the paranasal sinuses and lacrimal ducts.

The bony part of the nose consists of the nasal bones, frontal processes of the maxillae, the nasal part of the frontal bone and its nasal spine, and the bony parts of the nasal septum. The cartilaginous part of the nose consists of five main cartilages: two lateral cartilages, two alar cartilages, and one septal cartilage. The U-shaped alar cartilages are free and movable; they dilate or constrict the nares when the muscles acting on the nose contract.

Each nasal cavity has a floor, roof, medial wall and lateral wall.

WALLS OF THE NASAL CAVITY

Lateral Wall

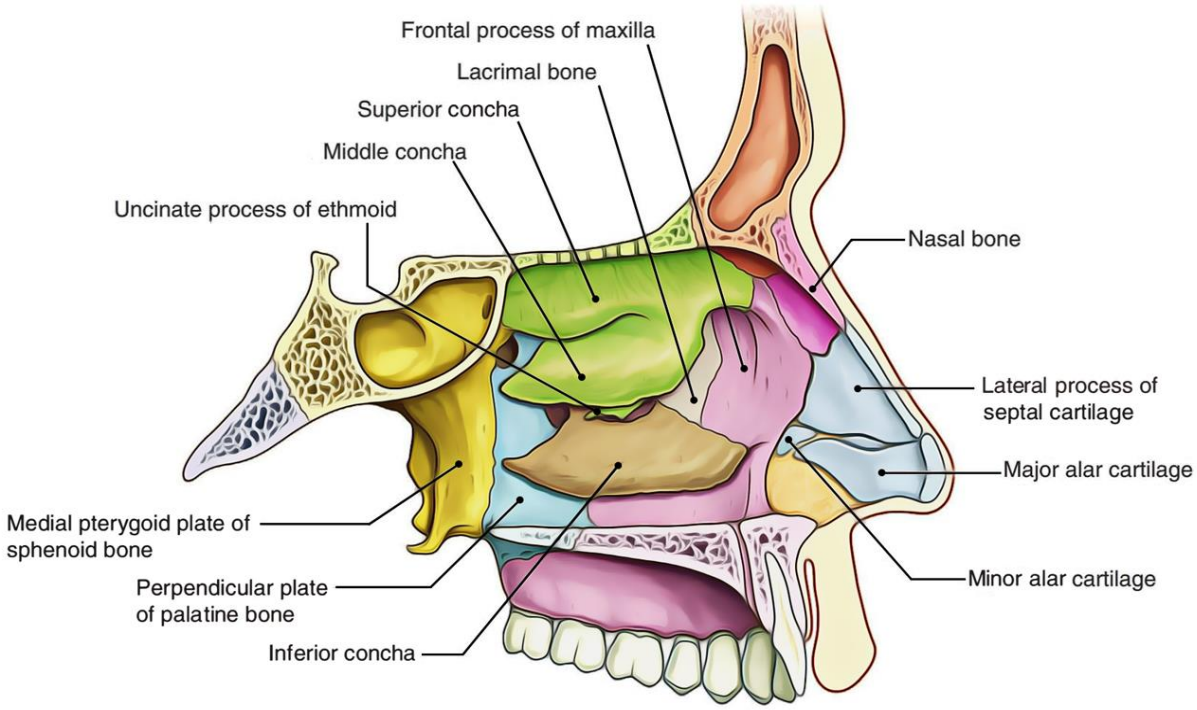


Diagram of the lateral wall of thee nose

The lateral wall is characterized by 3 curved shelves of bone **(superior, middle and inferior conchae),** which are one above the other and project medially and inferiorly across the nasal cavity. The conchae divides each nasal cavity into four air channels and a medially placed common nasal meatus into which four lateral passages open. The channels are:

a) An inferior nasal meatus between the inferior concha and the nasal floor.
b) A middle nasal meatus between the inferior and middle concha. The lateral wall of the middle meatus elevates to form the dome-shaped ethmoidal bulla. This is formed by the underlying middle ethmoidal cells.
c) A superior nasal meatus between the middle and superior concha.
d) A spheno-ethmoidal recess between the superior concha and the nasal roof.
e) A medially placed common nasal meatus into which four lateral passages open.

The inferior concha is the longest and broadest of the conchae and is formed by an independent bone covered by a mucous membrane that contains large vascular spaces that can enlarge to control the caliber of the nasal cavity.

The middle and Superior Conchae are medial processes of the ethmoid bone. When infected or irritated, the mucosa covering the conchae may swell rapidly, blocking the nasal passages on that side.

The lateral wall of each nasal cavity is complex and is formed by bone, cartilage, and soft tissues. Bony support for the lateral wall is provided by:

- The ethmoidal labyrinth and uncinate process
- The perpendicular plate of the palatine bone.

The nasolacrimal duct and most of the paranasal sinuses open onto the lateral wall of the nasal cavity:

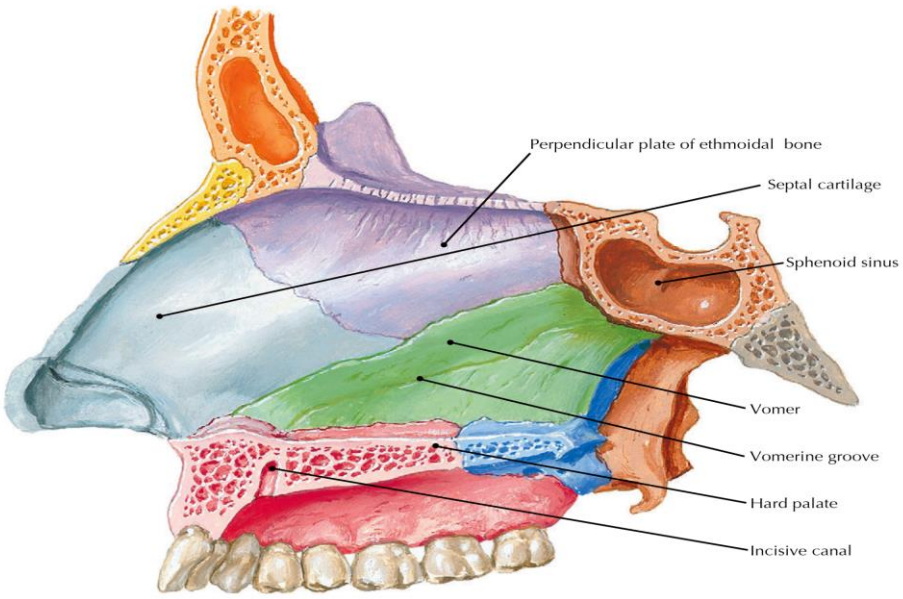
a) The nasolacrimal duct which originates at the inferior end of the lacrimal sac, opens onto the lateral wall of the inferior nasal meatus under the anterior lip of the inferior concha. It drains tears from the conjunctival sac into the nasal cavity.
b) The frontal sinus drains through the frontonasal duct and ethmoidal infundibulum into the anterior end of the semilunar hiatus on the lateral wall of the middle nasal meatus.
c) The large maxillary sinus opens into the semilunar hiatus.
d) The sphenoidal sinus does not drain into the lateral wall of the nasal cavity.

Medial Wall

The medial wall of each nasal cavity is the **mucosa-covered surface of the thin nasal septum**, which is oriented vertically in the median sagittal plane and separates the right and left nasal cavities from each other. The nasal septum consists of:

i) The septal nasal cartilage anteriorly
ii) The vomer and the perpendicular plate of the ethmoid bone, posteriorly.
iii) Small contributions by the nasal bones where they meet in the midline and the nasal spine of the frontal bone.

iv) Contributions by the nasal crests of the maxillary and the palatine bones, rostrum of the sphenoid bone and the incisor crest of the maxilla.



MEDIAL WALL OF NASAL CAVITY (NASAL SEPTUM)