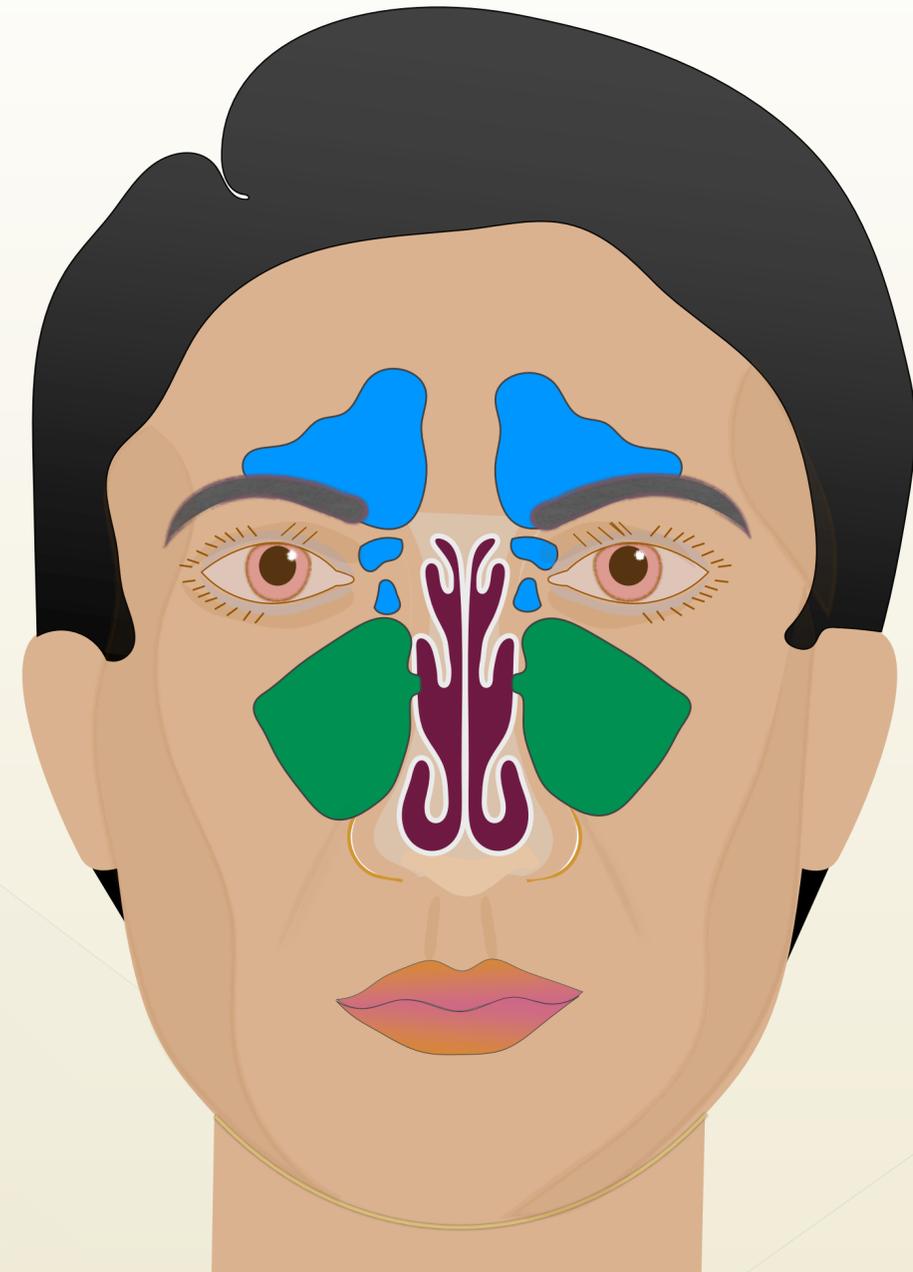


Lecture of

Maxillary Sinuses

Dr. Sherif

2025



Maxillary Sinus

Definition of maxillary sinuses:

- Maxillary sinuses are a pneumatic space that fill the body of maxilla.
- Maxillary sinuses are the largest sinuses all over the paranasal air sinuses.

Terminology:

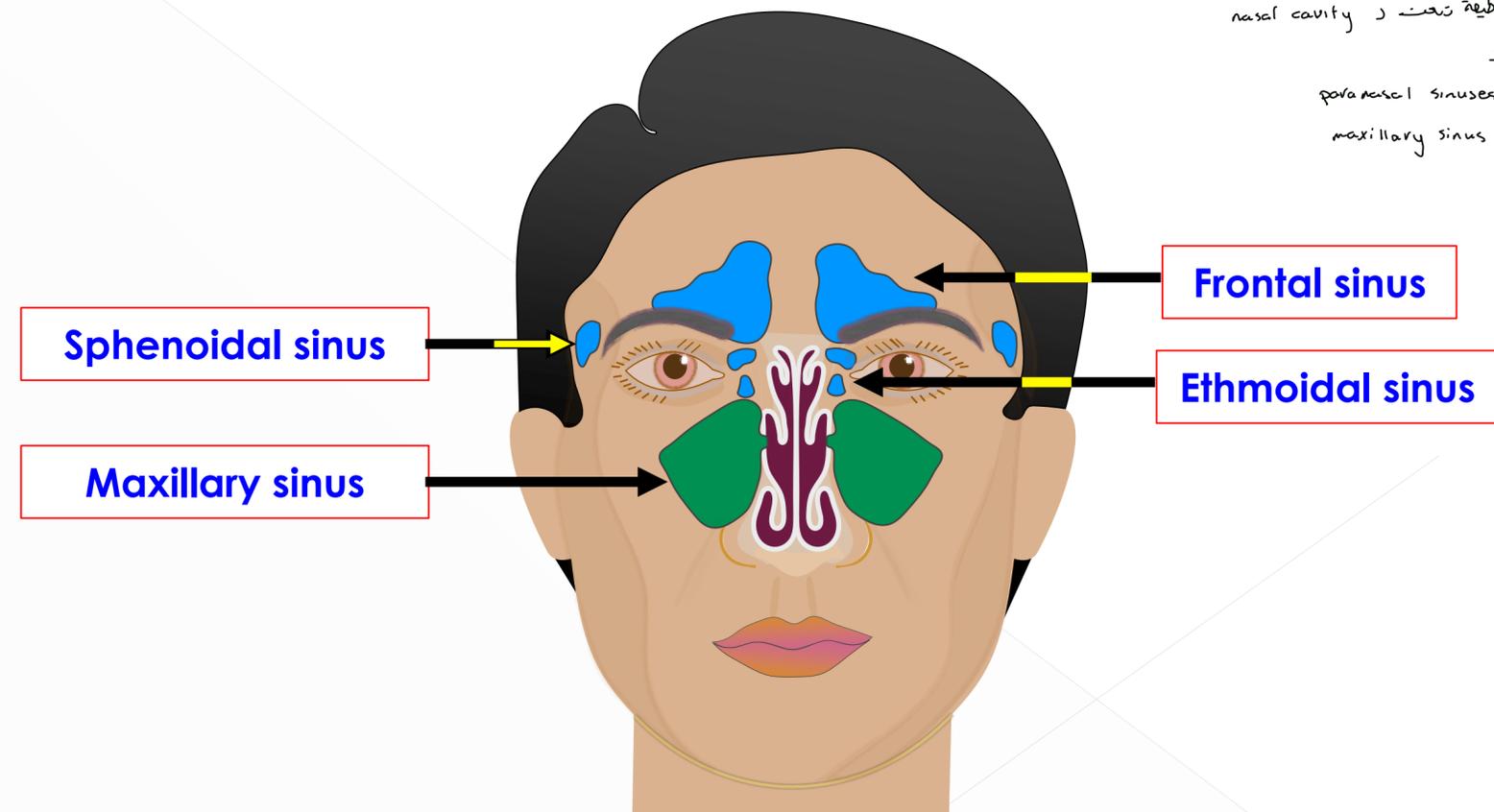
- Maxillary antrum = Antrum of Highmore.

Definition of paranasal sinuses:

- Paranasal air sinuses are air filled cavities found in the cranial and facial bones and communicates with the nasal air way.

Paranasal air Sinuses are:

- Frontal sinuses.
- Ethmoidal sinuses.
- Sphenoidal sinuses.
- Maxillary sinuses.



nasal cavity ر يعني لها علاقة بالوظيفة تحت ر لذلك نقول ان ال paranasal sinuses include the maxillary sinus part of respiratory system

air filled cavity
pneumatic
التي من كلمة pneumatic
انtrum
التي اكتسب
maxillary sinus ر

4-5-6-7-8-9-10
ان في جدار العين و جدار و جدار
انتم من وحدة حلقية تكبريا (10)

Anatomy of nasal cavities

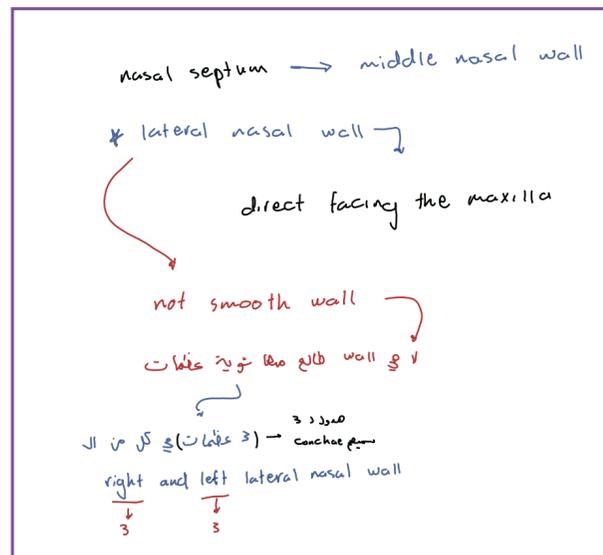
Definition of conchae:

- Conchae are a bony elevations located at the lateral nasal walls.

Types of conchae:

- Superior conchae.
- Middle conchae.
- Inferior conchae.

لو وصد مبعف تزيد سُوي
يحدث بعض الاضطرابات
فالإنسان لن يستطيع النوم
و سيظهر هورت (تحتجر)
أثناء النوم و بالتالي يحتاج
تدخل جراحي عندما تكون
مأقوية قليلًا



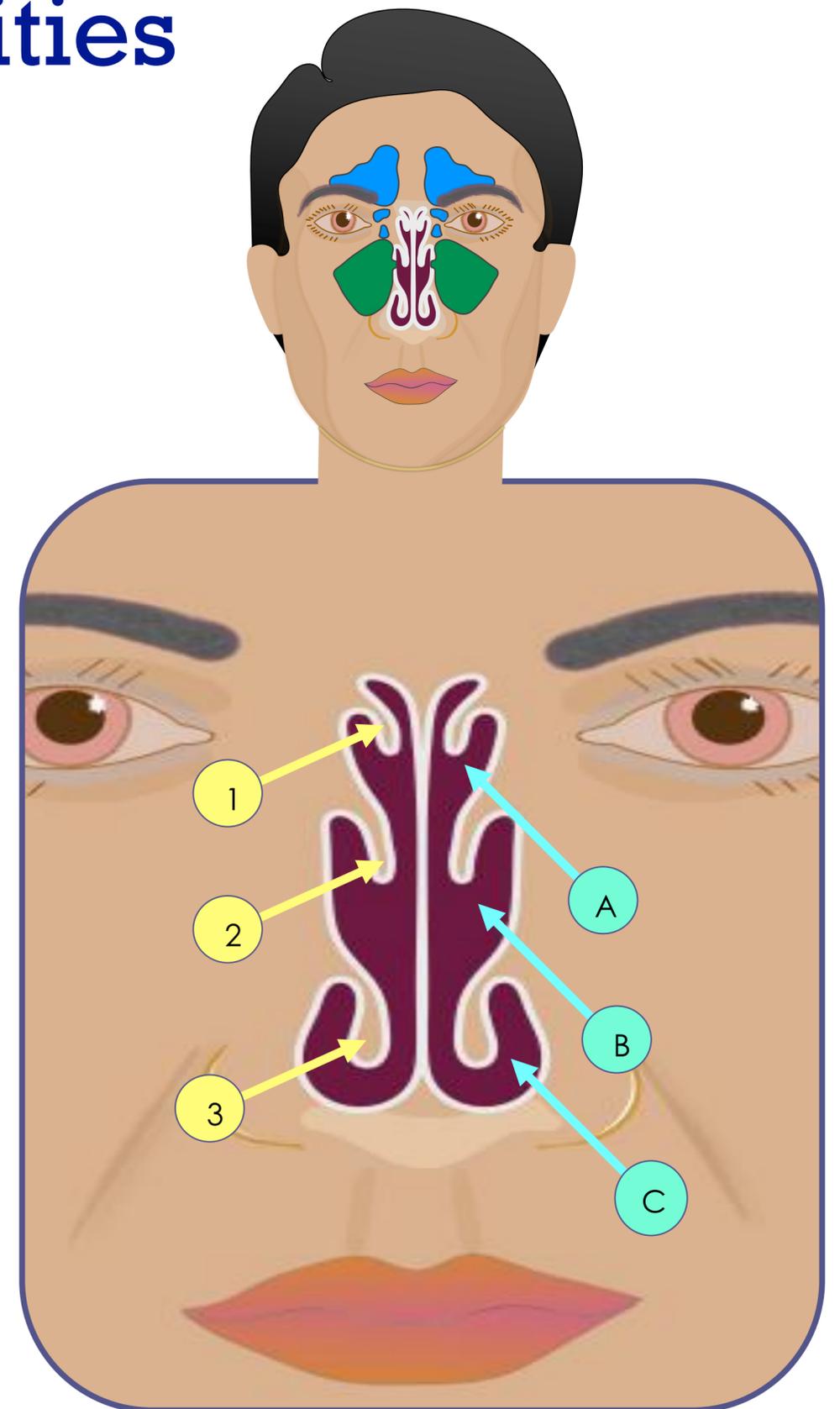
Definition of meatuses:

- Meatuses are depressions located between the conchae.

Types of meatuses:

- Superior meatus.
- Middle meatus.
- Inferior meatus.

nasal meatus
↓
الاحداث لها
inflammation
و انتفخت يحدث لها ما يسبب
(التهبة) - لانها جرد soft tissue
التالي اذا زادت أتيها تحتاج
تدخل جراحي لازالة هذه اللحمية
لانه لن يستطع التنفس أليها و هو الألم



General properties of maxillary sinuses

● Beginning of development :

3-4 MIU. (MIU)
 3-4 week not month

● Size of maxillary sinus: 1. At birth:

8 X 6 X 4 mm.

لها حجرة
ذاتية ان يكون
لها (3) ابعاد (3D)
و مساحت من
الداخل

2. In adult:

30 X 25 X 20 mm.

له الراس 4 الى 5 مرات

● Total capacity in adult: 20 ml (Cm³) fluid.

يعني البروتين من الدم التي تعطيها
في الورود الكبار (الكبر اكرة تستطوع
المطاطة في ابرة 10cm) والتي كل
maxillary sinus
تحتوي بابرة وهذه المساحة تكون
له maxillary sinus حيث والسيار مع بعض

● Growth of maxillary sinus was done by Pneumatization

بواسطة ريب الملون لها سعة متعديه هوا، شكل الملون يتسع ويكبر

Pneumatization means enlargement of the bony cavity by:

1- Resorption occur to the inner wall of the sinus cavity.

لـ يقال العواد

2- Deposition of bone on the outer surface of maxilla.

لـ يقال الوجه

عشان د MS
فال اسكلا تبعد العظام
تكم فدهير الاله ذبحت
د MS
وتسمى ان العواد في الداخل
يستوعق ويتغير ل bone
لما يتغير bone عشان يكبر
د bone التي في الداخل يحدث له
resorption
د bone التي في الخارج يحدث له
deposition
و بالتالي العواد في الداخل يكبر
بالتالي د maxilla تكبر في الداخل

The End Results:

A- Enlargement of the sinus cavity.

B- Enlargement of maxilla.

C- Growth of the face.

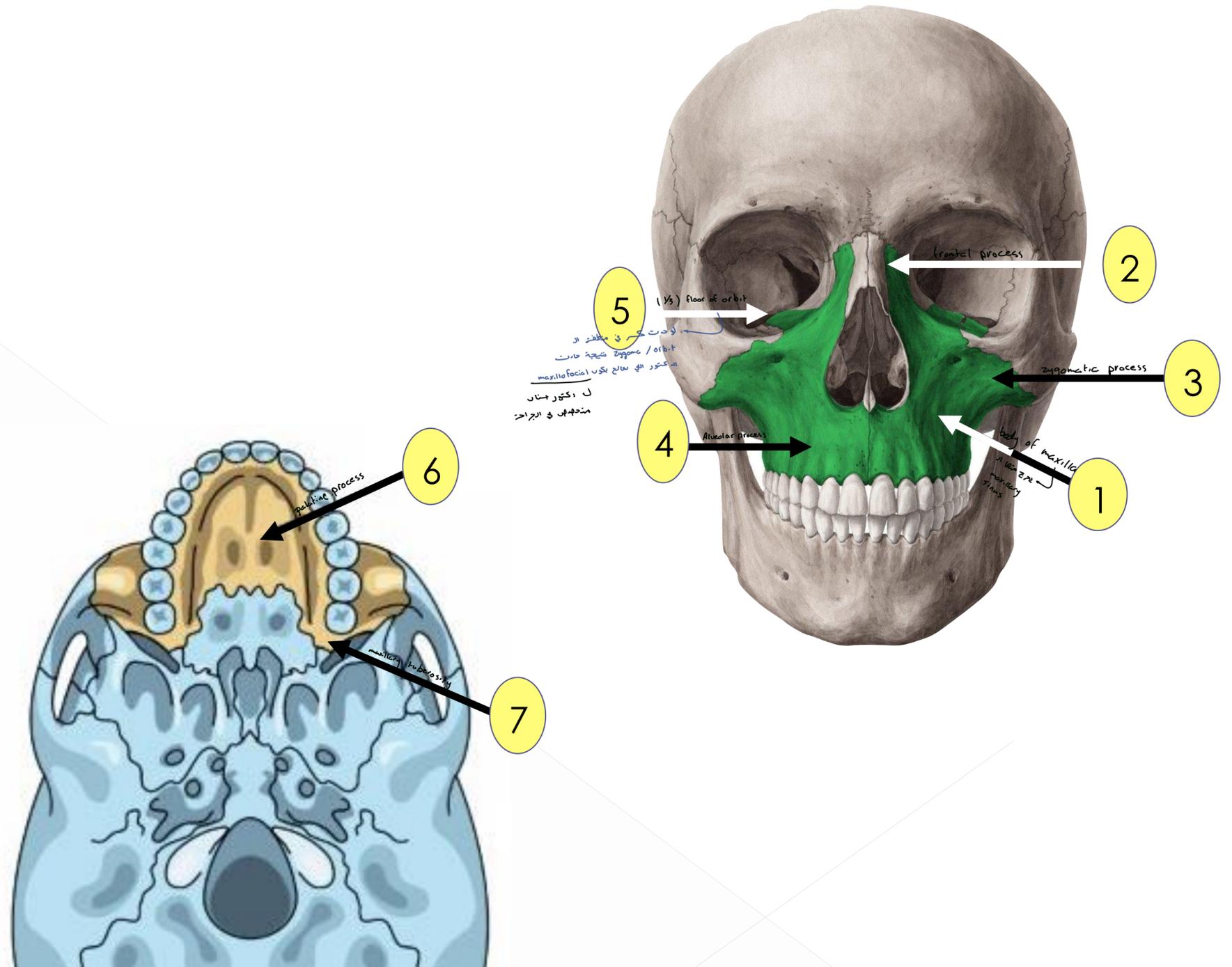
الmaxilla
بسم maxillary sinus
لها د maxilla تكبر
ان يكبر د mandible وده
فيتم الانسجام بينهم
فال maxillary sinus لها علاقة في ان
growth of mandible
growth of face
لانه لها د maxilla تكبر لازم
د base of the skull تكبر
لانه د skull عامة يسي
craniofacial growth و هذا يعني تظهر نمو الأسنان



Anatomy of maxilla

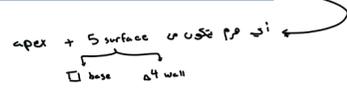
Anatomy of maxilla

1. Body of maxilla.
2. Frontal process of maxilla.
3. Zygomatic process of maxilla.
4. Alveolar process of maxilla.
5. Orbital floor of maxilla.
6. Palatine process of maxilla.
7. Maxillary tuberosity.

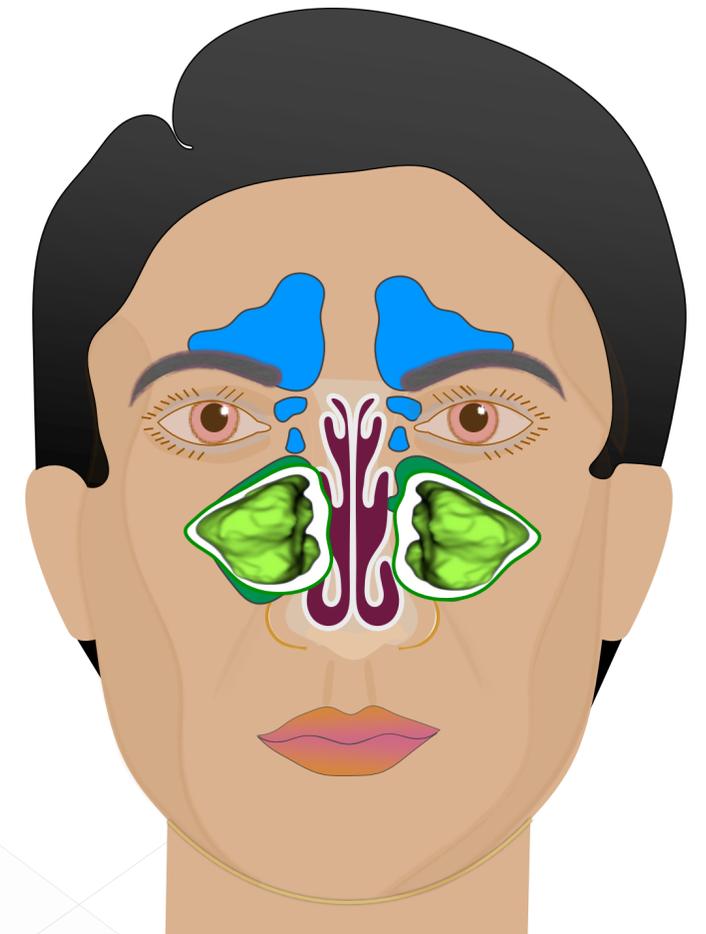
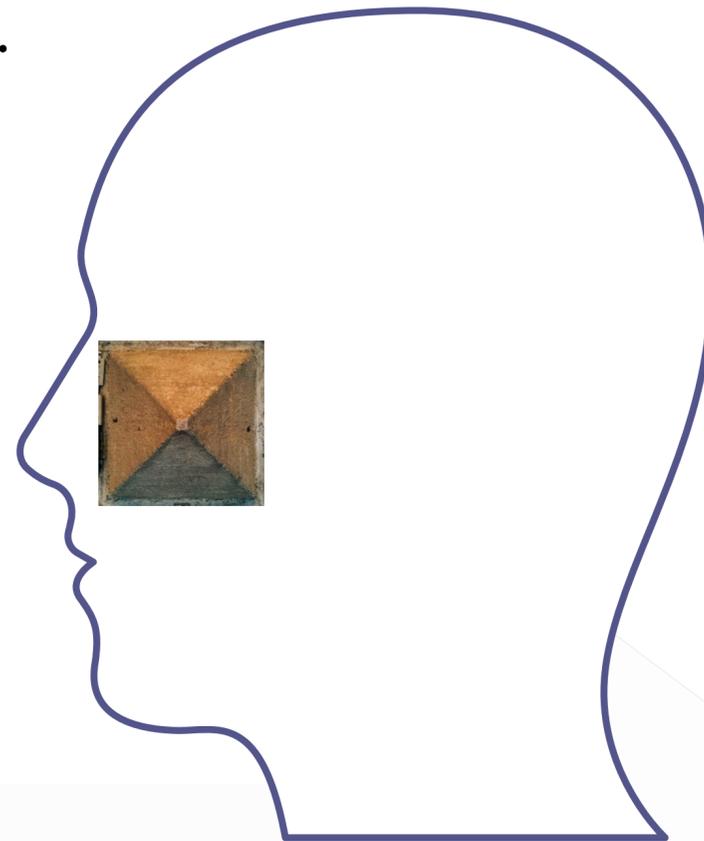


Anatomy of maxillary sinus

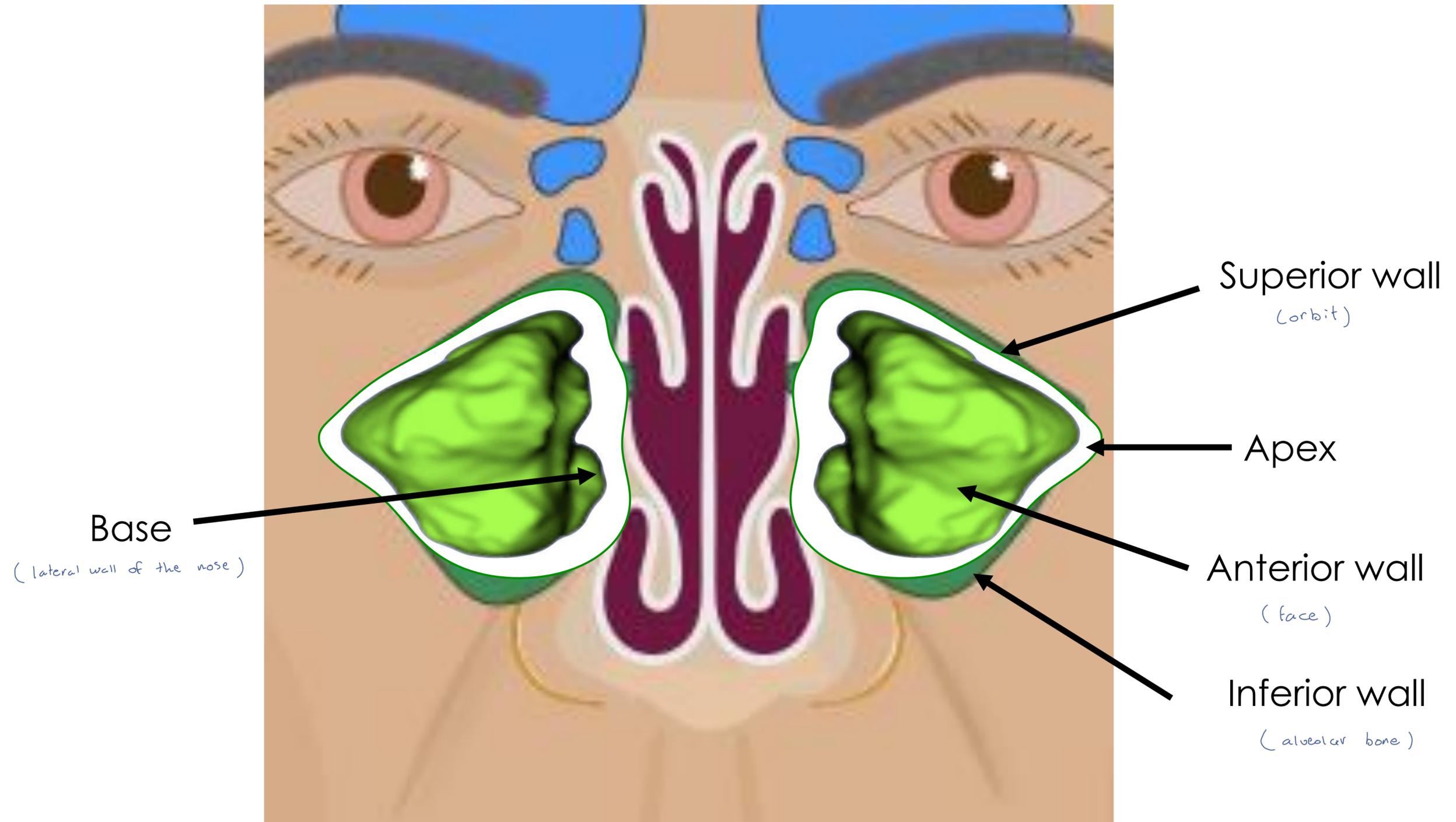
The sinus is described as a four-sided pyramid :



1. The apex is pointed laterally toward the body of the zygomatic bone.
2. The base facing medially toward the lateral nasal wall.
3. Anterior side facing toward the face.
4. Inferior side facing toward the alveolar process.
5. Superior side facing toward the orbital floor.
6. Posterior side facing toward the infratemporal fossa.



Maxillary sinus 3D



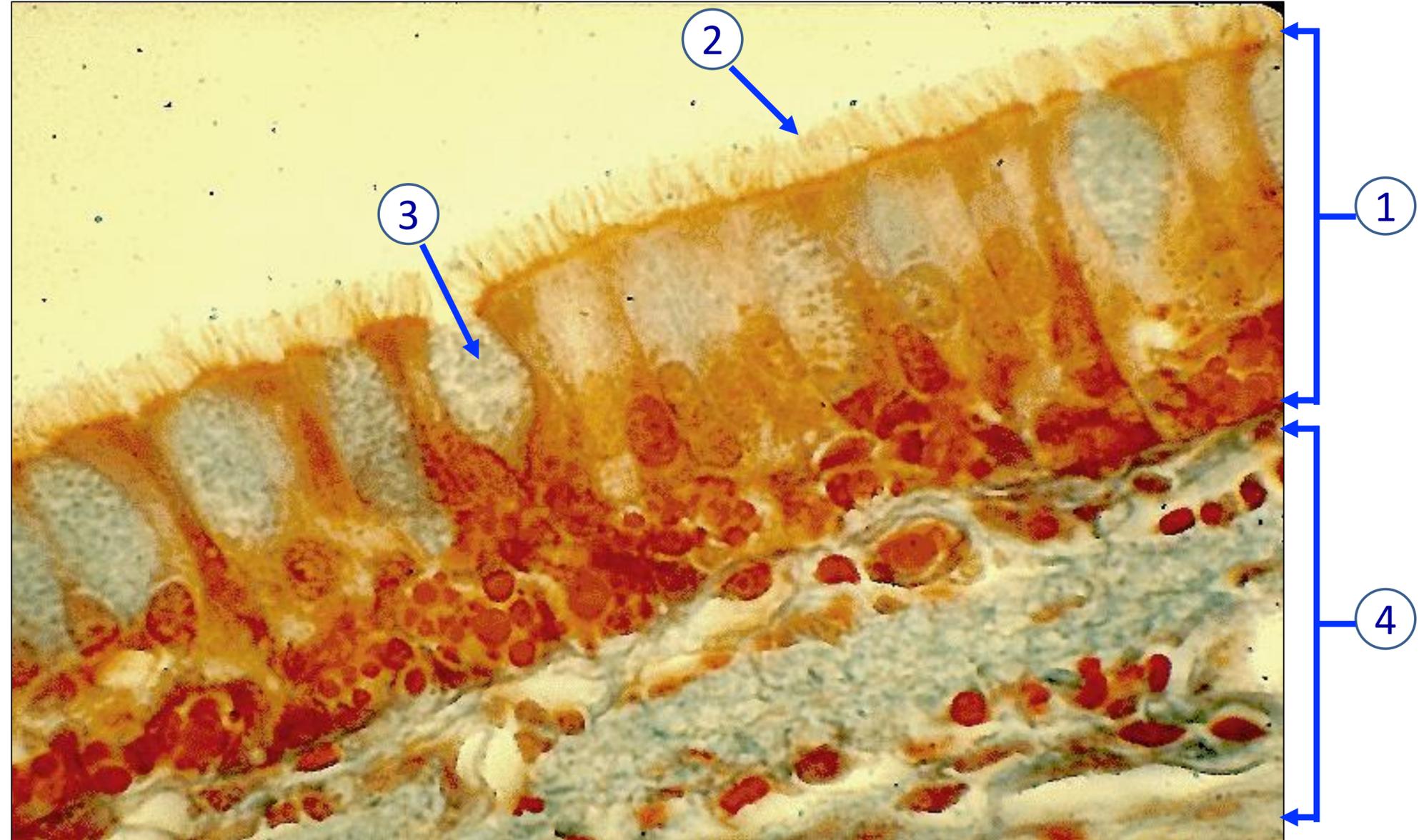
Histology of maxillary sinus

- The inner surface of the maxillary sinus is lined by a respiratory type mucous membrane.
nasal cavity ←
- The respiratory mucosa consists of pseudostratified (ciliated) columnar epithelium with goblet cells.
تفرق secretion و صرحه ←
- The columnar epithelium contains many Cilia on its surface which beat the secretion into the sinus opening.
- The epithelium is rest on thin basement membrane separateing it from the connective tissue.
*epithelium + C.T
mucous membrane*
- Goblet cells
- The underlying (connective tissue) is composed of loose, vascular lamina propria containing:
*any C.T have :-
- ground substance - fibroblast
- collagen fiber - serous, mucous gland absent in gingiva*
*bone ← صحت, periosteum ← C.T
compact bone ←
irregular flat bone ← (Ms)
(compact → spongy) → compact*
- Serous glands secrete bactericidal enzyme.
*not salivary gland
because their secretion doesn't drain in oral cavity
لكن في غشى د الغدد
بعضى د structure*
- Mucous glands secrete mucous for lubrication.
- Lymphocytes and plasma cells.
- This mucosa is thinner and less vascular than that of the nasal cavity, making it more susceptible to infection and inflammation.

Mucous membrane of maxillary sinus

↳ serous gland ←
* serous gland
* mucous gland
* goblet cell

1. Pseudo-stratified columnar ciliated epithelium with goblet cells.
2. Cilia.
3. Goblet cells (unicellular gland).
4. Connective tissue contain both serous and mucous glands.

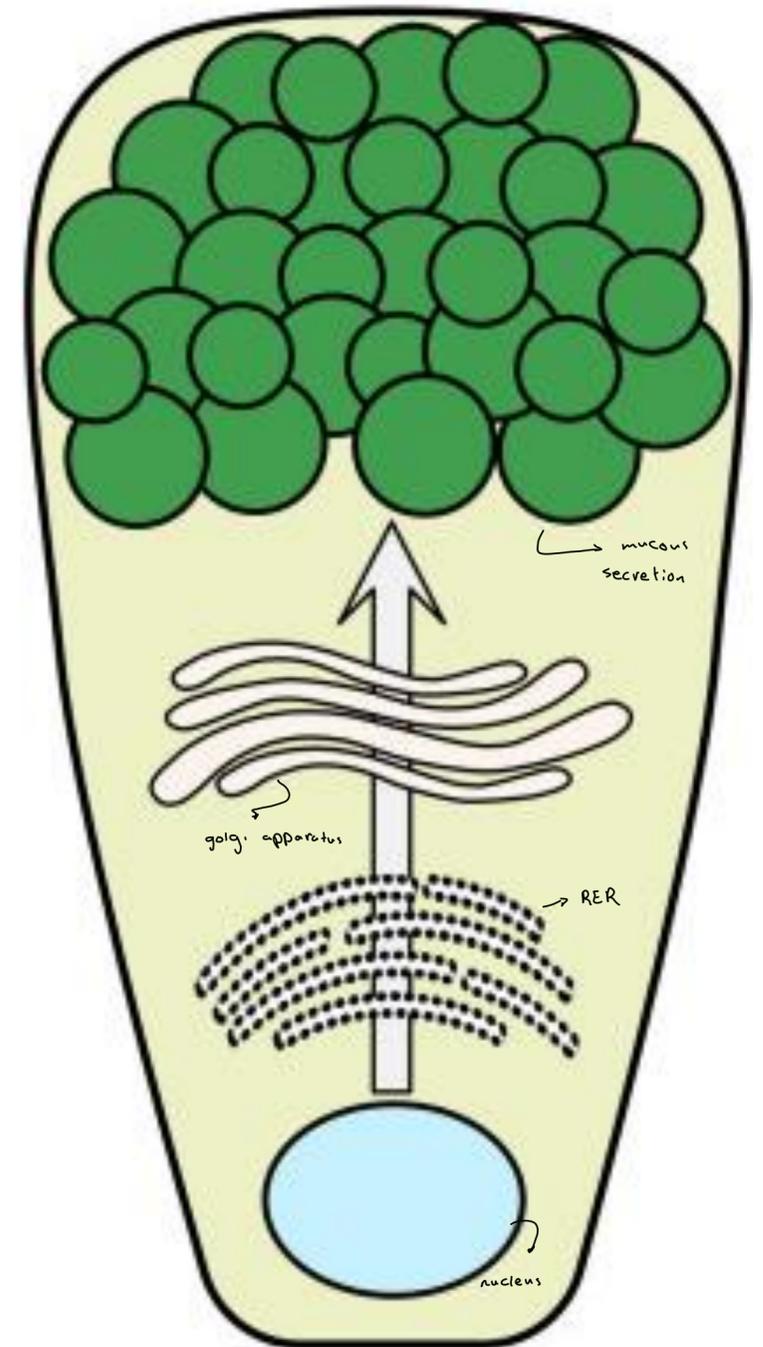


Goblet cells

- Goblet cells are unicellular glands formed from epithelial cells.
- They have a goblet-like shape, with a narrow base and a wider top filled with mucus-containing granules.
- The primary function of goblet cells is the production and secretion of mucus.
- The mucus secreted helps protect and lubricate the surfaces of the maxillary sinus.
- Mucus also traps dust, microorganisms, and other particles in the airways, helping to keep the lungs clean.

منه ينتج المخاط و له دور في حجب الميكروبات في مجرى الهواء

(MS) +
تحت الهواء،
كان بارد فتح نظفه في
ال رئة
من لذلك ساهم الناس
بان لا يتنفسوا من الدم
لانه الدم لا يقوم بتسخين الهواء



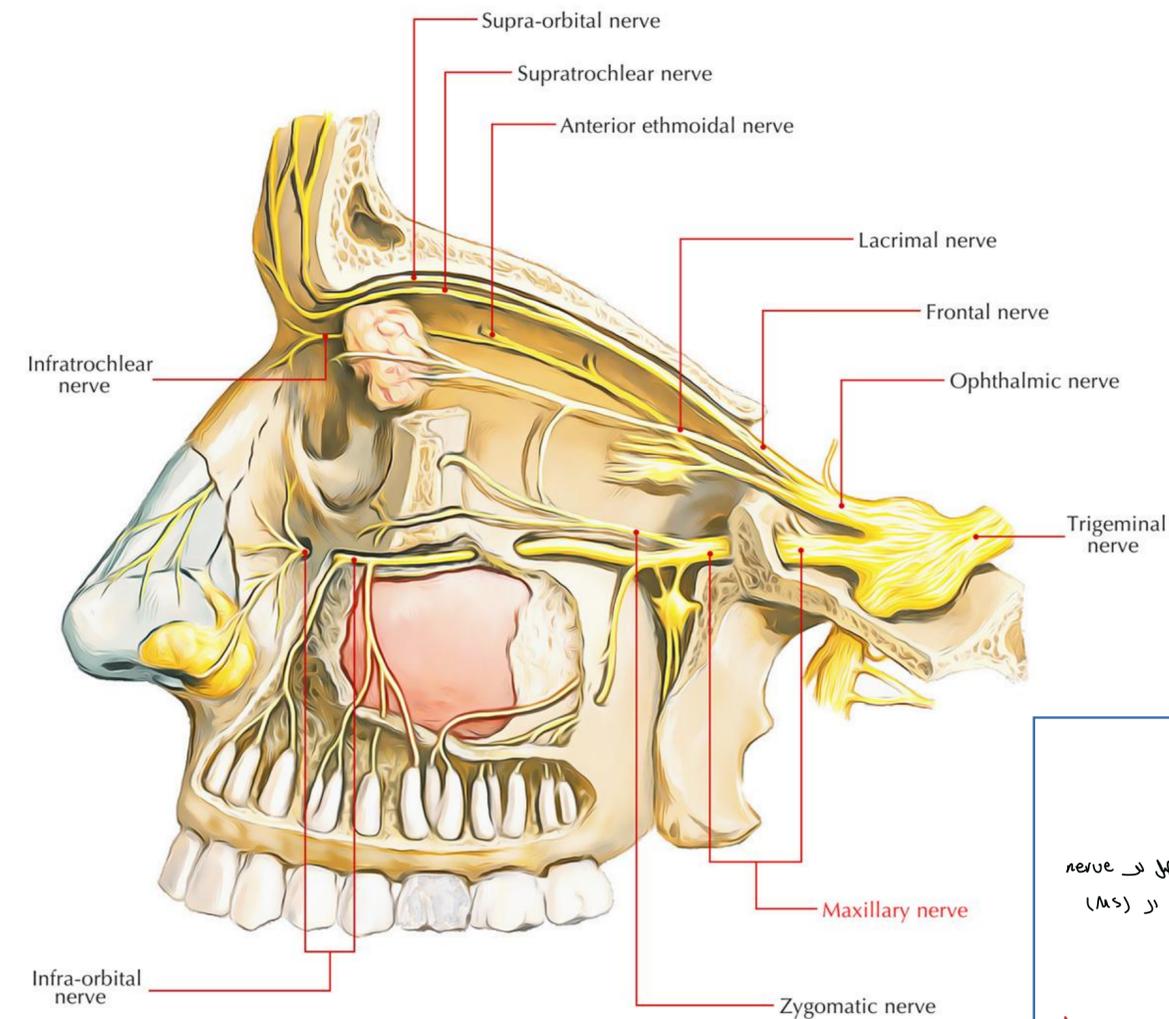
Nerve supply of maxillary sinus

The maxillary sinus is supplied by nerves from the maxillary division of the trigeminal nerve (CN V2).

- Infraorbital nerve (V2)
- Anterior superior alveolar nerve.
- Middle superior alveolar nerve.
- Posterior superior alveolar nerves

These nerves supplies to:

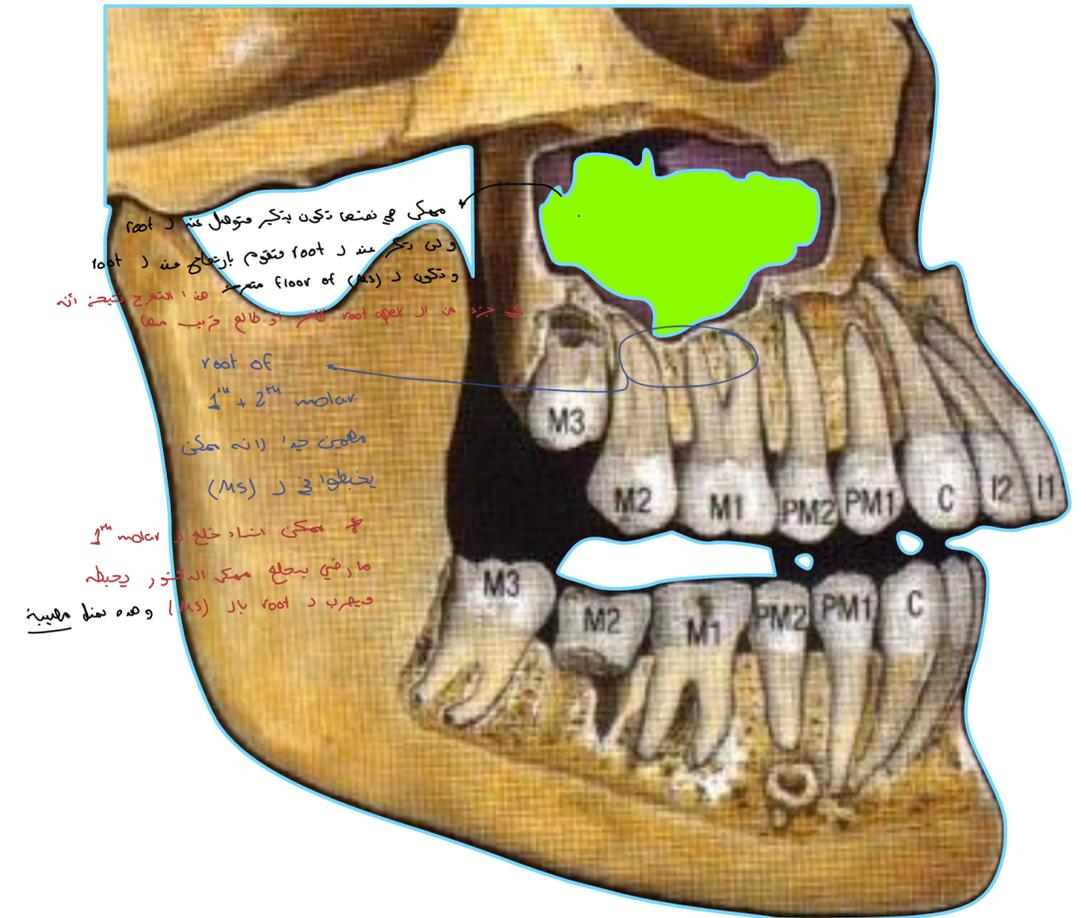
- The mucosa of the maxillary sinus
- Adjacent upper teeth and gingiva



→ pneumatization of maxillary sinus
له فائده wall تنوع ، كلفم (كلا التواحي او MS سنكر)
عنه اساسي الي اكبر من 50 سنة ممكن ان ال roof of (MS) واهل ال nerve
و لا تنوع بطريقة شرجي سيكون ال nerve و سطحه بمشوا داخل ال (MS)
لذلك عند حدوث inflammation في (MS) و يتعب (nerve)
ستشعر في ألم في الاسنان لذلك ممكن يكون المريضي
يشعر بألم في بنائه العلوية لسببين اما ال (MS) او الاسنان نفسها

Teeth Proximity to maxillary sinus

- The maxillary sinus is closely related to the maxillary posterior teeth and canine.
- The roots of the maxillary first and second molars lie very close to the floor of the maxillary sinus.
- Sometimes, the root apex may even cause slight elevations of the sinus floor or separated from the sinus cavity by only a thin layer of mucosa.
- The teeth arranged from closest to least related to the maxillary sinus are: 6, 7, 5, 4, 8, and 3.



Functions of maxillary sinus

1

Lightens the skull weight.

من تقليل خفة صوت الفم



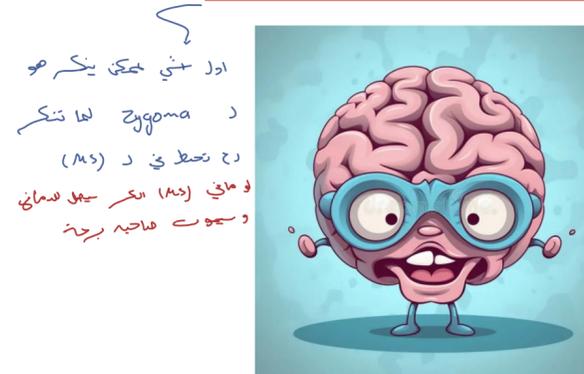
2

Warming and humidifies the inspired air.



3

Protect brain from external trauma.



4

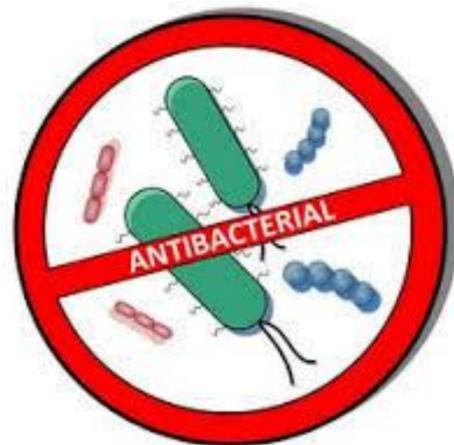
Resonance of the voice.

لحس في الهموت



5

Antibacterials.



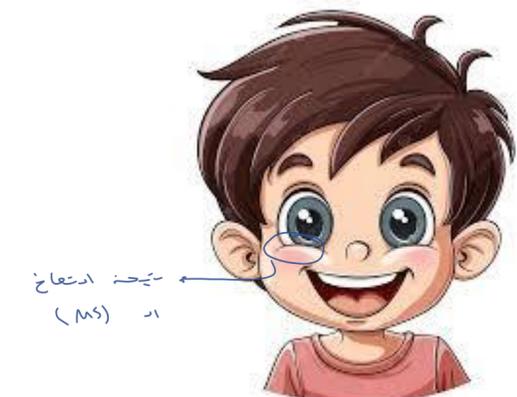
6

Facial growth



7

Define facial contour.



Clinical consideration of maxillary sinus

- The maxillary sinus is clinically significant due to its location close to the maxillary teeth, nasal cavity, and orbit.

Maxillary sinusitis

Maxillary sinusitis is the inflammation of the maxillary sinus.

Causes:

1. Upper respiratory infections.
2. Dental infections of maxillary teeth.

Clinical manifestations:

exposure of 2nd, 3rd molar + (maxillary 3rd molar) بعض التمراس

- Facial pain, nasal congestion, headaches, and tenderness in the cheek region.





Clinical significances of maxillary sinus in dentistry



يمكن نوات بين ار maxillary sinusitis القادمة من ار teeth
 (MS) نفا
 اذا جد مع الأذن ولم نأتم عاري ← الخلل في الأسنان
 لوسج و زاد الألم او يحدث شبه استعاج في منطقة الوجه ← maxillary sinusitis
 (خلل في MS نفا)

- The maxillary sinus is located close to the roots of upper premolar and molar teeth.
- Dental infections from these teeth can spread to the sinus, causing odontogenic maxillary sinusitis.
- Tooth extraction, root canal treatment, or implant placement may perforate the maxillary sinus.
- Perforation of the sinus during dental procedures can lead to infections and prevent healing.

سيتمه عملية جراحية طويلة

دخلتها لجوی خوبی
 لكي قدرت اطلعها
 لكي مجلت خنجر بين ل
 (MS) و cavity التي تالعة
 من تربيت اس (socket)
 حدث connection بين ار
 socket و ار (MS) وهذا
 يسمى odontogenic maxillary sinusitis
 هذا الجرح جزر رح يتعافى ولا اذا بنفس
 لوم الجرح صلت suture و مواد تقفل بنية
 عمان يدخل و لو تركها الجرح ليقفخ ألباع
 سينا epithelium + canal
 و مجلعي سهل بالمنظر لكي يقتر
 ل epithelium التي تكون و تقفل مرة آخر
 وهذه العملية طويلة يمكن أن تعطل لسان

شكرا لكم