



Special Senses Module Nose & Paranasal sinuses (SGD)



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THOI MEDIC

Motto Vision ;The Dream/Tomorrow



- To impart evidence based research oriented medical education
- To provide best possible patient care
- To inculcate the values of mutual respect and ethical practice of medicine

Prof. Umar's Model of Teaching Strategy Self Directed Learning Assessment Program

Objectives : To cultivate critical thinking, analytical reasoning, and problem-solving competencies.

To instill a culture of self-directed learning, fostering lifelong learning habits and autonomy.

How to Assess?

➤Ten randomly selected students will be evaluated within the first 10 minutes of the lecture through 10 multiple-choice questions (MCQs) based on the PowerPoint presentation shared on Students Official WhatsApp group, one day before the teaching session.

➤ The number of MCQs from the components of the lecture will follow the guidelines outlined in the Prof. Umar model of Integrated Lecture.

Component	Core	Horizontal	Vertical	Spiral
of LGIS	Knowledge	Integration	Integration	Integration
No. of MCQs	6-7	1-2	1	1



Professor Umar Model of Integrated Lecture



Learning objectives

- Discuss anatomy and location of paranasal air sinuses separately.
- Define & list names of paranasal sinuses
- Describe their blood and nerve supply
- Describe functions & Drainage of paranasal sinuses.
- Identify various sinuses in radiographs
- Describe anatomy of external nose and features of of nasal septum, side and anatomical position.
- Describe details of olfactory receptors and formation of olfactory nerve.
- Discuss blood and nerve supply of external nose and nasal septum.
- Explain functions of nose.
- Discuss in detail clinical correlates of external nose and nasal septum. Lateral nasal wall and their importance.
- Discuss on clinical importance of nasal cavity.
- Read relevant research article
- Use digital libaray



Interactive Session



Upper & Lower Respiratory Tract







External Nose



(A) Lateral view

Parts of External Nose



Skeleton of External Nose



Skeleton of External Nose



Blood Supply of the External Nose

- The skin of the external nose is supplied by branches of the ophthalmic(supratrochlear,infratrochlear) and the maxillary arteries.(from 3rd part=sphenopalatine,greater palatine).
- The skin of the ala and the lower part of the septum are supplied by branches from the facial artery.(sup.labial A)

Nerve Supply of External Nose



Nasal Cavity

- The nasal cavity has
 - a floor,
 - a roof,
 - a lateral wall,
 - a medial or septal wall.



The Floor of Nasal Cavity



The Roof of Nasal Cavity

- Narrow
- It is formed
 - anteriorly beneath the bridge of the nose by the nasal and frontal bones,
 - in the middle by the cribriform plate of the ethmoid,
 - located beneath the anterior cranial fossa,
 - posteriorly by the downward sloping body of the sphenoid



The Medial Wall of Nasal Cavity

- The Nasal Septum
- Divides the nasal cavity into right and left halves
- It has osseous and cartilaginous parts
- Nasal septum consists of the perpendicular plate of the ethmoid bone (superior), the vomer (inferior) and septial cartilage (anterior)



The Nasal Septum



The Lateral Walls of Nasal Cavity

Marked by 3 projections:

- Superior concha/terbinate
- Middle concha
- Inferior concha
- The space below each concha is called a meatus.



The Lateral Walls of Nasal Cavity



The Lateral Walls of Nasal Cavity



Core Knowledge Openings Into the Nasal Cavity

Anterior & middle ethmoid air cells, maxillary and frontal sinuses open into middle meatus Sphenoid sinus opens into sphenoethmoidal recess

Posterior ethmoidal air cells open into superior meatus

Nasolacrimal Canal drains into Inferior Meatus

Blood Supply to the Nasal Cavity



Blood Supply of the Nasal Cavity



Nerve Supply of the Nasal Cavity



Open-book view

FIGURE 7.106. Innervation of nasal cavity. An open-book view of the lateral and medial (septal) walls of the right side of the nasal cavity is shown. A *dashed line* extrapolated approximately from the spheno-ethmoidal recess to the apex of the nose demarcates the territories of the ophthalmic (CN V_1) and maxillary (CN V_2) nerves for supplying general sensation to both the lateral wall and the nasal septum. The olfactory nerve (CN I) is distributed to the olfactory mucosa superior to the level of the superior concha on both the lateral wall and the nasal septum.

Lymph Drainage of the Nasal Cavity

- The lymph vessels draining the vestibule end in the *submandibular nodes*.
- The remainder of the nasal cavity is drained by vessels that pass to the *upper deep cervical nodes*.

The Paranasal Sinuses

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The 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.



Drainage of Mucus and Function of Paranasal Sinuses

- The mucus produced by the mucous membrane is **moved into the nose** by ciliary action of the columnar cells.
- Drainage of the mucus is also achieved by the siphon action created during the blowing of the nose.

• Functions:

- 1. Resonators of the voice
- 2. They also reduce the skulls weight
- 3. Help warm and moisten inhaled air
- 4. Act as shock absorbers in trauma

Maxillary Sinus



(B) Anteroposterior view

Boundaries of Maxillary sinus



Frontal Sinuses

- Rarely symmetrical
- Contained within the frontal bone .
- Separated from each other by a bony septum.
- Each sinus is roughly triangular
- Extending upward above the medial end of the eyebrow and backward into the medial part of the roof of the orbit.
- Opens into the middle meatus



Sphenoidal Sinuses

- Lie within the body of the sphenoid bone
- Below sella turcica
 - Extends between dorsum sellae and post clinoid processes
- Opens into the sphenoethmoidal recess above the superior concha



Ethmoid Sinuses

- They are anterior, middle, and posterior groups
- They are contained within the ethmoid bone, between the nose and the orbit
- Anterior & middle
 - Drains into middle nasal meatus
- Posterior
 - Drain into superior nasal meatus
- Separated from the orbit by a thin plate of bone so that infection can readily spread from the sinuses into the orbit



Sinus Drainage Schema



Clinical Notes

- Examination of the Nasal Cavity
- Trauma to the Nose
- Infection of the Nasal Cavity=RHINITIS.
- Foreign Bodies in the Nose
- Nose Bleeding (Epistaxis)





Causes Of Epistaxis



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Nasal fractures - classification

- Class 1 frontal or frontolateral trauma
 - vertical septal fracture
 - depressed or displaced distal part of nasal bones
- Class 2 lateral trauma
 - horizontal or C-shaped septal fracture
 - bony or cartilaginous septum fracture
 - frontal process of maxilla fracture

Nasal fractures - classification

- Class 3 high velocity trauma
 - fracture extends to ethmoid labyrinth
 - bony septum rotates posteriorly
 - bridge collapse
 - upturned tip, revealing nostrils
 - depressed nasal bones pushed up under frontal bones
 - apparent inter-ocular space widening

Clinical Notes

- Examination of the Paranasal Sinuses
- Sinusitis
- Basal skull fracture











Waters view X-Ray anatomy

Spiral Integration Family Medicine; Management of Epistaxis



Spiral Integration





Framework^a

Principle	Description		
Respect for Autonomy	Respect for the individual patient and his or her ability to make decisions with regard to own health and future; right to self-determination		
Beneficence	Doing and promoting good; preventing and removing evil or harm		
Nonmaleficence	Doing no harm; avoiding harming		
Justice	Maximizing benefit to patients and society while emphasizing equality, fairness, and impartiality		

^a Adapted from Beauchamp and Childress.³

Spiral Integration

Research Article

Volumetric Analysis of the Paranasal Sinuses using CT among Chronic Sinusitis Conditions September 2020 **International Journal of Science and Research** (IJSR) 9(9) DOI:10.21275/SR20927154620 Author: **Abbas Omer**

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Video

KIESSELBACH'S PLEXUS

-S.MONISH BALAJI

