

Paranasal air sinus

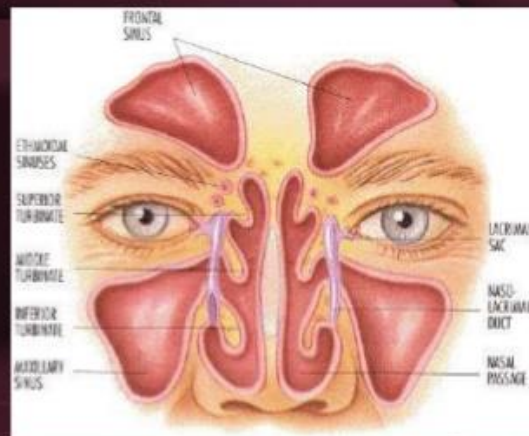
Introduction

- Paranasal air sinuses are the air filled mucosa lined cavities which develops in the cranial and facial bones.
- These are the spaces which communicates with the nasal airway.
- These forms the various boundaries of the nasal cavity.

3

I
n
t
r
o
d
u
c
t
i
o
n

- Maxillary air sinus
- Frontal air sinus
- Ethmoidal air sinus
- Sphenoidal air sinus



6

Definition of maxillary sinus

“Maxillary sinus is the pneumatic space that is lodged inside the body of maxilla and that communicates with the environment by way of the middle meatus and nasal vestibule.”

Anatomy of the maxillary sinus was 1st described by Highmore in 1651.

7

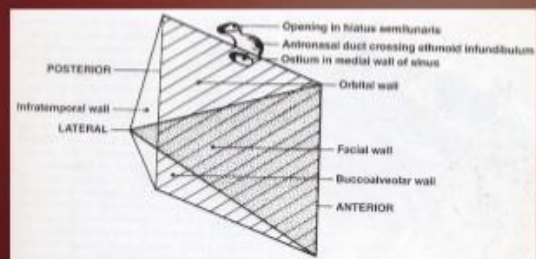
Anatomy

- ┆ Largest of PNS, communicate with other sinuses through lateral nasal wall.
- ┆ Horizontal Pyramidal shaped

┆ Base

┆ Apex

┆ 4 walls



- Wall thickness varies with individual

The walls of the maxillary sinus are sinus is related to the floor of the orbit, the upper posterior teeth and the infratemporal fossa

Development of max.sinus **In the 4th week I.U.L**

Innervation of max,sinus by **branches of the maxillary division of the trigeminal nerve**

2- anatomy of maxillary sinus:-

- its described as a 4 sided pyramid .
 1. base located *medially* toward the nasal cavite.
 2. apex directed *laterally* toward the body of zygomatic bone.
- The walls of sinus (4 sided pyramid) are related to the surface of maxilla as follow.
 - 1- anterior wall: to **facial** surface of Maxilla (region of canine , premolars).
 - 2- posterior wall: to **infra-temporal surface of maxilla.**
 - 3- inferior floor: to **alveolar process** ,
1 mm below the level of floor of the nose.
 - 4- superior roof: **floor of orbit.**



Osteum:

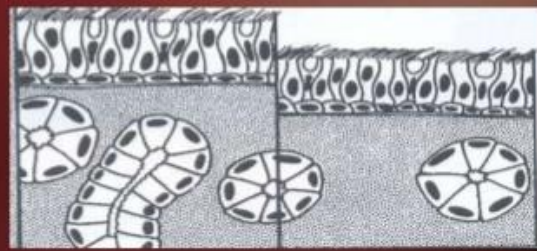
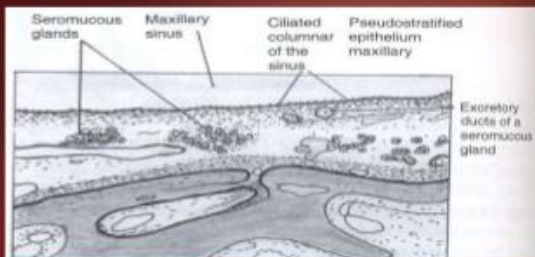
- Opening of the maxillary sinus is called osteum.
- It opens in middle meatus at the lower part of the hiatus semilunaris.
- Lies above the level of nasal floor.

- In 15% to 40% of cases, a very small, accessory ostium is also found.
- Blockage of the ostium can easily occur when there is inflammation of the mucosal lining of the ostium.

18

HISTOLOGY

- Maxillary sinus is lined by three layers: epithelial layer, basal lamina and sub epithelial layer with periostium.
- Epithelium is pseudo stratified, columnar and ciliated.
- As cilia beats, the mucous on epithelial surface moves from sinus interior towards nasal cavity.



B) Lamina propria:

- * consist of loose C.T , very few elastic fibers.
- * its moderately vascular.
- * *mixed glands.*
- * its secretion reaches the sinus lumen through excretory ducts.

N.B: its separated from epith. Layer
by nearly straight basement membrane &
fused with peri-ostium of underlying bone.



4) Functions of maxillary sinus:-

- 1- *warming , moistening of inhaled air.*
- 2- *resonance of voice.*
- 3- *producing bacterial lysozyme to nasal cavity.*
- 4- *enhancement of facio-cranial growth (pneumatization)*
- 5- *lightening of the skull.*
- 6- *pressure dampening.*
- 7- *increase olfactory surface area.*
- 8- *heat insulation of the brain.*
- 9- *assisting in regulation of intra-nasal pressure , serum gas pressure.*

➤ The roots of maxillary molars usually lie in close apposition to the maxillary sinus and may project into the floor of the sinus, causing small elevations or prominences.



(White & Pharoah

2000)

Maxillary sinus septum
34

Clinical considerations:

1. Nerves that supply maxillary teeth are those that supply the maxillary sinus accounting for dental pain from healthy teeth arising from maxillary sinusitis.
2. Bone forming the floor of the sinus can also be the bone surrounding the apex of a tooth. Consequently periapical infection of teeth can spread to maxillary sinus. The reverse can occur with maxillary sinus infection being perceived as originating from teeth.
3. Pain from carious lesion or other insults to the dental pulp may be referred to the sinus.
4. Accidental communication between the sinus and oral cavity may occur during tooth extraction or surgical procedures leading to oroantral fistula.
5. Roots of maxillary posterior teeth may have close relationship to the floor of the maxillary sinus. Molars are more related than premolars in the following order: first molar, second premolar, second and third molars, first premolar and rarely the canine.

Symptom of sinusitis

- Thick, yellow or greenish mucus from the nose (**runny nose**) or down the back of the throat (postnasal drainage)
- Blocked or stuffy nose (**congestion**) causing difficulty breathing through your nose.
- **Pain, tenderness**, swelling and pressure **around** your eyes, cheeks, nose or forehead that worsens when bending over.