

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

# PARANASAL SINUSES

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*Roll No. 83*

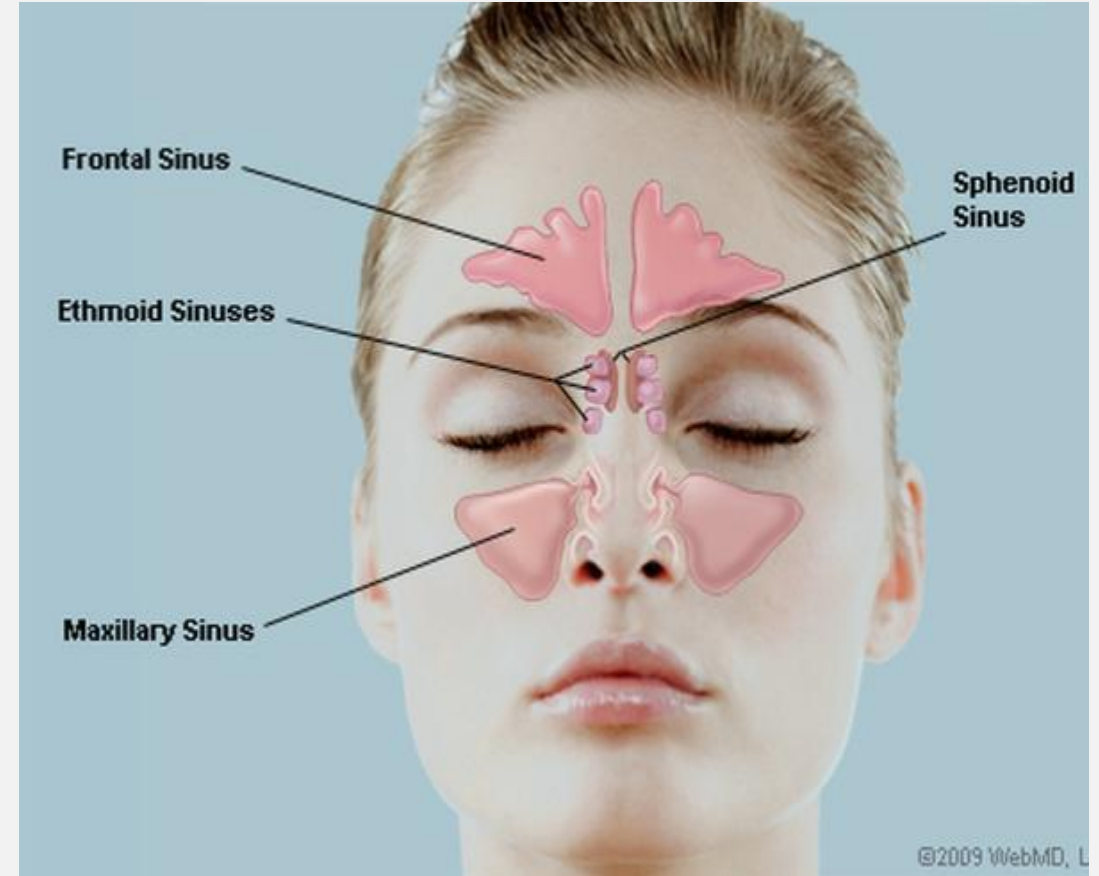
# PARANASAL SINUSES

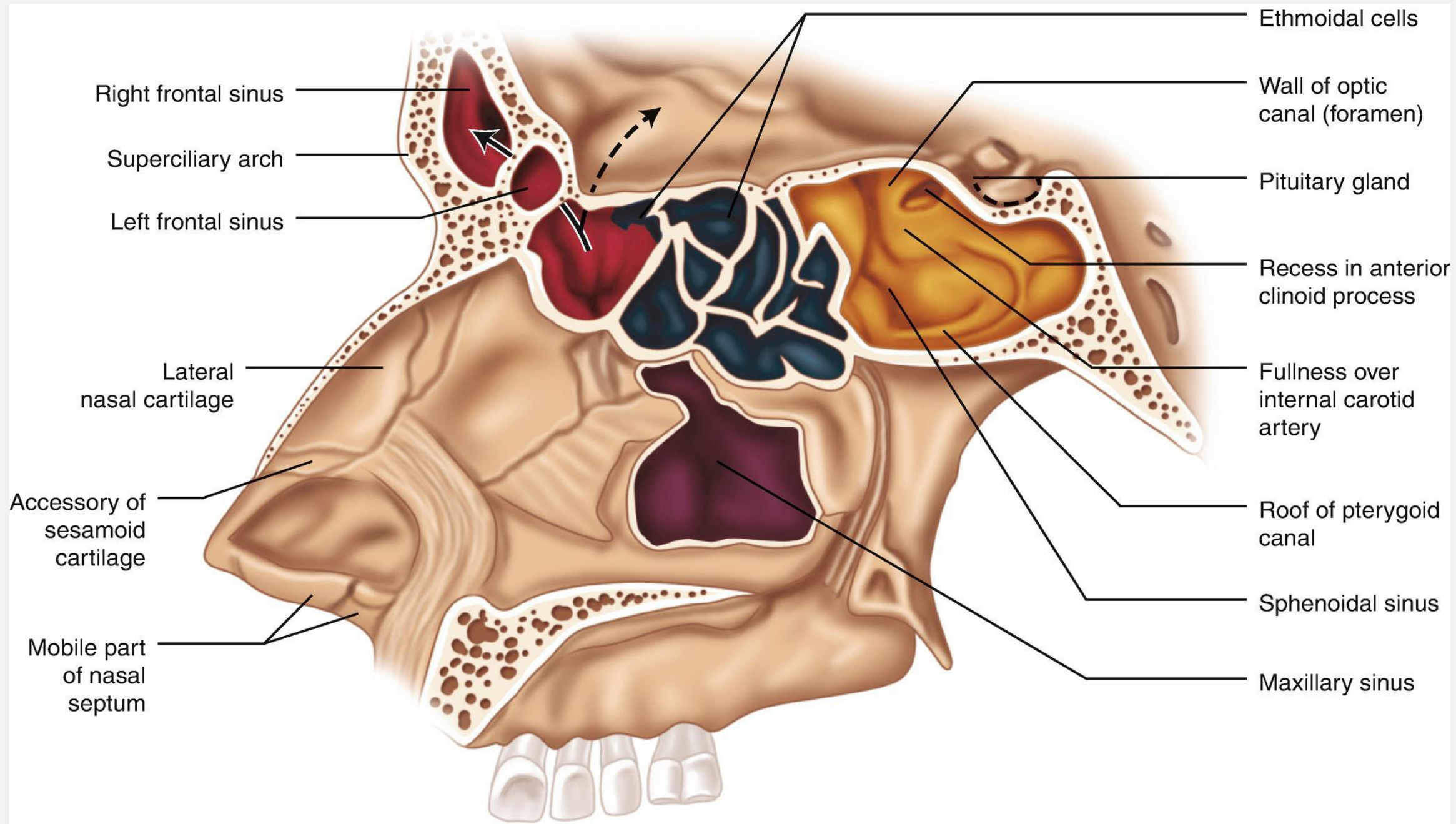
## INTRODUCTION

- *Air filled spaces within the bones surrounding the nasal cavity.*
- *They are **Frontal, Maxillary, Sphenoidal and Ethmoidal sinuses.***
- *Not present at birth except for **Maxillary and Sphenoid sinuses** which are present in rudimentary form.*
- *Develop at the time of eruption of permanent teeth and fully mature till puberty.*
- *Lined by pseudostratified ciliated columnar epithelium.*

### **Functions:**

- *Warms the inhaled air, humidifies and filters it.*
- *Decreases weight of the skull*
- *It resonates sound*





Right frontal sinus

Superciliary arch

Left frontal sinus

Lateral nasal cartilage

Accessory of sesamoid cartilage

Mobile part of nasal septum

Ethmoidal cells

Wall of optic canal (foramen)

Pituitary gland

Recess in anterior clinoid process

Fullness over internal carotid artery

Roof of pterygoid canal

Sphenoidal sinus

Maxillary sinus

# FRONTAL SINUSES

## Location:

- In frontal bone deep to superciliary arch.
- Extend upward from medial end of eyebrow to medial side of roof of the orbit.

## Relation with nasal cavity:

- Open to the middle meatus of nasal cavity through frontonasal duct within the infundibulum at the anterior end of *hiatus semilunaris*.

## Blood supply:

- Supraorbital artery

## Venous drainage:

- Supraorbital and superior ophthalmic vein

## Nerve supply:

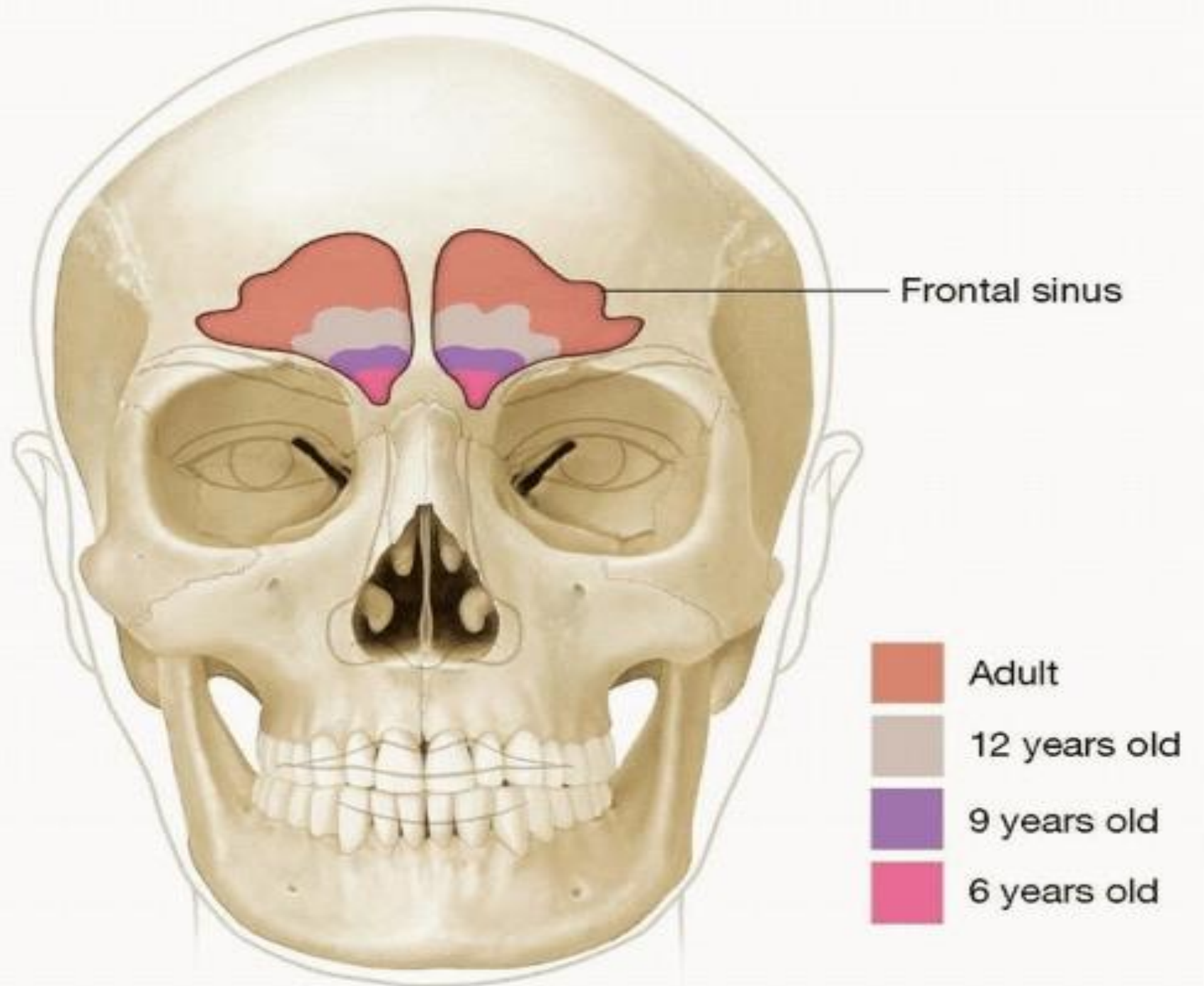
- Supraorbital nerve

## Lymph drainage:

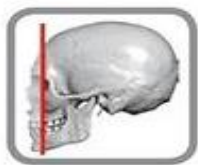
Submandibular nerve



SOMETIMES CAN  
BE SINGLE IN  
NUMBER AND  
VERY RARELY  
THEY CAN BE  
COMPLETELY  
ABSENT IN A  
NORMAL  
INDIVIDUAL



# PARANASAL SINUSES



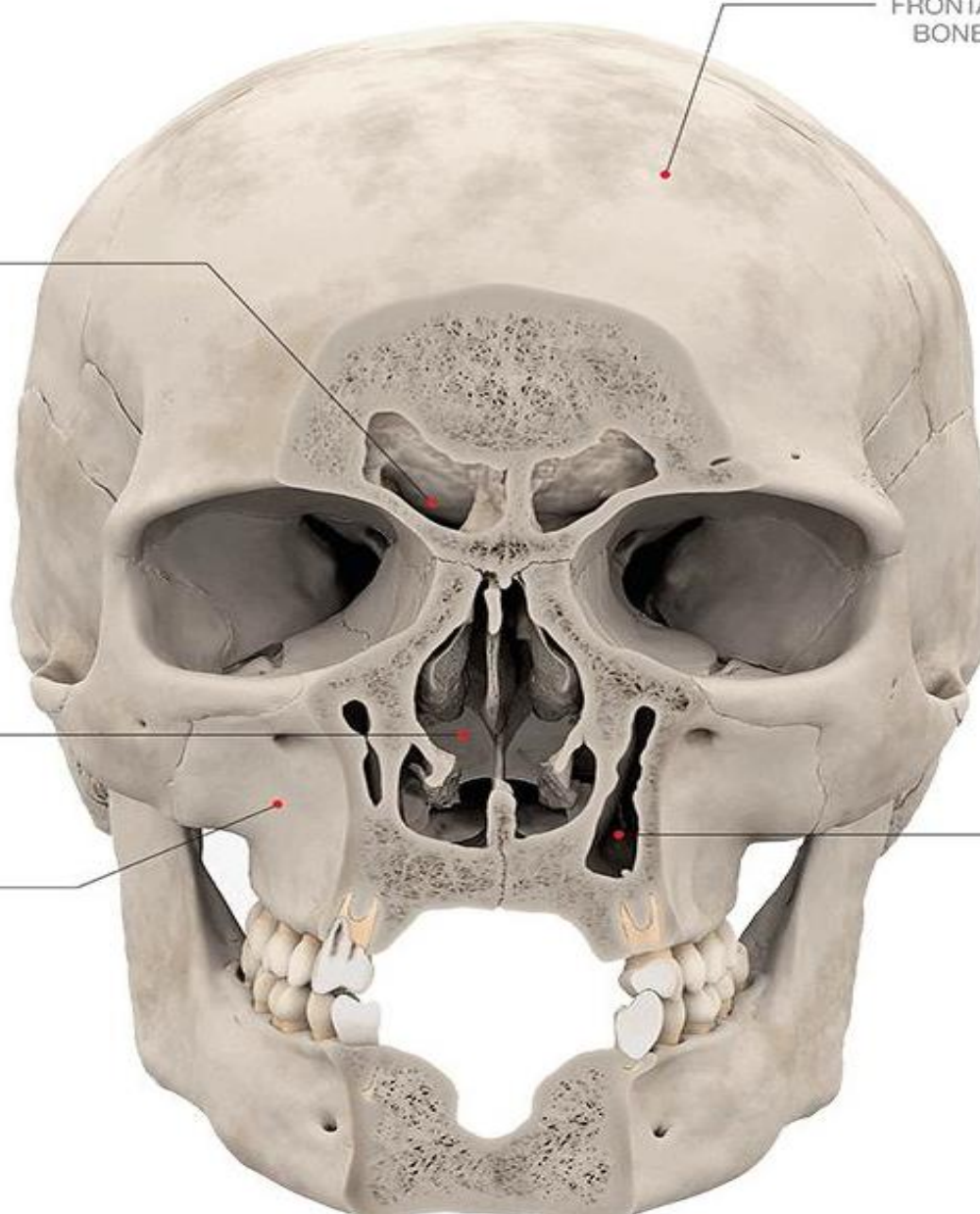
FRONTAL  
SINUS

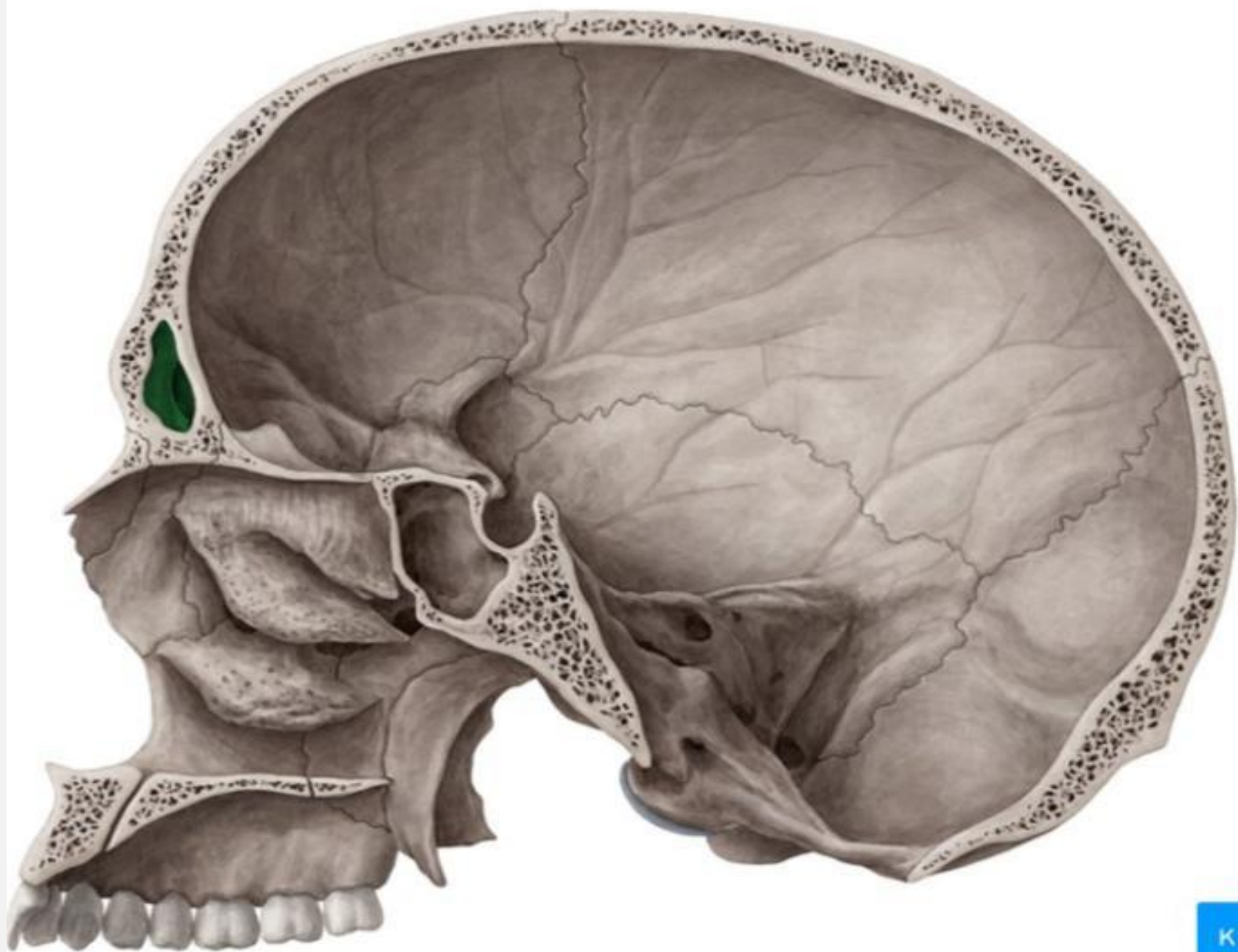
FRONTAL  
BONE

NASAL  
CAVITY

MAXILLA

MAXILLARY  
SINUS





# MAXILLARY SINUSES

- They are the largest paranasal sinuses.

## **Location:**

- Located in the body of maxilla

## **Shape and Size:**

- Pyramidal in shape with base towards nose and laterally directed apex.

## **Relation with Nasal Cavity:**

- Open into the middle meatus in the lower part of *hiatus semilunaris*.



## **Boundaries:**

- Roof: Floor of orbit.
- Floor: Alveolar process of maxilla.

## **Blood supply:**

- Facial, infraorbital and greater palatine artery.

## **Venous drainage:**

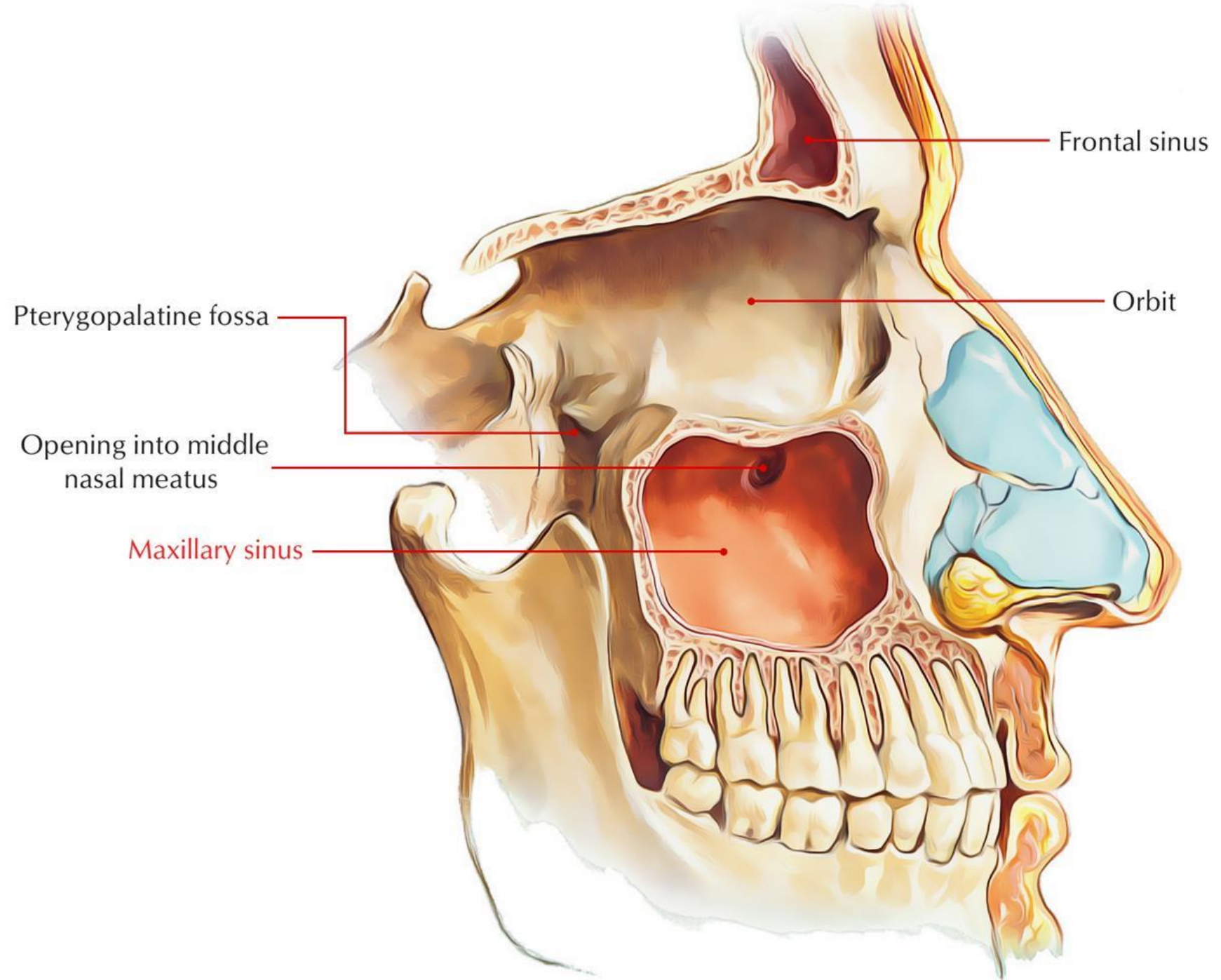
- Into vein and pterygoid plexus of veins.

## **Nerve supply:**

- Infraorbital and maxillary nerves.

## **Lymphatic drainage:**

- Submandibular lymph nodes.



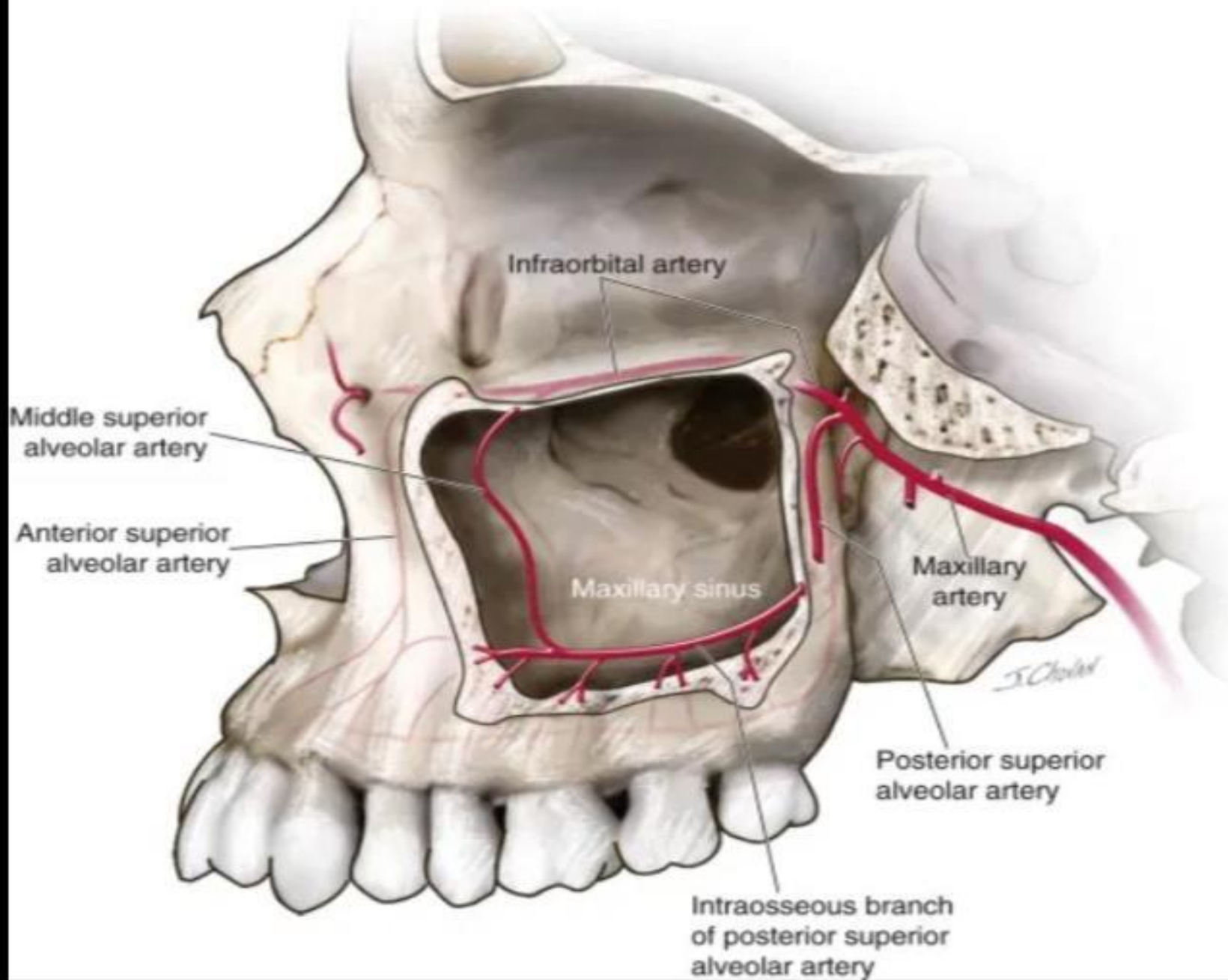
Frontal sinus

Orbit

Pterygopalatine fossa

Opening into middle nasal meatus

Maxillary sinus





# SPHENOIDAL SINUS

They are 2 in number and are unequal in size.

## **Location:**

- Located in the body of sphenoid bone

## **Connection with nasal cavity:**

- Open directly to *sphenoethmoidal recess*

## **Important relations:**

### *Superiorly:*

- Optic chiasm
- Pituitary gland

### *Laterally :*

- Internal carotid artery
- Cavernous sinus



## **Arterial Supply:**

Posterior ethmoidal artery

## **Venous drainage:**

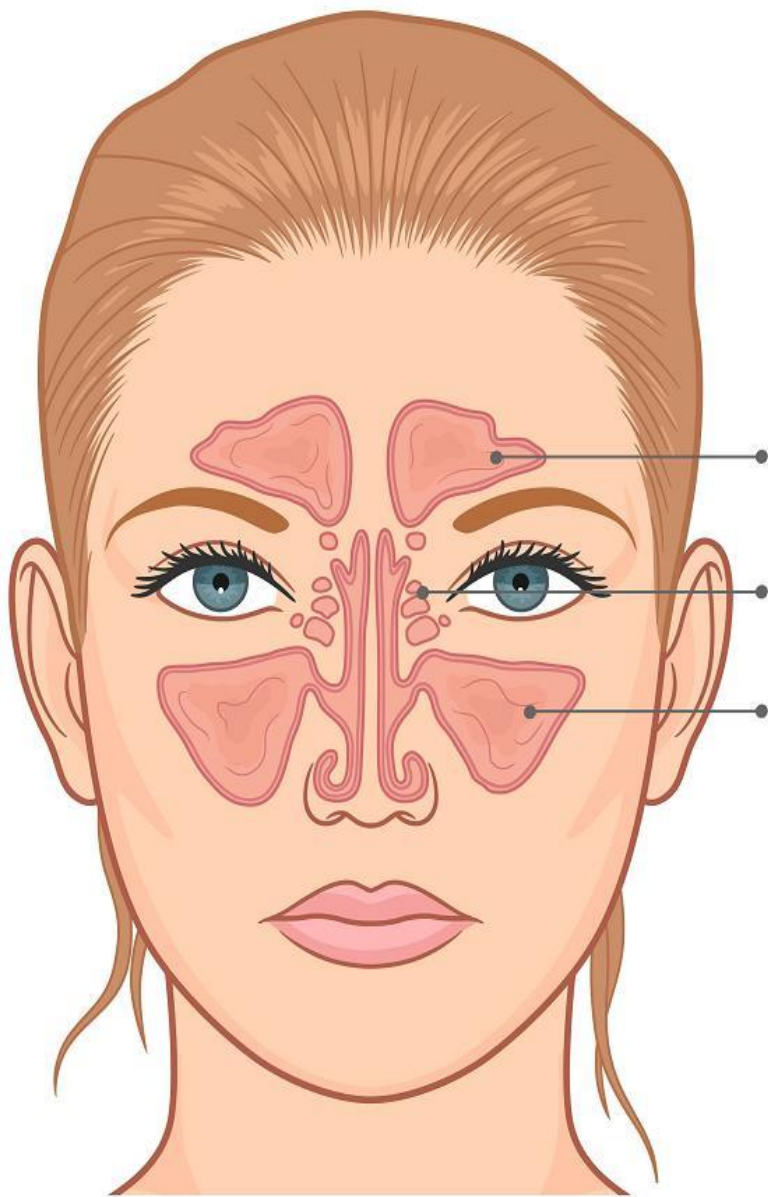
- Cavernous sinus
- pterygoid plexus

## **Lymphatic Drainage:**

Retropharyngeal nodes

## **Nerve supply:**

- Posterior ethmoidal nerve
- Orbital branch of pterygopalatine ganglion

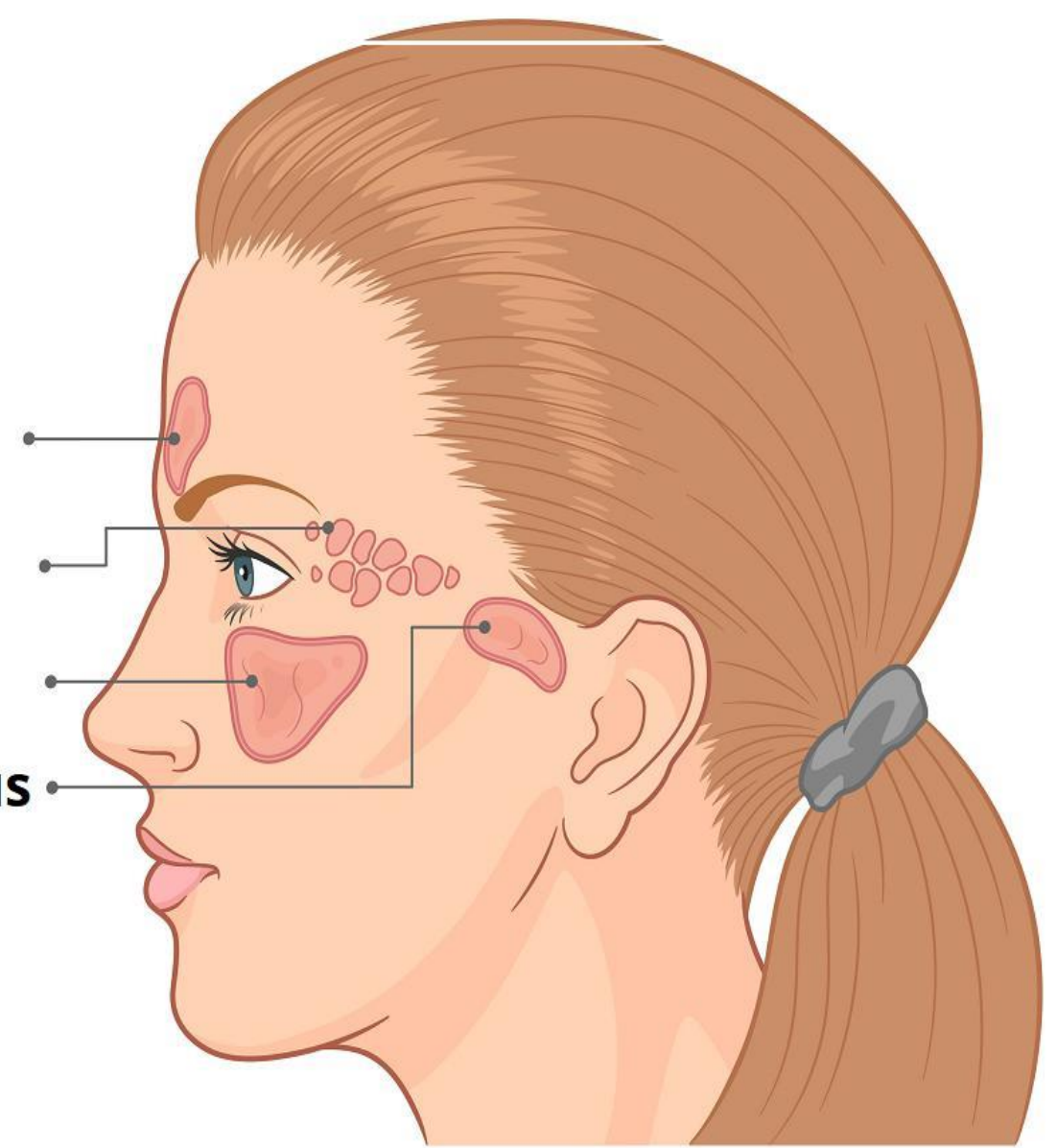


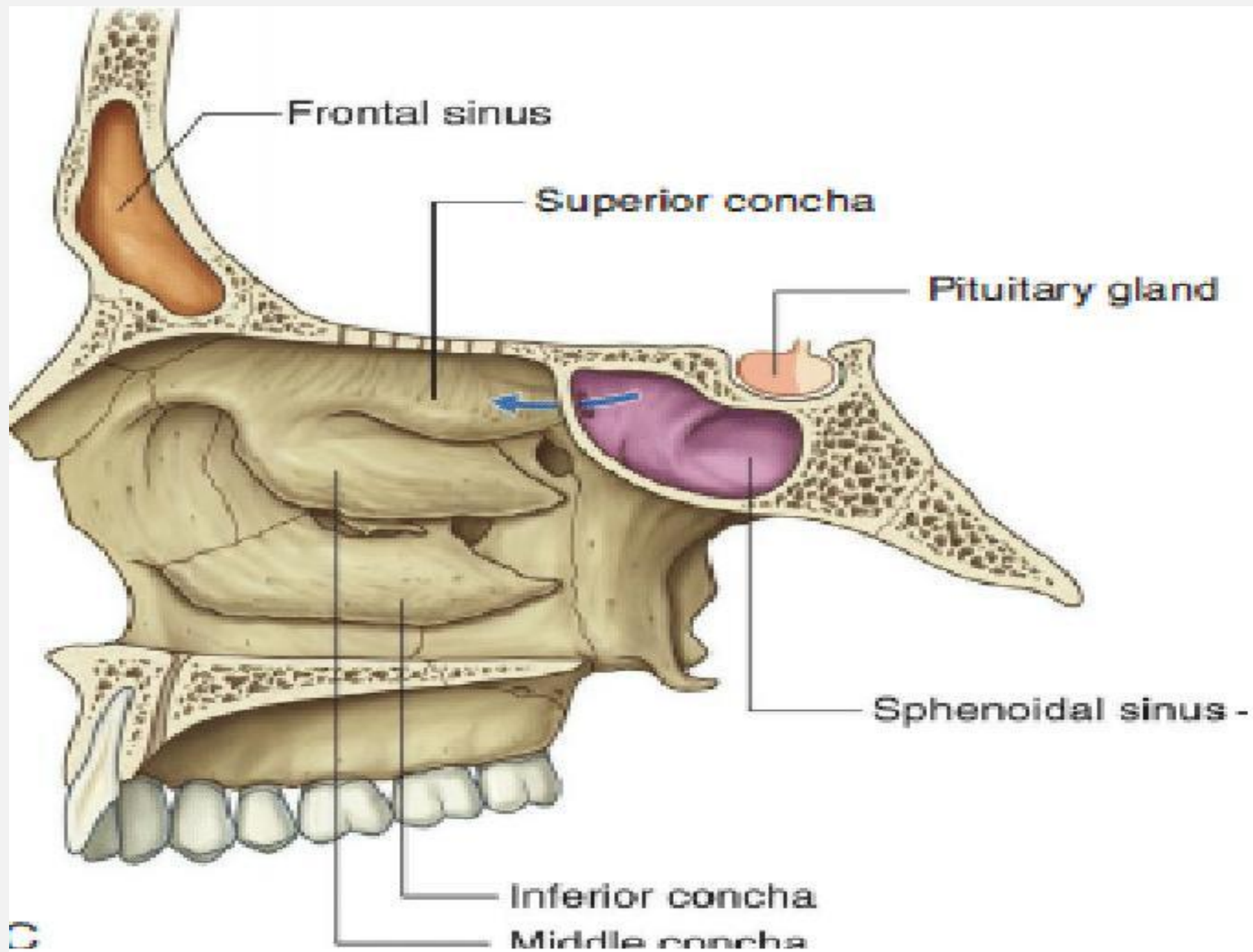
**Frontal sinus**

**Ethmoid sinus**

**Maxillary sinus**

**Sphenoid sinus**





## ETHMOIDAL SINUSES

- They are many in number
- Small intercommunicating spaces within the labyrinth of the ethmoid bone.

### **Completed by:**

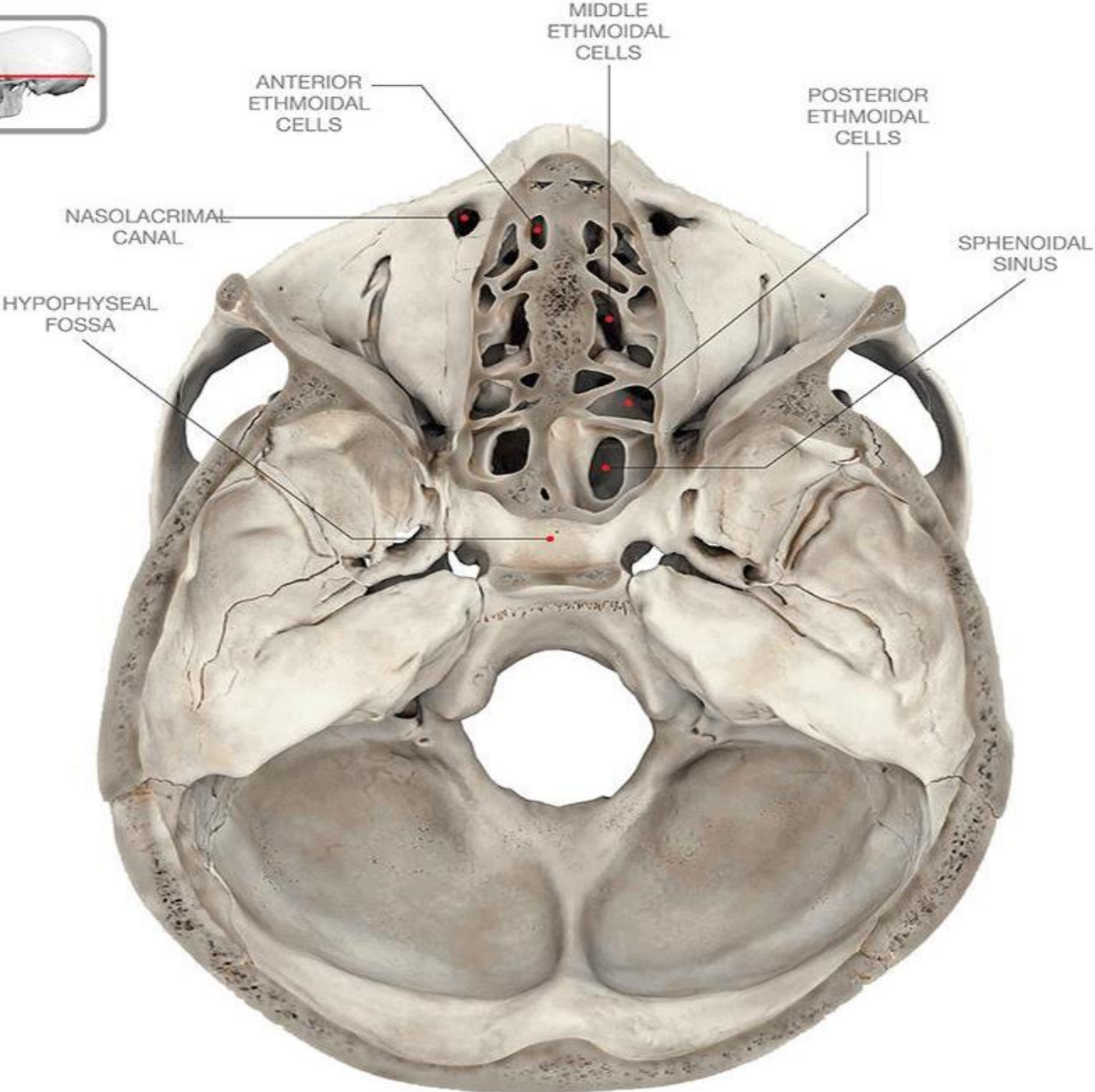
- Orbital plate of frontal bone superiorly
- Behind by sphenoidal conchae
- Anteriorly by lacrimal bone

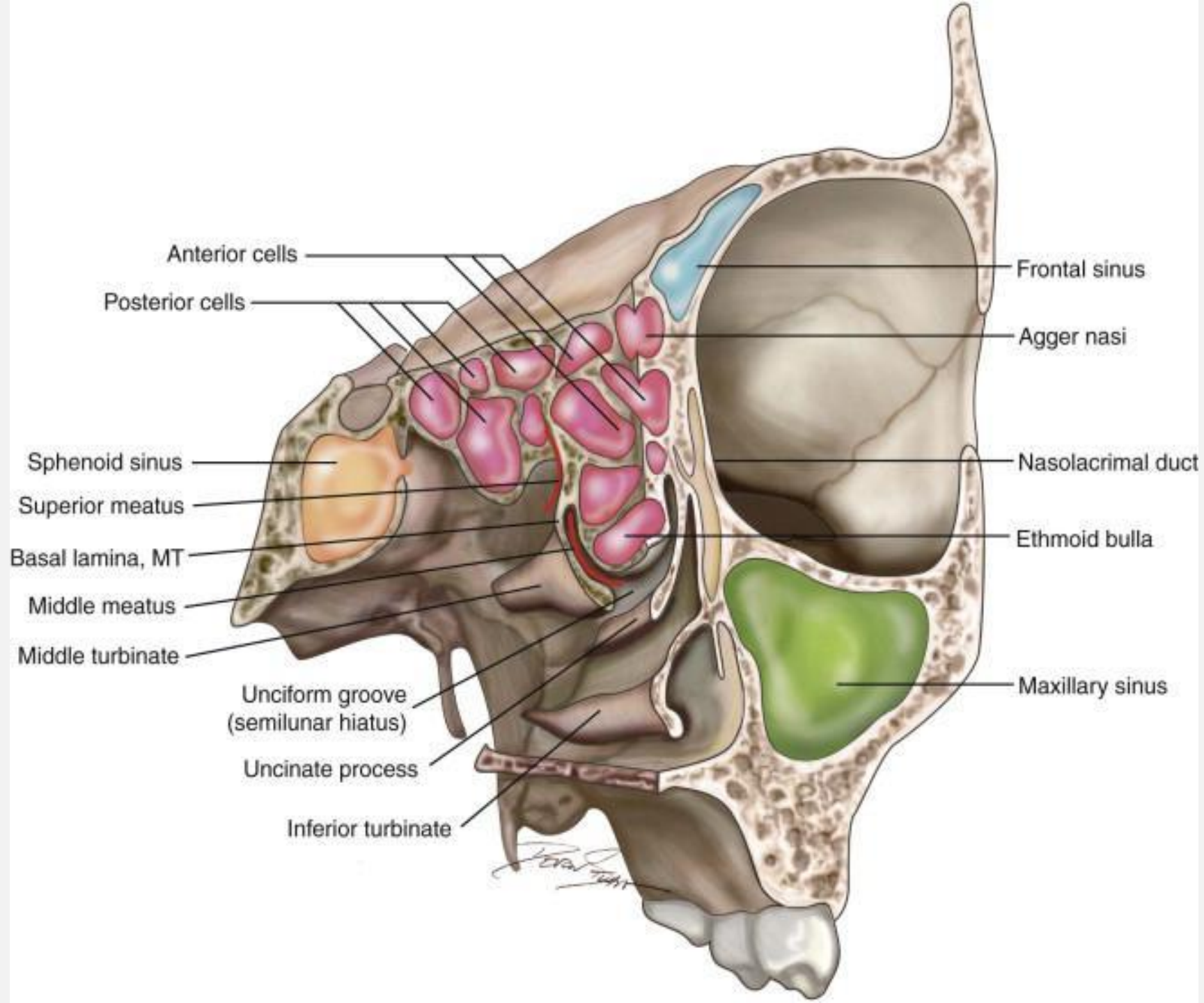
## **Classification:**

- 1. *Anterior Ethmoidal Sinus:*** Made up of **1-11** air cells  
Supplied by anterior ethmoidal nerve and vessels
- 2. *Middle Ethmoidal Sinus:*** Made up of **1-7** cell  
Supplied by the same nerve and vessels
- 3. *The Posterior Ethmoidal Sinus:*** Made up of **1-7** air cells  
Supplied by posterior ethmoidal nerve and vessels



# PARANASAL SINUSES





**Table 12.12****Paranasal Sinuses and Sites of Drainage into the Nose**

<b>SINUS</b>	<b>SITE OF DRAINAGE</b>
Maxillary sinus	Middle meatus through hiatus semilunaris
Frontal sinuses	Middle meatus via infundibulum
Sphenoid sinuses	Sphenoethmoidal recess
Ethmoid sinuses	
Anterior group	Infundibulum and into the middle meatus
Middle group	Middle meatus on or above bulla ethmoidalis
Posterior group	Superior meatus

## CLINICAL CORRELATES

### **Sinusitis:**

- Infection of the sinus

### **Symptoms:**

- Headache, thick purulent discharge from nose

### **Diagnosis:**

- Diseased sinus appears opaque in a radiograph
- Transillumination is also used as a diagnostic tool

### **Referred pain:**

- Pain from ethmoidal sinus is referred to the forehead because of similar nerve supply i.e. ophthalmic branch of trigeminal nerve.
- Pain of maxillary sinus is referred to the upper jaw because of maxillary nerve.









*thank you*