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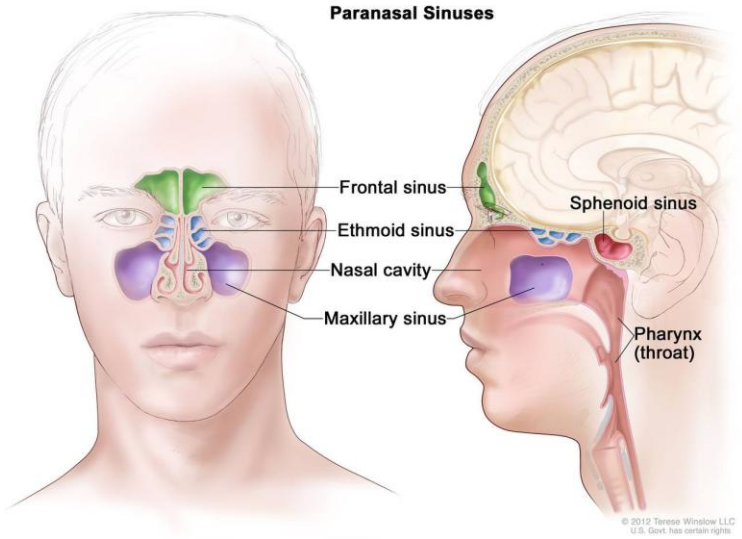
Second stage - Al Ameed University

College of Dentistry 2024-2025

MAXILLARY SINUS

Maxillary sinuses are part of the paranasal sinuses. The paranasal sinuses are hollow, air-filled cavities that are lined by a mucous membrane.

There are four pairs of paranasal sinuses; the frontal sinuses are located above the eyes, in the forehead bone. The maxillary sinuses are located in the body of maxilla, under the eyes. The ethmoid sinuses, also called ethmoid labyrinth are located between the eyes and the nose. The sphenoid sinuses are located in the center of the skull, behind the nose and the eyes.



The maxillary sinus is **pyramidal** in shape.

Boundaries:

The base is formed by the lateral wall of the nasal cavity.

The apex extends into the zygomatic process.

The roof is formed by orbital surface.

The floor reaches the alveolar processes.

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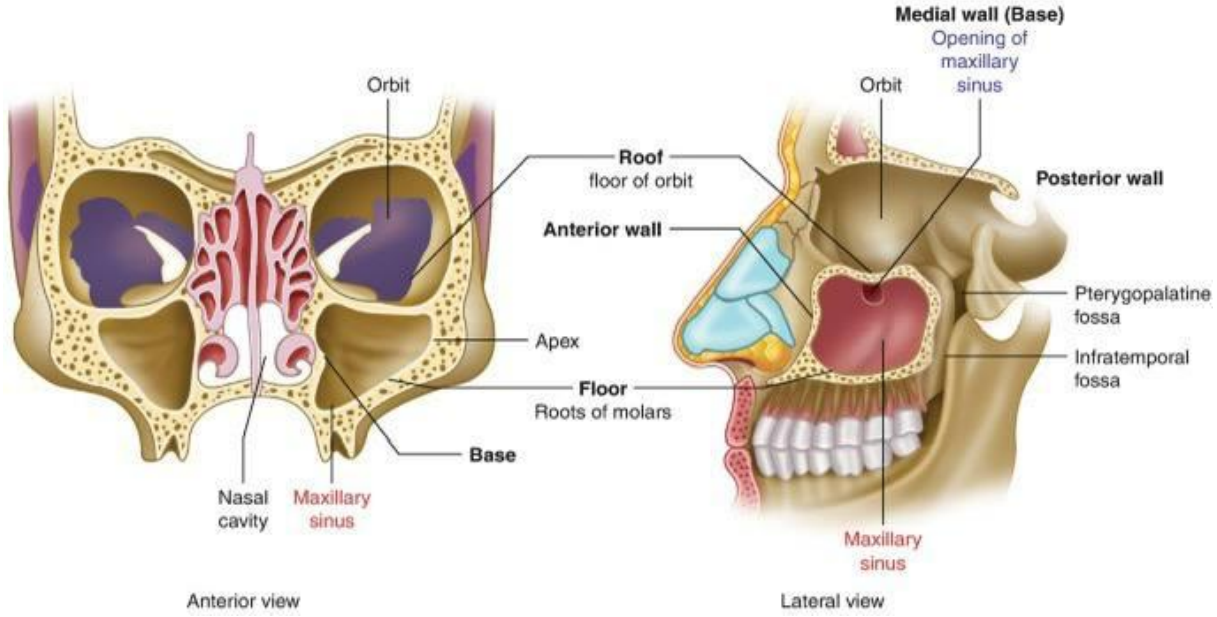
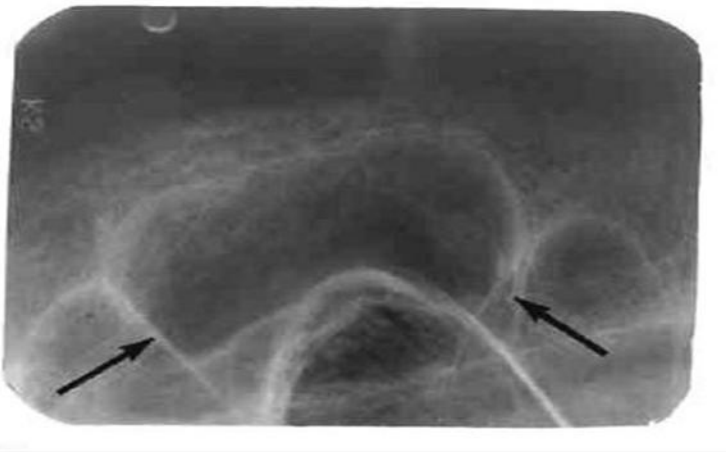
General characters:

1. The maxillary sinus communicates with the nasal cavity through the middle nasal meatus.
2. There is a wide variation in shape, size and position of maxillary sinus, not in different individual, but in both sides of same individual.
3. Enlargement of maxillary sinus results from its extension into the zygomatic process and even into the zygomatic bone, the maxillary tuberosity, and extension into the alveolar processes.



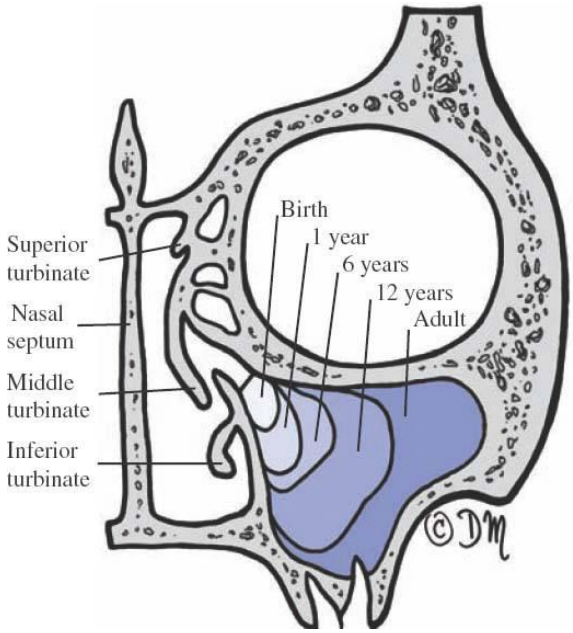
4. The extension of the floor of the sinus into the alveolar processes may place the sinus floor, not only between the roots of adjacent teeth, but also between the roots of the same tooth.
5. Sometimes there are defects in the bone of the sinus floor, thus the roots protrude through an opening into the sinus cavity. Here they are covered only by soft tissue composed of combination of the PDL that surround the root and mucous membrane that lines the cavity of the sinus.

6. The cavity of the sinus may be partially divided into compartments by septa which arise from its wall.



Development

The maxillary sinus development begins in the 3rd month of fetal life. Arising by lateral invagination of mucous membrane of the middle nasal meatus, and forming a slit like space. In a new born the sinus is a very small groove, thereafter; it gradually expands by pneumatization of the body of the maxilla. The sinus is well developed when the permanent dentition has erupted, but it may continue to expand probably throughout life.



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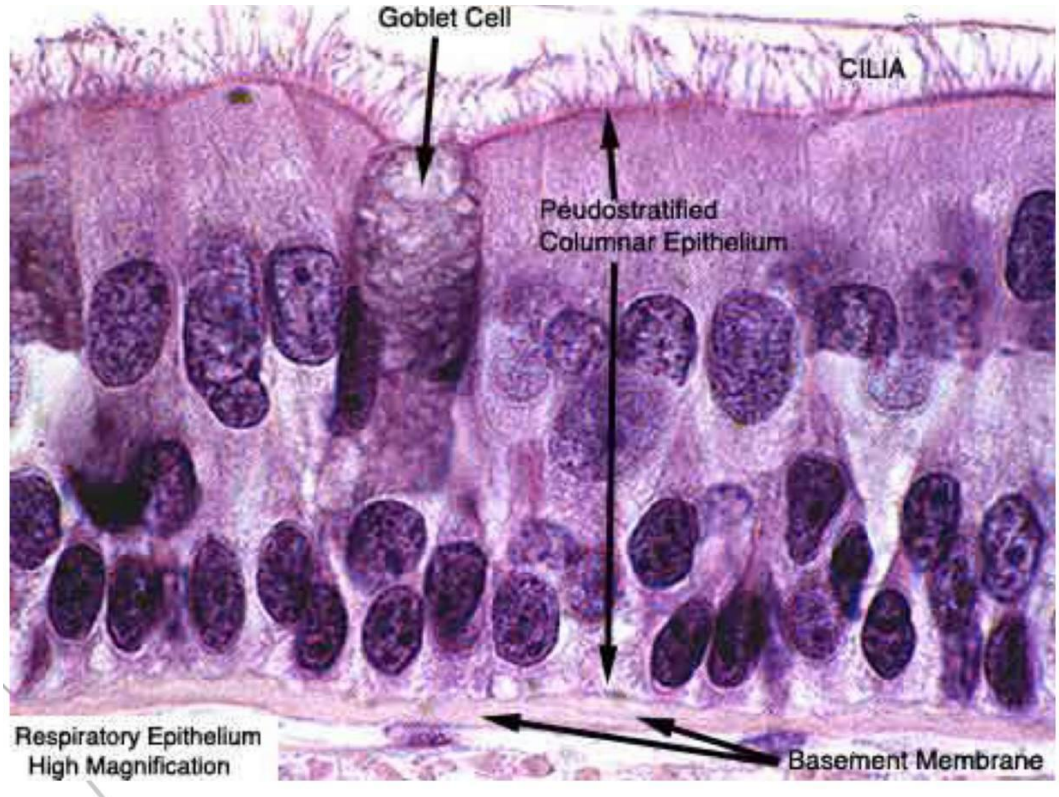
Histology: -

The maxillary sinus is lined by a mucous membrane that is thinner and more delicate than that of the nasal cavity. The lamina propria of the nasal mucosa is fused with the periosteum of the underlying bone and consists of loose bundles of collagen fibers with few elastic fibers. It is moderately vascular. Glands of the mucous and serous types are present and confined to the part of the lamina propria that is located around the opening into the nasal cavity. The epithelium of the sinus mucosa is a typical epithelium of the respiratory tract, a pseudostratified ciliated columnar rich in goblet cells. The goblet cells secrete mucous that moisten the surface of the sinus mucosa. The cilia beat convey any surface material towards the opening that communicates with the nasal cavity, so they act to clean the sinus cavity of inhaled substances.



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Relation of teeth to the maxillary sinus

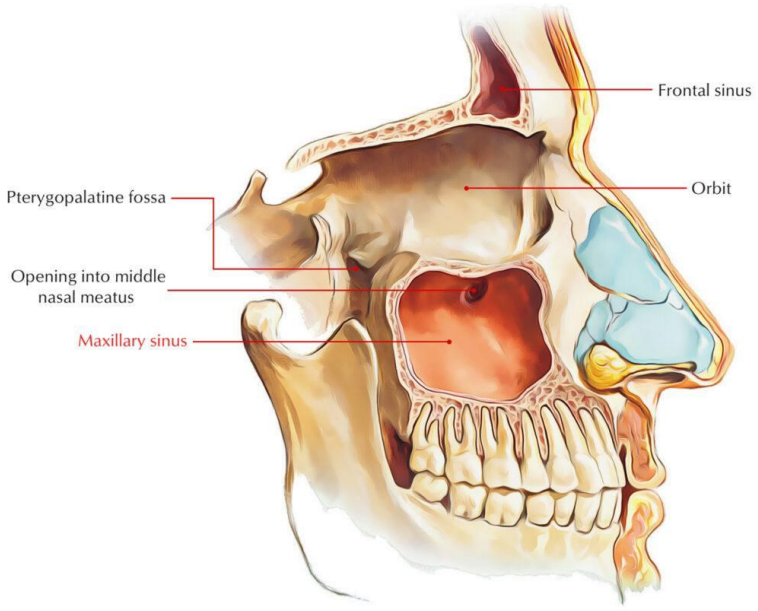
In the deciduous teeth

The related teeth are the maxillary first and second molar and rarely canines.

In the permanent teeth:

The maxillary sinus is related to first molar, next the maxillary second and third molar.

Finally, it is related the premolars. Very rarely it is related to the canines.



Function of the maxillary sinus

1. It lightens the skull weight
2. It aids in warming and moisturizing inhaled air
3. It plays an important role in vocalization
4. Regulation of intranasal and serum gas pressures
5. Immunological defense: Production of bactericidal lysosome to the nasal cavity.

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Clinical considerations

- The periapical infection of the root apices of the teeth which are in close approximation to the floor of the maxillary sinus can cause sinus infection.
- Diseases of the maxillary sinus (sinusitis) can cause dental pain.
- The superior alveolar nerves run in narrow canals in the thin wall of the sinus. Sometimes these canals are partly open into the sinus, and the nerves that supply the teeth are in contact with the sinus mucosa where they may become involved in any inflammation of the mucoperiosteum. The resulting pain may resemble pulpal pain, but it involves a group of teeth in the maxilla.
- Because of its proximity to the root of the maxillary posterior teeth, the maxillary sinus may easily become involved during oral surgery procedures.