



# GROSS ANATOMY OF NOSE

By

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# THE EXTERNAL NOSE

The external nose is a visible component of the face, projecting over and allowing entrance into the nasal cavity.

# *Nose*

## ***Introduction:***

- *The nose is the part of the respiratory tract superior to the hard palate*
- *It contains the peripheral organ of smell*

## ***Composition:***

- *external nose*
- *nasal cavity*
- *the **nasal cavity** is divided into right and left cavities by the nasal septum*

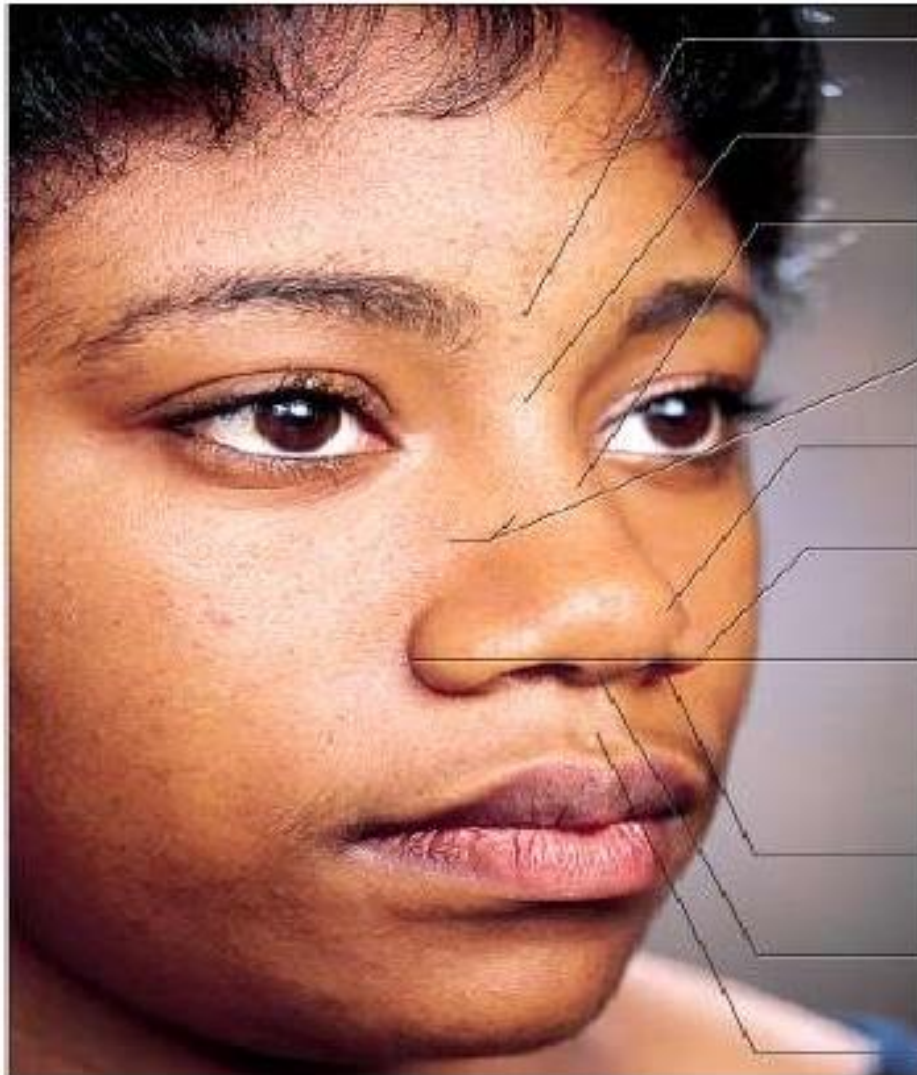
## ***Functions:***

- *olfaction (smelling)*
- *respiration (breathing)*
- *filtration of dust*
- *humidification of inspired air*
- *reception and elimination of secretions from the paranasal sinuses and nasolacrimal ducts*

# SURFACE APPEARANCE

- The external nose is said to have a pyramidal shape. The **nasal root** is located superiorly, and is continuous with the forehead. The apex of the nose ends inferiorly in a rounded 'tip'. Spanning between the root and apex is the **dorsum** of the nose.
- Located immediately inferiorly to the apex are the **nares**; piriform openings into the vestibule of the nasal cavity.
- The nares are bounded medially by the **nasal septum**, and laterally by the **ala nasi** (the lateral cartilaginous wings of the nose).

# External Nose



**Root**

**Bridge**

**Dorsum nasi**

**Nasofacial angle**

**Apex**

**Ala nasi**

**Alar nasal sulcus**

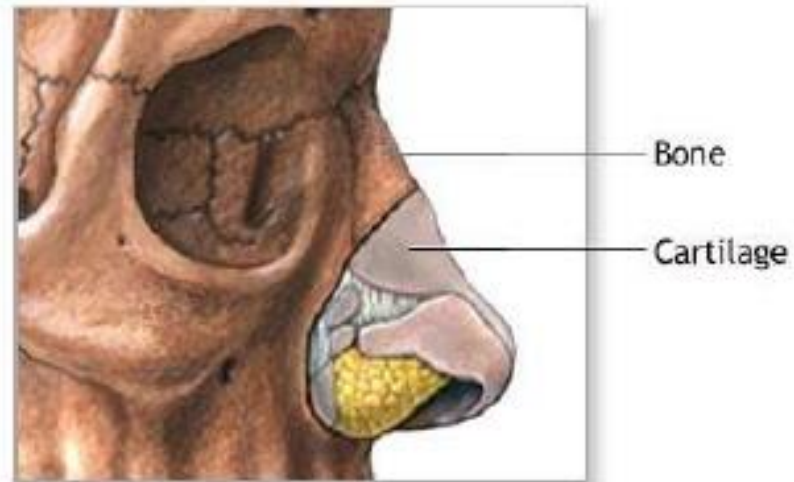
**Anterior naris (nostril)**

**Nasal septum**

**Philtrum**

# The Nose

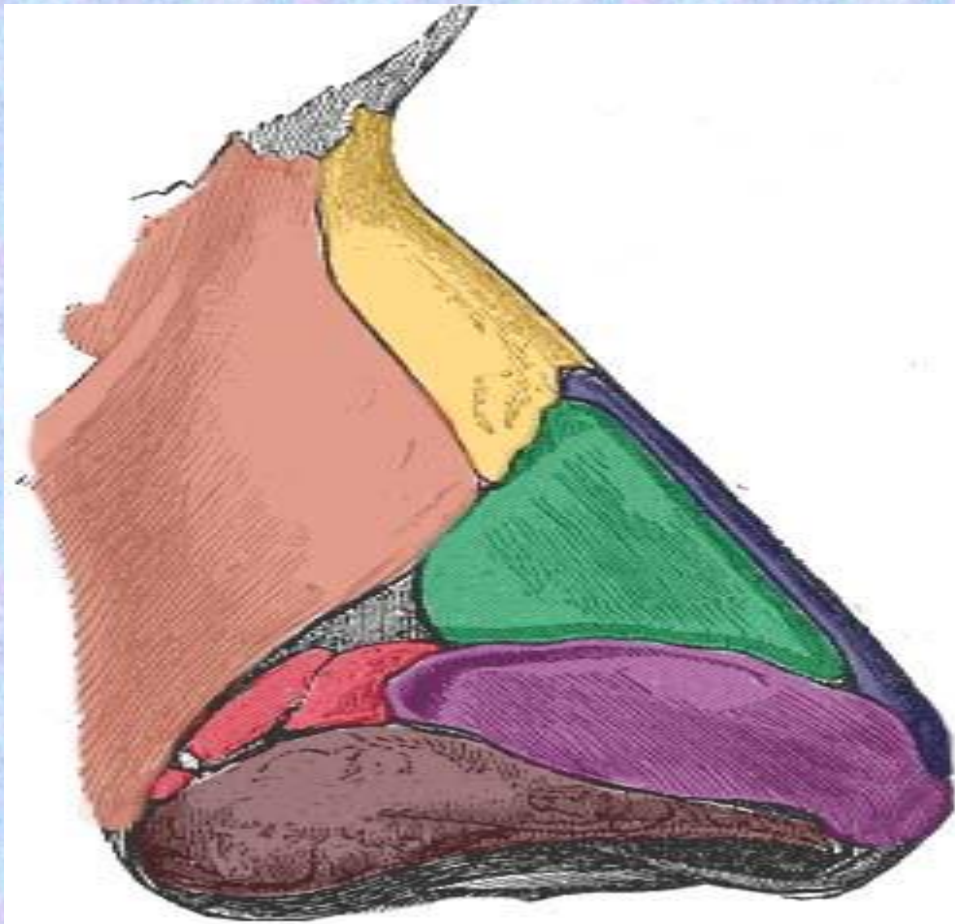
- The nose consists of the ***external nose*** and the ***nasal cavity***,
- Both are divided by a septum into right and left halves.



# *SKELETAL STRUCTURE*

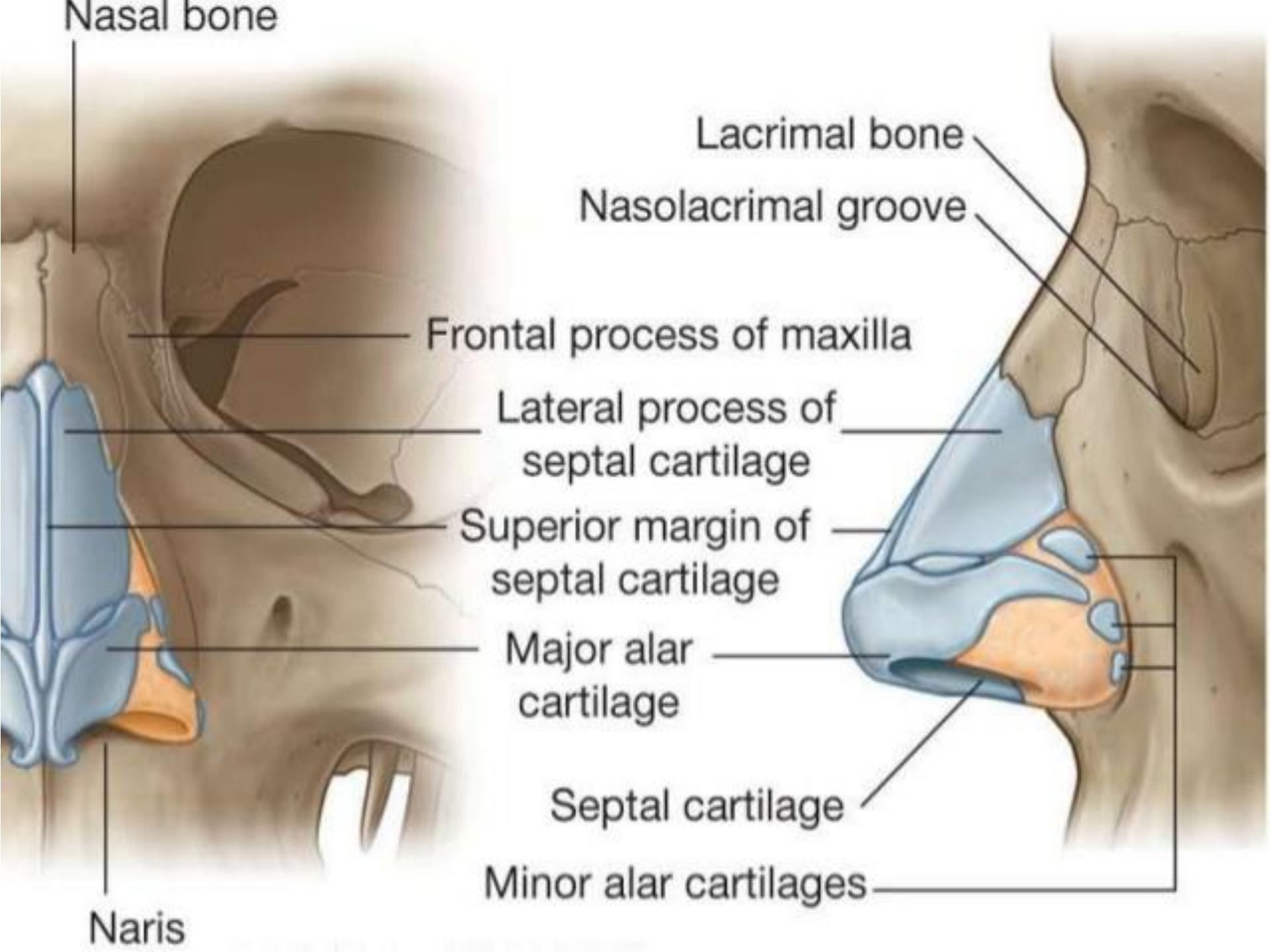
- The skeleton of the external nose is made of both bony and cartilaginous components:
- **Bony component** – located superiorly, and is comprised of contributions from the nasal bones, maxillae and nasal part of frontal bone.
- **Cartilaginous component** – located inferiorly, and is comprised of the two lateral cartilages, two alar cartilages and one septal cartilage. There are also some smaller alar cartilages present.
- Whilst the skin over the bony part of the nose is thin, that overlying the cartilaginous part is thicker with many sebaceous glands. This skin extends into the vestibule of the nose via the nares. Here there are hairs which function to filter air as it enters the respiratory system.

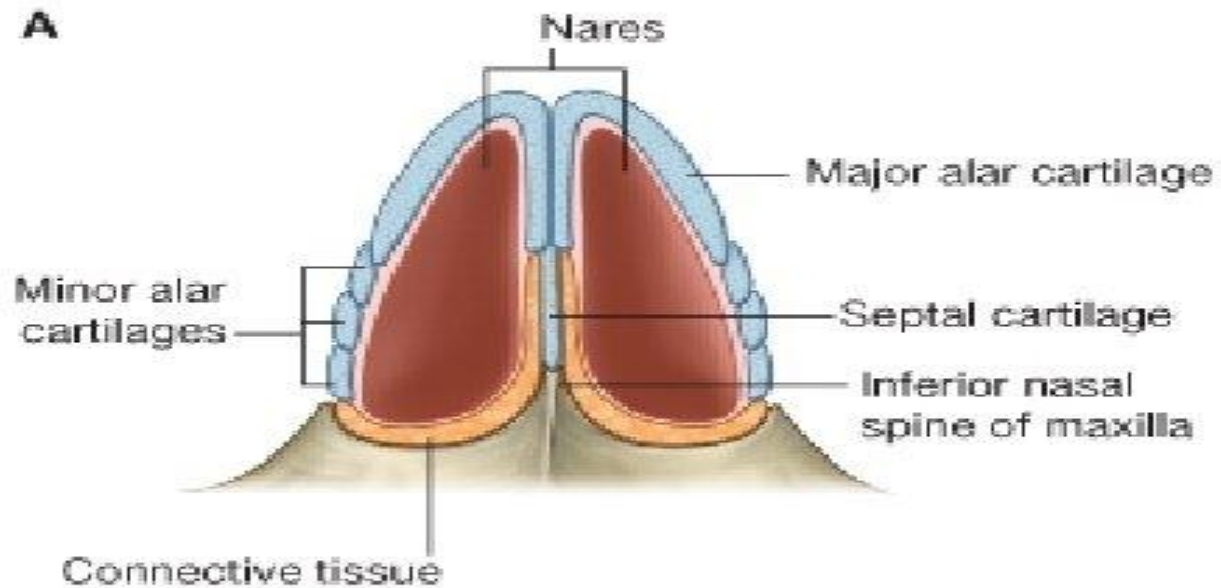




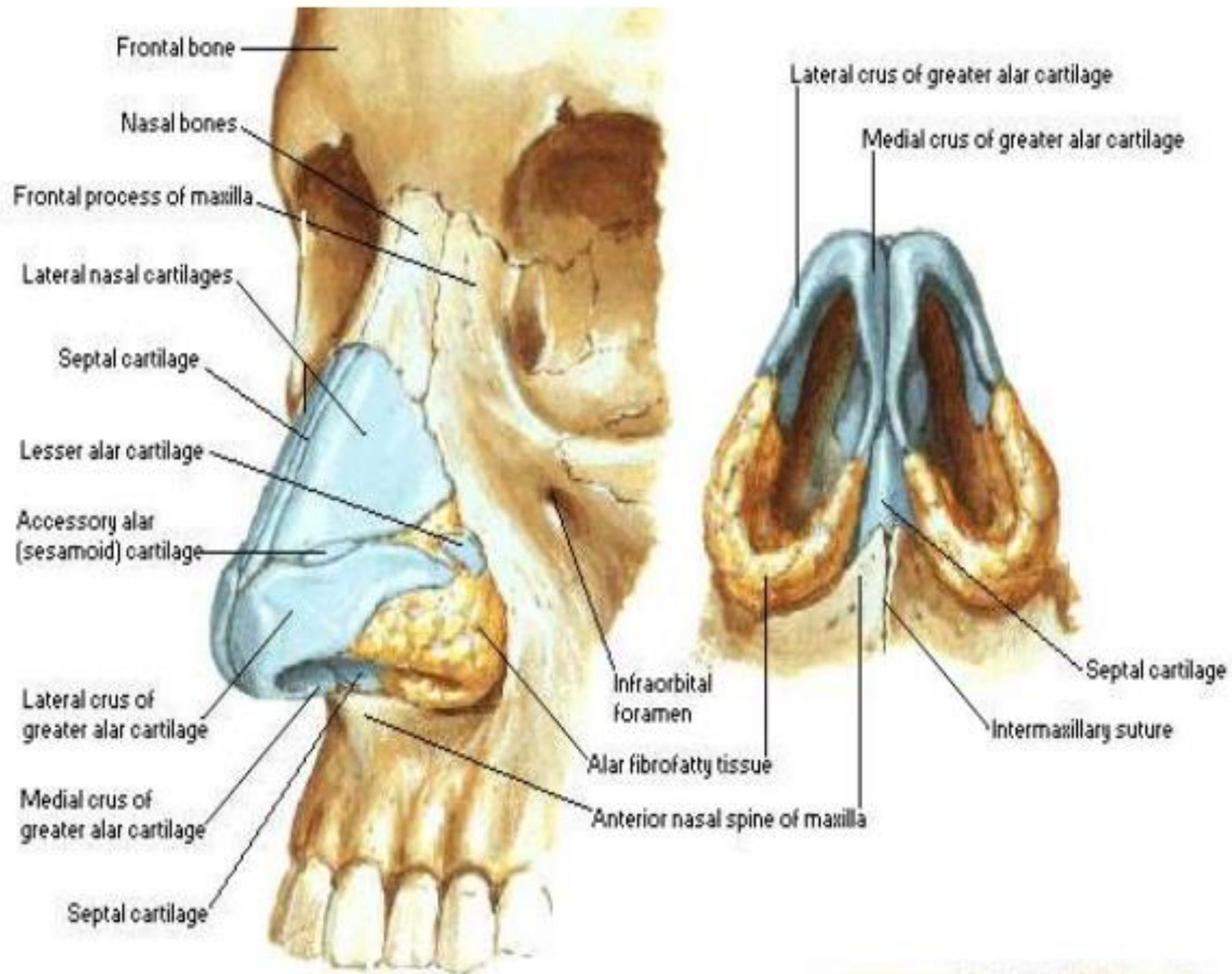
-  **Nasal Bone**
-  **Maxilla**
-  **Septal Cartilage**
-  **Lateral Cartilage**
-  **Major Alar Cartilage**
-  **Minor Alar Cartilages**
-  **Fibro-fatty Tissue**

Lateral view of the external nasal skeleton



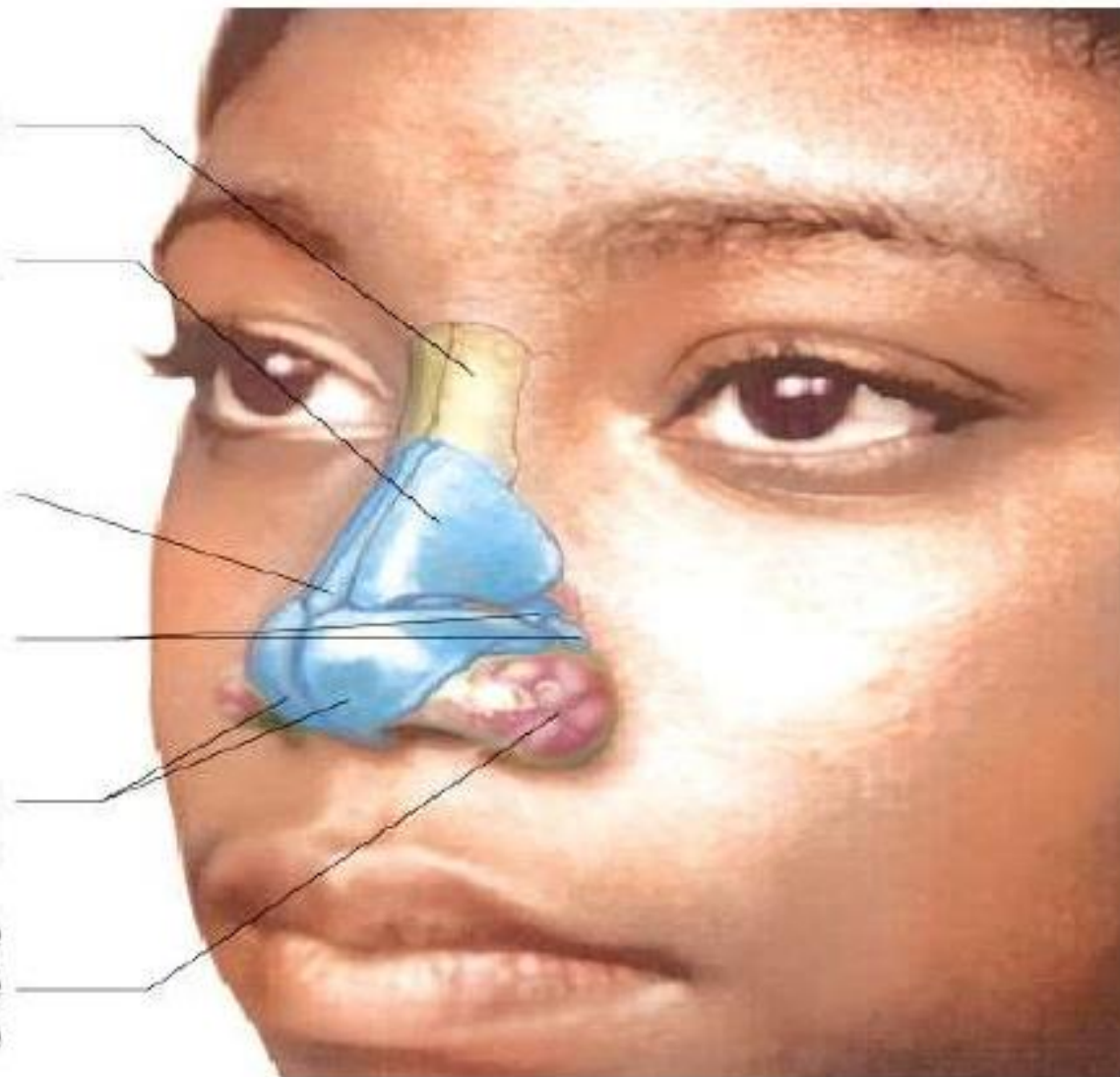


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# External Nose

- Nasal bone**
- Lateral cartilage**
- Septal cartilage**
- Lesser alar cartilages**
- Greater alar cartilages**
- Dense connective tissue**



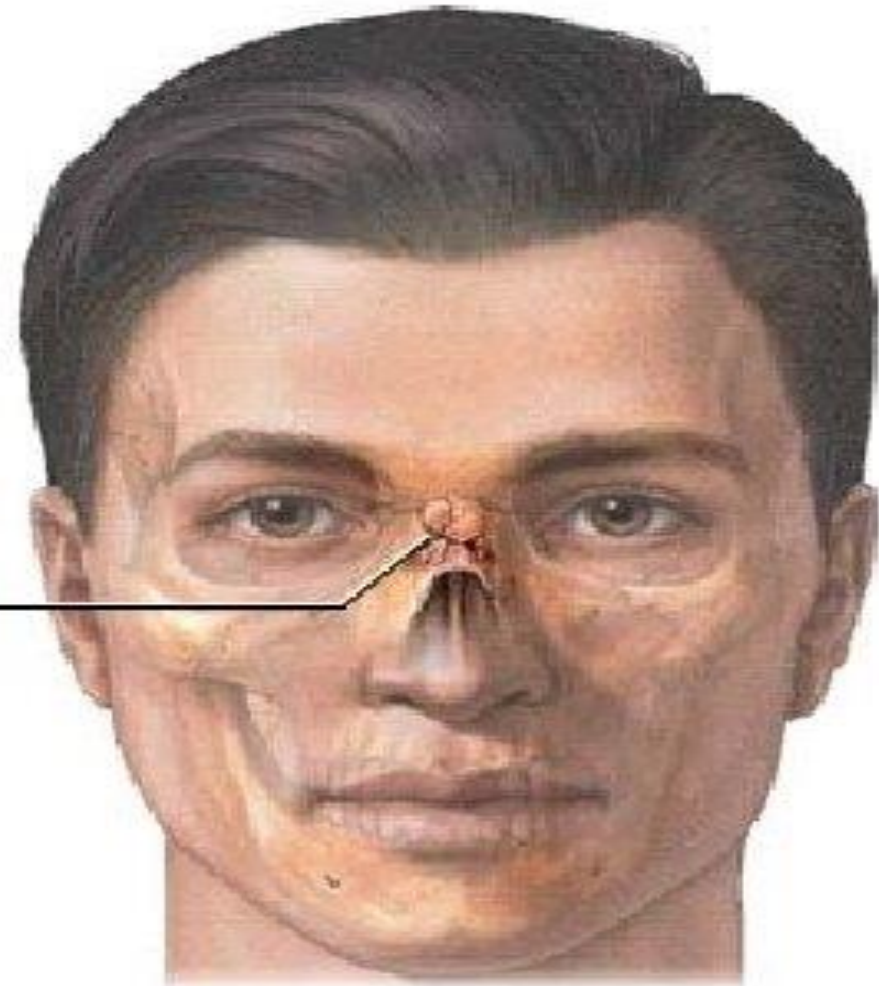
# CLINICAL RELEVANCE - SADDLE NOSE DEFORMITY

- The saddle nose deformity occurs primarily as a result of nasal trauma; whereby septal support to the nose is lost, and subsequently the middle part of the nose appears sunken. This is either a result of direct damage to the septal bone or cartilage, or a consequence of **nasal septal haematoma**.
- As cartilage has no blood supply of its own, it relies on oxygen and nutrients diffusing from blood vessels in the surrounding perichondrium. A haematoma between these two structures can result in destruction of the septum, and therefore deformity of the nose.





Fracture  
on bridge  
of nose



**Nasal deformity**



# MUSCLES

- A number of small muscles insert into the external nose, contributing to facial expression. All these muscles are innervated by branches of the **facial nerve (CN VII)**.
- The **procerus** muscle originates in the fascia overlying the nasal bone and lateral nasal cartilage, inserting into the inferior forehead. Contraction can depress the medial eyebrows, and wrinkles the skin of the superior dorsum.
- The transverse portion of the **nasalis** muscle assists the procerus muscle in this action. Meanwhile the alar part of nasalis arises from the maxilla, inserting into the major alar cartilage. This allows the muscle to dilate the nares, “flaring” them. This action is assisted by the **depressor septi nasi**.

# VESSELS AND LYMPHATICS

- **The skin of the external nose receives arterial supply from branches of the maxillary and ophthalmic arteries.** The septum and alar cartilages receive additional supply from the **angular** artery and **lateral nasal** artery. These are both branches of the **facial artery** (derived from the external carotid artery).
- Venous drainage is into the **facial vein**, and then in turn into the **internal jugular vein**.
- Lymphatic drainage from the external nose is via superficial lymphatic vessels accompanying the facial vein. These vessels, like all lymphatic vessels of the head and neck, ultimately drain into the **deep cervical lymph nodes**.

# INNERVATION

- **Sensory innervation** of the external nose is derived from the **trigeminal nerve (CN V)**.
- The **external nasal nerve**, a branch of the ophthalmic nerve (CN V<sub>1</sub>), supplies the skin of the dorsum of nose, nasal alae and nasal vestibule.
- The lateral aspects of the nose are supplied by the **infraorbital nerve**, a branch of the maxillary nerve (CN v<sub>2</sub>).
- **Motor innervation** to the nasal muscles of facial expression is via the **facial nerve (CN VII)**.

# Clinical Relevance

## Danger Triangle of the Face

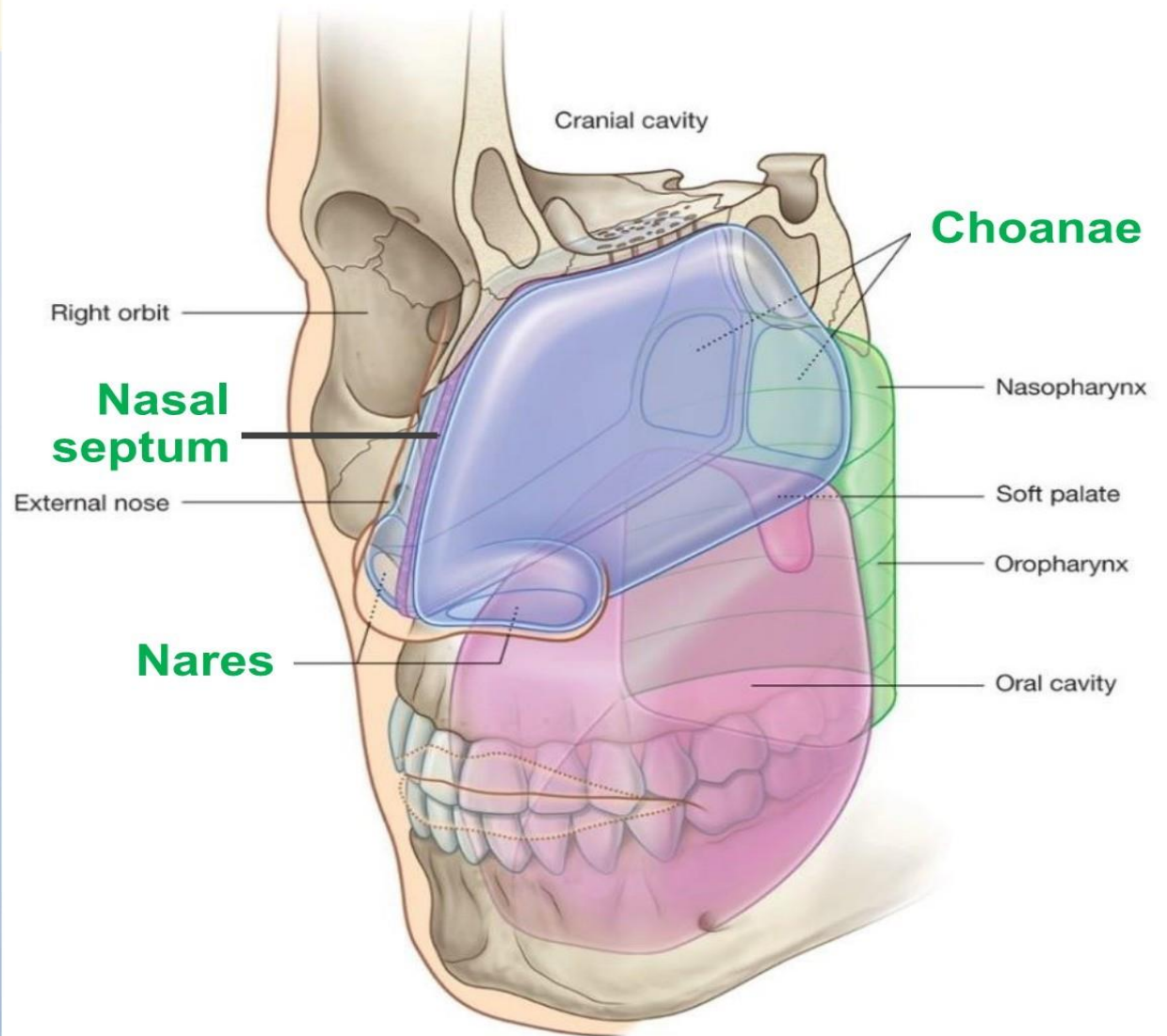
- The venous drainage of the nose and surrounding area is unique as a result of communication between the **facial vein** and **cavernous sinus**, via the **ophthalmic vein**.
- As the cavernous sinus lies within the cranial cavity, this enables infections from the nasal area to spread to the brain. This retrograde spread of infection can therefore cause cavernous sinus thrombosis, meningitis or brain abscess.

# THE NASAL CAVITY

- The **nose** is an olfactory and respiratory organ. It consists of nasal skeleton, which houses the nasal cavity. The nasal cavity has four functions:
- **Warms** and **humidifies** the inspired air.
- Removes and traps **pathogens** and particulate matter from the inspired air.
- Responsible for sense of **smell**.
- **Drains** and clears the paranasal sinuses and lacrimal ducts.

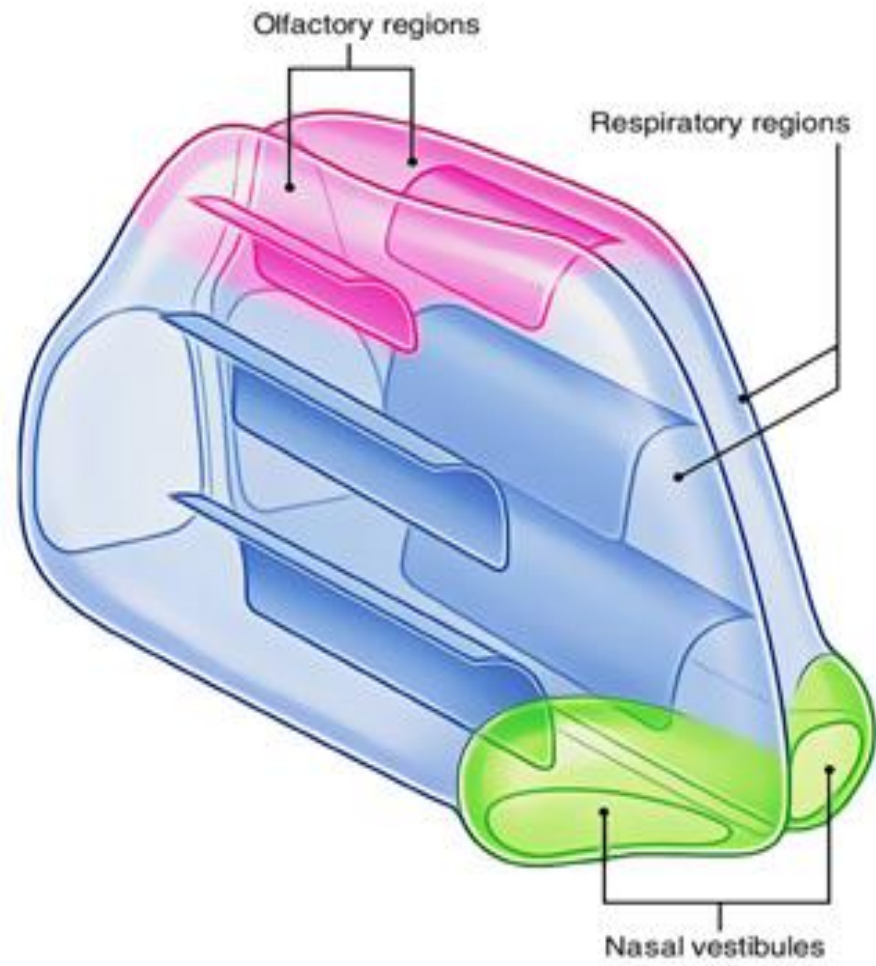
## Nasal Cavity

- : The two nasal cavities are divided by **Nasal septum**
- : Containing the olfactory receptors
- Skeletal framework
  - bone and cartilage--
  - Anterior aperture
  - Nares/Nostril
  - Posterior aperture
  - Choanae

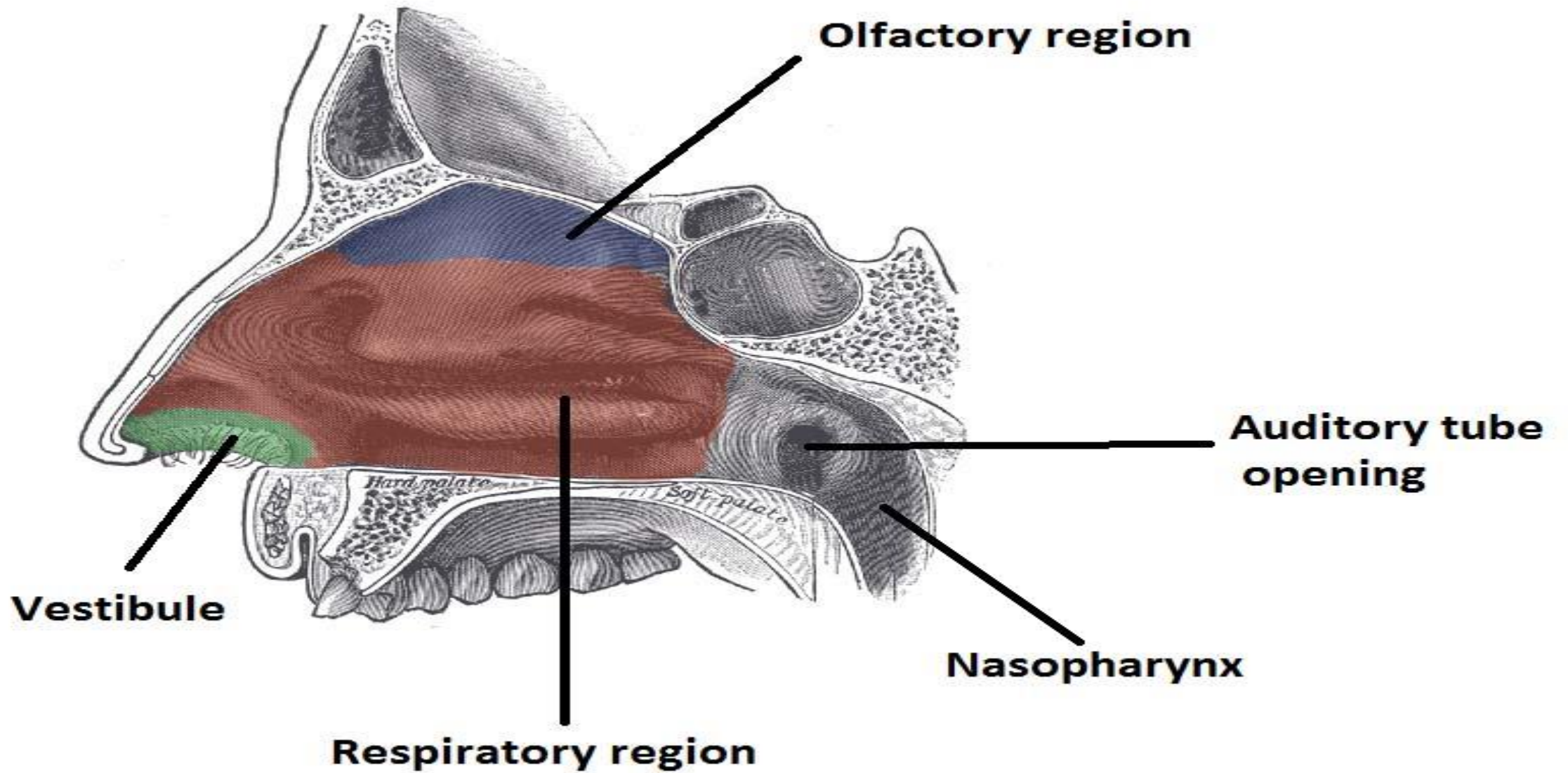


# DIVISIONS

- The nasal cavity is the most superior part of the **respiratory tract**. It extends from the vestibule of the nose to the nasopharynx, and has three divisions:
- **Vestibule** – the area surrounding the anterior external opening to the nasal cavity.
- **Respiratory region** – lined by a ciliated psudeostratified epithelium, interspersed with mucus-secreting goblet cells.
- **Olfactory region** – located at the apex of the nasal cavity. It is lined by olfactory cells with olfactory receptors.







**Sagittal section of the nasal cavity. Conchae are present on the lateral walls**

## ***Boundaries of the Nasal Cavity***

➤ *The nasal cavity has a:*

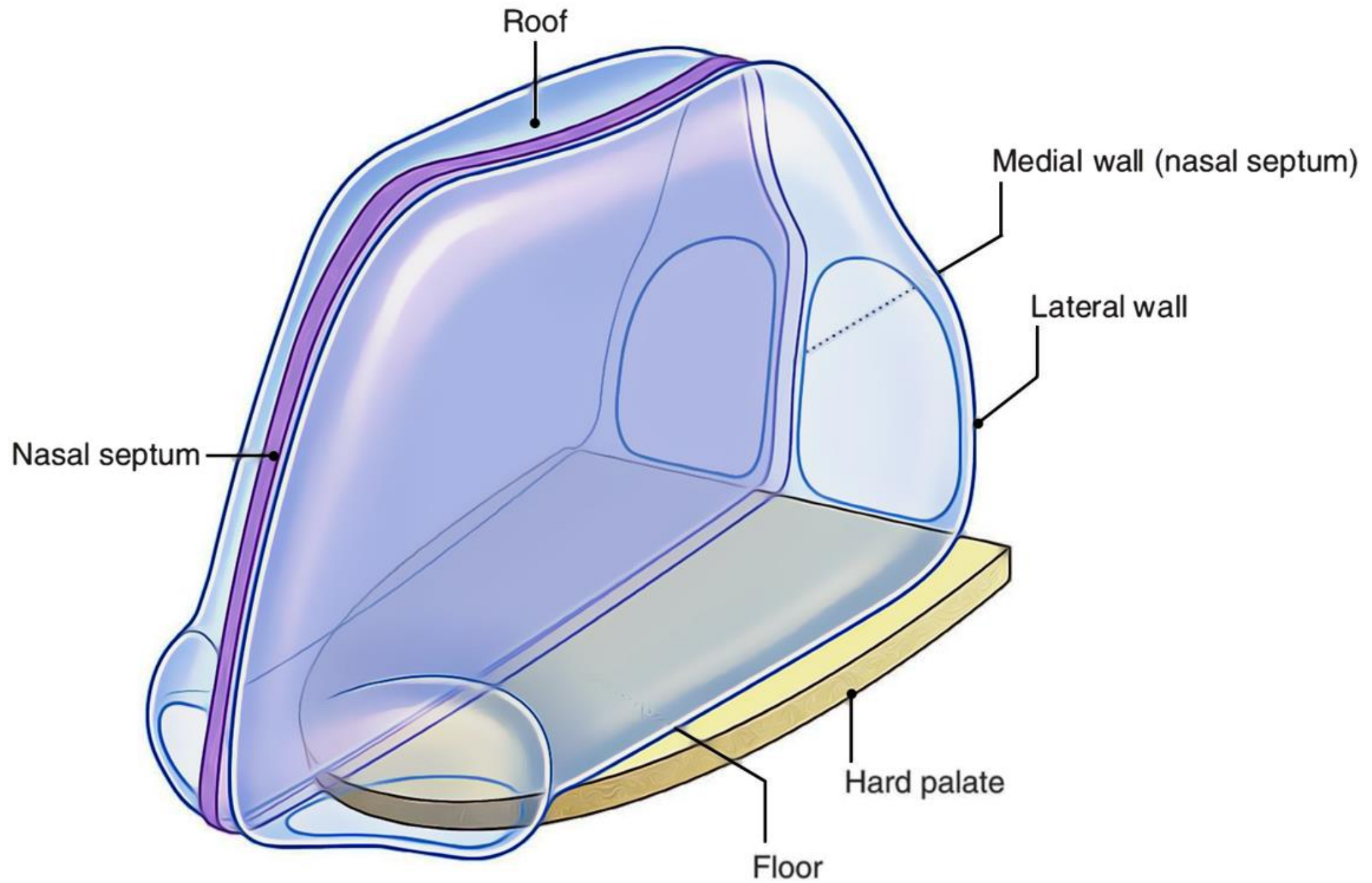
- ✓ *roof*
- ✓ *floor*
- ✓ *medial wall*
- ✓ *lateral wall*

### ***The roof :***

- *is curved and narrow, except at its posterior end*
- *it is divided into 3 parts*
  - ✓ *frontonasal*
  - ✓ *ethmoidal*
  - ✓ *sphenoidal*
- *They are named from the bones forming each part*

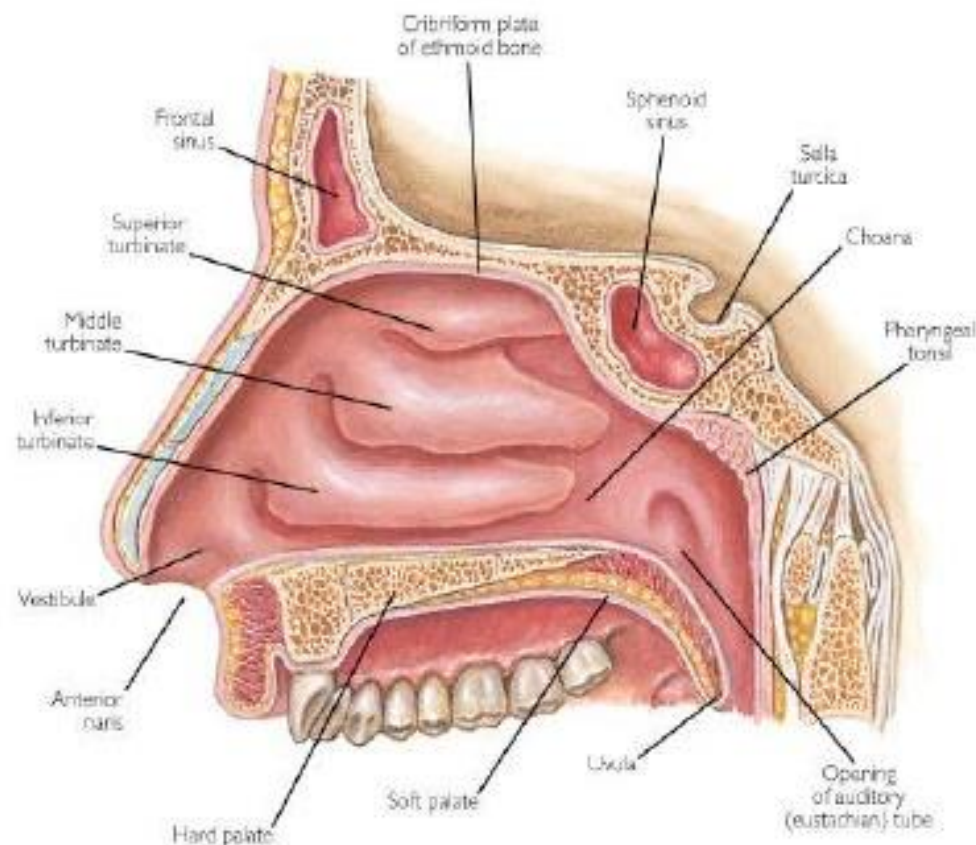
### ***The floor:***

- *is wider than the roof*
- *is formed by the;*
  - ✓ *palatine processes of the maxilla*
  - ✓ *horizontal plates of the palatine bone*



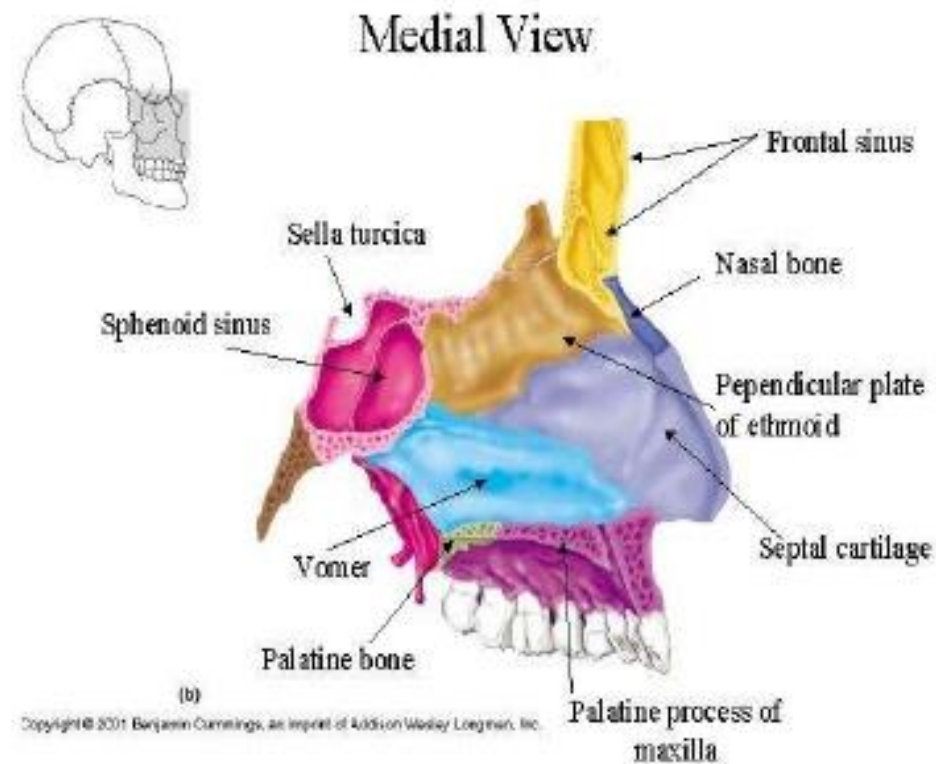
# The Roof of Nasal Cavity

- 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



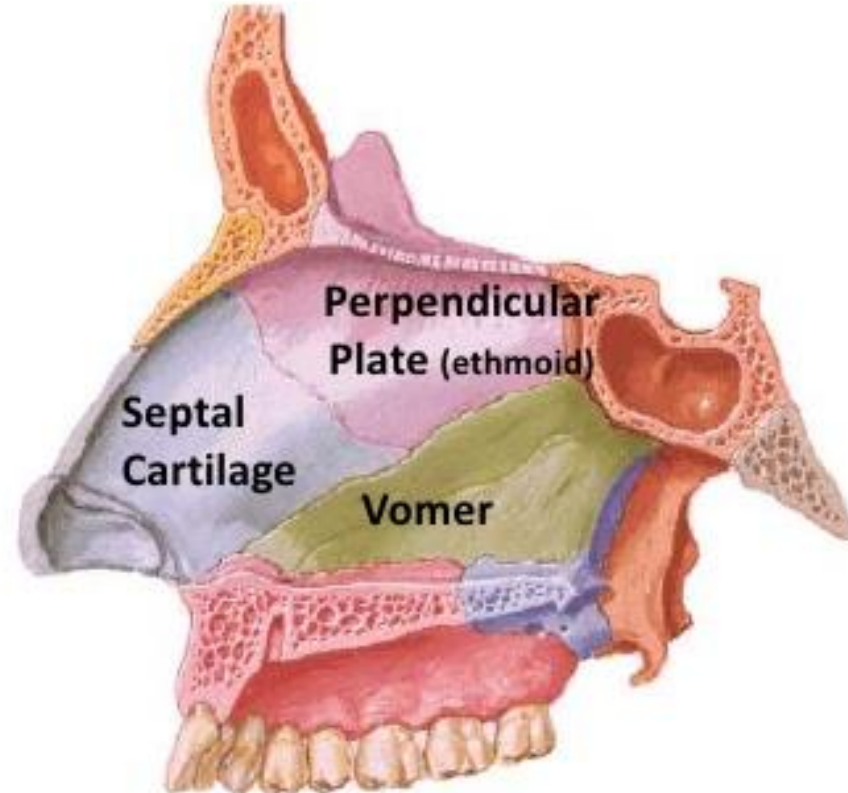
# The Floor of Nasal Cavity

- Palatine process maxilla
- Horizontal plate palatine bone

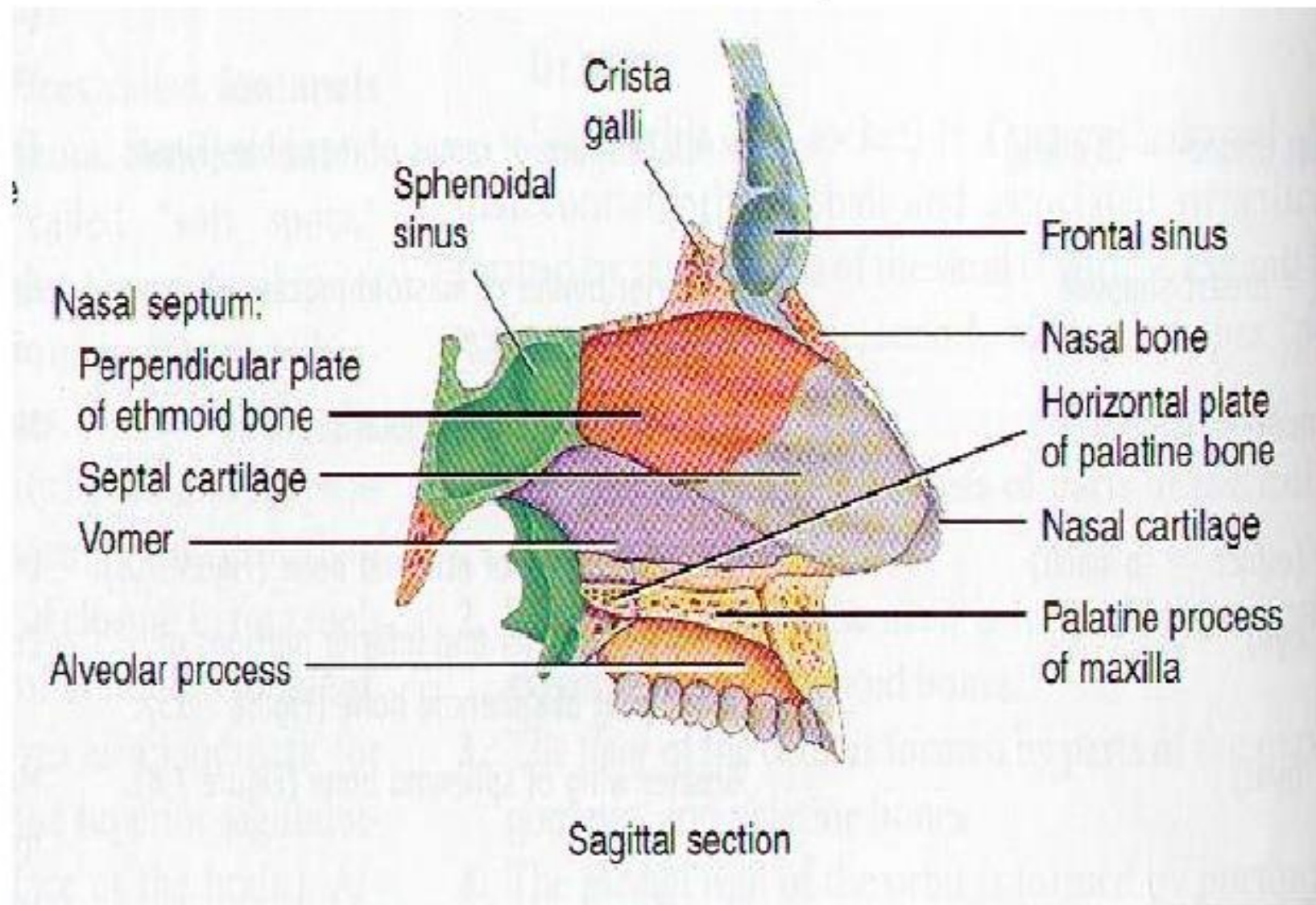


# The Medial Wall of Nasal Cavity

- 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 **septal cartilage** (anterior)



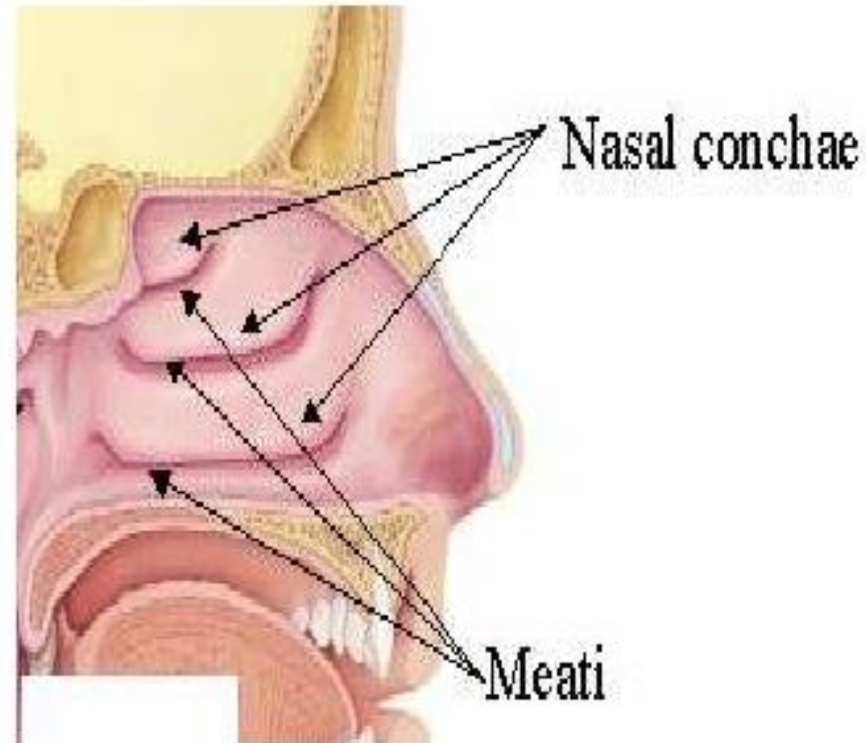
# The Nasal Septum



# The Lateral Walls of Nasal Cavity

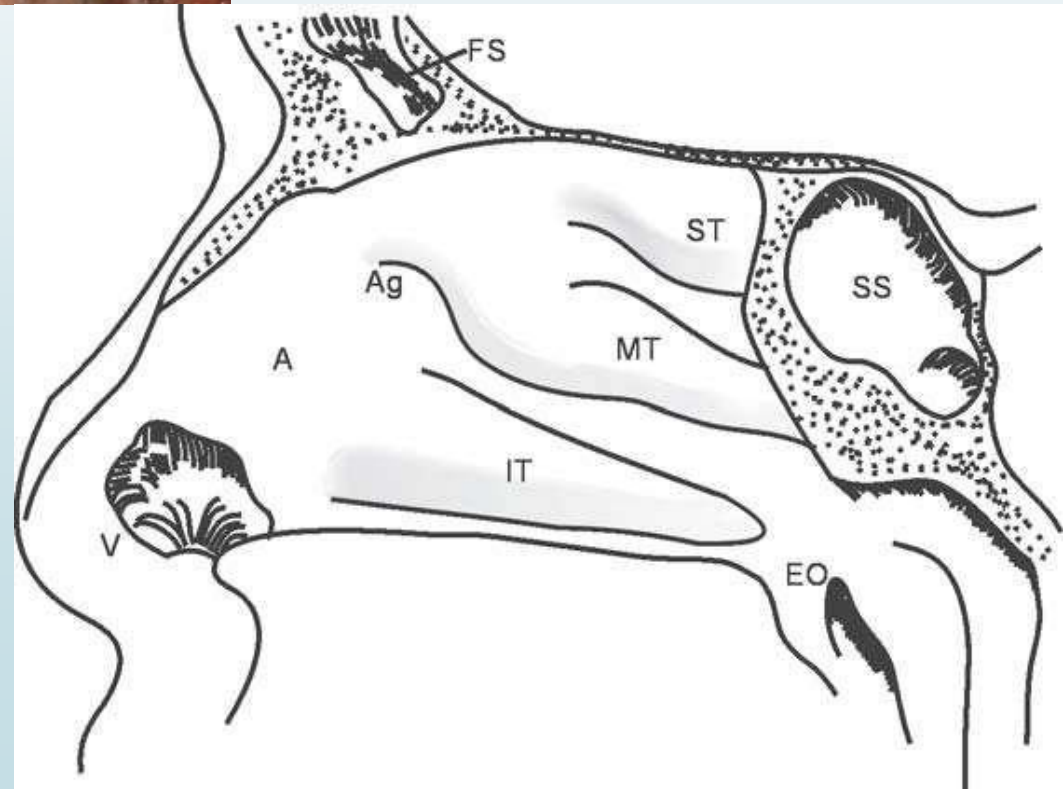
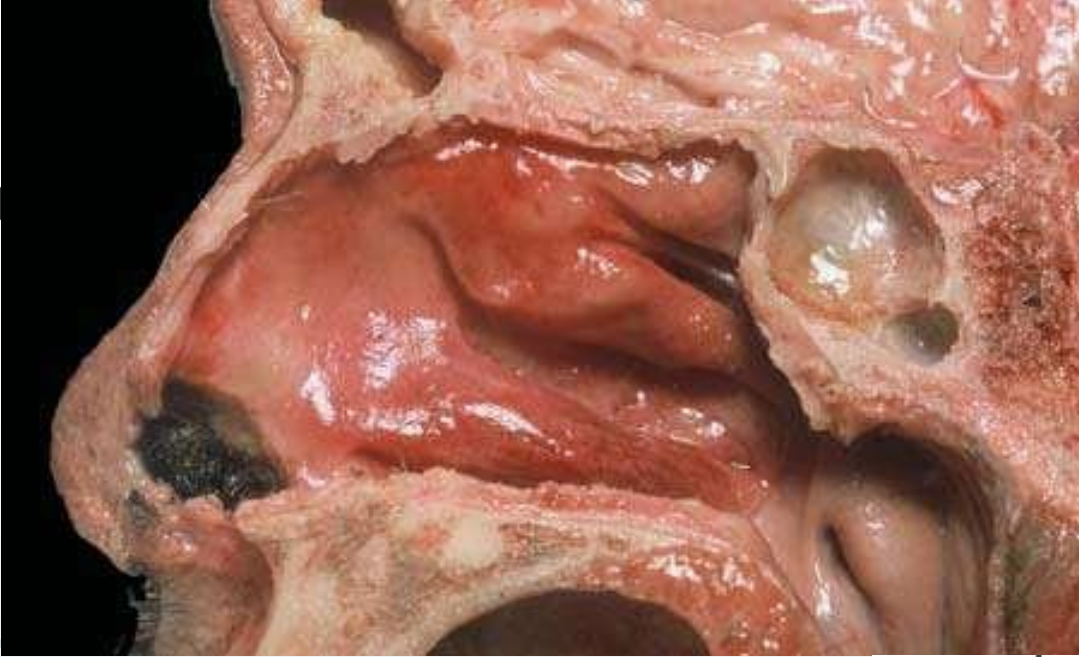
Marked by 3 projections:

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



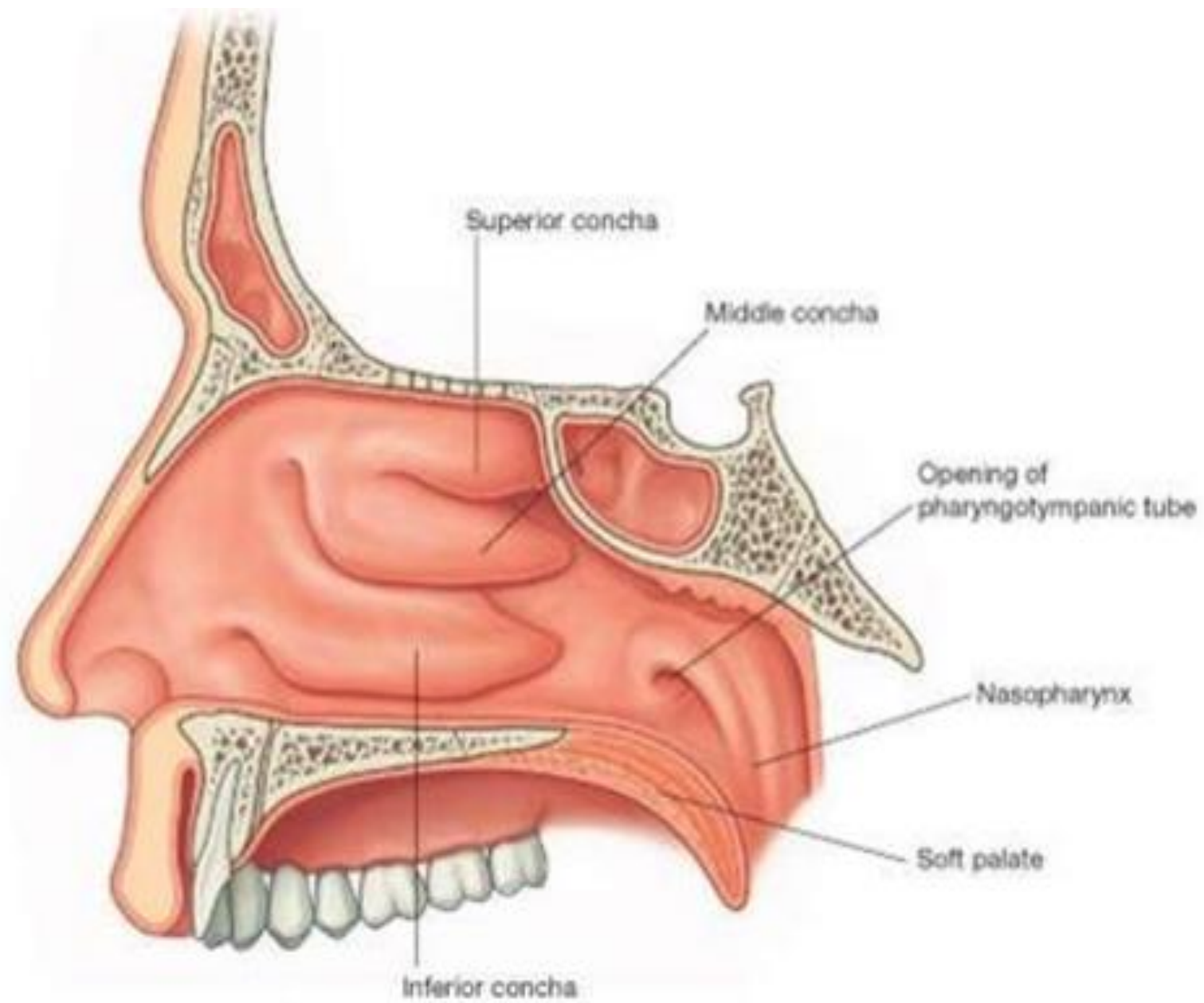


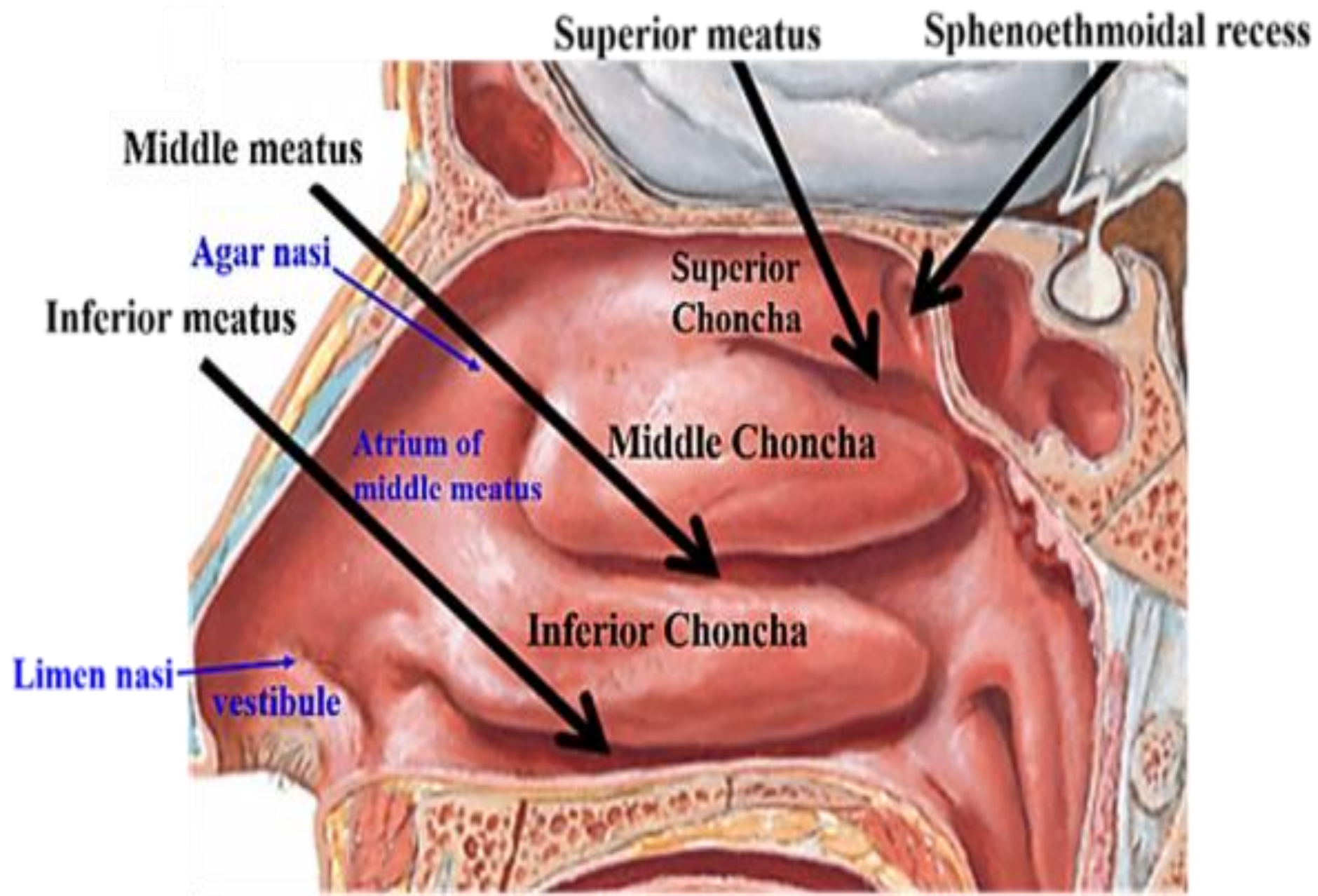
# The lateral nasal wall



# NASAL CONCHAE

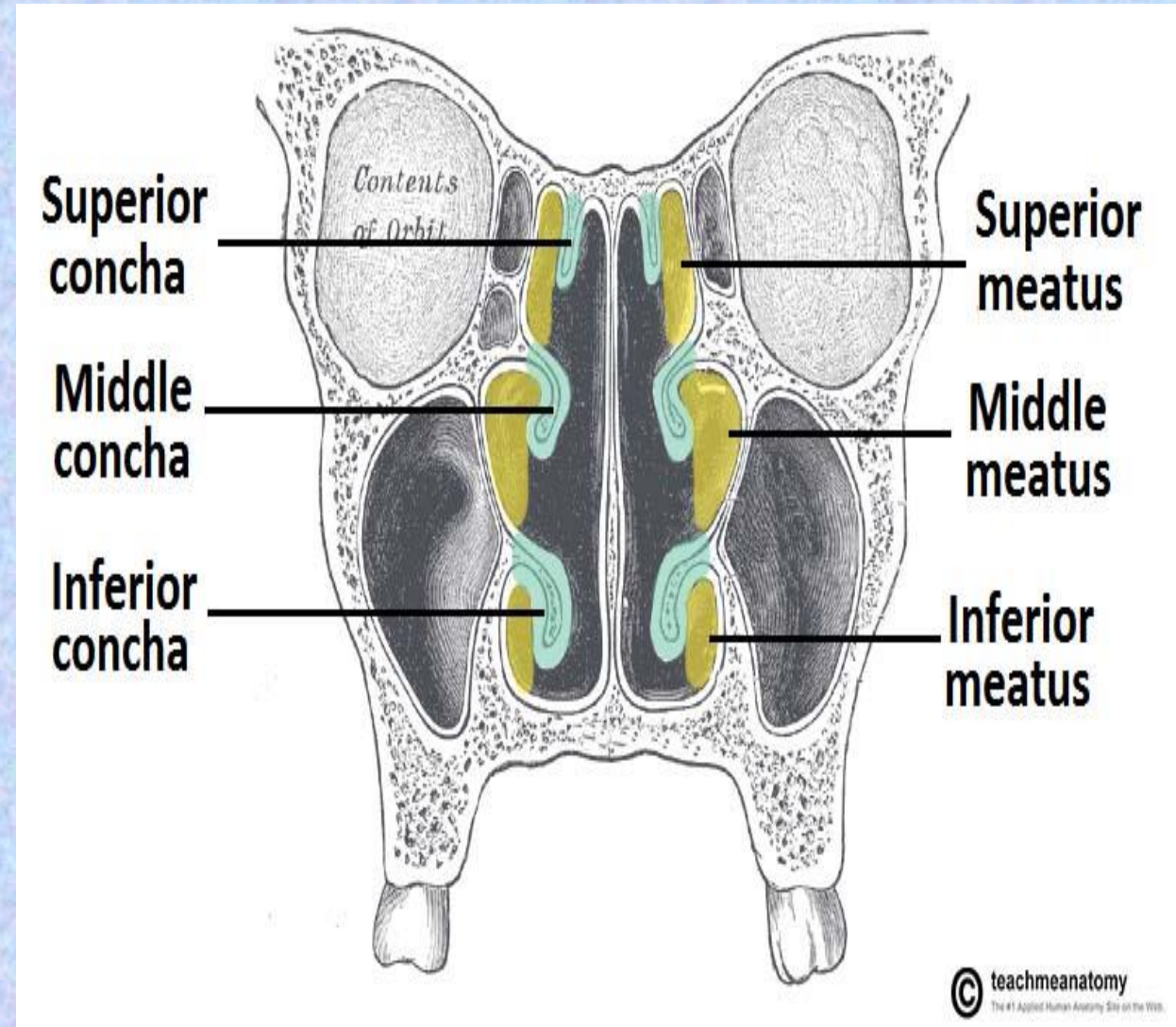
- Projecting out of the lateral walls of the nasal cavity are curved shelves of bone. They are called **conchae** (or turbinates). There are three conchae – inferior, middle and superior.
- They **project** into the nasal cavity, creating four pathways for the air to flow. These pathways are called meatuses:
- **Inferior meatus** – between the inferior concha and floor of the nasal cavity.
- **Middle meatus** – between the inferior and middle concha.
- **Superior meatus** – between the middle and superior concha.
- **Spheno-ethmoidal recess** – superiorly and posteriorly to the superior concha (roof)





# NASAL CONCHAE

- The function of the conchae is to increase the **surface area** of the nasal cavity – this increases the amount of inspired air that can come into contact with the cavity walls.
- They also disrupt the fast, laminar flow of the air, making it slow and turbulent. The air spends longer in the nasal cavity, so that it can be humidified.

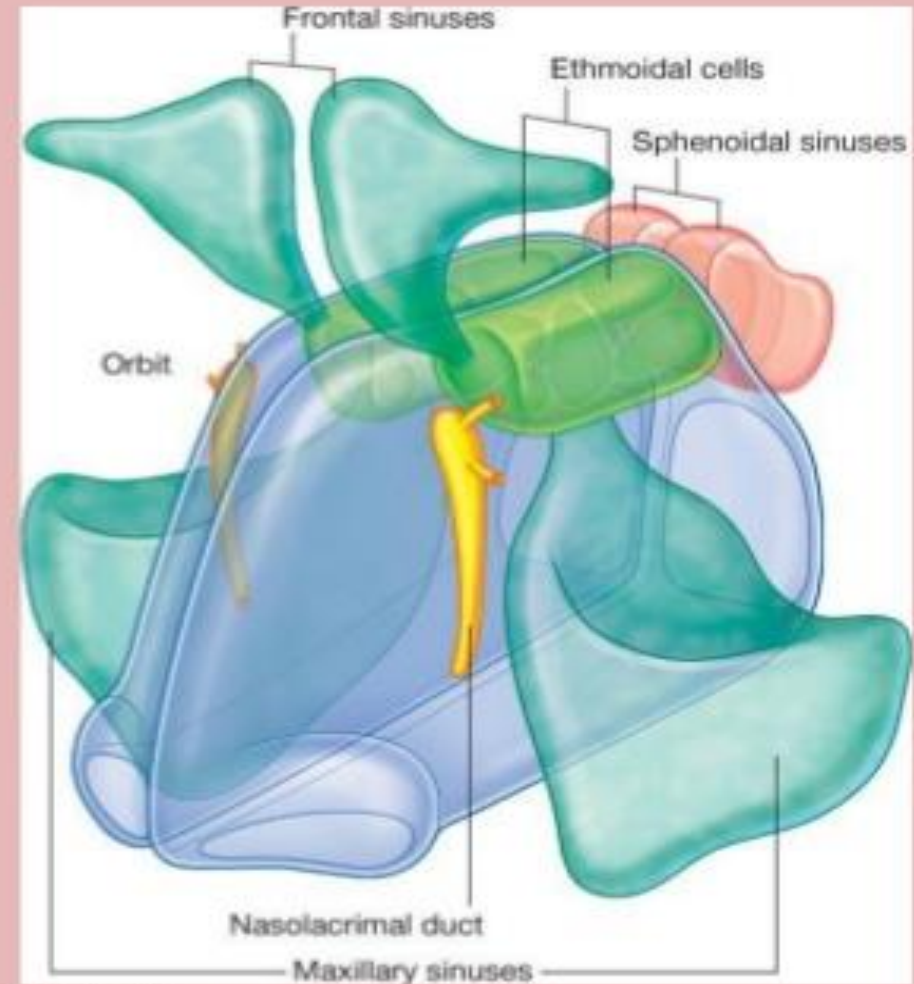


# OPENINGS INTO THE NASAL CAVITY

- One of the functions of the nose is to **drain** a variety of structures. Thus, there are many openings into the nasal cavity, by which drainage occurs.
- The **paranasal sinuses** drain into the nasal cavity. The frontal, maxillary and anterior ethmoidal sinuses open into the middle meatus. The location of this opening is marked by the semilunar hiatus, a crescent-shaped groove on the lateral walls of the nasal cavity.
- The middle ethmoidal sinuses empty out onto a structure called the **ethmoidal bulla**. This is a bulge in the lateral wall formed by the middle ethmoidal sinus itself.
- **The posterior ethmoidal sinuses open** out at the level of the superior meatus.
- The only structure not to empty out onto the lateral walls of the nasal cavity is the **sphenoid sinus**. It drains onto the posterior roof.

# PARANASAL SINUS

- **Invaginations** from the nasal cavity that drain into spaces associated with the **lateral nasal wall**
- There are four paranasal air sinuses
  - Ethmoidal cells,
  - Sphenoidal,
  - Maxillary,
  - Frontal sinuses
- **Functions:** skull lighter and add resonance to the voice
- Infection causes **Sinusitis**



**Opening in Sphenoethmoidal Recess**  
Sphenoidal air sinus

Frontal air sinus

Sphenoidal air sinus

**Opening in Superior Meatus**  
Posterior Ethmoidal air sinuses

Bulla ethmoidalis

Hiatus semilunaris

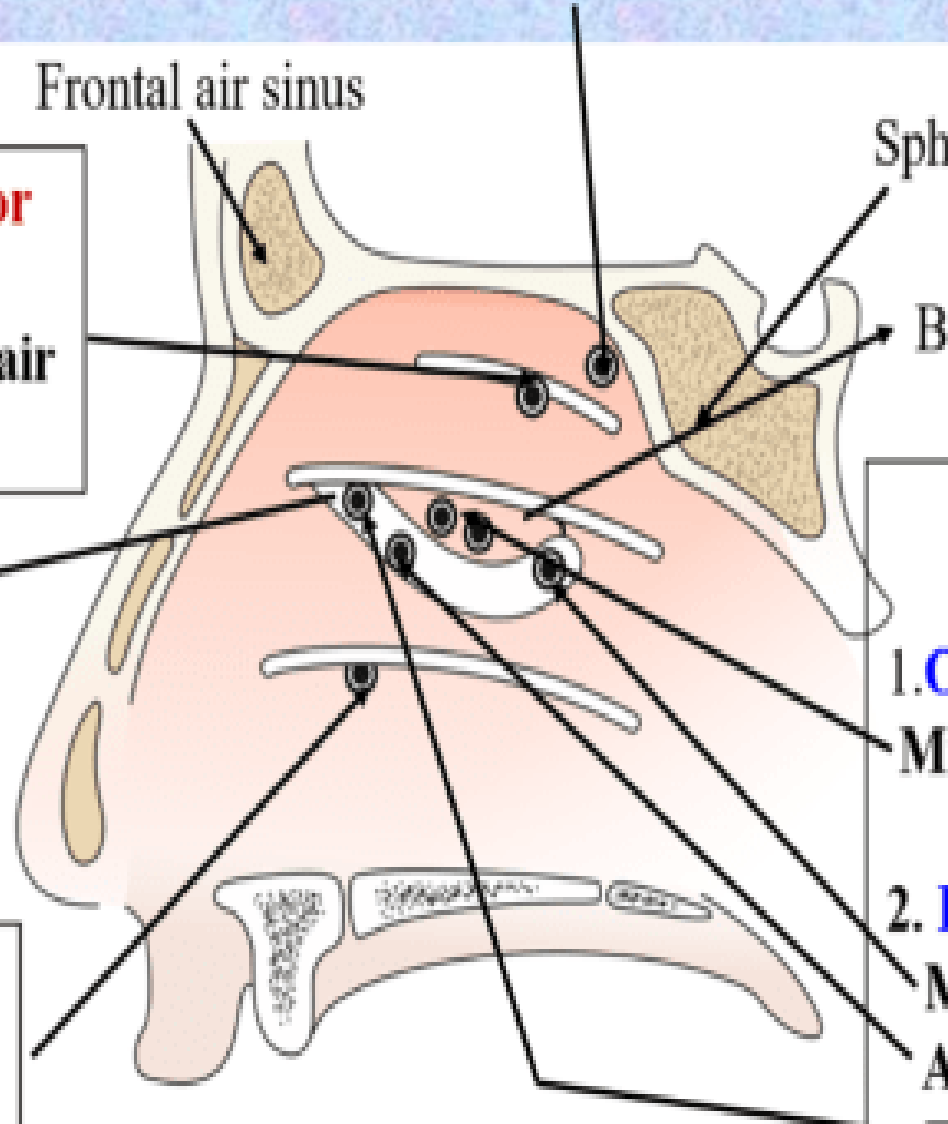
**Openings in Middle Meatus**

1. **On bulla ethmoidalis**  
Middle Ethmoidal sinuses

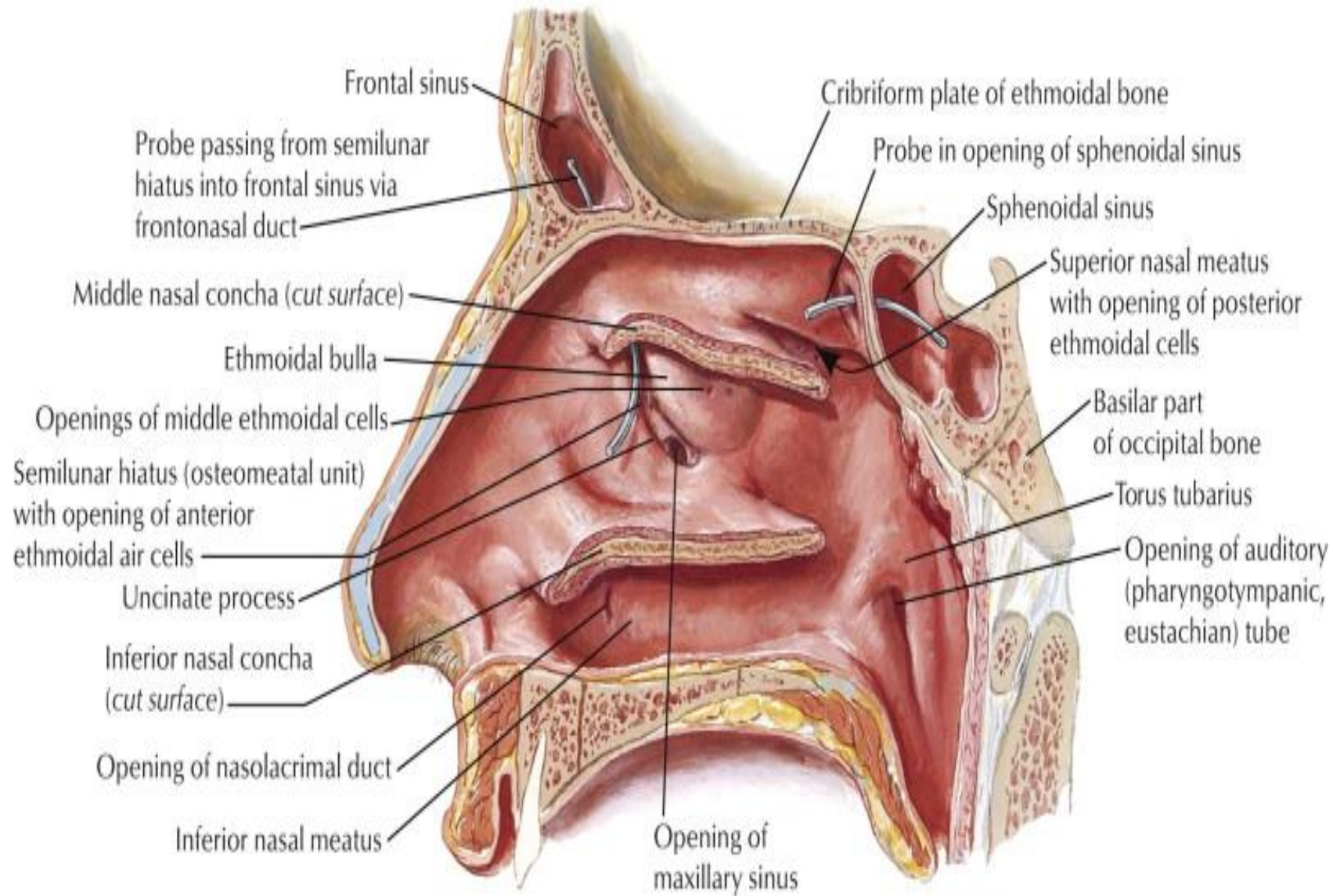
2. **In Hiatus Semilunaris**

Maxillary sinus  
Anterior Ethmoidal sinus  
Frontal sinus

**Opening in Inferior Meatus**  
Nasolacrimal duct

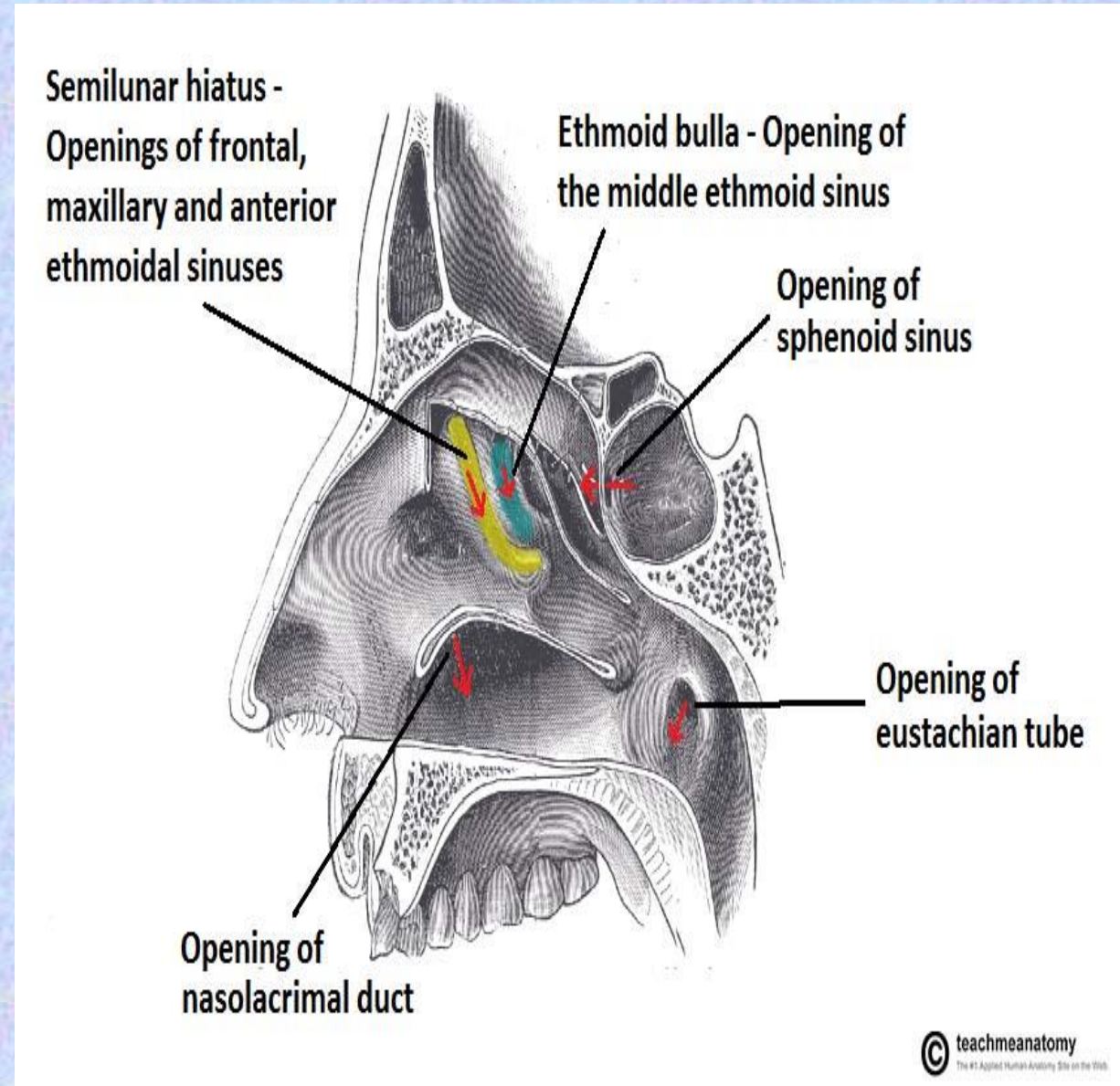






# OPENINGS INTO THE NASAL CAVITY CONTD

- In addition to the paranasal sinuses, other structures open into the nasal cavity:
- **Nasolacrimal duct** – acts to drain tears from the eye. It opens into the inferior meatus.
- **Auditory (Eustachian) tube** – opens into the nasopharynx at the level of the inferior meatus. It allows the middle ear to equalise with the atmospheric air pressure.



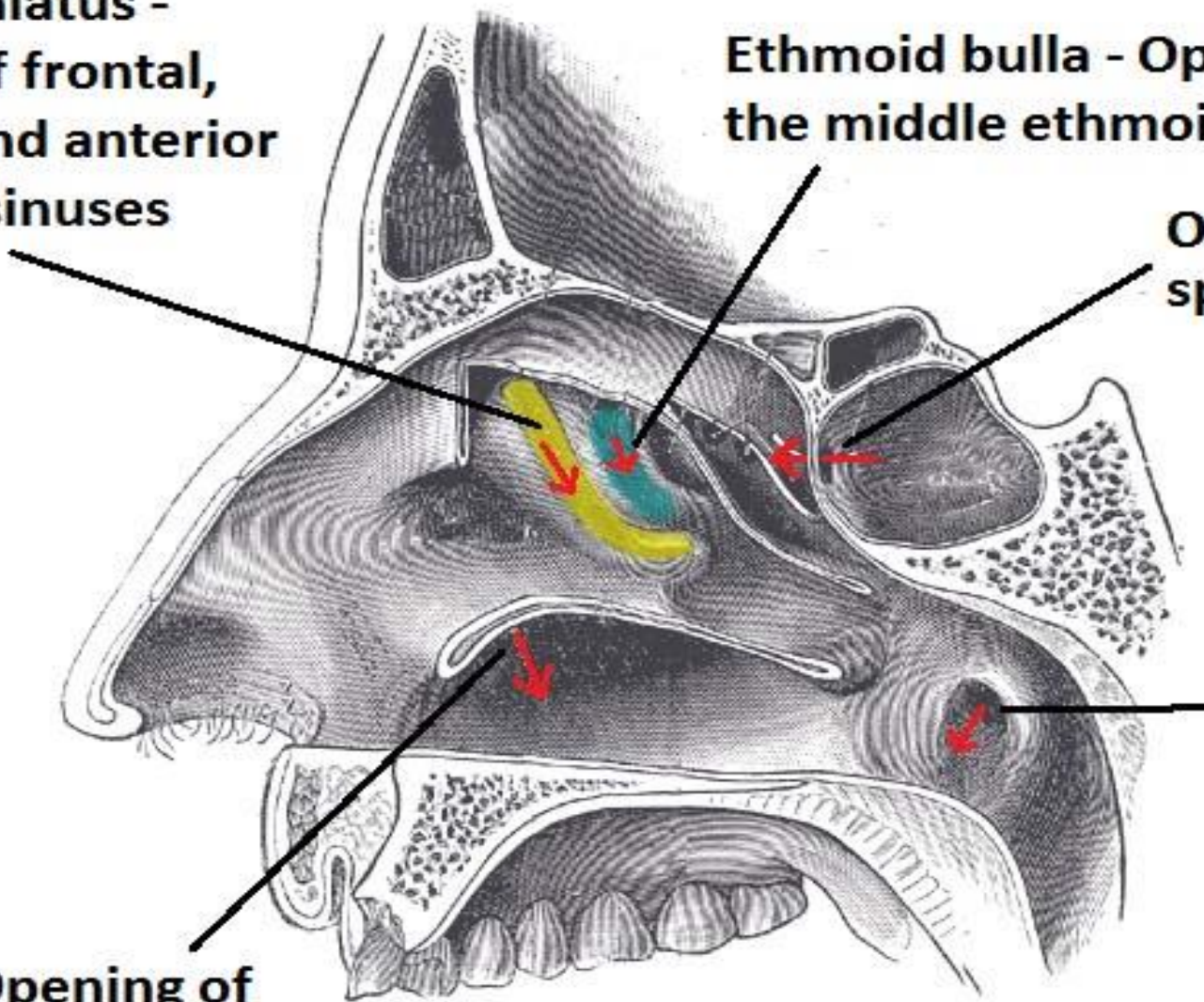
**Semilunar hiatus -  
Openings of frontal,  
maxillary and anterior  
ethmoidal sinuses**

**Ethmoid bulla - Opening of  
the middle ethmoid sinus**

**Opening of  
sphenoid sinus**

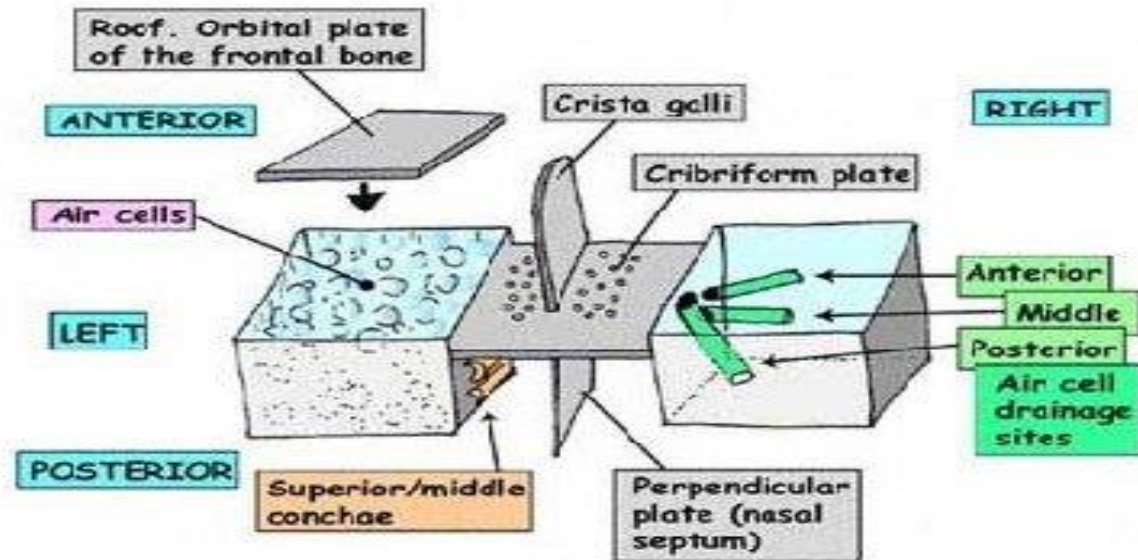
**Opening of  
nasolacrimal duct**

**Opening of  
eustachian tube**

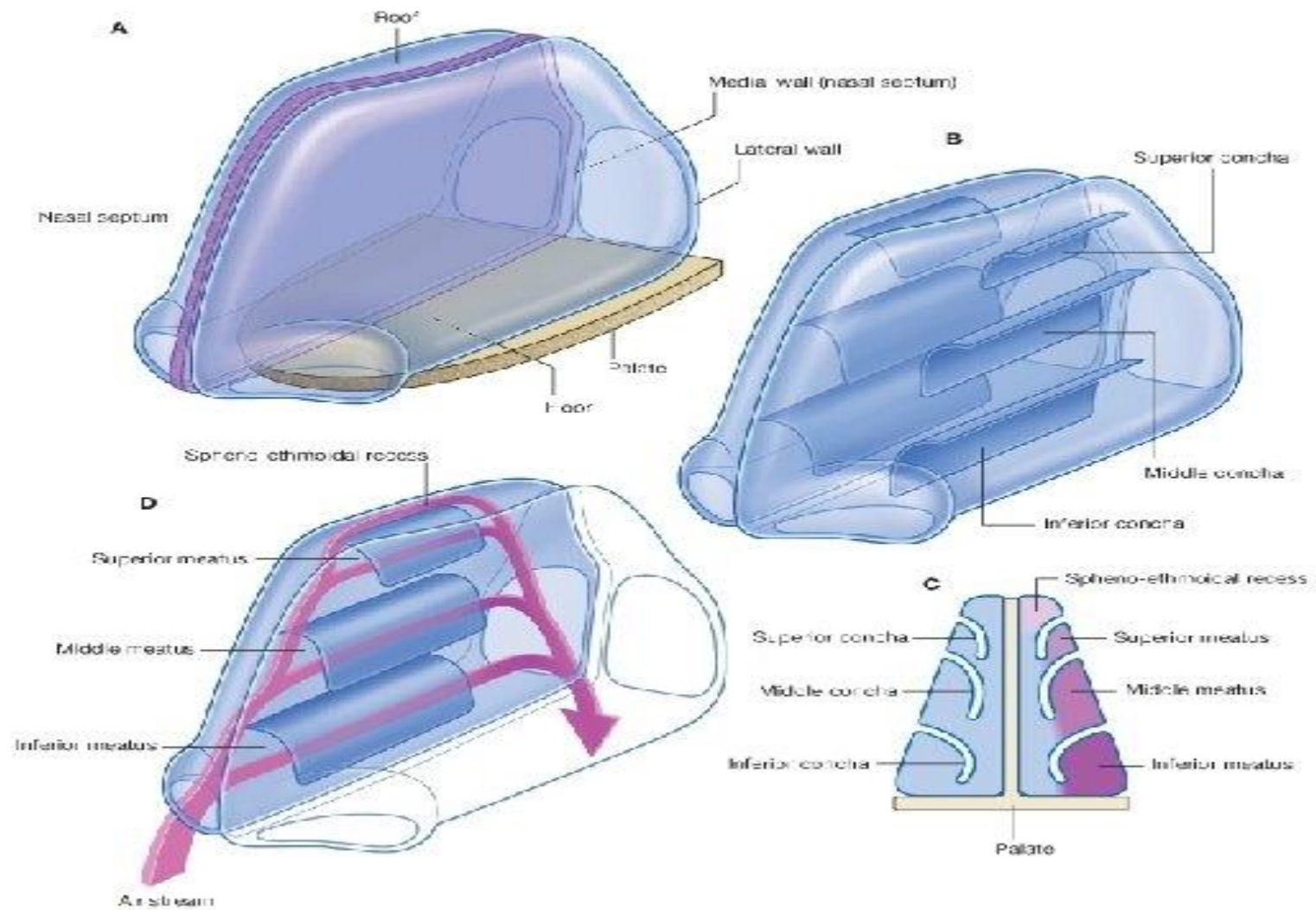


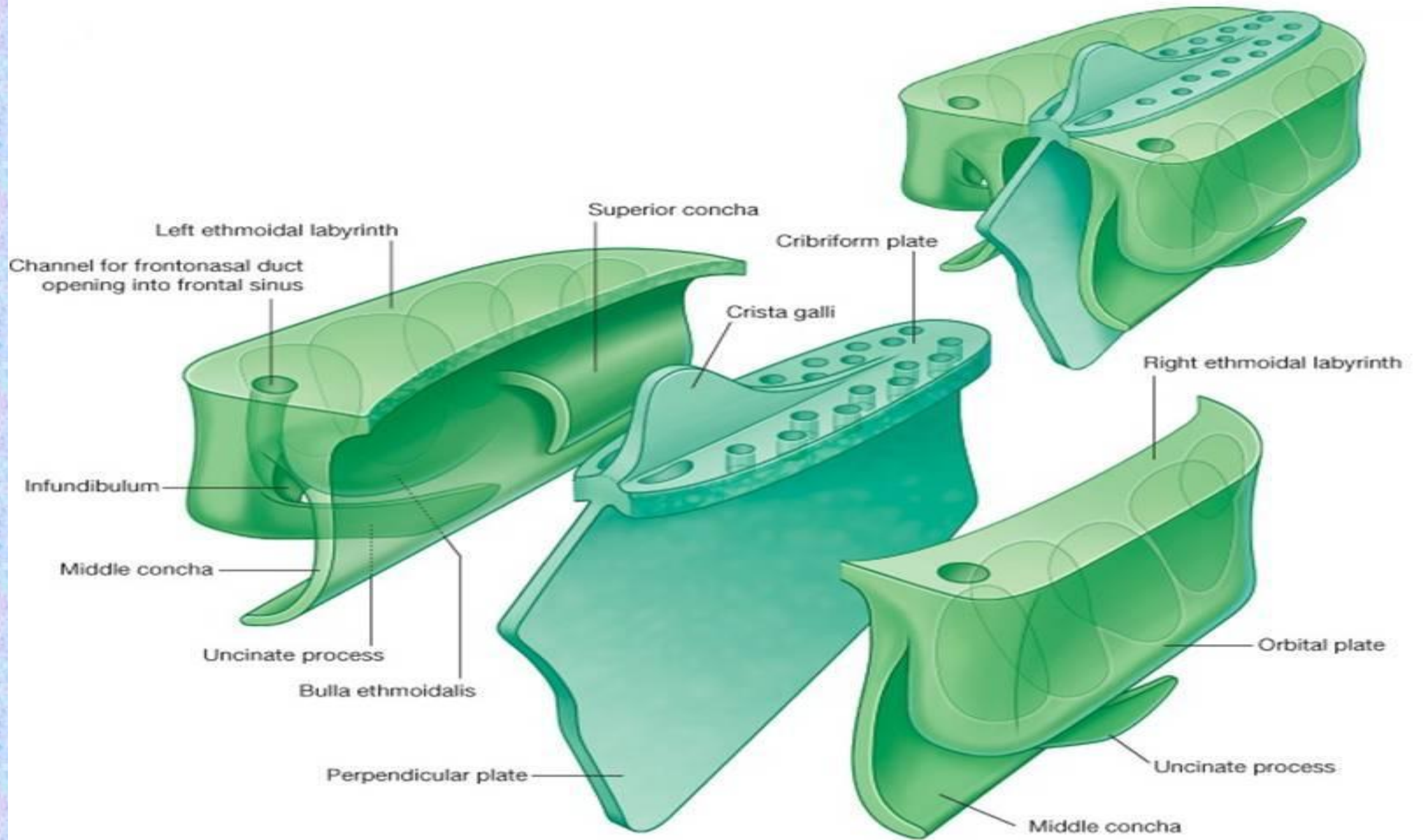
## ETHMOIDAL SINUSES

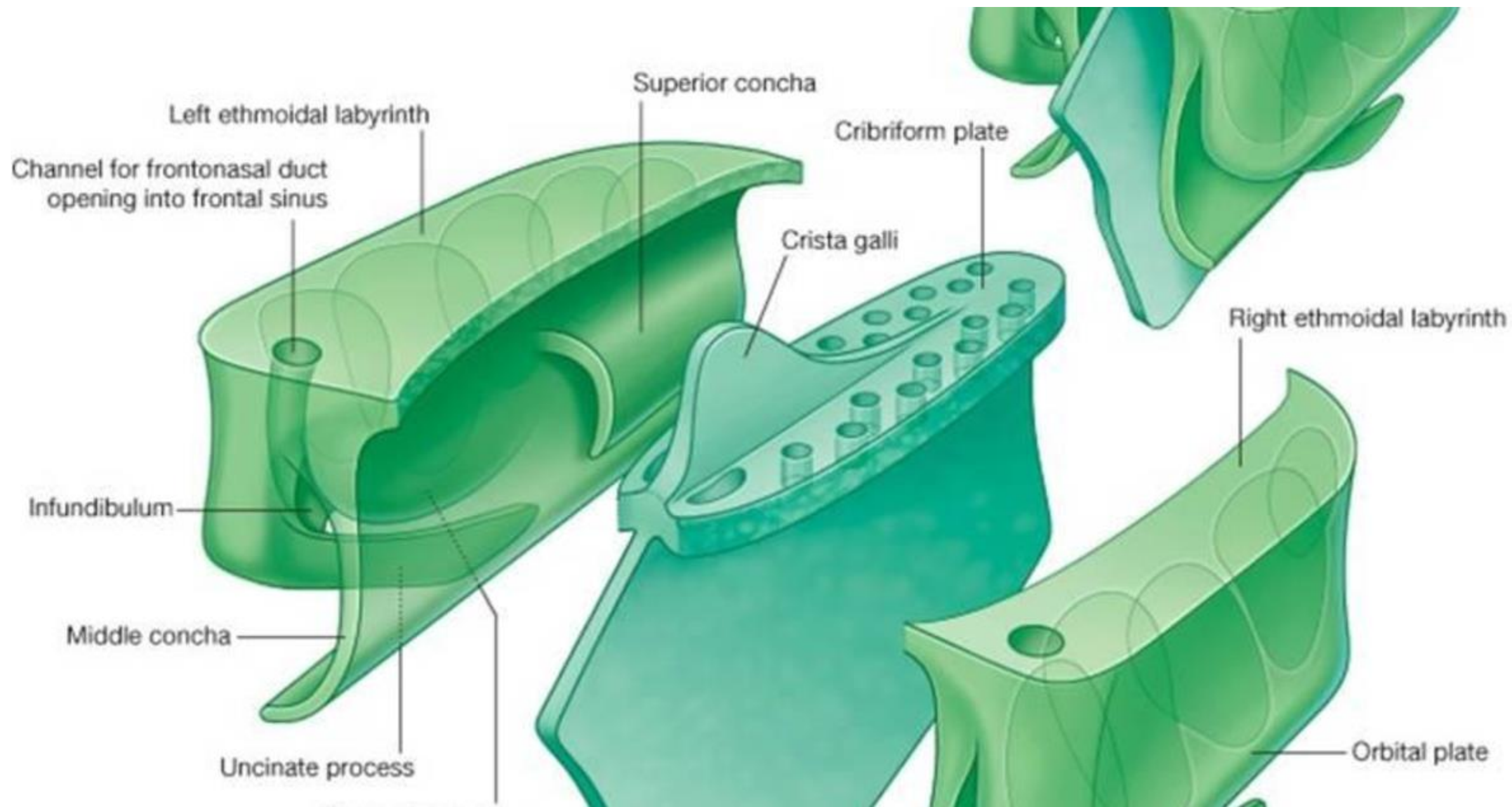
Diagrammatical representation of the ethmoid bone to show the left and right ethmoidal sinus joined by the cribriform plate. The roof of the air cell containing sinuses on each side is the orbital plate of the frontal bone. Anterior to the ethmoid bone is the lacrimal bone & posterior is the sphenoid bone



**Ethmoidal sinuses** lie between the orbit & nose in the lateral (labyrinthine) part of the bone  
**Septa** lie between 3-18 lots of air cells  
**Blood supply:** Supra-orbital, anterior/posterior ethmoidal, sphenopalatine  
**Lymph drainage:** Submandibular and retropharyngeal  
**Nerve:** Supra-orbital (Va), Anterior ethmoidal (Va), lateral posterior superior nasal (Vb), posterior ethmoidal (Va)







- *The nasal cavity is thus divided into 5 passages:*
  - 1) a posterosuperiorly placed **sphenoethmoidal recess***
  - 3 laterally located nasal meatus:*
    - II) superior*
    - III) middle*
    - IV) inferior*
  - V) and a medially placed common nasal meatus into which the four lateral passages open*

### ***The inferior concha***

- *is the longest and broadest and is formed by an independent bone (of the same name, inferior concha) covered by a mucous membrane that contains large vascular spaces that can enlarge to control the caliber of the nasal cavity*
- *When infected or irritated, the mucosa may swell rapidly, blocking the nasal passage(s) on that side*



### ***The sphenoethmoidal recess :***

- *lying superoposterior to the superior concha,*
- *receives the opening of the sphenoidal sinus, an air-filled cavity in the body of the sphenoid.*

### ***The superior nasal meatus :***

- *is a narrow passage between the superior and the middle nasal conchae*
- *The posterior ethmoidal sinuses open into this superior nasal meatus through one or more orifices*

### ***The middle nasal meatus:***

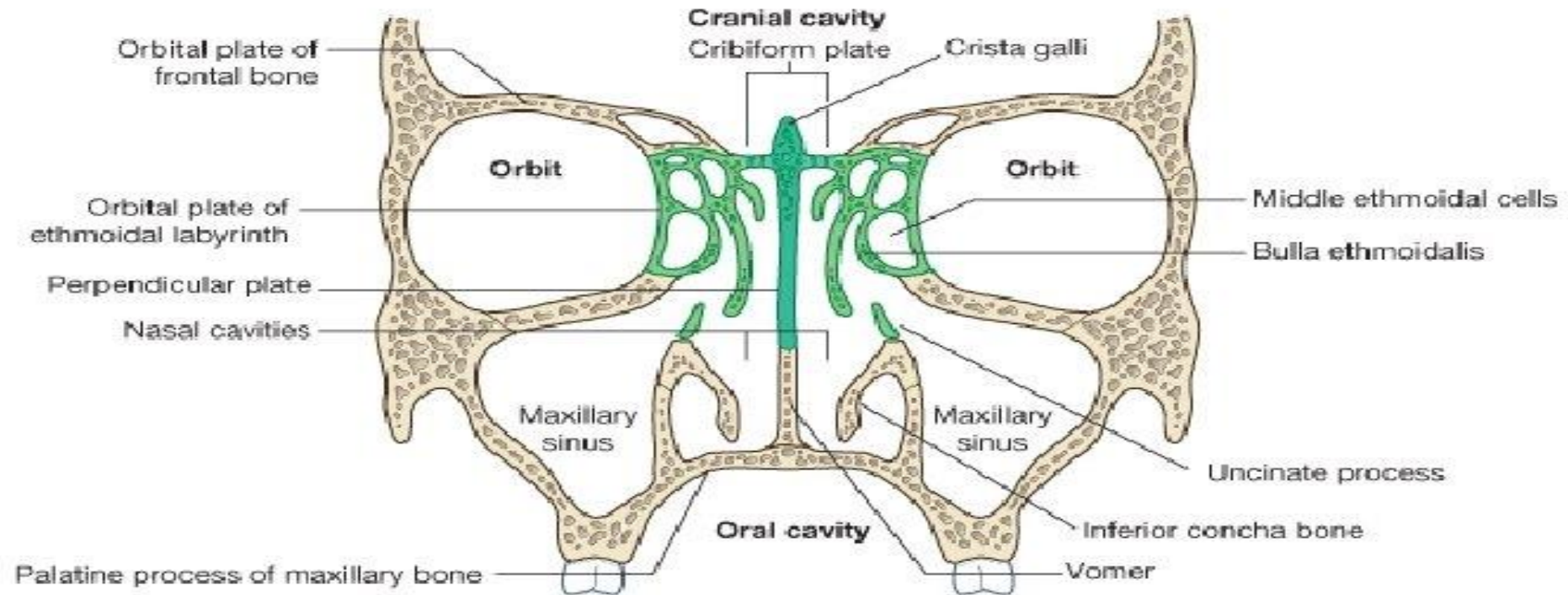
- *is longer and deeper than the superior one*
- *The anterosuperior part of this passage leads into a funnel-shaped opening, **the ethmoidal infundibulum** through which it communicates with the frontal sinus through a passage known as the **frontonasal duct***
- *the **anterior ethmoidal cells** opens on the ethmoidal infundibulum directly or opens indirectly on the frontonasal sinus*

- The ethmoidal infundibulum leads inferiorly into a semicircular groove called the **semilunar hiatus**
- The maxillary sinus opens into the semilunar hiatus
- superior to the semilunar hiatus is a rounded elevation called the ethmoidal bulla
- The ethmoidal bulla is only visible when the middle concha is removed
- The bulla is a swelling formed by **middle ethmoidal cells** that form the ethmoidal sinuses
- Anterior and inferior to the semilunar hiatus is a hooklike process called the **uncinate process of the ethmoid bone**
- This process articulates with the inferior nasal concha

### **The inferior nasal meatus :**

- is a horizontal passage inferolateral to the inferior nasal concha
- The nasolacrimal duct, which drains tears from the lacrimal sac, opens into the anterior part of this meatus

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# GATEWAYS TO THE NASAL CAVITY

- As well as openings for the drainage of structures, nerves, vasculature and lymphatics need to be able to access the nasal cavity.
- The **cribriform plate** is part of the ethmoid bone. It forms a portion of the roof of the nasal cavity. It contains very small perforations, allowing fibres of the olfactory nerve to enter and exit,
- At the level of the superior meatus, the **sphenopalatine foramen** is located. This hole allows communication between the nasal cavity and the **pterygopalatine fossa**. The sphenopalatine artery, nasopalatine and superior nasal nerves pass through here.
- The **incisive canal** is a pathway between the nasal cavity and the incisive fossa of the oral cavity. It transmits the nasopalatine nerve and greater palatine artery.

## KEY FACTS ABOUT THE LATERAL WALL OF THE NASAL CAVITY

Parts	<p>Nasal septum</p> <ul style="list-style-type: none"><li>- <i>Cartilages:</i> lesser alar cartilages, greater alar cartilages, lateral nasal cartilages</li><li>- <i>Bones:</i> anterior nasal aperture (piriform aperture) formed by maxilla and nasal bones</li></ul> <p>Nasal conchae</p> <ul style="list-style-type: none"><li>- Superior nasal concha</li><li>- Middle nasal concha</li><li>- Inferior nasal concha</li></ul>
Bony framework of the nasal cavity	<p>Ethmoid bone</p> <p>Frontal bone</p> <p>Lacrimal bone</p> <p>Nasal bones</p> <p>Palatine bones</p> <p>Sphenoid bone</p>
Clinical relation	<p>Sinusitis</p>

# VASCULATURE

- The nose has a very **rich** vascular supply – this allows it to effectively change humidity and temperature of inspired air. The nose receives blood from both the internal and external **carotid** arteries:
- **Internal carotid branches:**
- Anterior ethmoidal artery
- Posterior ethmoidal artery
- The ethmoidal arteries are branch of the **ophthalmic** artery. They descend into the nasal cavity through the cribriform plate

# VASCULATURE CONTD

## External carotid branches:

- Sphenopalatine artery
- Greater palatine artery
- Superior labial artery
- Lateral nasal arteries
- In addition to the rich blood supply, these arteries form **anastomoses** with each other. This is particularly prevalent in the anterior portion of the nose .
- The **veins** of the nose tend to follow the arteries. They drain into the pterygoid plexus, facial vein or cavernous sinus.
- In some individuals, a few nasal veins join with the **sagittal sinus** (a dural venous sinus). This represents a potential pathway by which infection can spread from the nose into the **cranial cavity**.

# ARTERIAL SUPPLY -

## LATERAL WALL

The antero-superior

- Anterior ethmoidal artery assisted by the posterior ethmoidal and facial arteries.

The antero-inferior

- Branches from the facial and greater palatine arteries.

The postero-superior

- Sphenopalatine artery.

The postero-inferior quadrant

- Branches from the greater palatine artery, which pierce the perpendicular plate of the palatine bone

3/23/2018 lateral wall of nose

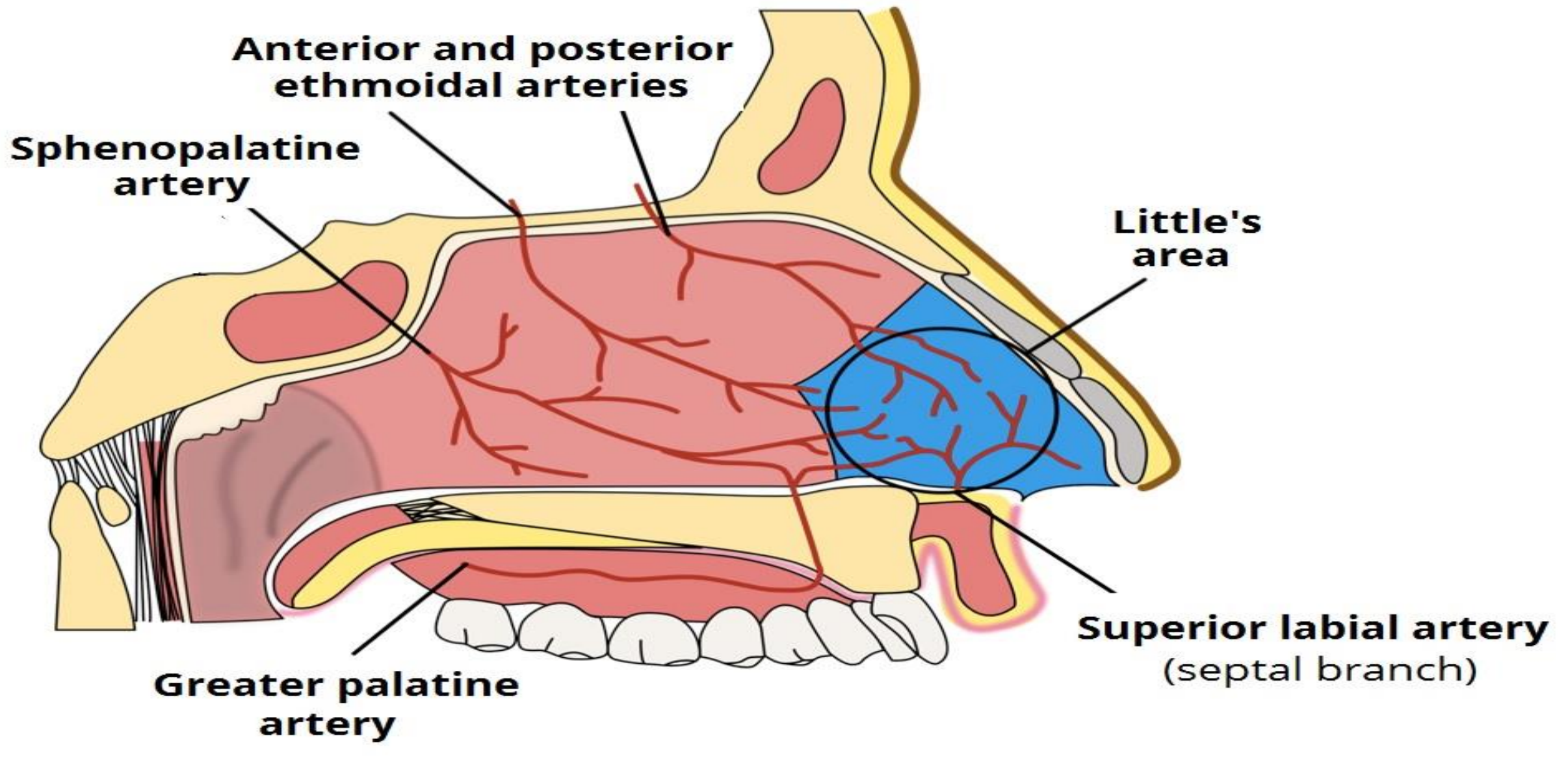
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# VENOUS DRAINAGE-

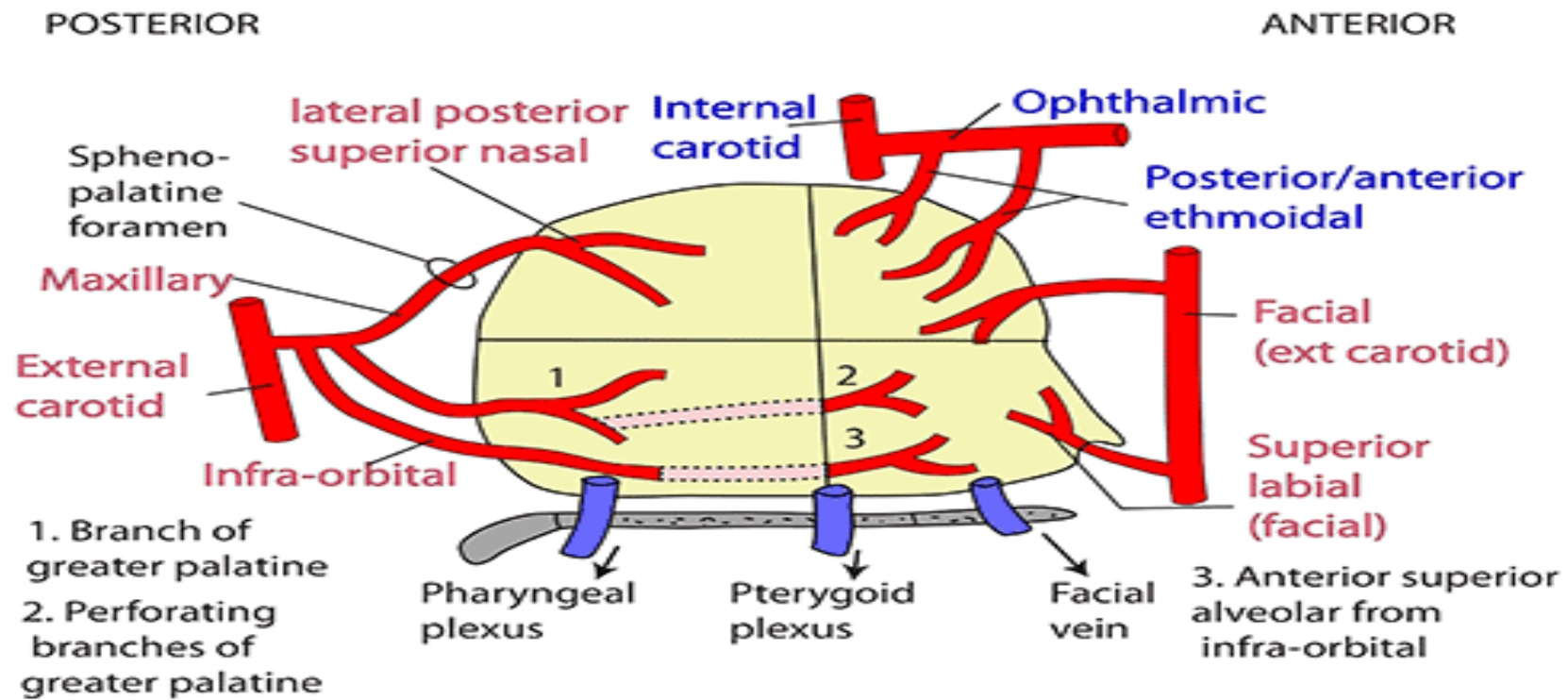
## LATERALWALL

- The veins form a plexus which drains anteriorly into the facial vein.
- Posteriorly into the pharyngeal plexus of veins.
- From middle part to the pterygoid plexus of veins.



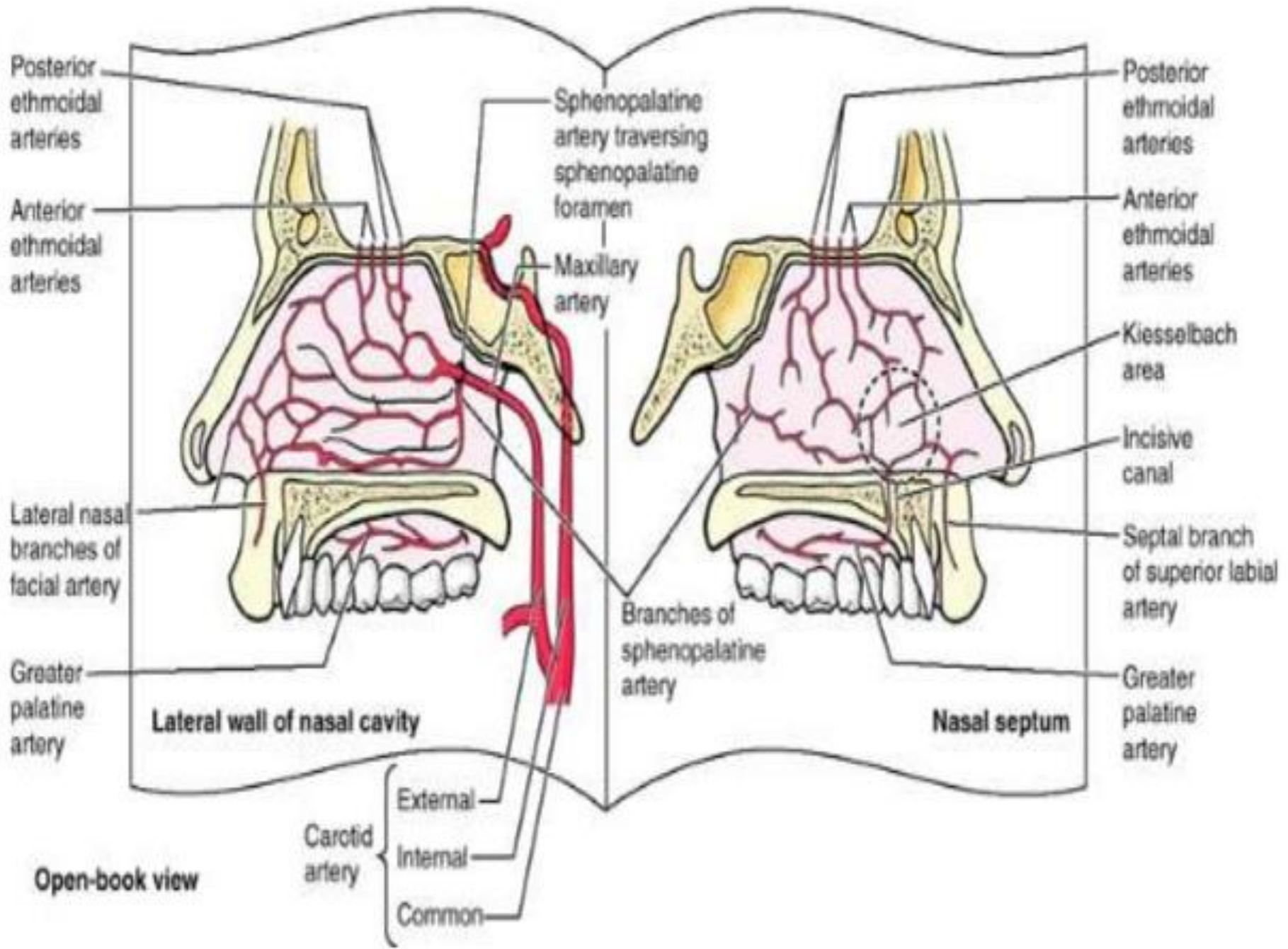
**LITTLE'S AREA AND THE ARTERIAL SUPPLY TO THE NOSE.**

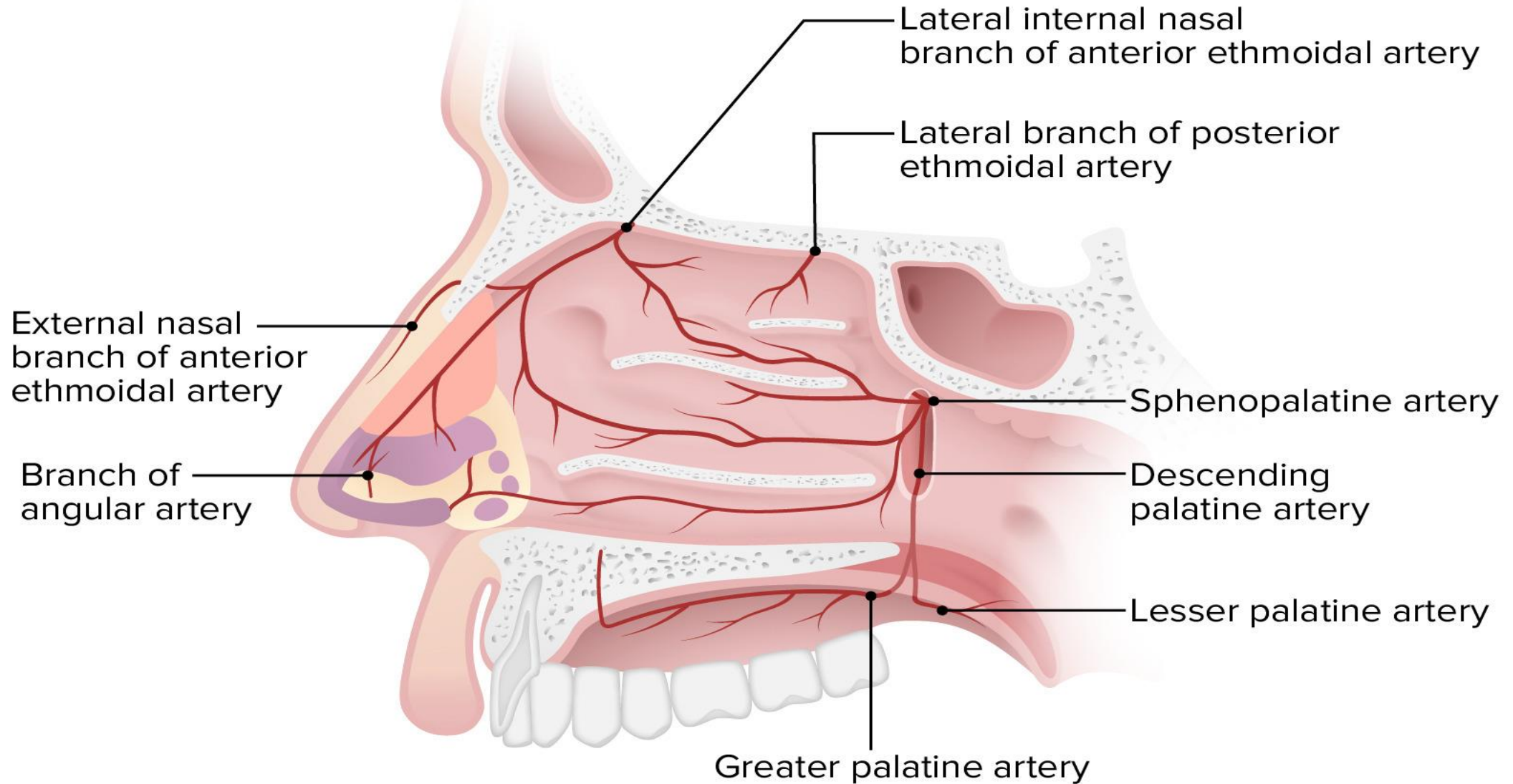
## BLOOD SUPPLY OF LATERAL WALL OF NOSE



1. Branch of greater palatine
2. Perforating branches of greater palatine
3. Anterior superior alveolar from infra-orbital

Note anastomoses between **internal & external carotid** arteries on both medial & lateral walls of the nasal cavity



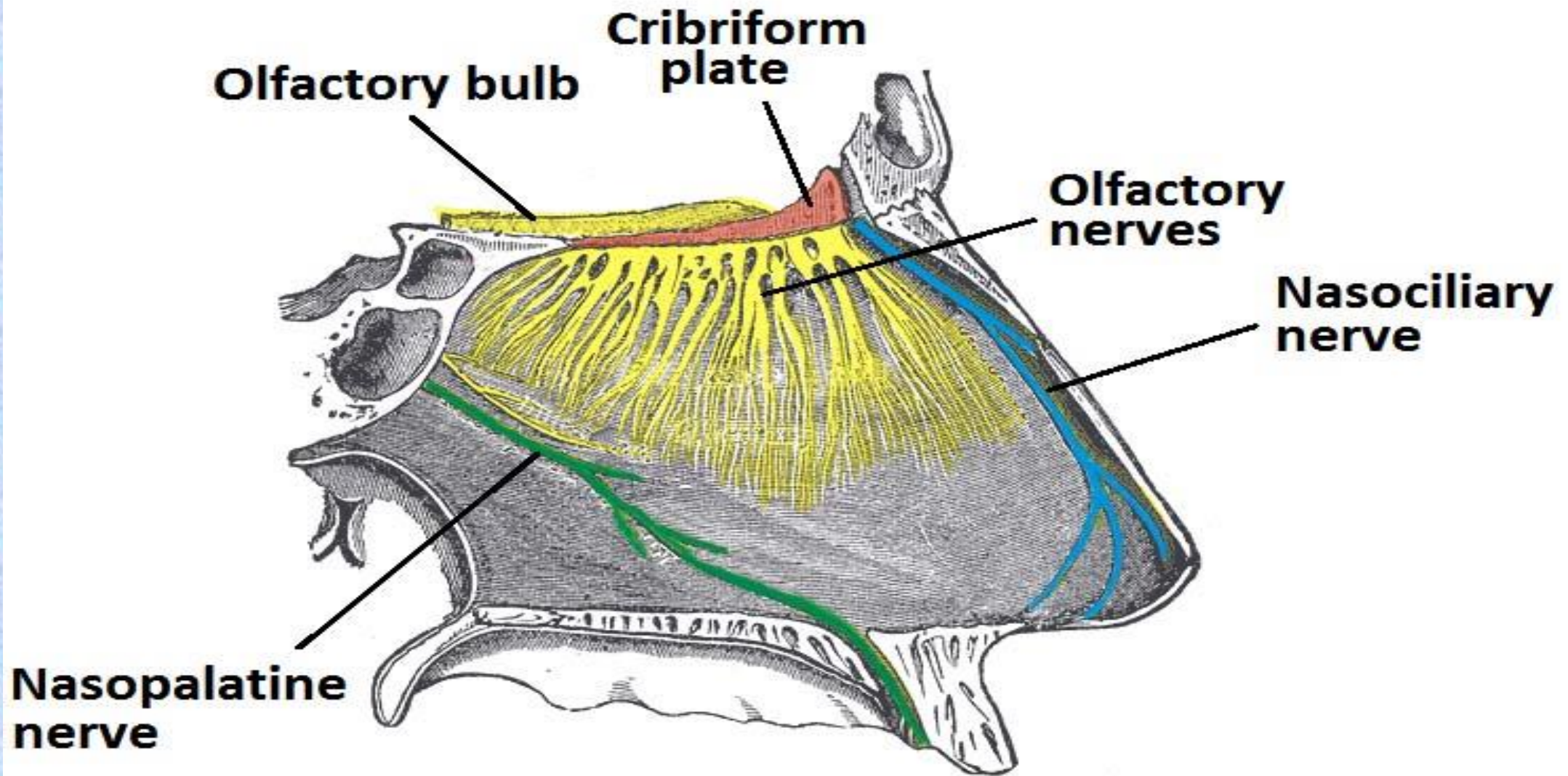


# Nerve Supply of the Nasal Cavity

- The olfactory nerves from the olfactory mucous membrane ascend through the cribriform plate of the ethmoid bone to the olfactory bulbs .
- The nerves of ordinary sensation are branches of the ophthalmic division (V1) and the maxillary division (V2) of the trigeminal nerve.

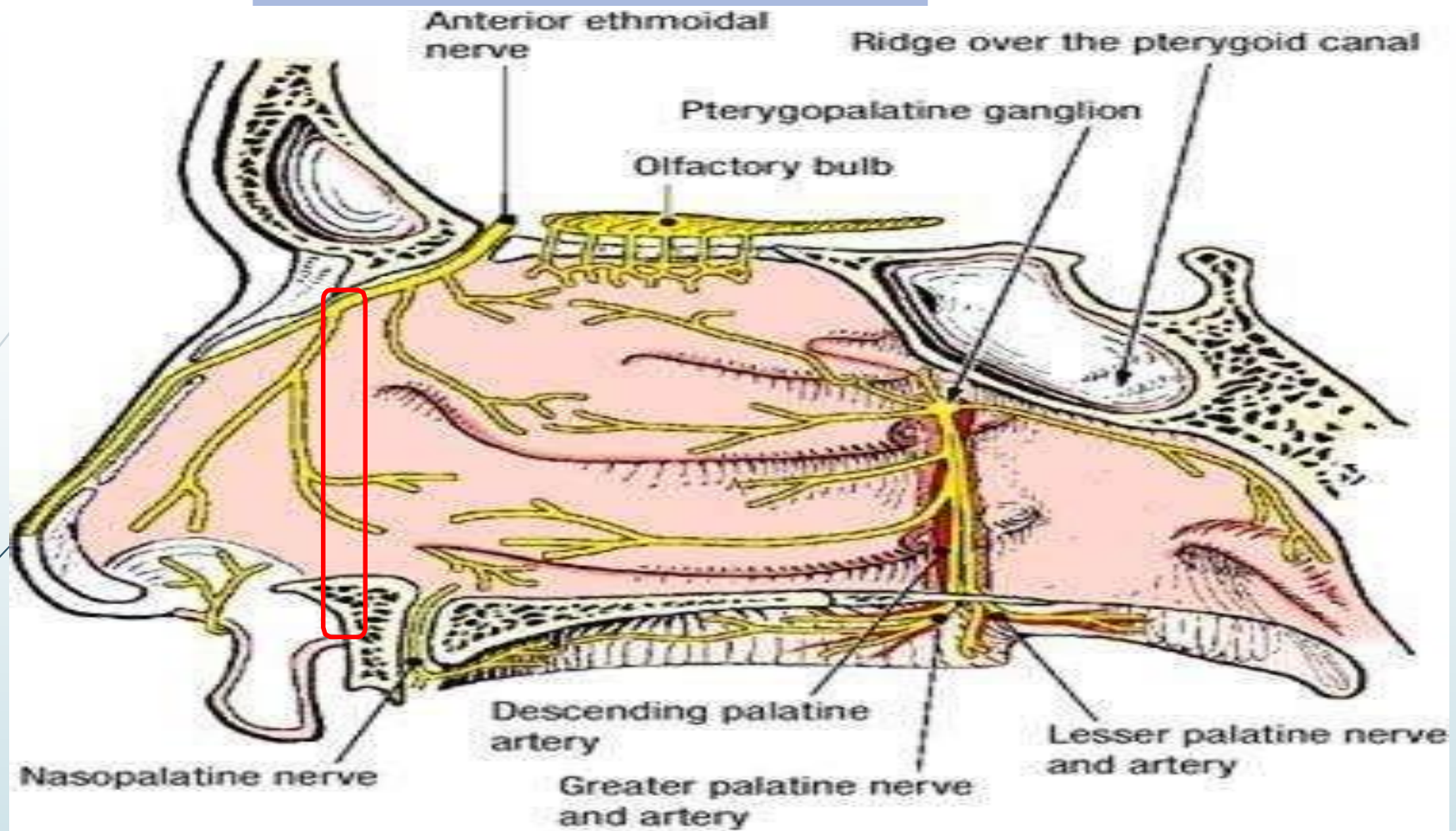
# INNERVATION

- The innervation of the nose can be functionally divided into **special** and **general** innervation.
- Special sensory innervation refers to the ability of the nose to smell. This is carried out by the **olfactory nerves**. The olfactory bulb, part of the brain, lies on the superior surface of the cribriform plate, above the nasal cavity. Branches of the olfactory nerve run through the cribriform plate to provide special sensory innervation to the nose.
- General sensory innervation to the septum and lateral walls is delivered by the **nasopalatine nerve** (branch of maxillary nerve) and the **nasociliary nerve** (branch of the ophthalmic nerve). Innervation to the external skin of the nose is supplied by the **trigeminal nerve**.



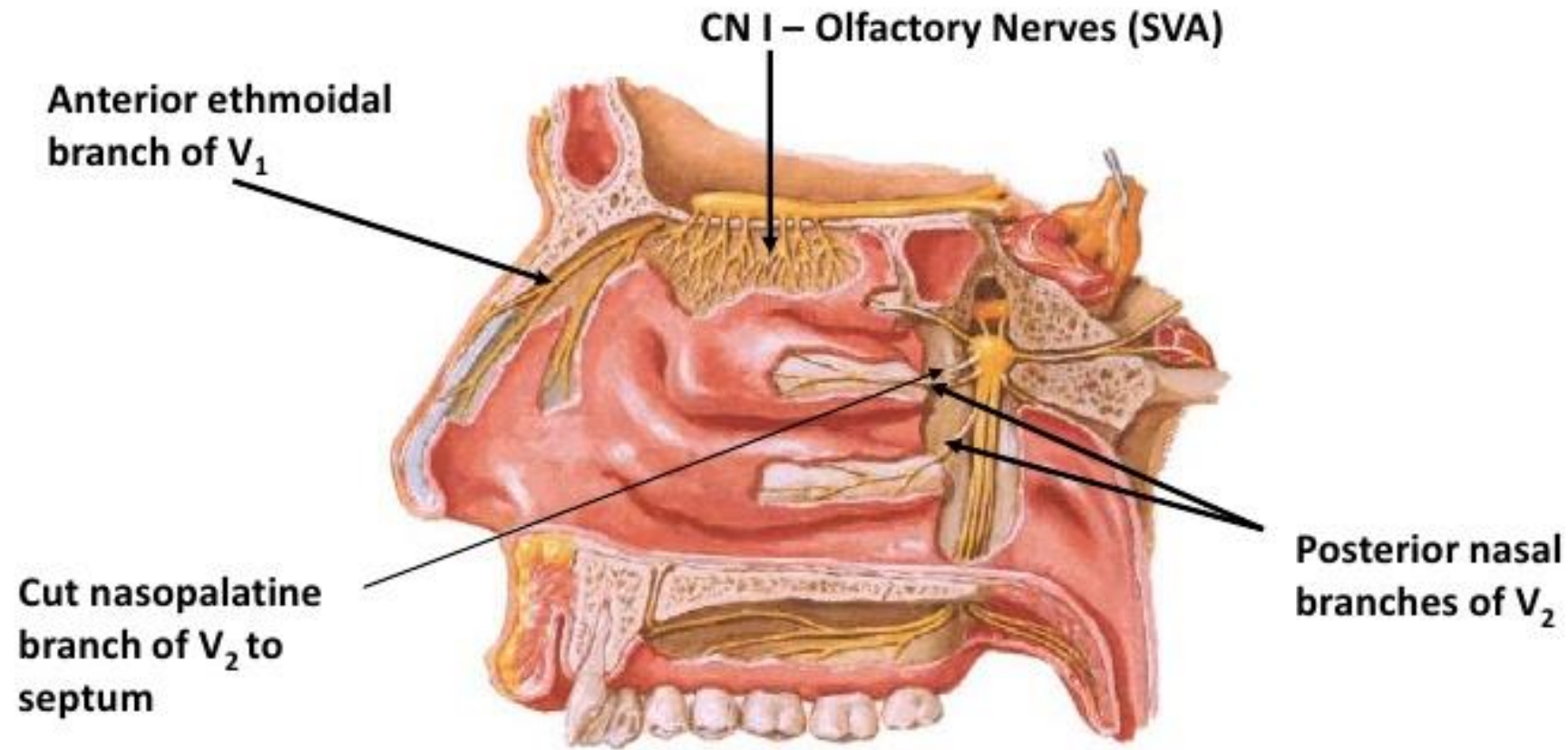
Lateral view of the nasal septum. Note the close relationship of the olfactory bulb and cribriform plate





**Figure 7.86. Nerve and arterial supply to the mucosa of the lateral wall of the nasal cavity. Pterygopalatine ganglion.**

# Nerve Supply of the Nasal Cavity

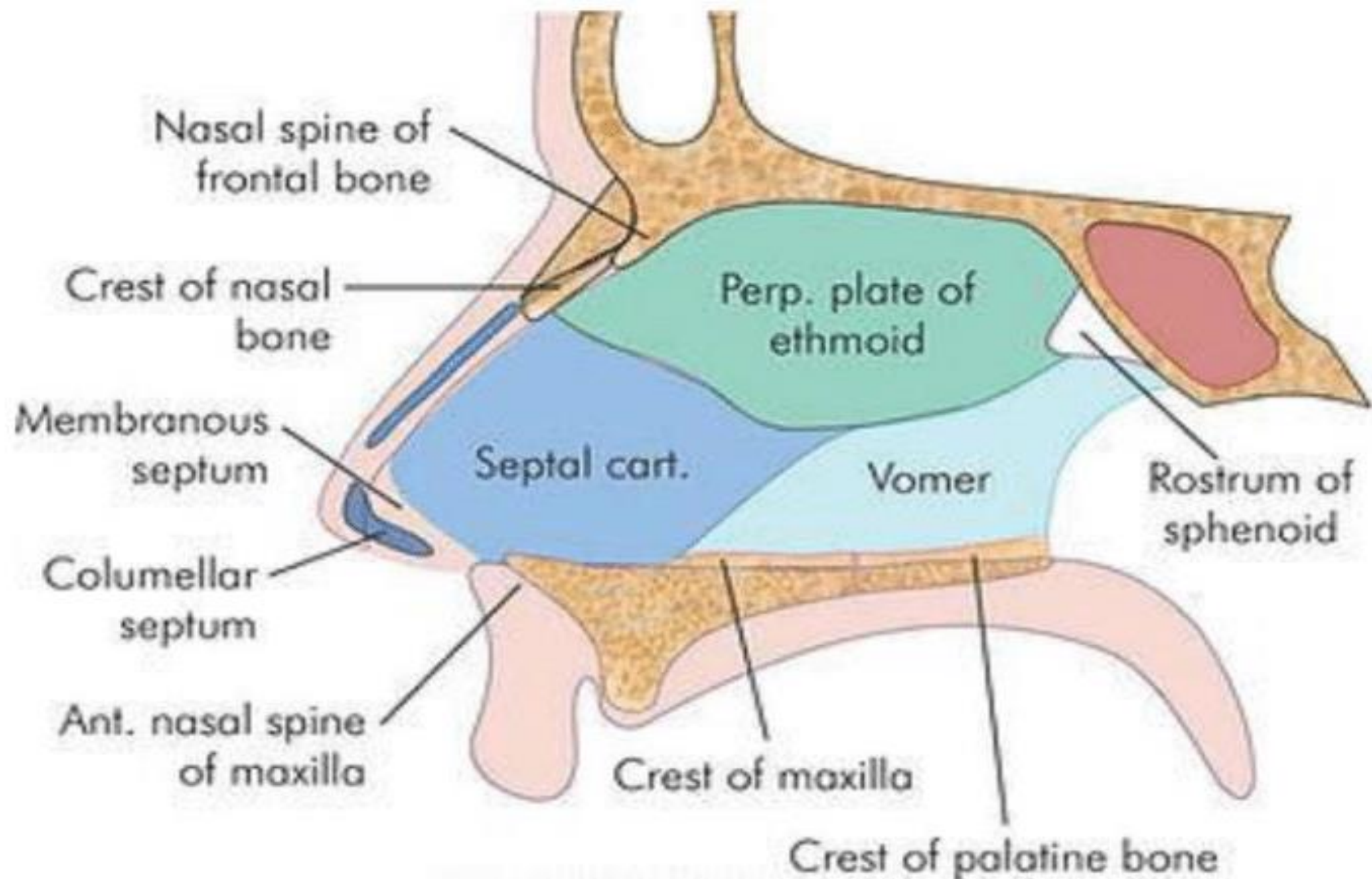


# Lymph Drainage of the Nasal Cavity

- 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***.

# Medial wall of the nasal cavity

- The medial wall of the nasal cavity comprises the nasal septum, the septal cartilage and various bones of the skull.
- **Contents**
  1. Nasal skeleton
    1. Ethmoid bone
    2. Maxillary bone
    3. Vomer
    4. Palatine bone



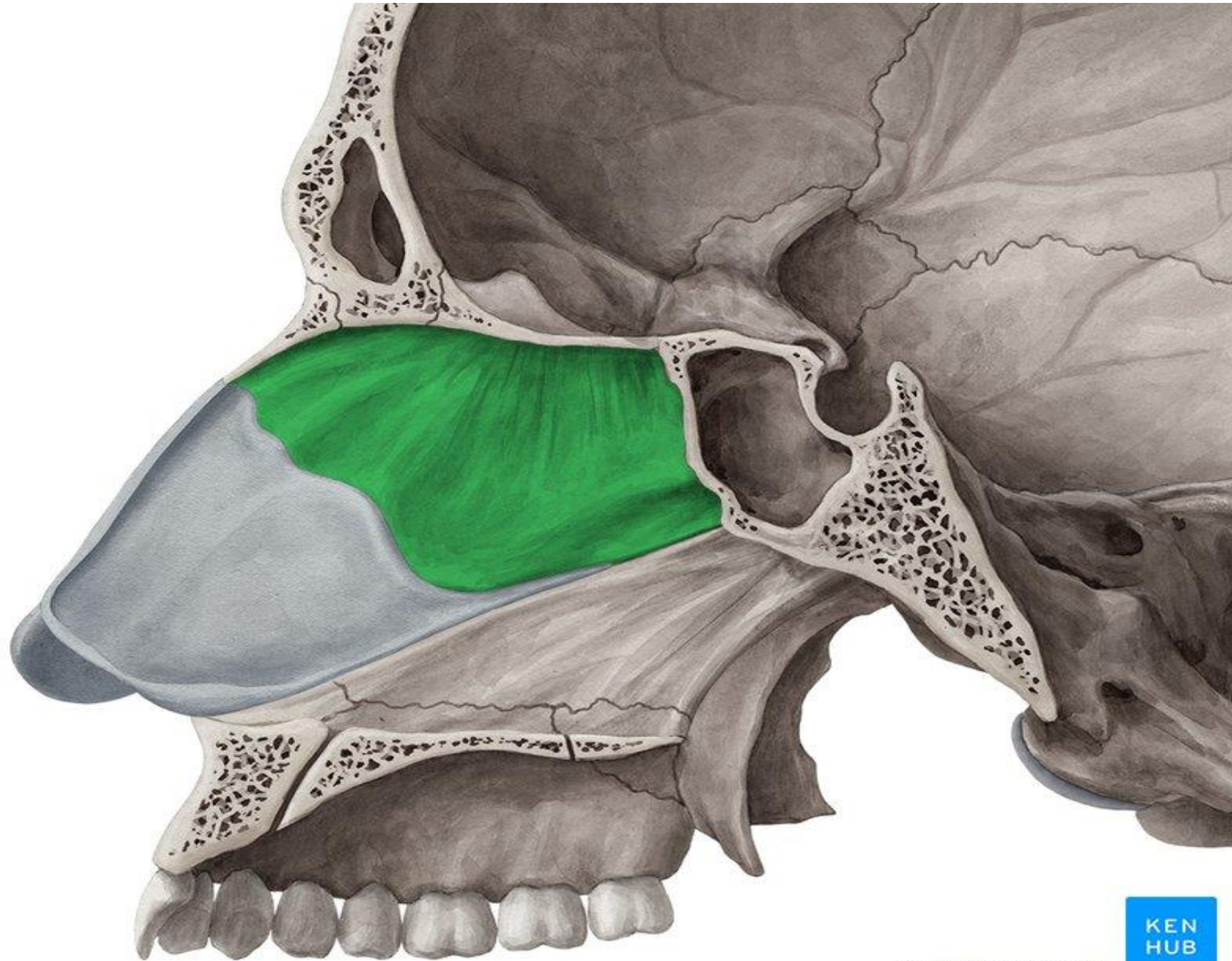
# Nasal skeleton

The nasal septum is a structure consisting of both bony and cartilaginous components. The bony components are the:

- perpendicular plate of the ethmoid superoinferiorly
- the vomer posteroinferiorly
- the crests of the maxillary bone anteroinferiorly
- the crest of the palatine bone inferior to the vomer and associated structures

# ETHAMOID BONE

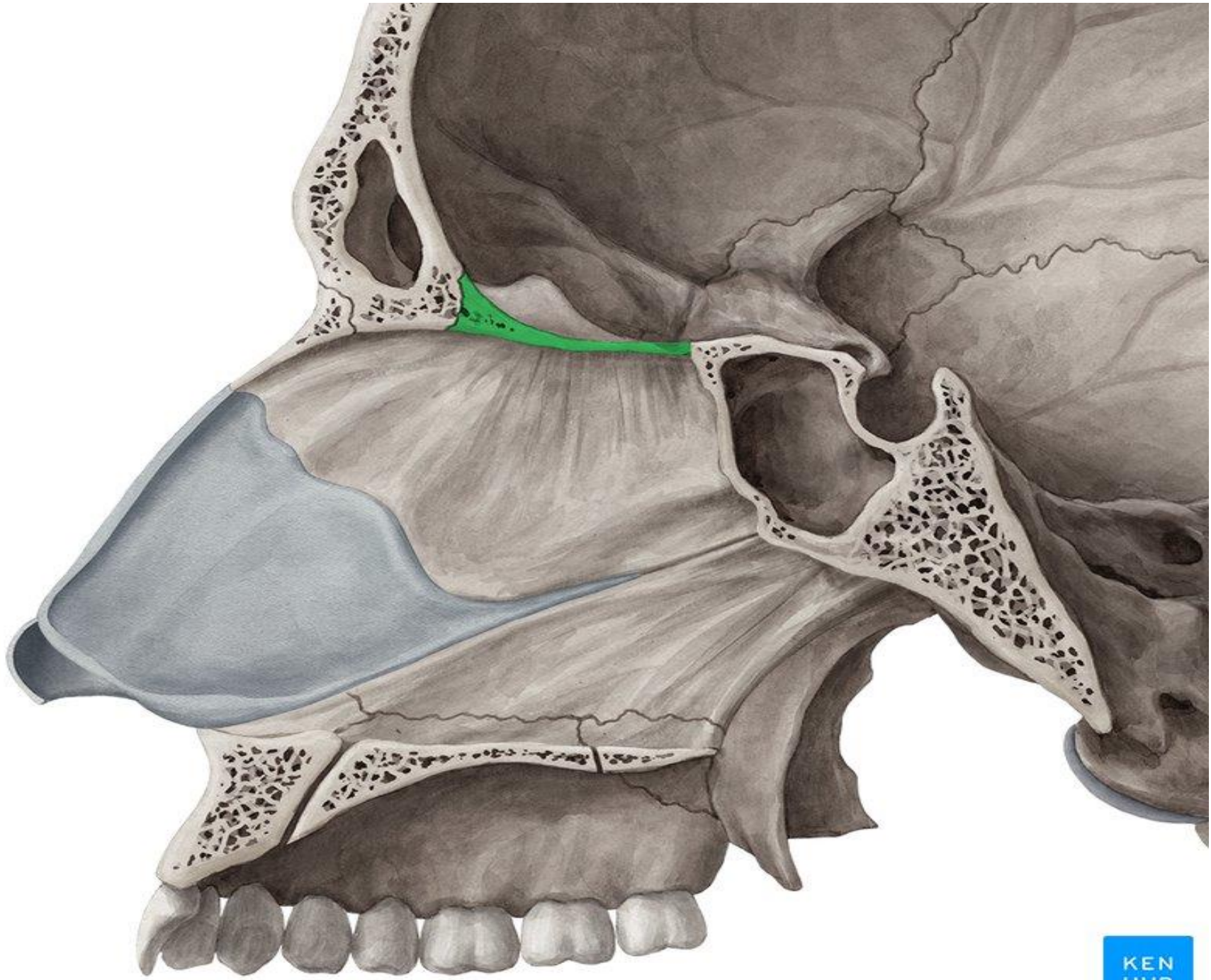
- The medial wall of the [nasal cavity](#) is formed by both bony elements and cartilage.
- Posteriorly the perpendicular plate of the [ethmoid bone](#) forms the superoposterior part of the bony nasal septum and articulates superiorly with the cribriform plate. The posterior border articulates superiorly with the sphenoidal crest and with the vomer by its inferior border.



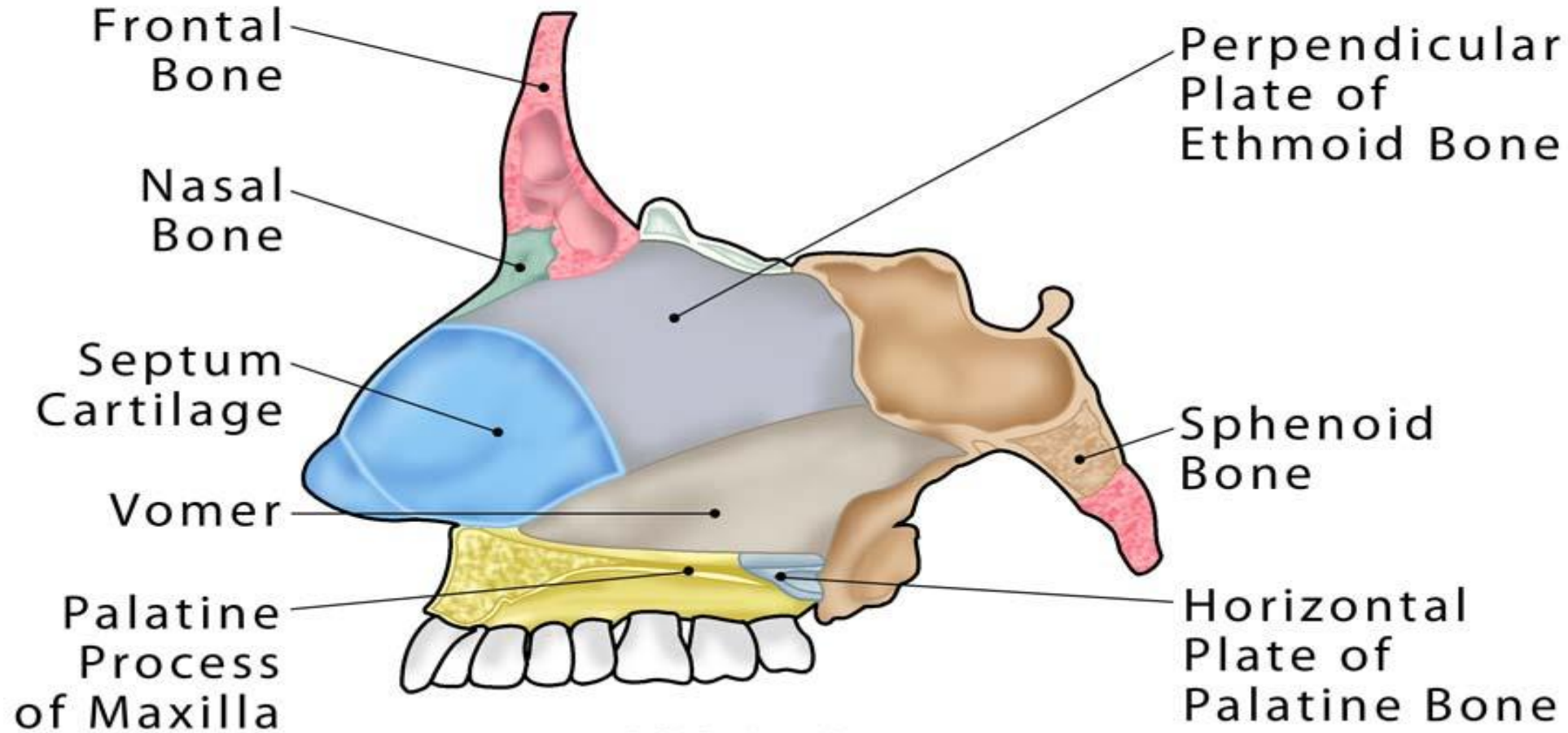


# CRIBRIFORM PLATE OF ETHAMOID BONE....

- The cribriform plate is found in the midline on the anterior floor of the anterior cranial fossa. It can be described as a thin bony plate of perforated bone through which the fibres of the [olfactory nerve](#) ascend and reach the entorhinal cortex. The plate is divided by the crista galae in the midline.



# Bones Forming the Walls of Nasal Cavity



# Maxilla

- Further posteriorly than the ethmoid bone,
- the crest of both the maxilla and palatine bone complete the posterior septum.
- The anterior septum is formed entirely of the quadrangular cartilage which divides the cavity in the midline.
- The nasal septum can be deviated in some and is a sign of nasal trauma or abnormal growth.

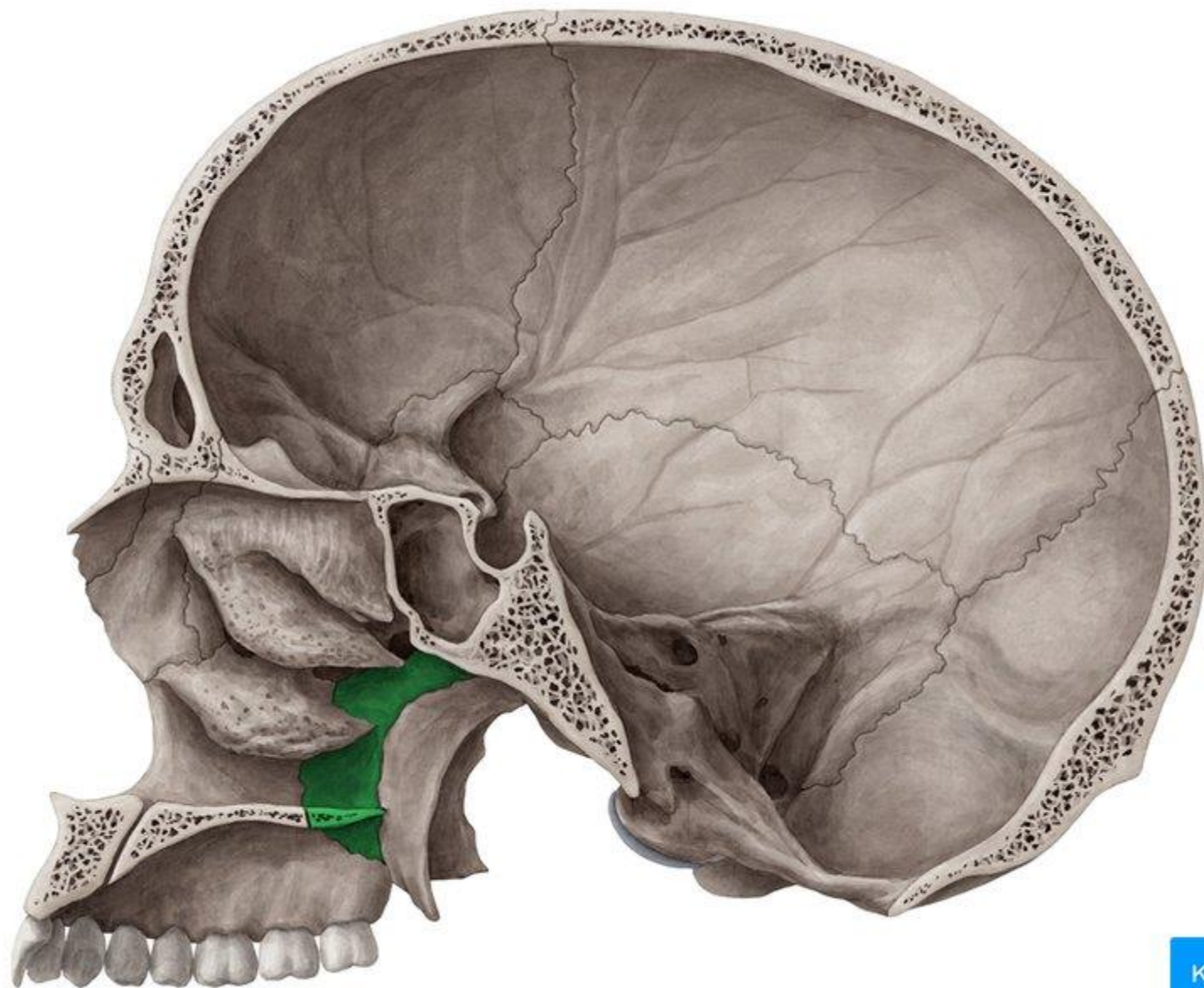
# VOMER

- The vomer is an unpaired bone of the [skull](#) forms the inferior part of the septum. It is located in the mid sagittal plane and articulates with the ethmoid, both palatine bones and both maxillary bones.



# Palatine bone

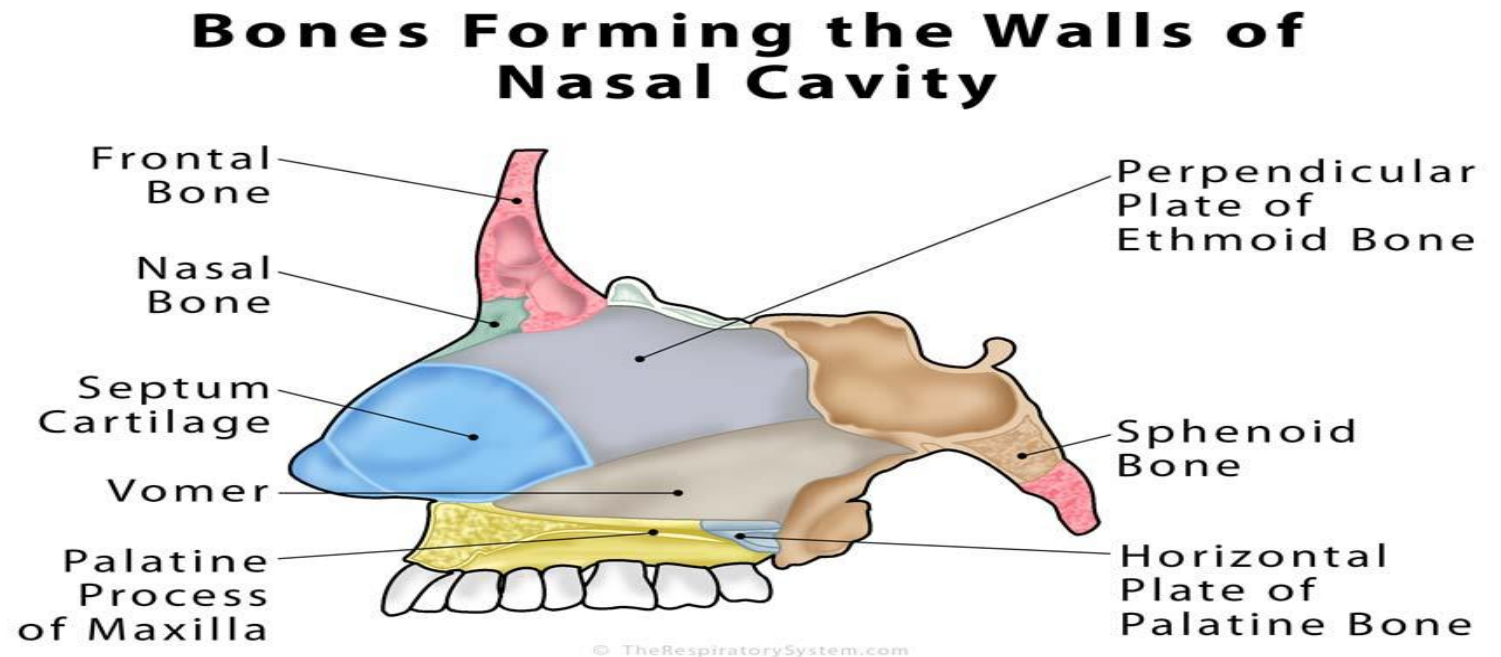
- The horizontal plate of the palatine bone is a rectangular shaped bone that projects medially and forms a right angle with the perpendicular plate of the ethmoid.
- The nasal surface of the bone forms part of the inferior meatus of the nose, while the serrated anterior maxillary surface articulates with the maxilla. Laterally the bone articulates with the perpendicular plate, and superior portion of the plate forms the posterior part of the nasal cavity.
- The inferior surface of the plate is rough and provides attachment to the oral mucosa of the [hard palate](#).



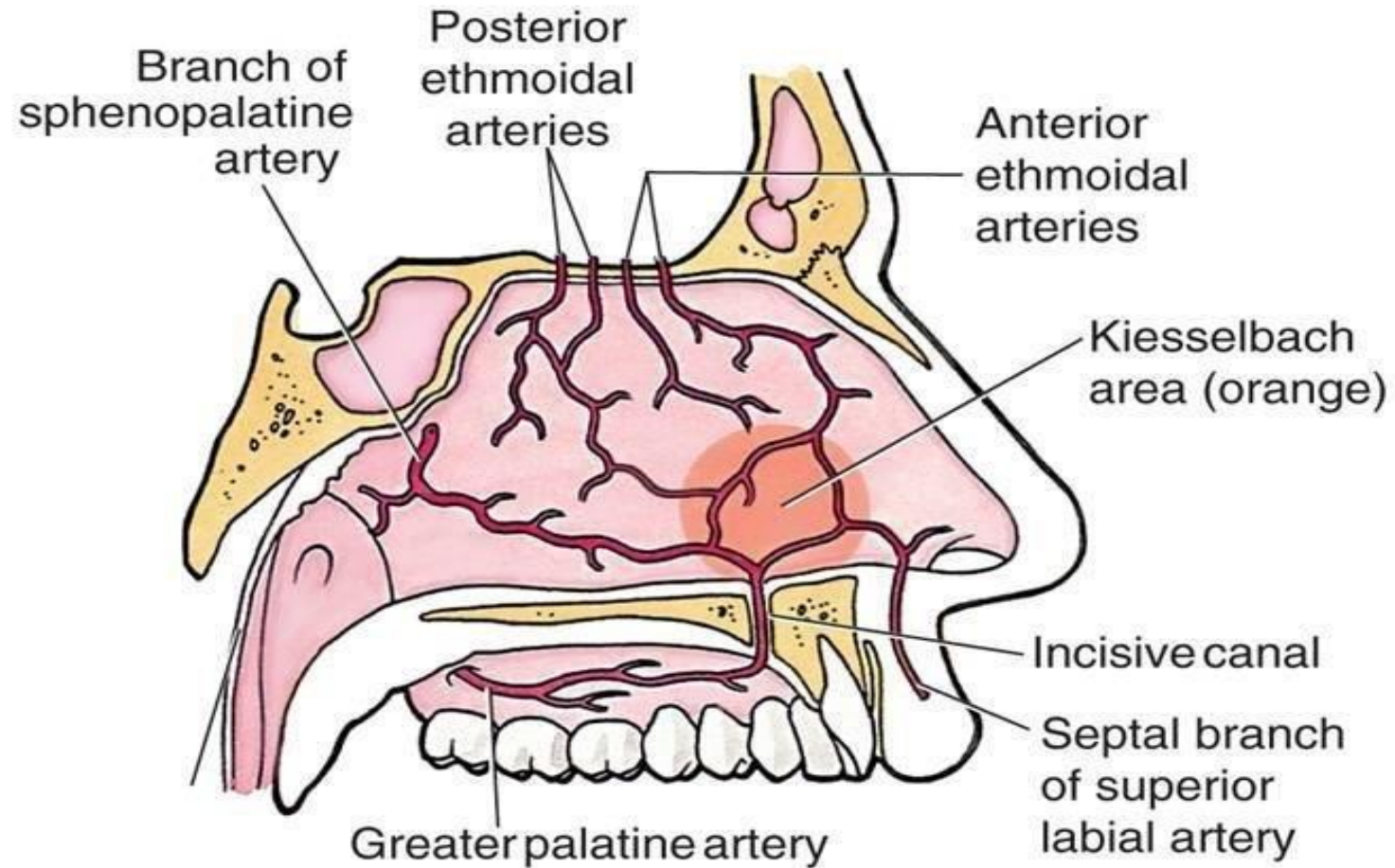


# Nasal cartilage and associated structures

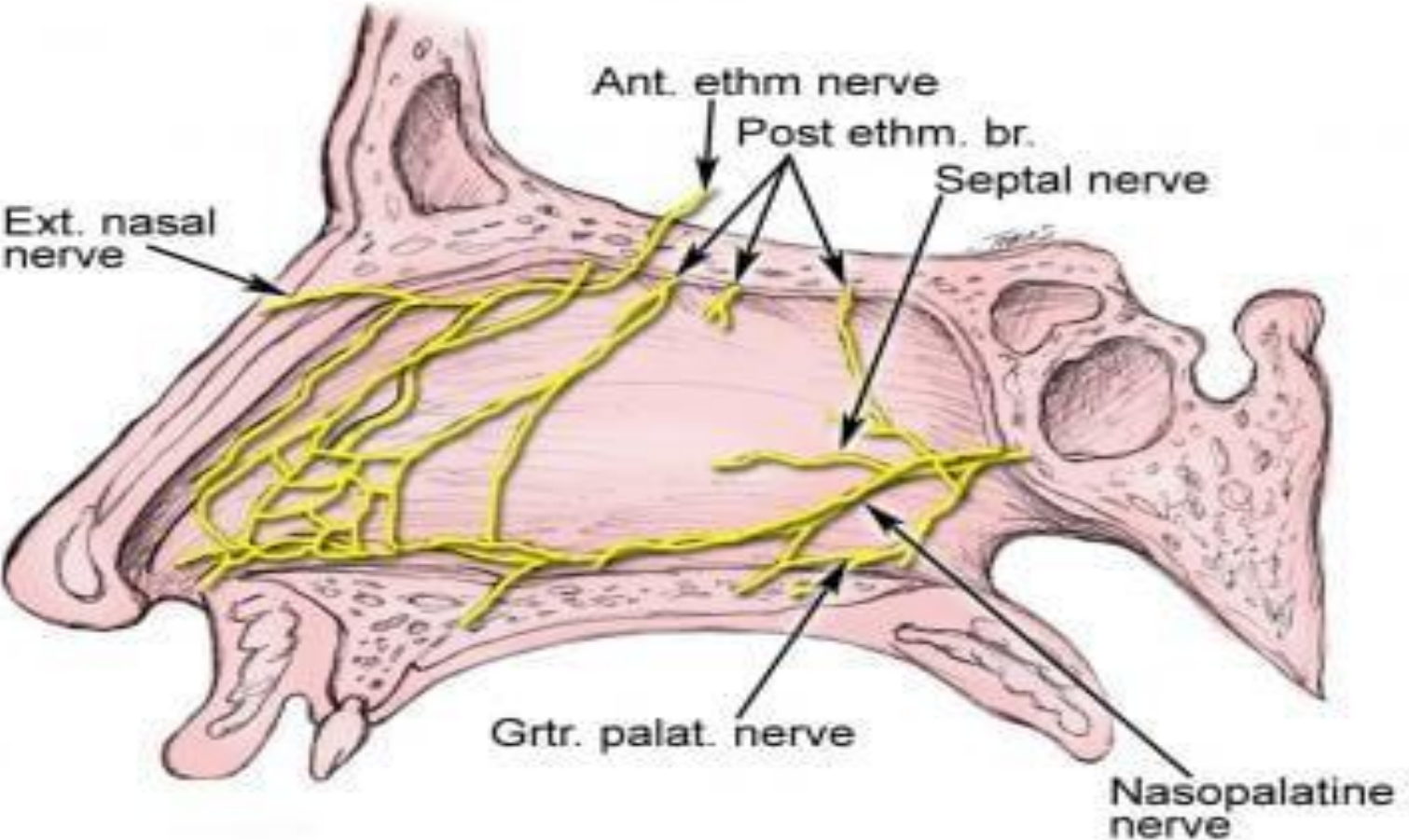
- The septal cartilage is approximately 3-4mm thick. It divides the nasal cavity into two halves.
- The cartilage is firmly adhered to the nasal bone by taut collagen fibres.



# BLOOD SUPPLY OF NASAL SEPTUM



# NERVE SUPPLY OF NASAL SEPTUM



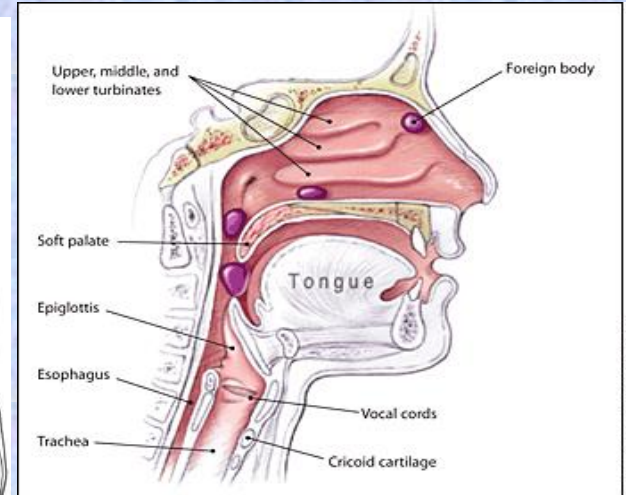
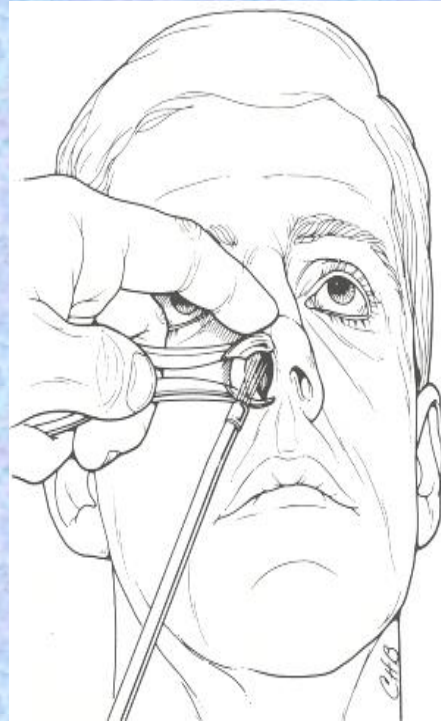
# CLINICAL RELEVANCE

## EPISTAXIS

- Epistaxis is the medical term for a **nosebleed**. Due to the rich blood supply of the nose, this is a common occurrence. It is most likely to occur in the anterior third of the nasal cavity – this area is known as the **Kiesselbach area**.
- The cause can be **local** (such as trauma), or **systemic** (such as hypertension).

# Clinical Notes

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



# CLINICAL RELEVANCE SPREAD OF INFECTION

- As the auditory tube connects the middle ear and upper respiratory tract, it is a path by which **infection can spread** from the upper respiratory tract to the ear. Infection of the auditory tube causes swelling of the mucous linings, and the tube becomes blocked. This results in **diminished hearing**

# **CLINICAL ANATOMY**

## ***Nasal Fractures***

- *Because of the prominence of the nose, fractures of the nasal bones are common facial fractures in automobile accidents and sports (unless face guards are worn)*
- *Epistaxis (nosebleed) usually occurs*
- *In severe fractures, disruption of the bones and cartilages results in displacement of the nose.*
- *When the injury results from a direct blow, the cribriform plate of the ethmoid bone may also fracture*

## ***Deviation of the Nasal Septum***

- *The nasal septum is usually deviated to one side or the other*
- *This could be the result of a birth injury, but more often the deviation results during adolescence and adulthood from trauma (e.g., during a fist fight)*
- *Sometimes the deviation is so severe that the nasal septum is in contact with the lateral wall of the nasal cavity and often obstructs breathing or exacerbates snoring*
- *The deviation can be corrected surgically*

# CLINICAL RELEVANCE

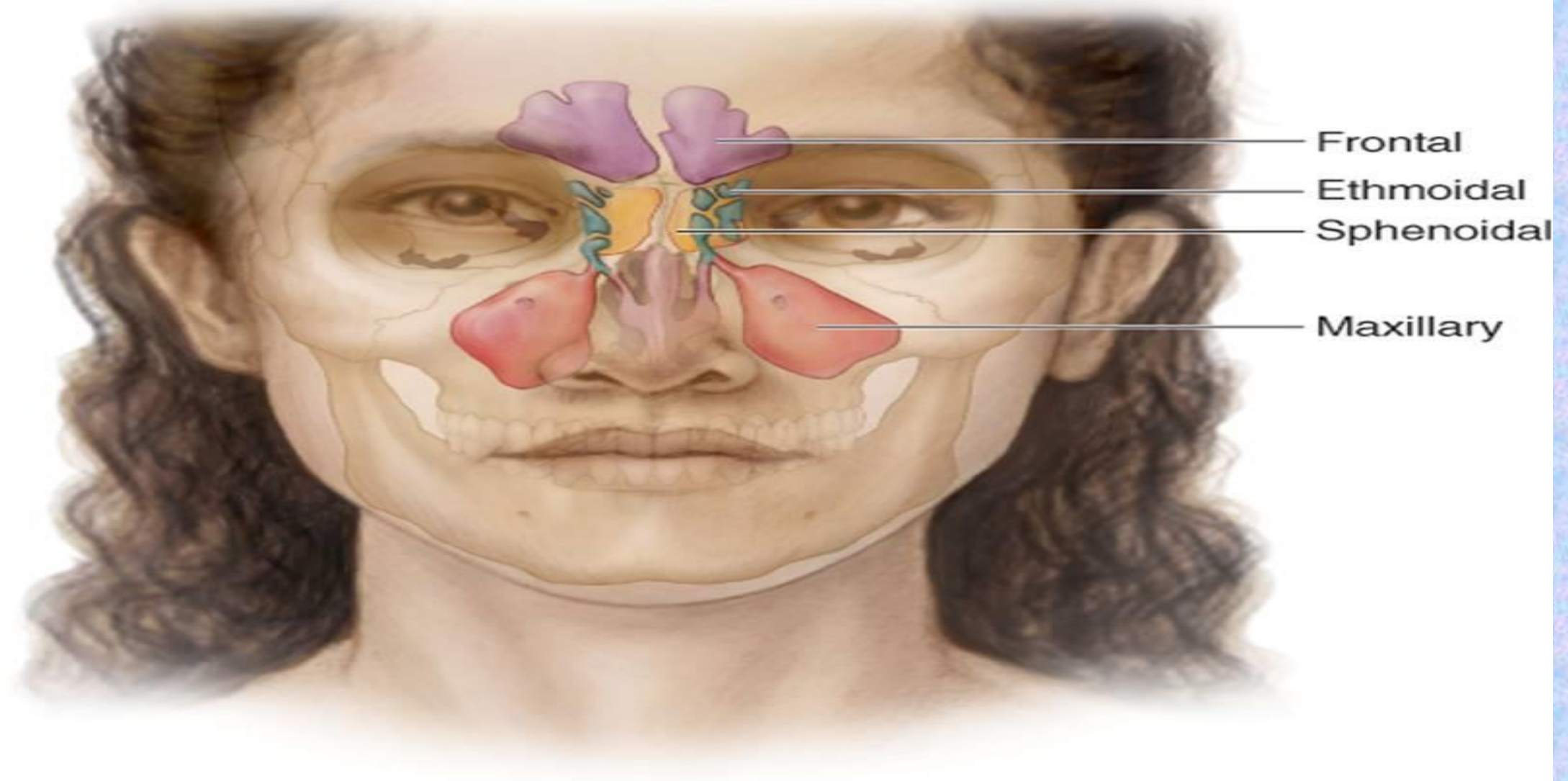
## SINUSITIS

- As the paranasal sinuses are continuous with the nasal cavity, an upper respiratory tract **infection** can **spread** to the sinuses. Infection of the sinuses causes inflammation (particularly pain and swelling) of the mucosa, and is known as sinusitis. If more than one sinus is affected, it is called **pansinusitis**.
- The **maxillary nerve** supplies both the maxillary sinus and maxillary teeth, and so inflammation of that sinus can present with **toothache**.



# The Paranasal Sinuses

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A close-up photograph of a young boy with dark hair, wearing a blue sweater, crying and holding a white tissue to his nose. The background is blurred, showing green and brown tones. The text "Thank you" is overlaid in green, bold, sans-serif font across the center of the image.

**Thank you**