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DEPARTMENT: MEDICINE AND SURGERY

LEVEL: 300L

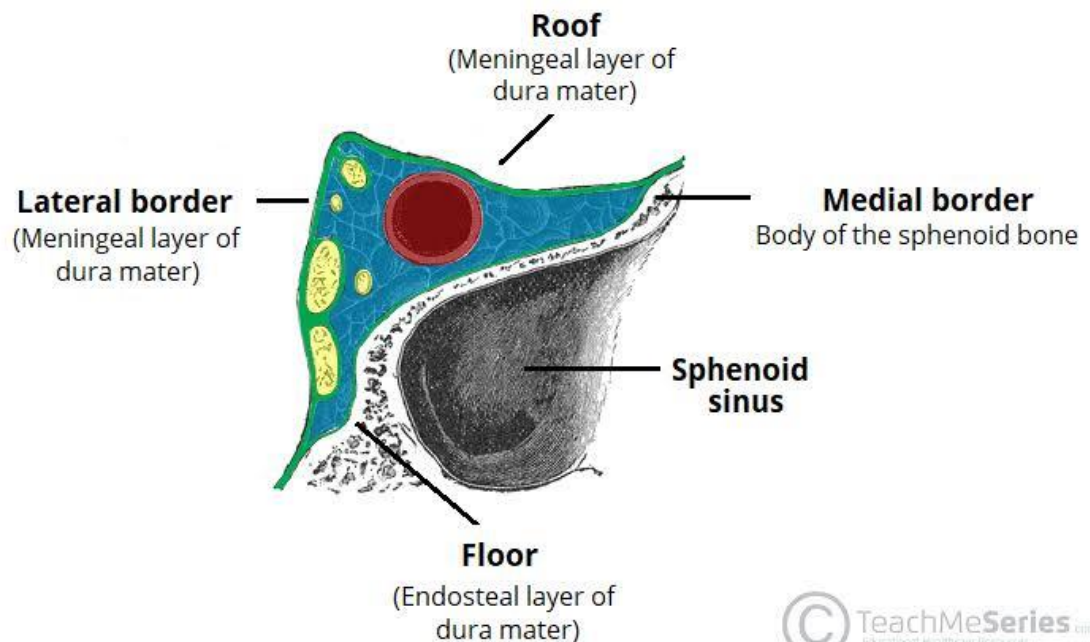
COURSE: GROSS ANATOMY OF HEAD AND NECK

1. Write an essay on the cavernous sinus

The cavernous sinus is a paired dura venous sinus located on either side of the sella turcica and superior to the sphenoid bone. 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 the dura mater that overlies the base of the greater wing of the sphenoid bone



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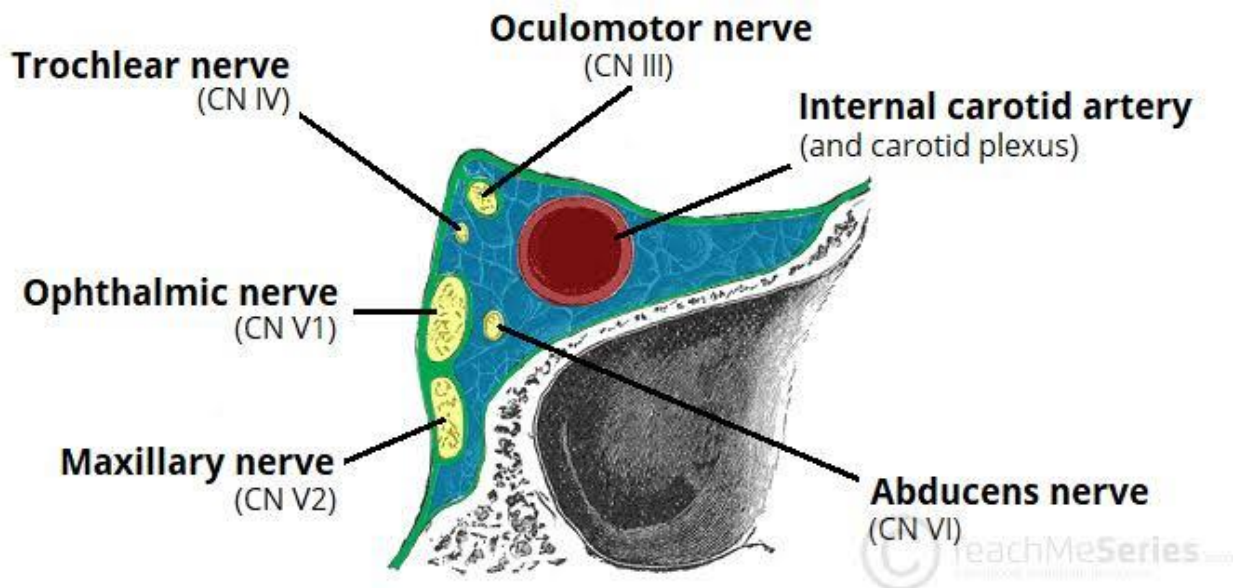
Travelling through the cavernous sinus are:

- i. Abducens nerve
- ii. Carotid plexus
- iii. Internal carotid artery

Travelling through the lateral wall of the cavernous sinus are:

- I. Oculomotor nerve
- II. Trochlear nerve
- III. Ophthalmic and axillary branches of the trigeminal nerve

The cavernous sinus is the only site in the body where an artery passes completely through a venous structure.



VENOUS CONNECTIONS

The cavernous sinus receives blood from:

- Superior and inferior ophthalmic veins
- Sphenoparietal sinus
- Superficial middle cerebral veins
- Inferior cerebral veins

Blood leaves the sinus via superior and inferior petrosal sinuses as well as via the emissary veins through the foramen ovale. There are also connections with the pterygoid plexus of veins via inferior ophthalmic vein, deep facial vein and emissary veins.

CLINICAL ANATOMY

Cavernous sinus thrombosis (CST): This refers to the formation of a clot within the cavernous sinus. The most common cause of CST is infection; which typically spreads from an extracranial location such as the orbit, paranasal sinuses. Infection is able to spread in this manner because of the anastomosis between the facial vein and superior ophthalmic veins.

Common clinical features are:

- Headache
- Unilateral periorbital edema
- Proptosis
- Photophobia
- Cranial nerve palsies (abducens nerve is most commonly affected).

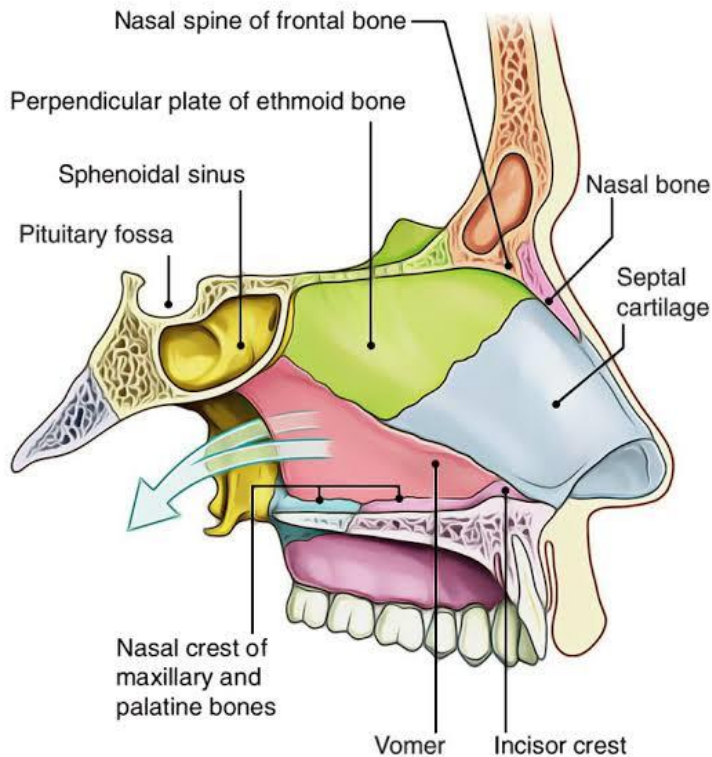
Treatment is typically with antibiotic therapy.

2. Discuss the walls of the nose

The nose has:

- A medial wall
- A lateral wall
- A roof
- A floor

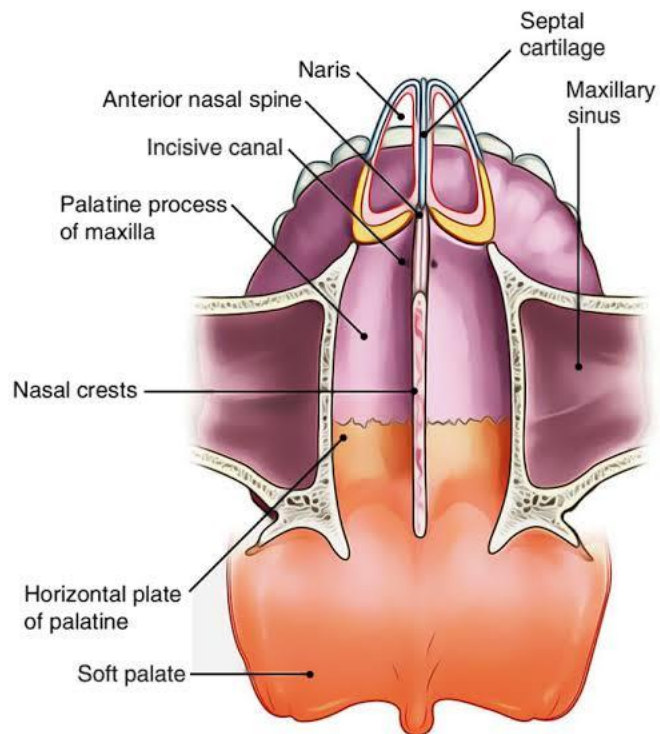
MEDIAL WALL



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:

- the septal nasal cartilage anteriorly
- posteriorly, mainly the vomer and the perpendicular plate of the ethmoid bone
- small contributions by the nasal bones where they meet in the midline
- the nasal spine of the frontal bone
- contributions by the nasal crests of the maxillary and palatine bones
- rostrum of the sphenoid bone
- the incisor crest of the maxilla.

FLOOR

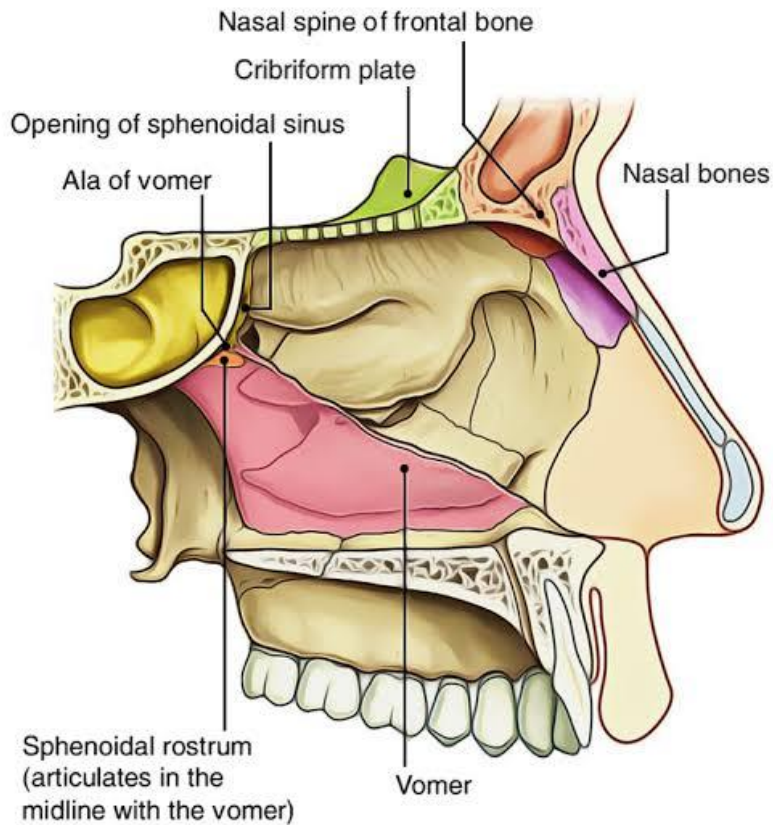


The floor of each nasal cavity is smooth, concave, and much wider than the roof. It consists of:

- soft tissues of the external nose
- the upper surface of the palatine process of the maxilla
- the horizontal plate of the palatine bone, which together form the hard palate.

The naris opens anteriorly into the floor, and the superior aperture of the incisive canal is deep to the mucosa immediately lateral to the nasal septum near the front of the hard palate.

ROOF



The roof of the nasal cavity is narrow and is highest in central regions where it is formed by the cribriform plate of the ethmoid bone. Anterior to the cribriform plate the roof slopes inferiorly to the nares and is formed by:

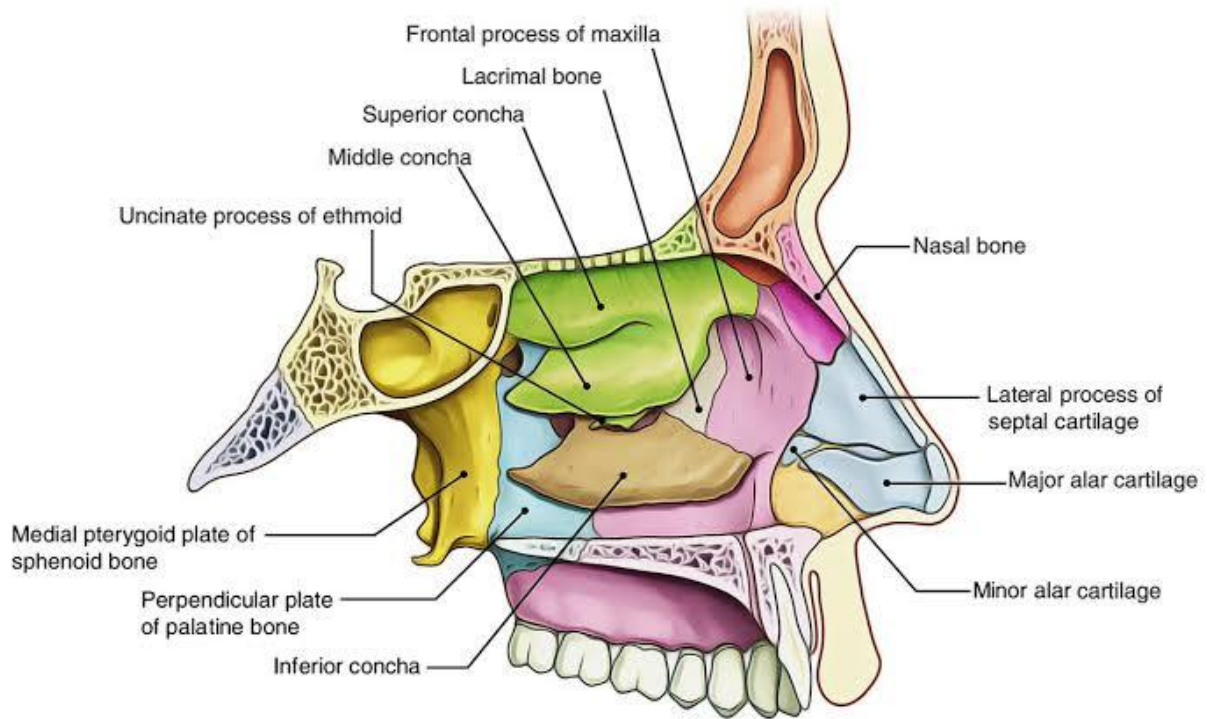
- the nasal spine of the frontal bone and the nasal bones
- the lateral processes of the septal cartilage and major alar cartilages of the external nose.

Posteriorly, the roof of each cavity slopes inferiorly to the choana and is formed by:

- the anterior surface of the sphenoid bone
- the ala of the vomer and adjacent sphenoidal process of the palatine bone
- the vaginal process of the medial plate of the pterygoid process.

Underlying the mucosa, the roof is perforated superiorly by openings in the cribriform plate, and anterior to these openings by a separate foramen for the anterior ethmoidal nerve and vessels. The opening between the sphenoidal sinus and the spheno-ethmoidal recess is on the posterior slope of the roof.

LATERAL WALL



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 medial plate of the pterygoid process of the sphenoid bone
- the medial surfaces of the lacrimal bones and maxillae
- the inferior concha.

In the external nose, the lateral wall of the cavity is supported by cartilage (lateral process of the septal cartilage and major and minor alar cartilages) and by soft tissues. The surface of the lateral wall is irregular in contour and is interrupted by the three nasal conchae.