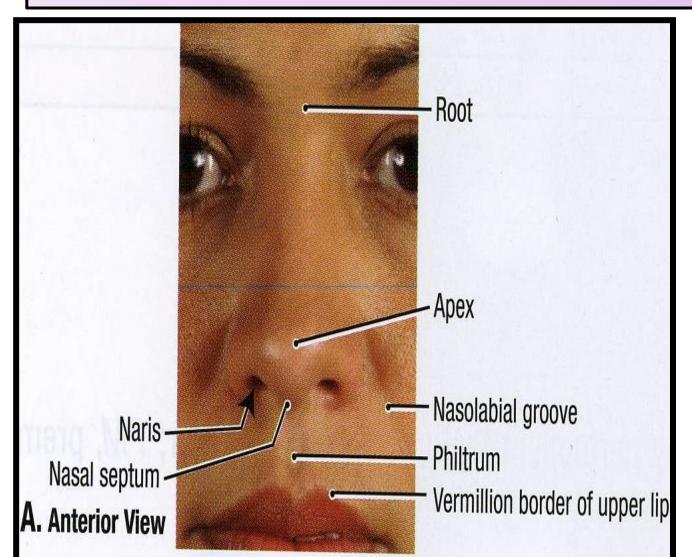
ANATOMY OF THE NOSE AND OLFACTORY NERVE

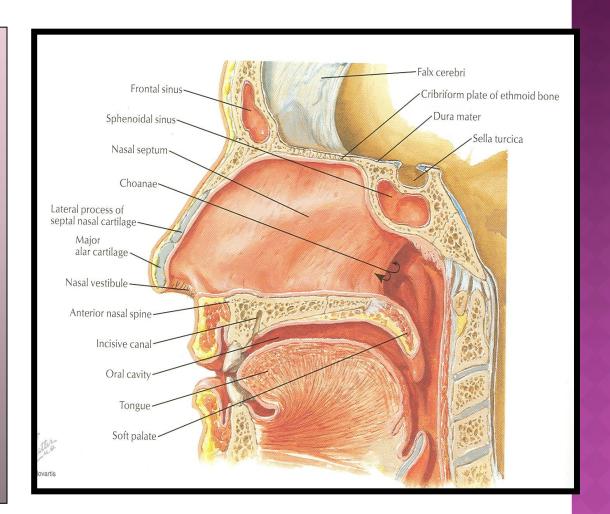


OBJECTIVES

- By the end of this lecture the students should be able to:
- Describe the structures forming the walls of the nasal cavity.
- List the main structures <u>draining into the lateral</u> wall of the nasal cavity.
- Differentiate between the <u>respiratory and</u> <u>olfactory</u> regions of the nasal cavity.
- List the main <u>sensory and blood</u> supply of the nose.
- Describe the <u>olfactory pathway.</u>

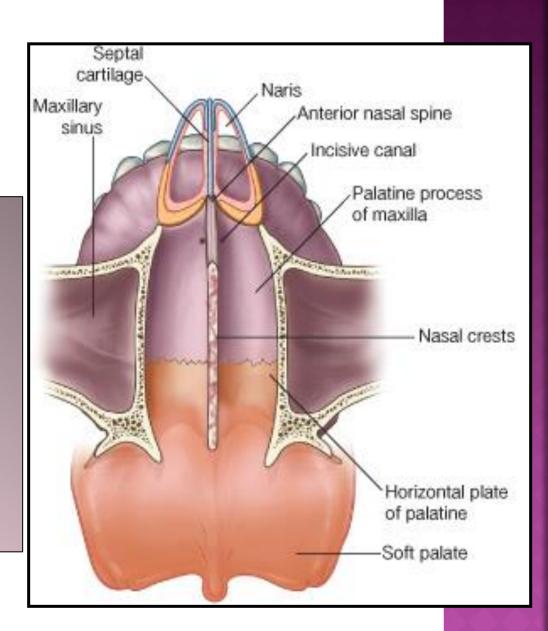
NASAL CAVITY

- It extends from <u>nostrils</u> anteriorly to the <u>choanae</u> posteriorly.
- Divided into right and left parts by the <u>nasal septum</u>.
- Each part has:
- Roof
- Floor
- Lateral and
- Medial walls.



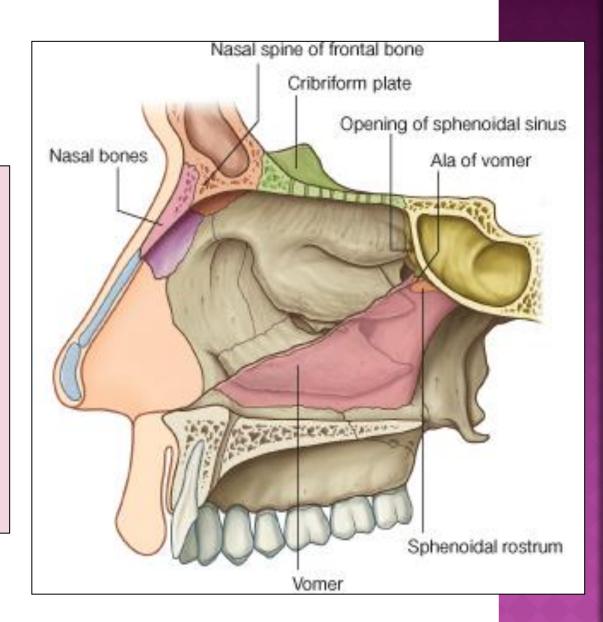
FLOOR

- Formed by:
- Nasal (upper)surface of the hard (bony) palate:
- Palatine process of maxilla, anteriorly.
- Horizontal plate of the palatine bone, posteriorly.



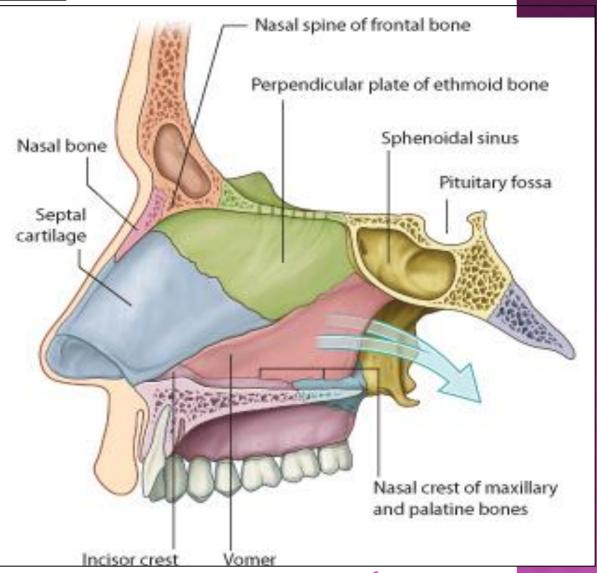
ROOF

- Formed by:
- Body of sphenoid, posteriorly.
- Cribriform plate of ethmoid, in the middle.
- Frontal, and nasal bones, Anteriorly.



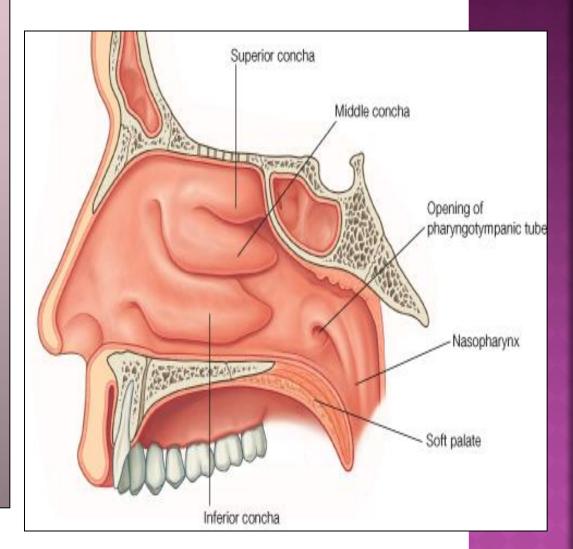
MEDIAL WALL

- The nasal septum :
- Vertical plate of ethmoid.
- Septal cartilage.
- Vomer.

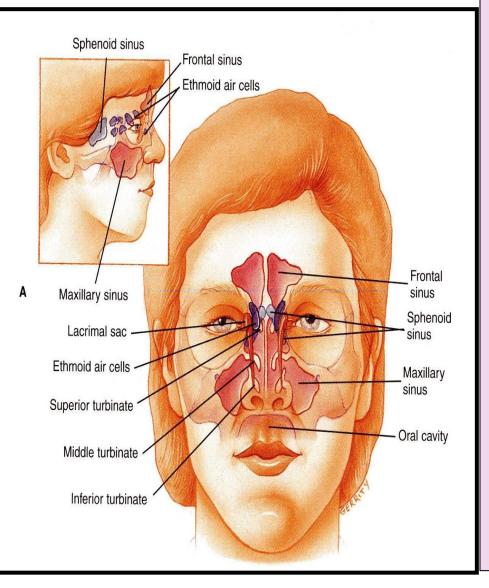


- Marked by:
- Three projections (Nasal Conchae):
- Superior, middle, and inferior
- The space below each concha is called Meatus.
- Superior, middle, and inferior meatus.
- The space (fossa)
 above the superior
 concha is the
 Sphenoethmoidal
 recess.

LATERAL WALL



PARANASAL SINUSES



They are <u>cavities</u> inside the:

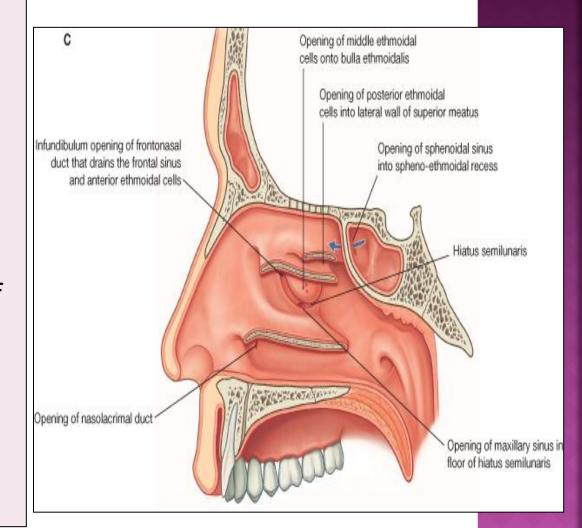
- Maxilla
- Frontal bone
- Sphenoid bone
- Ethmoid bone

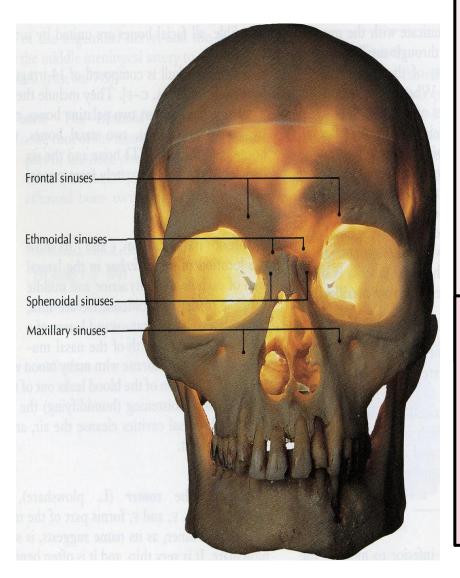
They are:

- Lined with mucoperiosteum;
- Filled with air; &
- Communicate with the nasal cavity.
- Open in the lateral wall of the nasal cavity
- Function:
- Lighten the skull weight
- Amplify the sound as we speak.

- Sphenoethmoidal recess receives the opening of sphenoidal air sinus
- Superior meatus; receives the opening of posterior ethmoidal sinus.
- Middle meatus; contains bulla ethmoidalis and hiatus semilunaris,
- Receives the openings of maxillary, frontal, & anterior, middle ethmoidal sinuses.
- Inferior meatus; receives the opening of nasolacrimal duct.

SINUSES OPENING IN LATERAL WALL



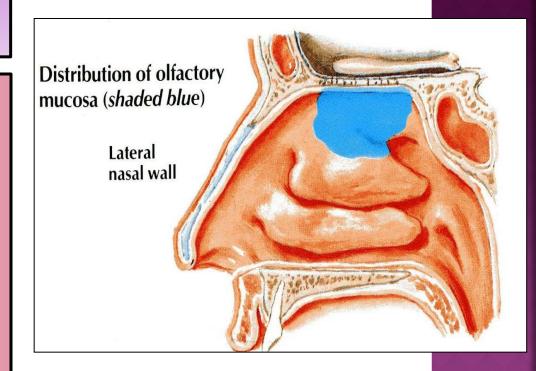


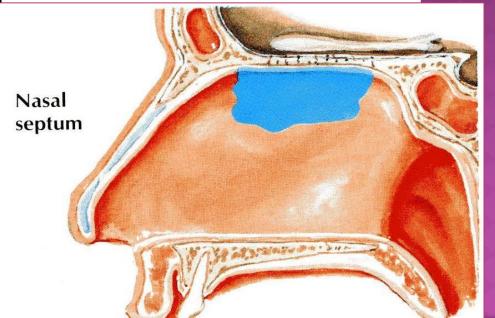
The mucosal lining of these sinuses is continuous with that in the nose and the throat. So infection in this area tends to migrate into the sinuses causing sinusitis.

- Note: all sinuses open into the middle meatus EXCEPT:
- Sphenoidal sinus: in sphenoethmoidal recess.
- Posterior ethmoidal sinus : in superior meatus.

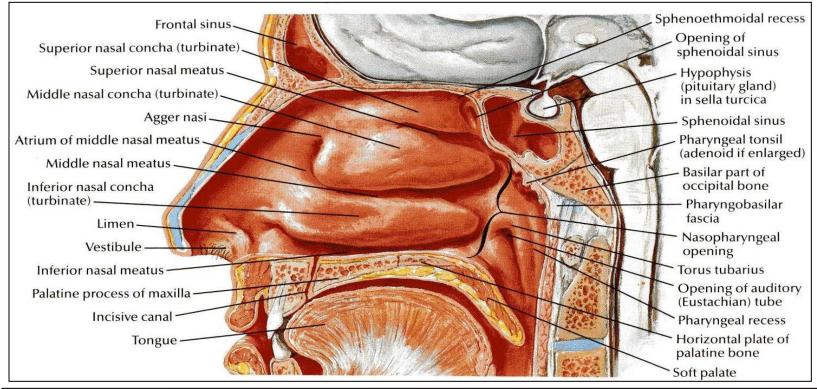
NASAL MUCOSA

- Olfactory:
- It is <u>delicate</u> and contains olfactory nerve cells.
- It is present in <u>the upper</u>
 part of nasal cavity:
- Roof
- On the lateral wall, it lines the upper surface of the <u>superior concha</u> and the <u>sphenoethmoidal</u> recess.
- On the medial wall, it lines the <u>superior part</u> of the nasal <u>septum</u>.





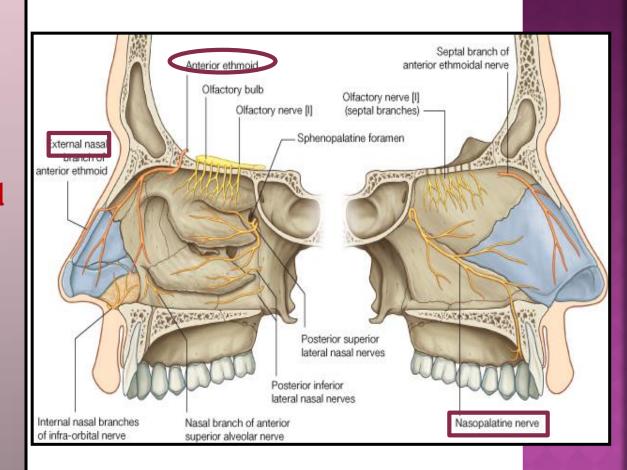
RESPIRATORY MUCOSA



- It is <u>thick</u>, ciliated, highly vascular and contains mucous glands & goblet cells
- It lines the lower part of the nasal cavity (from skin of vestibule to the superior concha).
- It functions to moisten, clean and warm the inspired air.
- The air is moistened by the secretion of numerous serous glands.
- It is cleaned by the removal of the dust particles by the ciliary action of the columnar ciliated epithelium that covers the mucosa.
- The air is warmed by a submucous venous plexus.

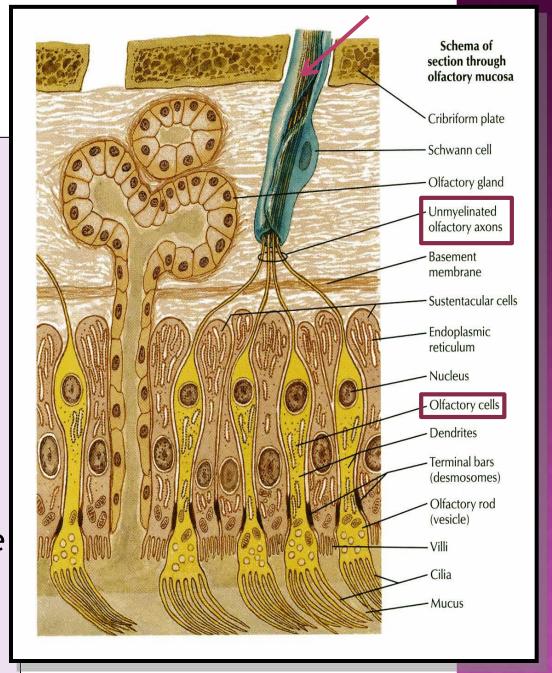
- The nerves of General Sensation are derived from the Ophthalmic & Maxillary divisions of trigeminal nerve.
- The anterior part
 is supplied by:
 Anterior Ethmoidal
 nerve.
- The posterior part
 is supplied by
 branches of the
 pterygopalatine
 ganglion:
- 1-Nasopalatine,
- 2- Nasal, and
- 3- Palatine

NERVE SUPPLY

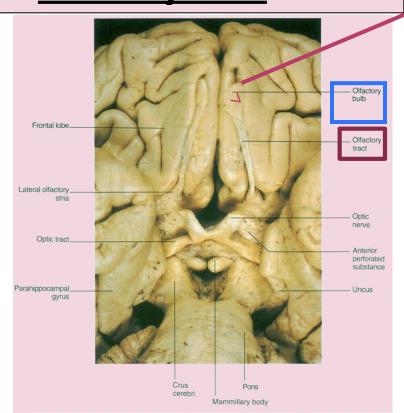


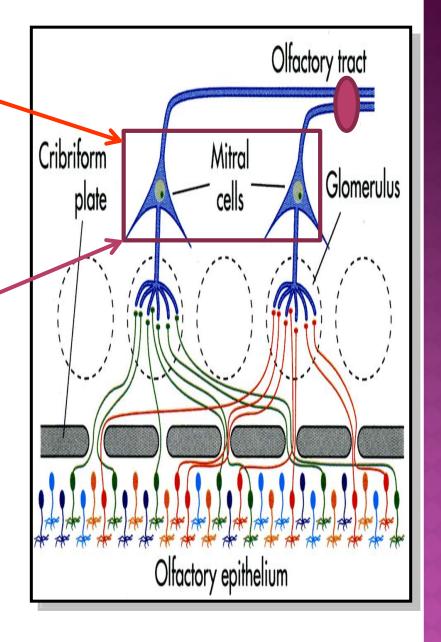
SPECIAL SENSATION OLFACTORY NERVE

- Olfactory pathway:
- 1st neurone:
- Olfactory receptors are specialized, ciliated nerve cells that lie in the olfactory epithelium.
- The axons of these bipolar cells 12-20 fibers form the true olfactory nerve fibers.
- Which passes through the <u>cribriform plate</u> of <u>ethmoid</u>.
- They join the olfactory bulb



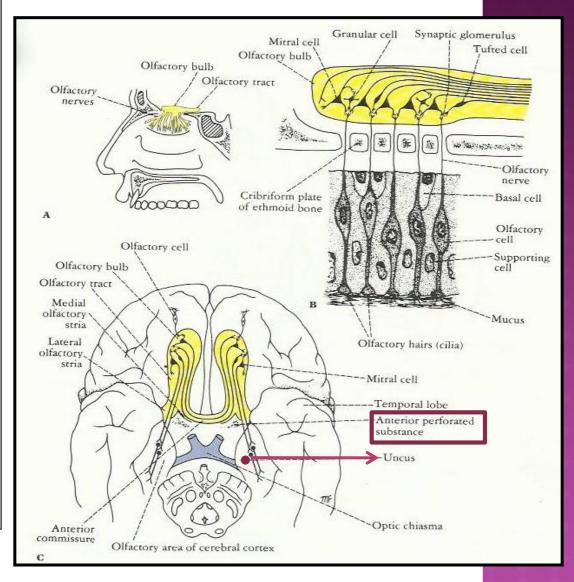
Preliminary processing of olfactory information is within the olfactory bulb, which contains interneurones and large Mitral cells; axons from the latter leave the bulb to form the olfactory tract.





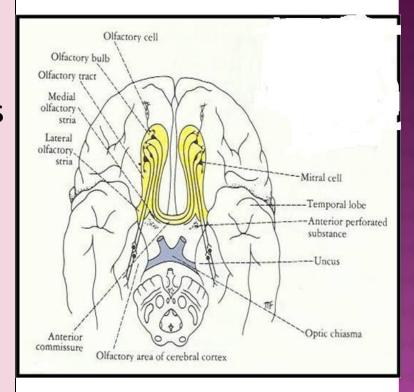
- 2nd neurone:
- It is formed by the Mitral cells of olfactory bulb.
- The axons of these cells form the <u>olfactory tract.</u>
- Each tract divides into 2 roots at the anterior perforated substance:
- Lateral root:
- Carries olfactory fibers to end in cortex of the Uncus & adjacent part of Hippocampal gyrus (center of smell).

OLFACTORY PATHWAY



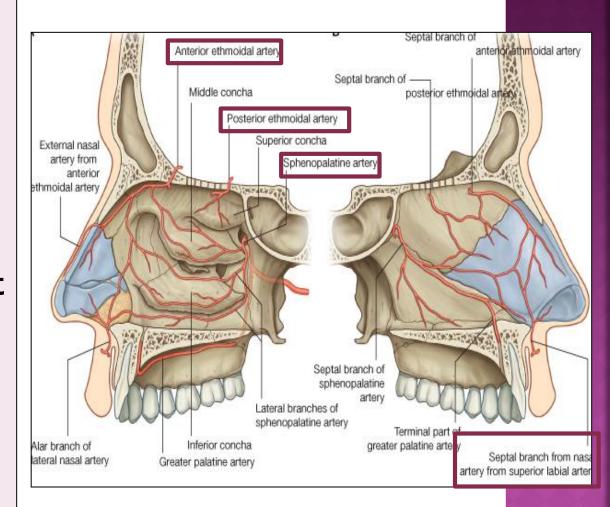
Medial root :

- crosses midline through anterior commissure and joins the uncrossed lateral root of opposite side.
- It connects olfactory centers of 2 cerebral hemispheres.
- So each olfactory centre receives smell sensation from both halves of nasal cavity.
- NB. Olfactory pathway is the only sensory pathway which reaches the cerebral cortex without passing through the Thalamus.



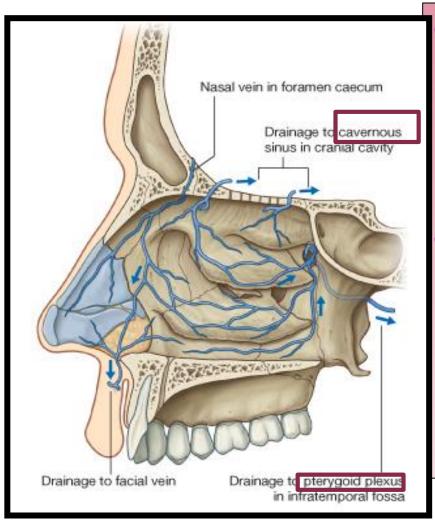
- Sphenopalatine artery (maxillary) .
- Anterior and Posterior Ethmoidal (ophthalmic).
- Superior labial (facial).
- Applied anatomy :
- The most common site for epistaxis is at the anterior & inferior part of nasal septum (Little's area) because of the rich arterial anastomosis.

ARTERIAL SUPPLY





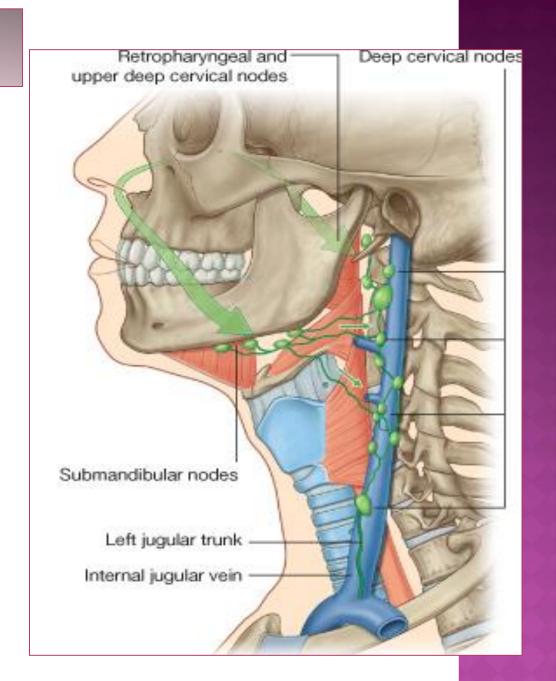
VENOUS DRAINAGE



- Venous plexus in the sub mucosa formed by veins accompanying the arteries
- They drain into <u>cavernous sinus</u> & <u>pterygoid venous</u> plexus.

LYMPH DRAINAGE

- ToSubmandibular&
- Upper deep cervical nodes.



THANK YOU