NASAL CAVITY
&
PARANASAL SINUSES

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Nose is a sign of Beauty, Sometimes!
- The Nose - Two regions: external nose & nasal cavity

- External nose-root, bridge, dorsum nasi, and apex
  - Philtrum - shallow vertical groove inferior to apex
  - Nostrils (nares) - bounded laterally by alae

(a) Surface anatomy
The Nose - Exterior

- Nasion (nasofrontal suture line)
- Upper nasal cartilage
- Septal cartilage
- Sesamoid cartilage
- Alar cartilage (medial crus)
- Alar cartilage (lateral crus)
- Dome
- Nasal bone
- Nasomaxillary suture line
- Ascending process of maxilla
- Pyriform aperture
- Sesamoid cartilage
- Fibrofatty tissue
- Medial crural footplate
- Lower lateral (alar) cartilage
- Nasal spine
- Intermediate crus
- Lateral crus
- Medial crus
- Footplate
- Septal cartilage
- Nasal spine
Broken Nose

- Brusing around eyes and swelling of nose
- Fracture of nasal bones
Common sites for CSF leak

- Cribiform plate, frontal sinus, Ant. Eth. roof.
- posterior ethmoid roof,
- sphenoid sinus.
- temporal bone (pseudorhinoliquorrhea).

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Abhijit Josh
Nose - Boundaries

- Frontal sinus
- Falx cerebri
- Cribiform plate of ethmoid bone
- Nasal septum
- Dura mater
- Lateral nasal cartilage
- Greater alar cartilage
- Nasal vestibule
- Anterior nasal spine
- Incisive canal
- Oral cavity
- Sella turcica
- Sphenoidal
- Choanae
- Soft palate
- Tongue
Nasal Cavity
Choanae (posterior view)
Medial wall of the Nose

- Squama of frontal bone
- Crista galli of ethmoid bone
- Cribiform plate of ethmoid bone
- Perpendicular plate of palatine bone
- Crest of sphenoid bone
- Body of sphenoid bone
- Sphenoidal sinus
- Medial plate of pterygoid process (part of sphenoid bone)
- Lateral plate of pterygoid process (part of sphenoid bone)
- Basilar part of occipital bone
- Pharyngeal tubercle
- Perpendicular plate of ethmoid
- Nasal crest of palatine bone
- Posterior nasal spine of palatine bone
- Lesser palatine foramen
- Incisive canal of maxilla bone
- Palatine process of maxilla bone
- Greater palatine foramen
- Nasal crest of maxilla bone
- Nasal spine of maxilla bone
- Greater alar cartilage (medial crus)
- Nasopalatine groove
- Septal cartilage
- Vomer
- Spine of frontal bone
- Frontal sinus
Vomer
- Forms inferior (bottom) portion of nasal septum
- Articulates with maxillae and palatine bones
Nasal Meatus
Lateral Wall of the Nose

- Lacrimal bone
- Uncinate process of ethmoid bone
- Middle nasal concha of ethmoid bone
- Superior nasal concha of ethmoid bone
- Cribriform plate of ethmoid bone
- Supreme nasal concha of ethmoid bone
- Sphenoid recess
- Orbital process of palatine bone
- Sphenopalatine foramen
- Sphenoidal sinus
- Sphenoidal process of palatine bone
- Basilar part of occipital bone
- Medial plate of pterygoid process of (part of sphenoid bone)
- Lateral plates of pterygoid process (part of sphenoid bone)
- Hamulus of sphenoid bone
- Posterior nasal spine of palatine bone
- Incisive canal of maxilla bone
- Alveolar process of maxilla bone
- Palatine process of maxilla bone
- Anterior nasal spine of maxilla bone
- Greater alar cartilage
- Alar fibrofatty tissue
- Lateral nasal cartilage
- Frontal process of maxilla bone
- Nasal bone
- Agger nasi
- Squama of frontal bone
- Frontal sinus
- Spine of frontal bone
- Lateral Wall of the Nose

- Horizontal plate of palatine bone
- Perpendicular plate of palatine bone
- Inferior nasal concha
Nasal Meatus

Frontal sinus
Cribriform plate of ethmoid bone
Probe in opening of sphenoidal sinus
Sphenoidal sinus
Superior nasal meatus with openings posterior of ethmoidal cells
Basilar part of occipital bone
Anterior tubercle of atlas (C1 vertebra)
Dens of axis (C2 vertebra)
Torus tubarius

Probe passing from semilunar hiatus into frontal sinus via nasal frontal duct
Middle nasal concha (cut surface)
Ethmoidal bulla
Openings of middle ethmoidal cells
Semilunar hiatus with openings of anterior ethmoidal
Uncinate process
Inferior nasal concha (cut surface)
Opening of nasolacrimal duct
Inferior nasal meatus
Opening of maxillary sinus
Opening of auditory
Nose – Nerve Supply

- Anterior ethmoid
- Olfactory bulb
- Olfactory nerve [I]
- Sphenopalatine foramen
- Septal branch of anterior ethmoidal nerve
- Olfactory nerve [I] (septal branches)
- Posterior superior lateral nasal nerves
- Posterior inferior lateral nasal nerves
- Nasopalatine nerve

- Internal nasal branches of infra-orbital nerve
- Nasal branch of anterior superior alveolar nerve
- Nasal branch of anterior ethmoidal nerve
Nose – Blood Supply
Blood Supply of Nasal Septum
Epistaxis
Kesselbach’s Plexus/Little’s Area:

- Superior Labial A (Facial)
- Anterior Ethmoid (Ophth)
- Greater Palatine (Max)
- Sphenopalatine A (Max)

Woodruff’s Plexus:

- Pharyngeal & Post. Nasal AA of Sphenopalatine A (Max)
Epistaxis management

Child sits in adults lap

Head tilted forward

Squeeze firmly above nostrils

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Nose – Venous Drainage
Lymph Drainage

- Retropharyngeal and upper deep cervical nodes
- Deep cervical nodes
- Submandibular nodes
- Left jugular trunk
- Internal jugular vein
Paranasal sinuses

- Frontal sinus
- Ethmoid sinus
- Nasal cavity
- Maxillary sinus
- Sphenoid sinus
- Pharynx (throat)
Paranasal Sinuses

- The paranasal sinuses are cavities found in the interior of the maxilla, frontal, sphenoid, and ethmoid bones.

- They are lined with mucoperiosteum and filled with air.

- They communicate with the nasal cavity through relatively small apertures.

- The maxillary and sphenoidal sinuses are present in a rudimentary form at birth.

- They enlarge appreciably after the eighth year and become fully formed in adolescence.
Frontal air sinus

- Frontal sin
- Ethmoid sin
- Nasal cavity
- Maxillary sin
Sphenoid air sinus

- Frontal sinus
- Ethmoidal cells
- Opening of sphenoidal sinus
- Sphenoidal sinus
- Opening of nasofrontal duct
- Semilunar hiatus
- Uncinate process
- Middle nasal concha (cut away)
- Opening of maxillary sinus
- Inferior nasal concha
Ethmoid air sinus
Sinus Infection (sinusitis)

Normal

Ostium

Normal

Sinus infection (acute sinusitis)

Inflammation

Pus filled sinuses

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Paranasal air sinuses - radiology

- Middle Turbinates
- Deviated Nasal Septum
- Inferior Turbinates