To days topic

Applied anatomy & physiology of nose and PNS

Presented by-

Dr. G H M Shahidul Haque

Associated Professor (ENT)

Parts of nose

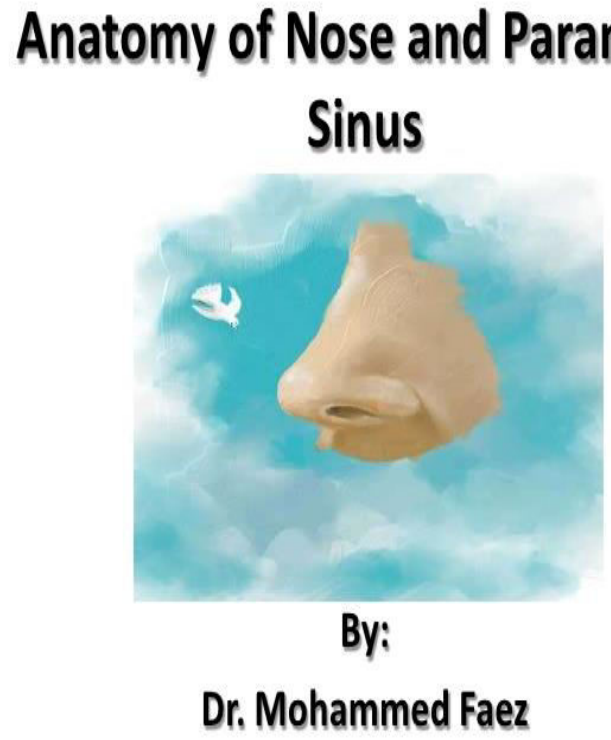
Anatomy of nose

Nose is divided into three parts:

External nose.

Vestibule.

Nasal cavity.

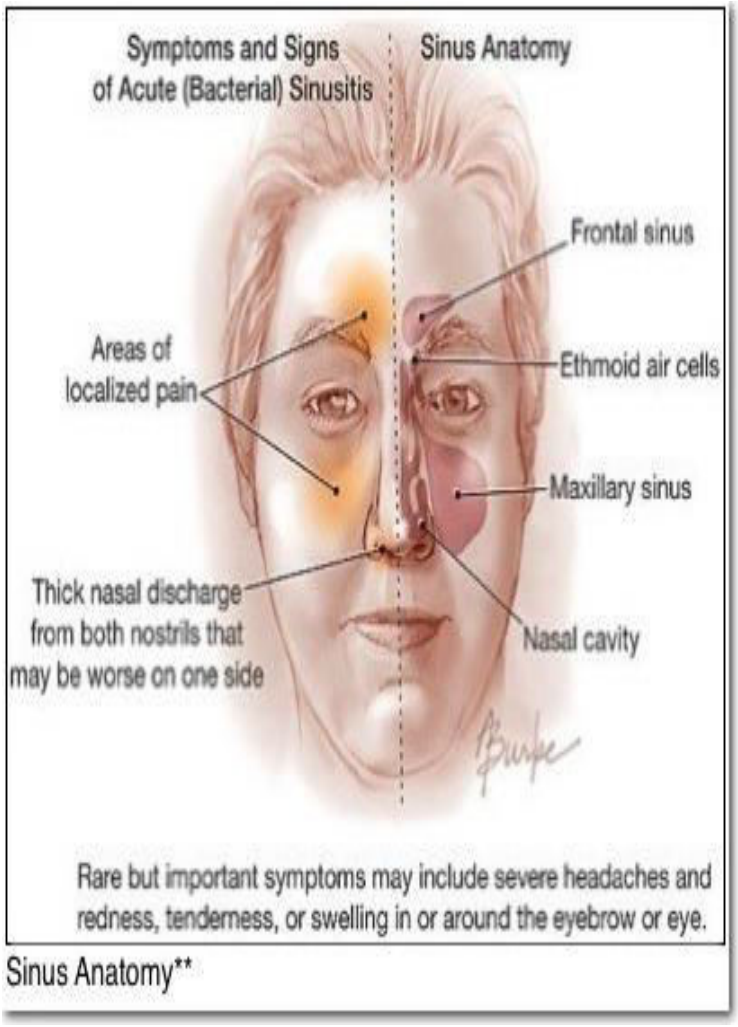


Anatomy of nose (cont.)

External nose is composed of

a) Bony part- containing two nasal bones & frontal process of the maxilla.

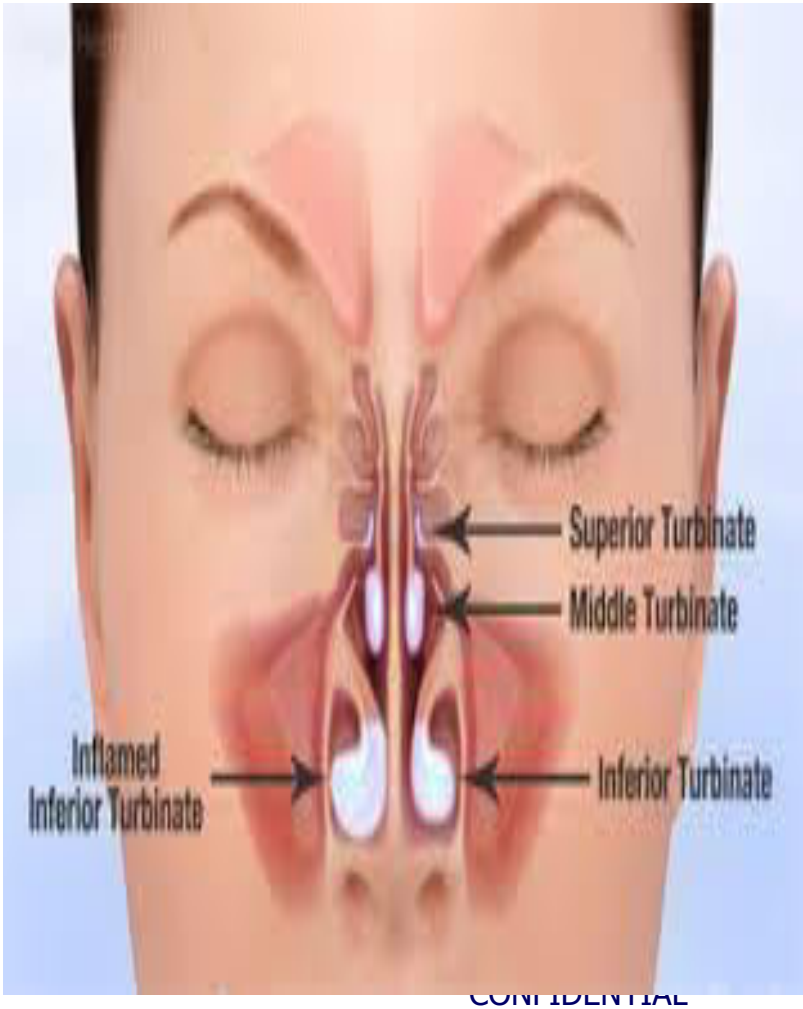
b) Cartilaginous part- containing upper lateral cartilage, lower lateral cartilage and dorsal border of the septal cartilage.



Sinus Anatomy**

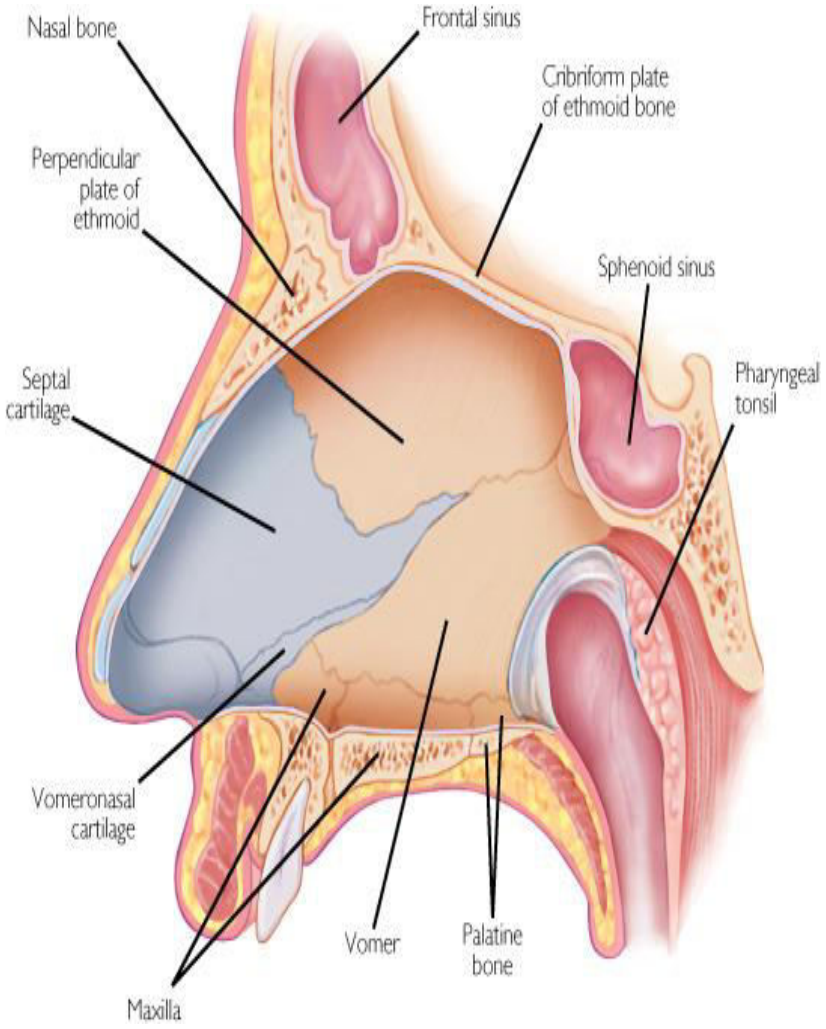
Anatomy (cont.)

- Muscles: 3 compressor & 4 dilators.
- Blood supply:
  - maxillary artery
  - ophthalmic artery
  - Anterior facial vein
  - ophthalmic vein
- Nerve supply: Facial nerve
- Lymphatic drainage:
  - Submandibular nodes.
  - Pre aurical nodes.



Anatomy of nose (cont.)

- The nasal vestibule: the entrance of the nasal cavity lined by stratified squamous epithelium.
- The nasal cavity :
- The nasal septum divided the nasal cavity into Rt. & Lt. haves.
- Each cavity consists of lateral wall, medial wall, roof & floor.



Anatomy of nose(cont.)

Lateral wall: formed by

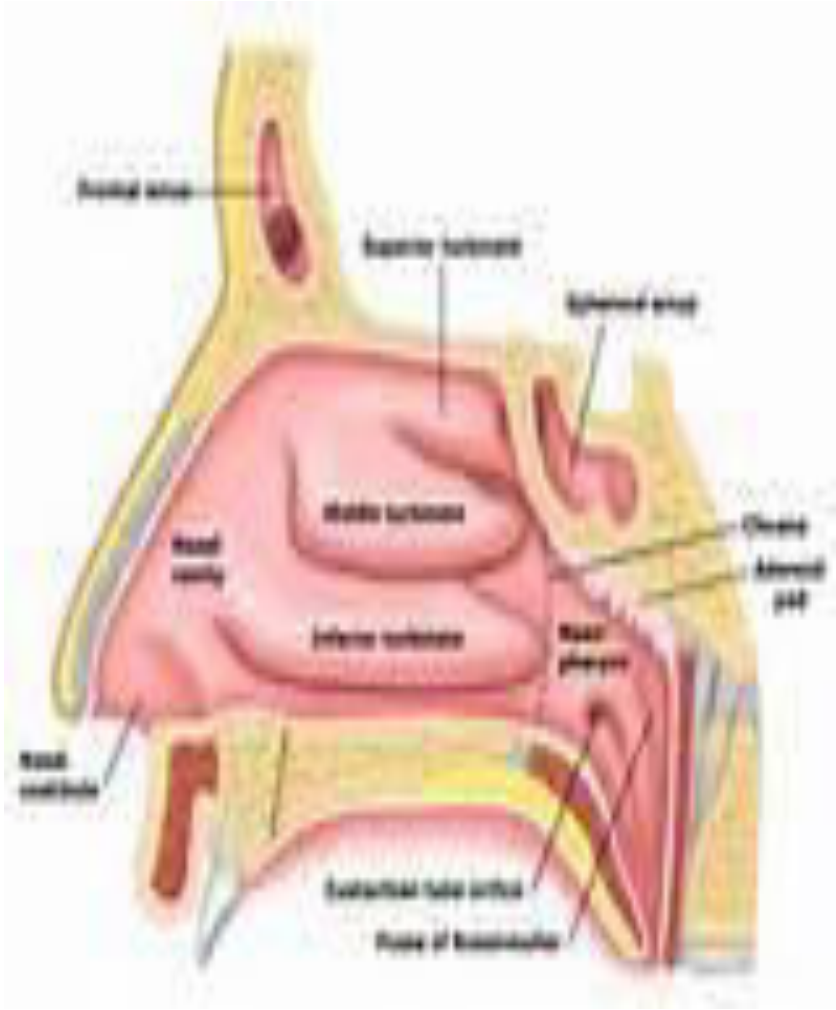
I) medial wall of the maxilla.

ii) lateral mass of ethmoid.

iii) Ascending process of maxilla.

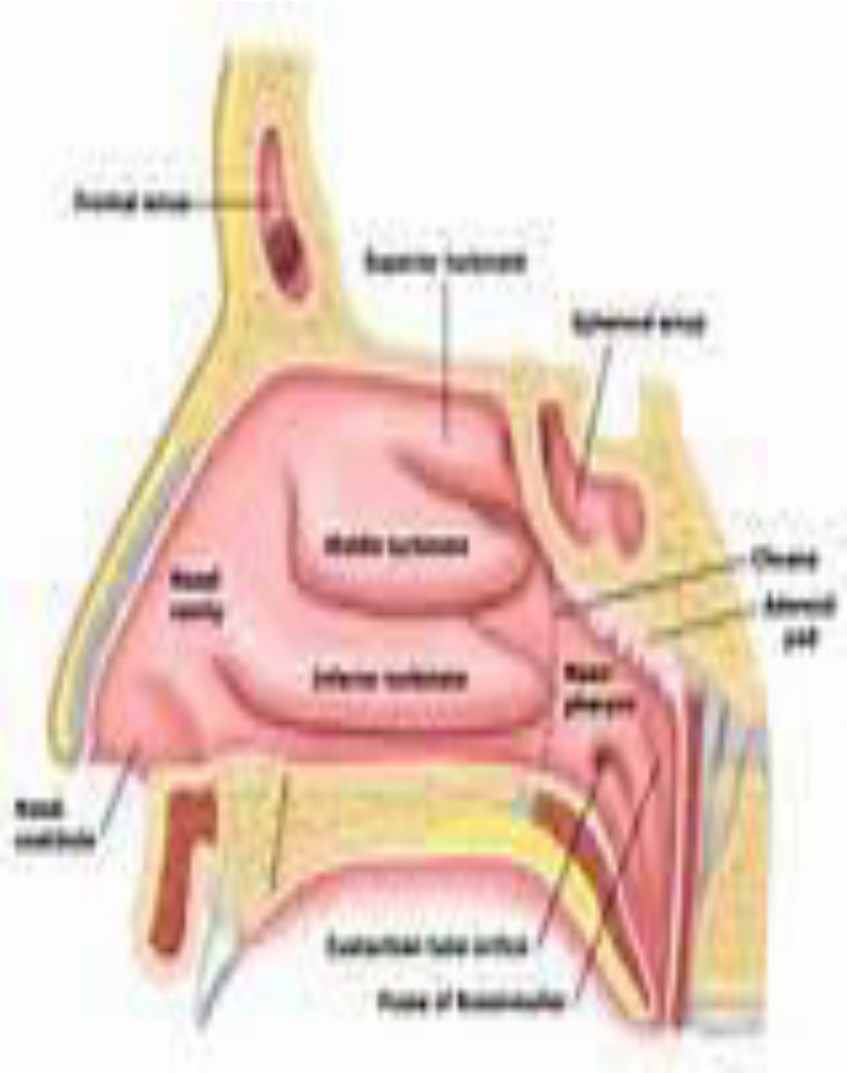
iv) perpendicular plate of palatine bone.

v) medial pterygoid process of sphenoid bone.



Lateral wall of nose (cont.)

- The bony lateral wall is convoluted by three turbinates named- superior, middle & inferior turbinates.
- The bony component of the turbinate is called concha.
- Each turbinate overhangs a space called meatus named superior, middle & inferior meatus.
- Paranasal sinuses & naso nacrimal duct open into these meatus.



Medial wall of nasal cavity

- Medial wall: is formed by the nasal septum.

Nasal septum is formed mainly by

A) Major components:

i) Quadrilateral cartilage.

ii) Perpendicular plate of the ethmoid bone.

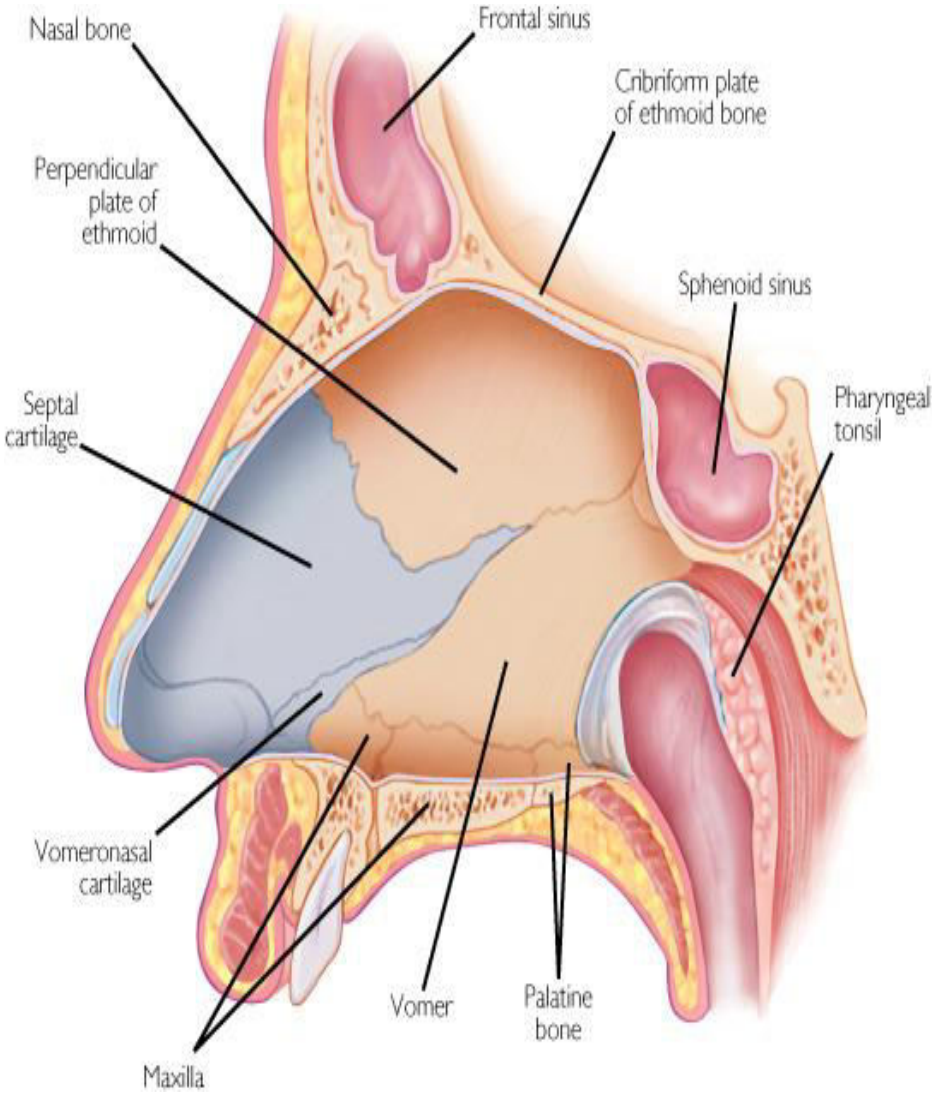
iii) Vomer.

B) Minor components:

i) nasal crest of maxilla

ii) nasal crest of palatine bone

iii) rostrum of the sphenoid.



Roof & Floor of nasal cavity

Roof: is formed by

i) nasal bone.

ii) frontal bone.

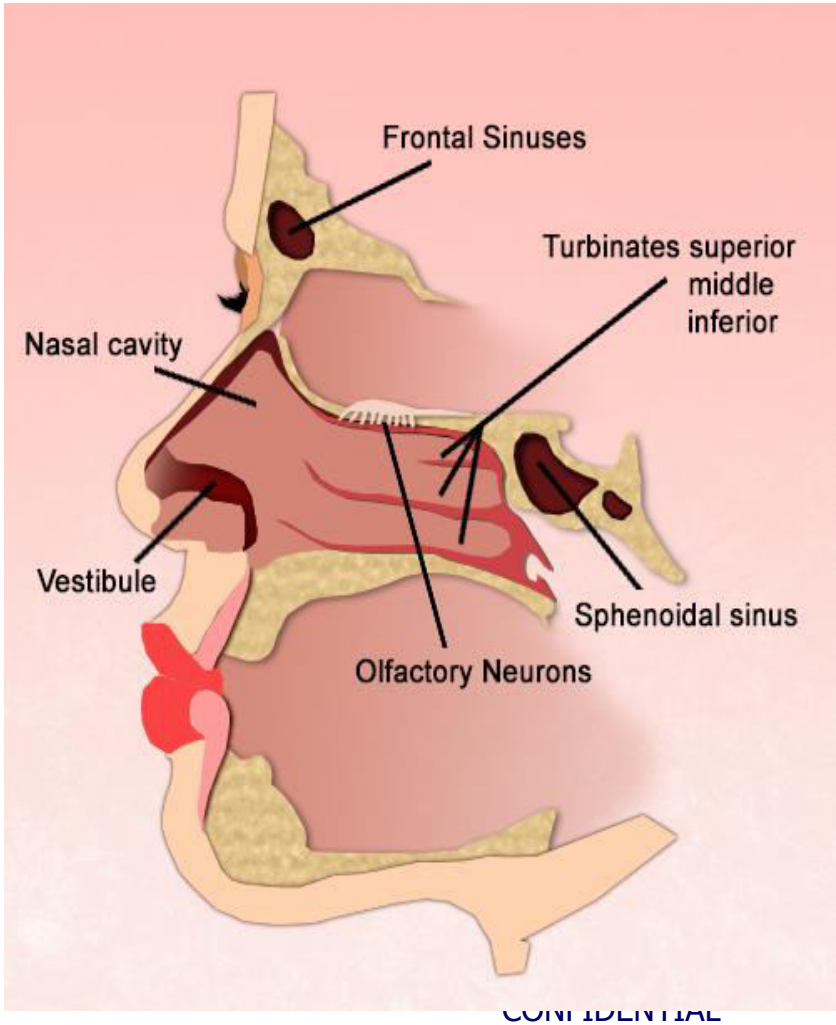
iii) cribriform plate of ethmoid bone.

iv) body of the sphenoid bone.

Floor : (hard palate) is formed by

i) palatine process of maxilla.

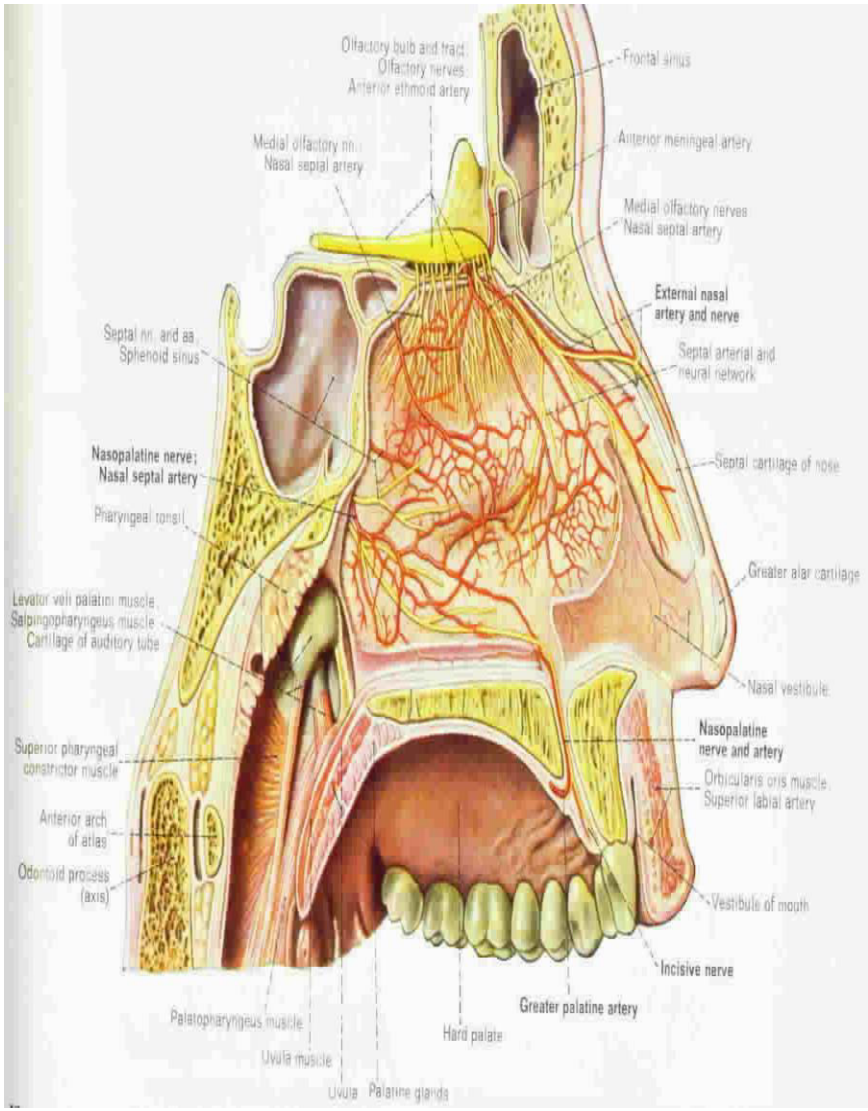
ii) horizontal process of palatine bone.



Lining of nasal mucosa

Epithelial lining:

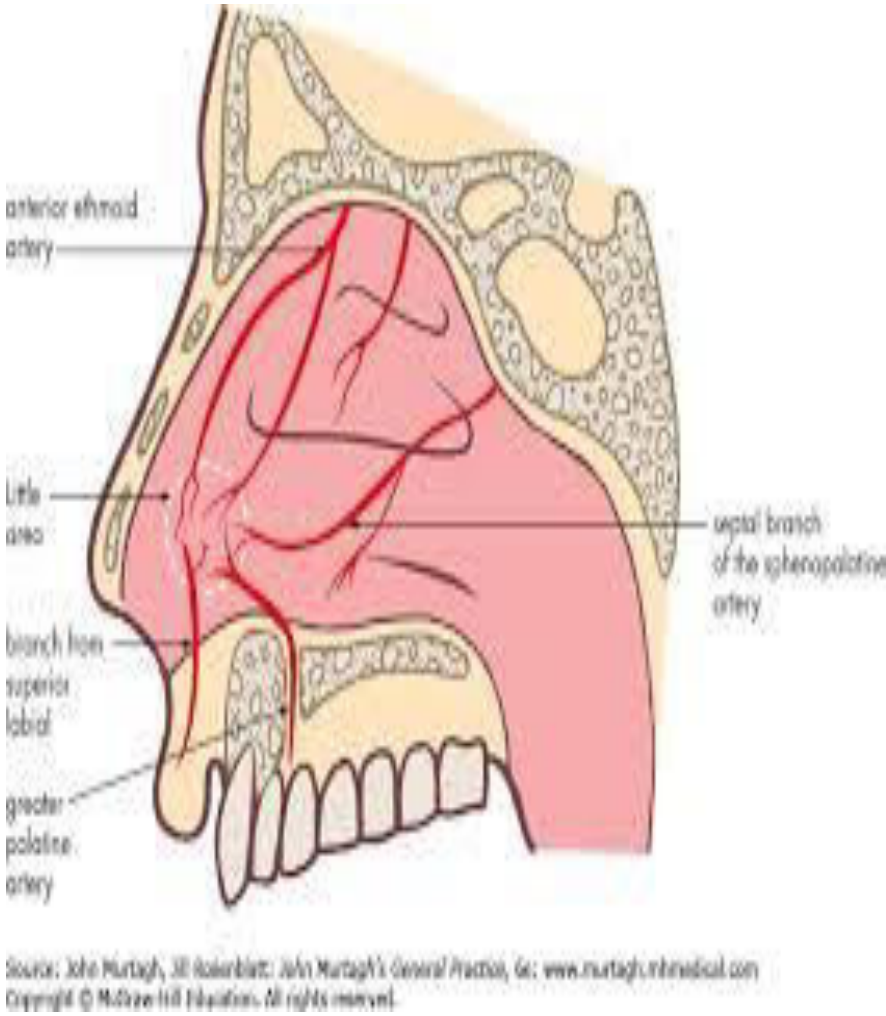
- Startified squamous epithelium(vestibule)
- Ciliated columnar epithelium (nasal cavity)
- Olfactory neuro epithelium (roof)



Blood supply of nasal cavity

Blood supply:

- Anterior ethmoidal & posterior ethmoidal (from internal carotid artery).
- Sphenopalatine, greater palatine, superior labial branch of facial artery (from external carotid artery.)
- These arteries form a plexus at the anteroinferior part of the nasal septum (Little's area) called Kiesselbach's plexus.



Paranasal sinuses

Paranasal sinuses: Are air filled cavities, arranged in paires and divided into

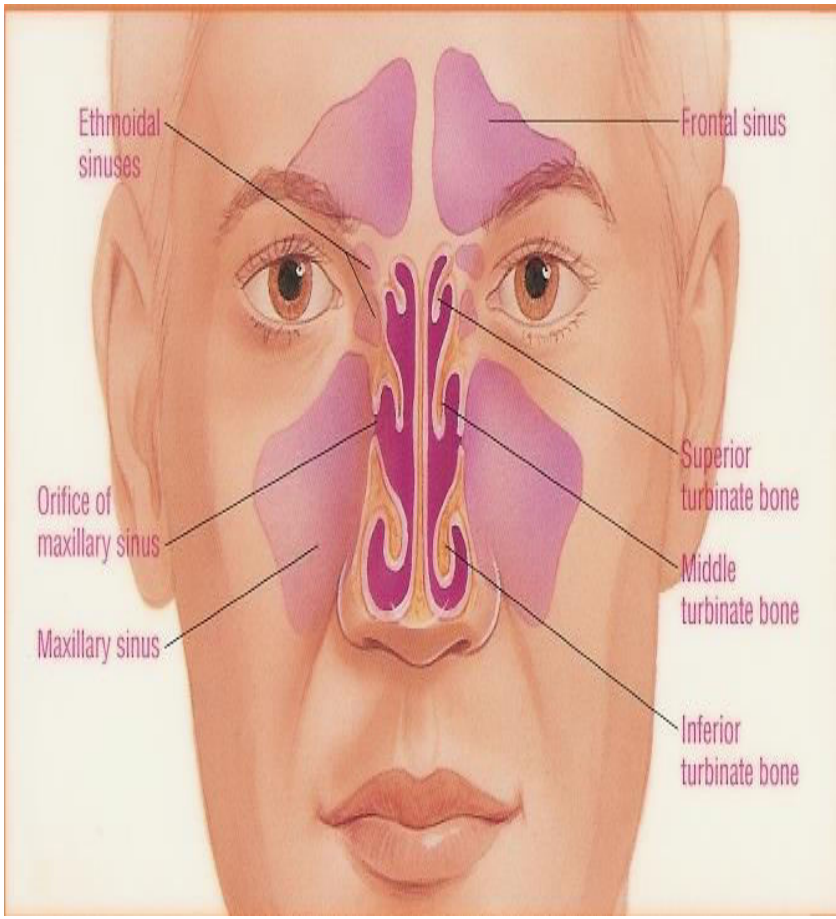
A) Anterior group comprising:

a) maxillary sinus.

b) Anterior ethmoidal air cells.

c) middle ethmoidal air cells.

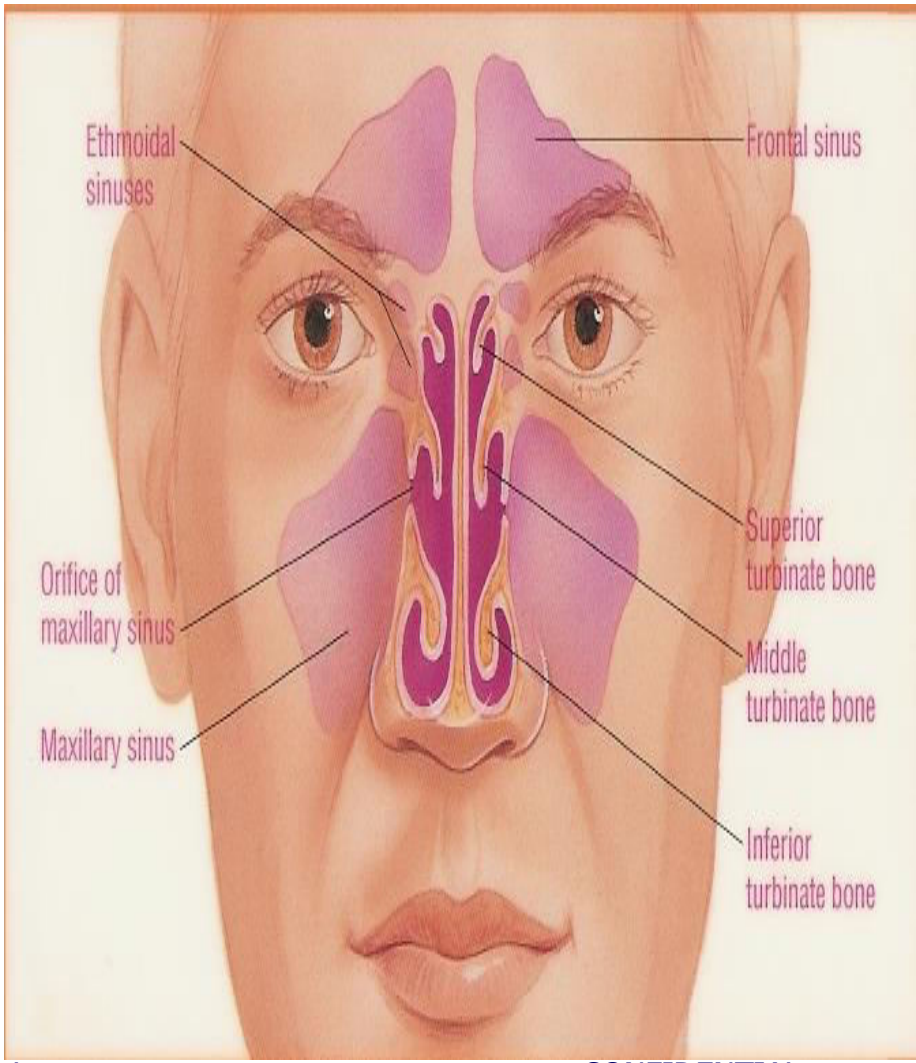
d) frontal sinus.



Paranasal sinuses(cont.)

B) Posterior group comprising of a) posterior group of ethmoidal air cells b) sphenoid sinus.

- The anterior groups drain into the middle meatus.
- The posterior ethmoidal air cells drain into the superior meatus.
- The sphenoidal sinus into sphenoethmoidal recess.

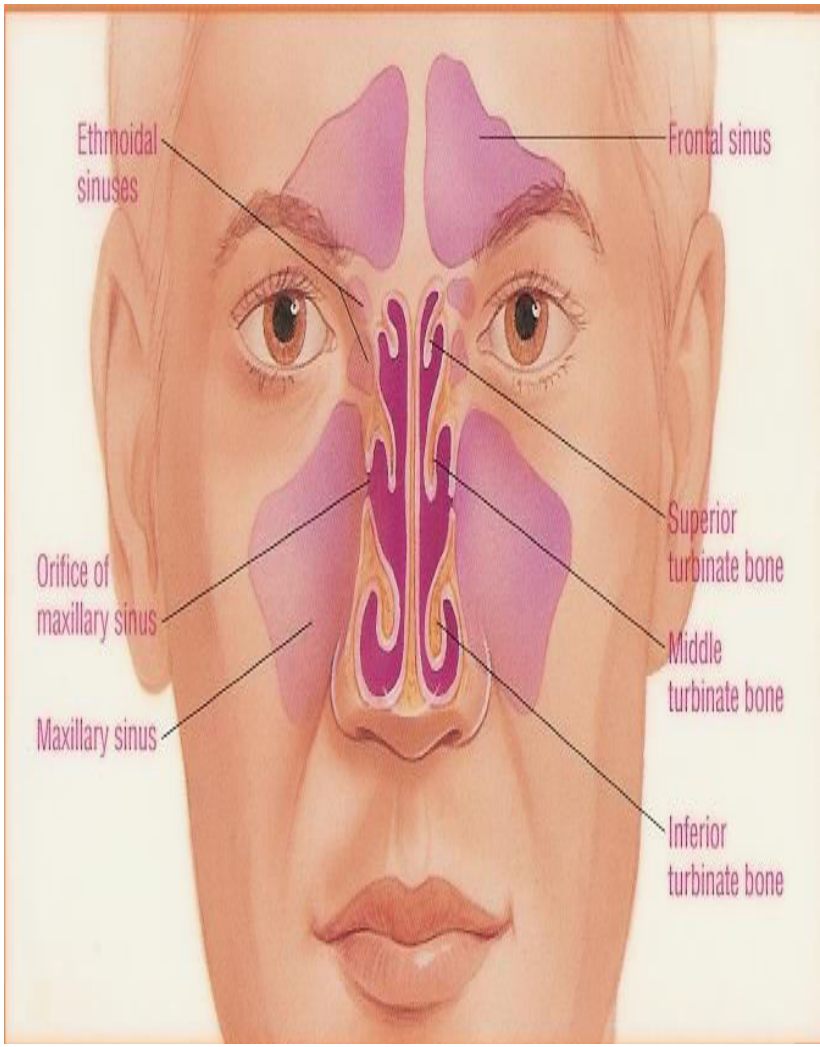


Functions of nose

- Respiration: provides an airway for respiration.
- Air conditioning and humidification:
- Filtration:
- Vocal resonance:
- Nasal reflex function:
- Organ of smell (Olfaction):

Functions of paranasal sinuses

- Resonance of voice
- Humidifications of inspired air
- Sound protection from own's speech to the ears.
- Protection of eyes from trauma
- May reduce the weight of the skull
- Thermal insulation of skull base & orbit.



common symptoms of nasal & paranasal sinus diseases

- Nasal discharge-
- ✓ may be unilateral or bilateral.
- ✓ may be watery, mucoid, mucopurulent, purulent or blood stain.
- Nasal obstruction- may be unilateral or bilateral.
  may be partial or complete.
- Facial pain and Headache.
- Epistaxis.
- Disorders of Olfaction- Anosmia, parosmia, hyposmia, hyperosmia.
- Post nasal drip.
- Speech defect
- Others symptoms- Sneezing, snoring, sleep apnoea.

Causes of

A) Unilateral nasal obstruction:

Deviated nasal septum.

Antrochoanal polyp.

Rhinosporiodiosis.

FB nose/ rhinolith.

Unilateral choanal atresia.

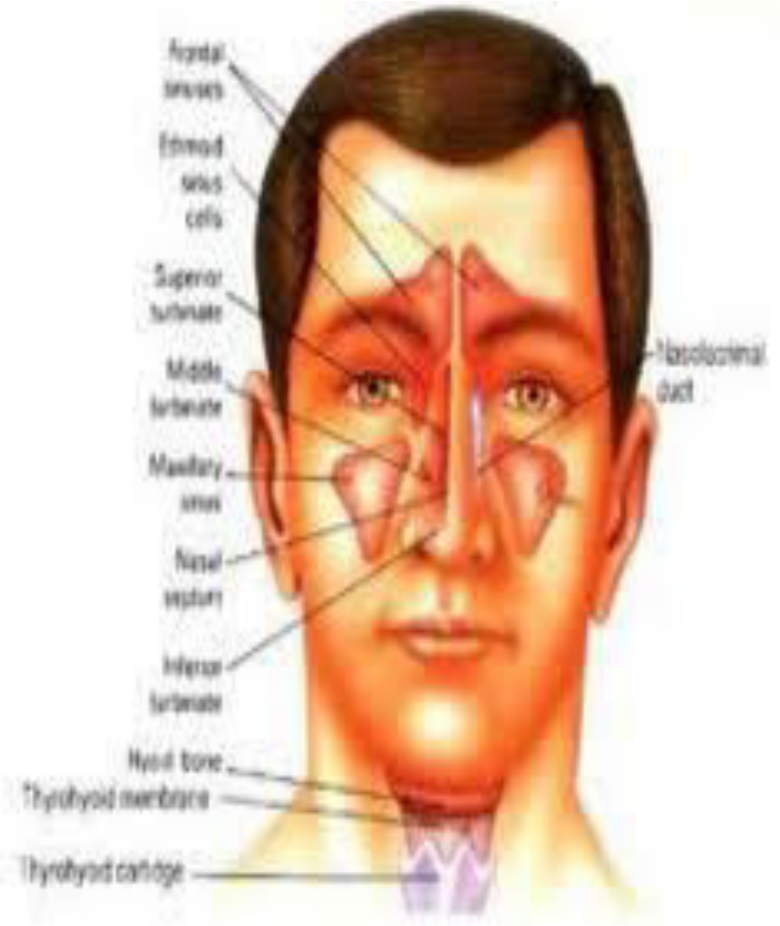
Carcinoma of maxillary antrum.

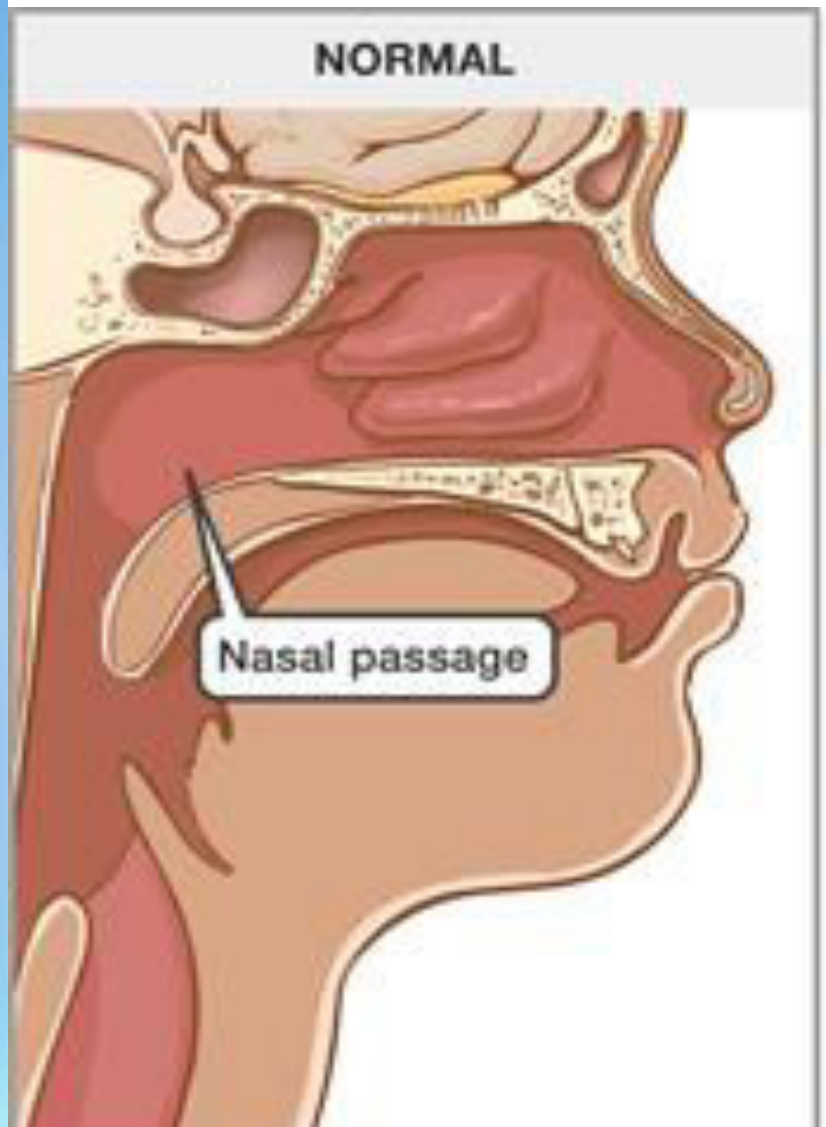
Olfactory neuroblastoma.

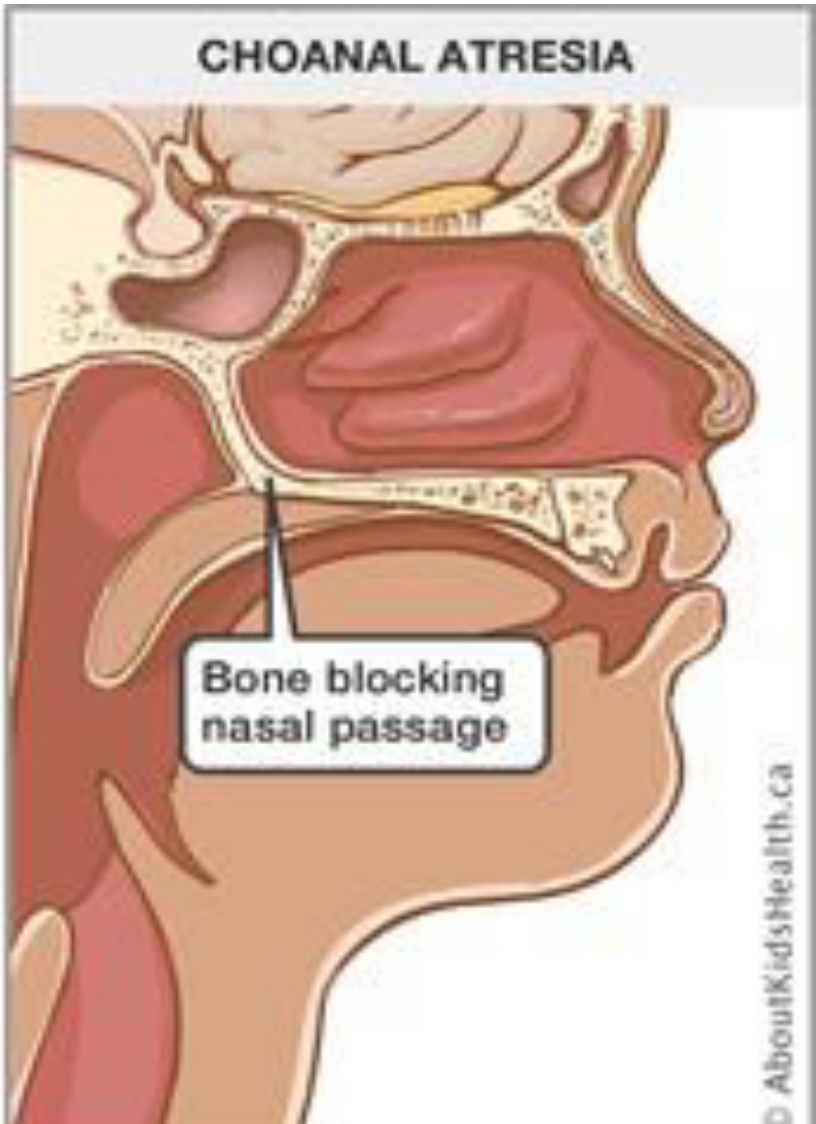
Rhingert's papilloma.

Sinusitis.

Hypertrophy inferior turbinate.




NORMAL
Nasal passage


CHOANAL ATRESIA
Bone blocking
nasal passage
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Causes of

B) Bilateral nasal obstruction:

Ethmoidal polyp.

Septal haematoma.

Septal abscess.

Allergic rhinitis.

Vasomotor rhinitis.

Adenoids .

DNS with HIT.

Bilateral choanal atresia.

Causes of

C) Foul smelling nasal discharge:

Atrophic rhinitis.

Old FB nose.

Rhinitis caseosa.

Purulent sinusitis.

Infected nasal polyps.

Nasal malignancy.

Causes of

D) Crusting conditions of the nose:

Atrophic rhinitis.

Unhealed septal perforation.

Rhinoscleroma.

Rhinitis sicca.

Post inferior turbinectomy/ FESS.

Post radiotherapy.

TB, Syphilis.

Disturbances of olfaction:

- Hyposmia: diminished sense of smell is termed hyposmia. Causes are-
- old age
- menopause
- tobacco smoker
- radiation therapy of nose
- surgical removal of the mucosa.
- Parosmia: it is a qualitative change. There occurs an unpleasant change in sense of smell. Causes are-
- skull fracture
- injury to uncus of the temporal bone
- may follow administration of streptomycin.

Disturbances of olfaction(cont.)

- Anosmia: anosmia is the loss of the sense of smell. Causes are-
- obstructive lesions in the nose and nasopharynx
- lesions of mucosa
- trauma- surgical or accidental
- neuritis
- central lesions in the brain.
- Hyperosmia: exaggeration of the olfactory sensitivity is termed as hyperosmia. Causes are-
- epilepsy
- pregnancy
- hunger
- general paralysis
- cystic fibrosis.

Causes of

Watery discharge: causes are

- Early stages of common cold
- Vasomotor rhinitis
- CSF rhinorrhea.

Mucoid discharge : causes are

- Allergic rhinitis.

Mucopurulent discharge: causes are

- Infective rhinitis.
- Sinusitis.

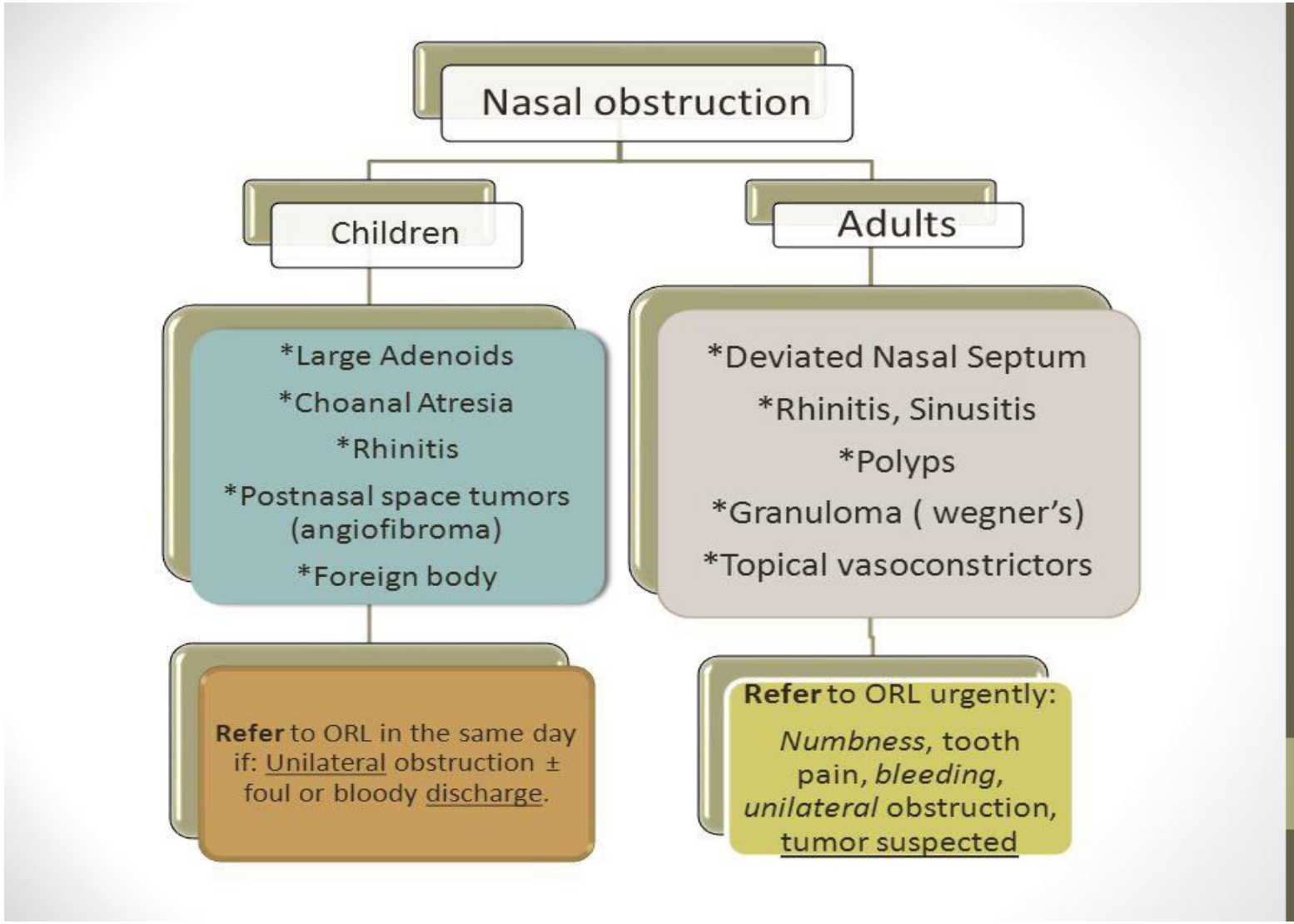
Purulent discharge :causes are

- Atrophic rhinitis.
- FB innose
- Furunculosis.

Causes of

Blood stained nasal discharge : causes are

- Malignant process.
- FB in nose
- Non healing granulomas


Nasal obstruction
Children
Adults
*Large Adenoids
*Choanal Atresia
*Rhinitis
*Postnasal space tumors (angiofibroma)
*Foreign body
*Deviated Nasal Septum
*Rhinitis, Sinusitis
*Polyps
*Granuloma (wegner's)
*Topical vasoconstrictors
Refer to ORL in the same day if: Unilateral obstruction ± foul or bloody discharge.
Refer to ORL urgently:
Numbness, tooth pain, bleeding, unilateral obstruction, tumor suspected

Questions and answers

Thank you all