



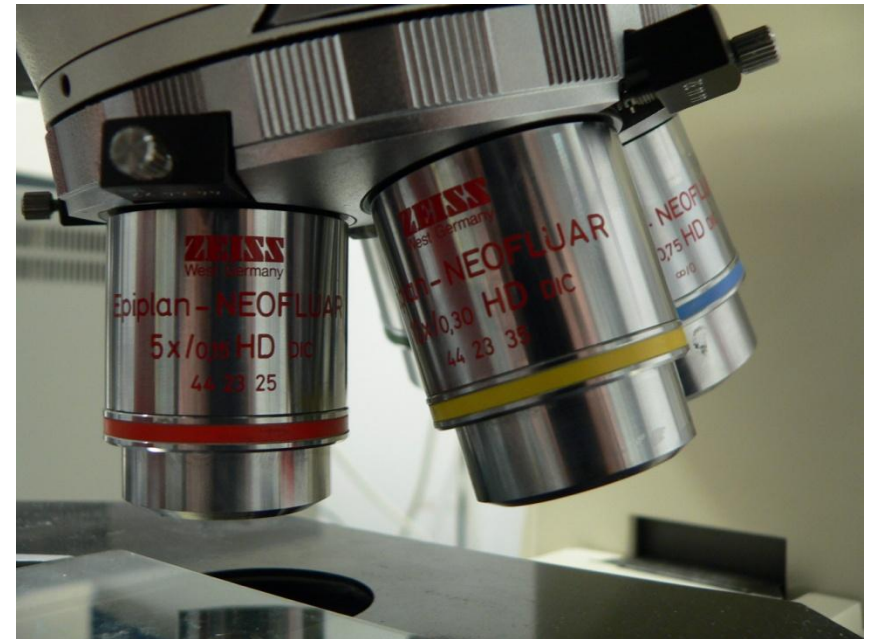
NASAL CAVITY AND PARANASAL SINUSES

P. Mazenganya

2B04

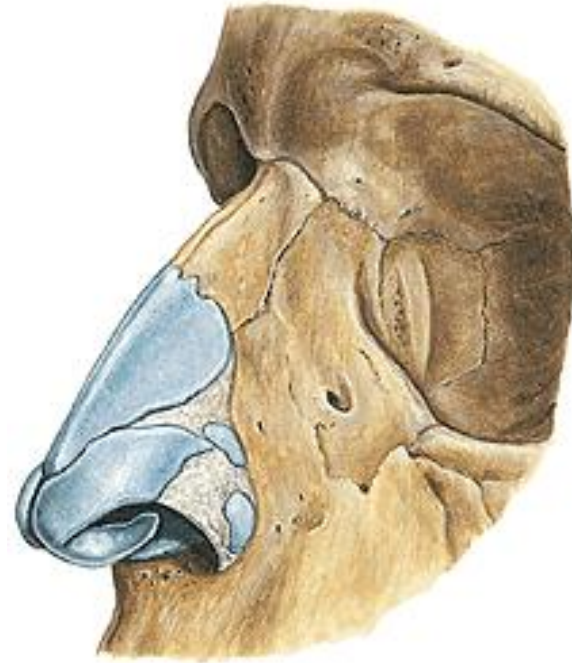
OBJECTIVES

- Outline the structures that form the nasal region
- Describe the gross structure of the external nose
- Describe the nasal septum
- Define the boundaries of the nasal cavity
- Describe the blood supply, venous and lymphatic drainage of nasal cavity
- Describe the paranasal sinuses and their relationship to the nasal cavity



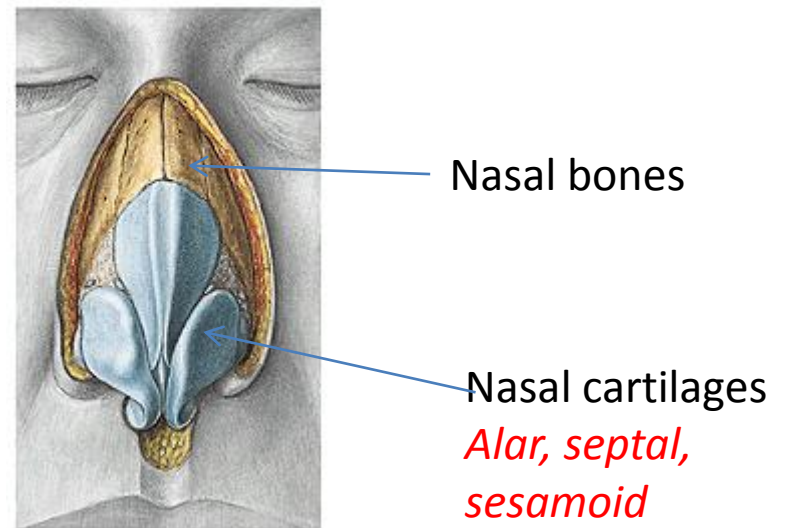
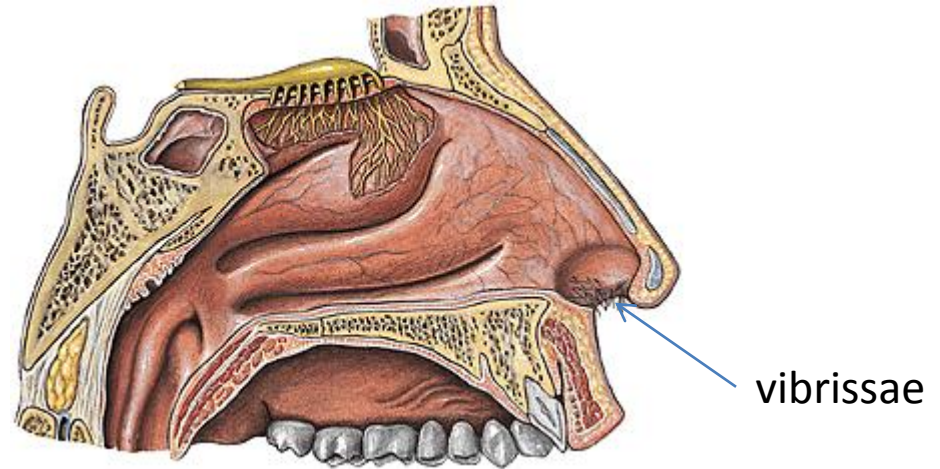
NOSE

- Organ of smell
- Part of the respiratory system
- **Functions include:**
 - Olfaction
 - Respiration
 - Filtration
 - Humidification
 - Conduit



EXTERNAL NOSE

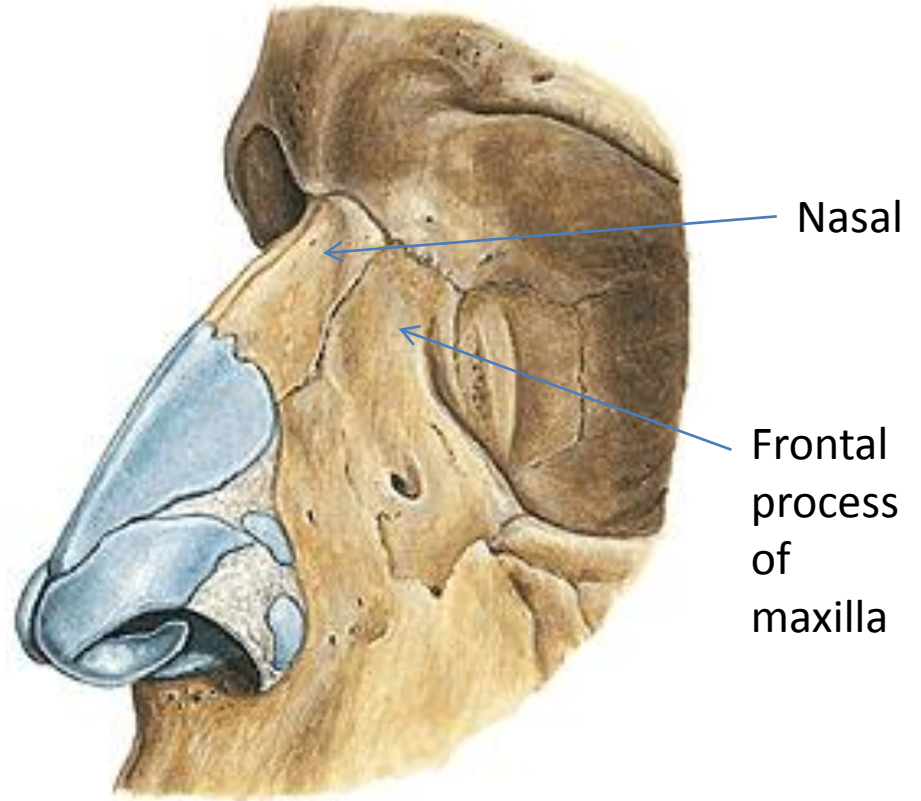
- **Consists :**
 - Bone
 - cartilage
- Root
- Apex
 - Openings called the **nares/nostrils**
- Alar of the nose
- Nasal septum
- Vestibule- vibrissae



ROOT OF THE NOSE

- **Bones**

- ✓ Paired nasal bones
- ✓ Frontal processes of the maxilla
- ✓ Frontal bone(nasal part)

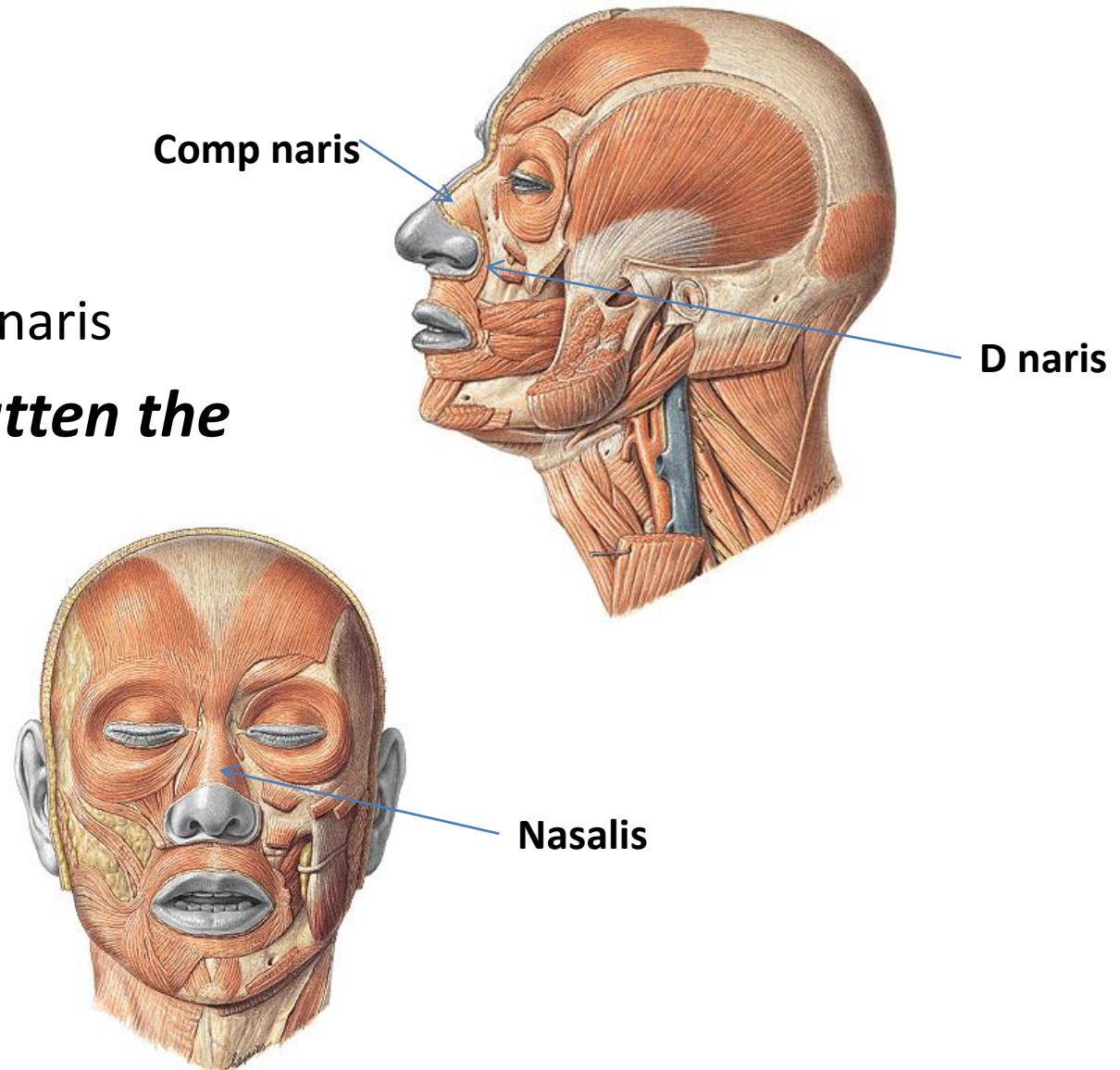


MUSCLES OF THE EXTERNAL NOSE

- **Nasalis**

- Dilator naris
- Compressor naris

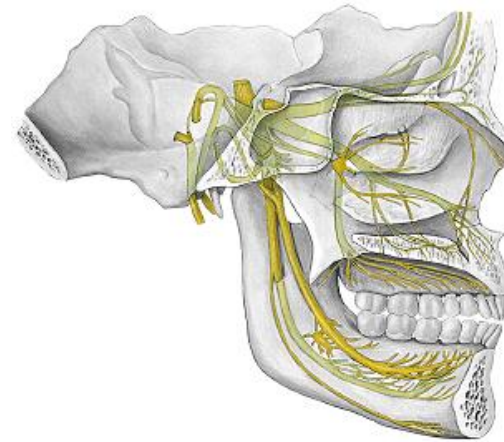
❖ ***Dilate and flatten the naris***



VASCULATURE & INNERVATION

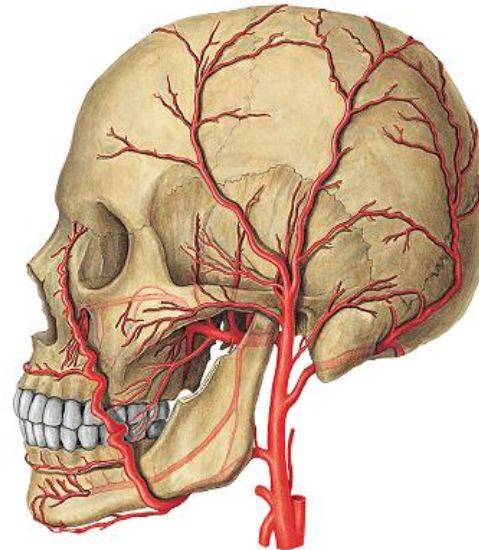
- **Vasculature**

- Ophthalmic artery
- Facial artery
 - *Corresponding veins*



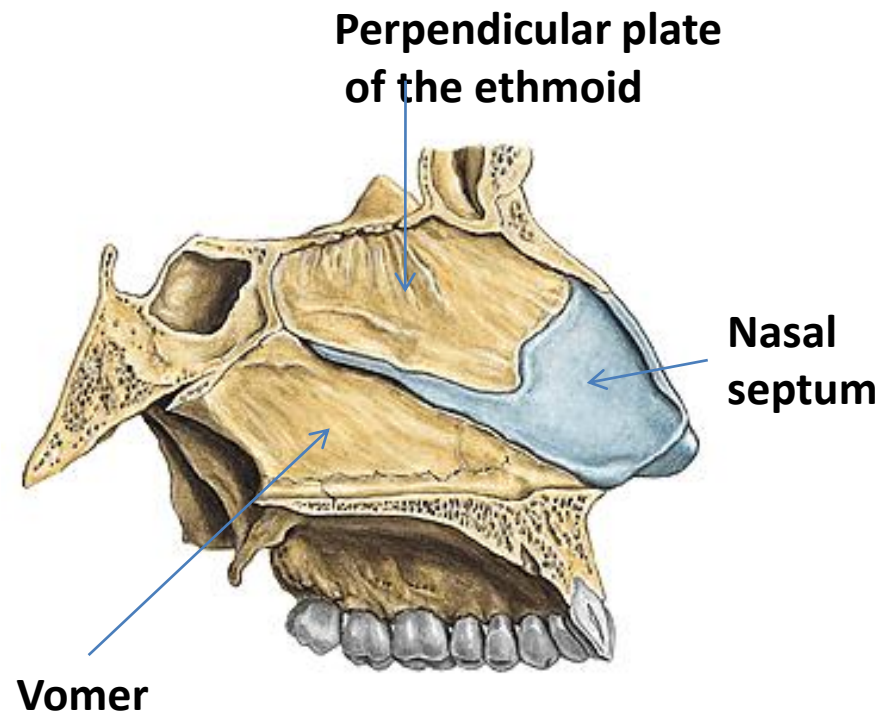
- **Innervation**

- Trigeminal via V1 and V2



NASAL SEPTUM

- **Composed:**
 - bone- posterior $\frac{2}{3}$
 - cartilage- anterior $\frac{1}{3}$
- *Divides the nasal cavity*
- **Bones**
 - Perpendicular plate of ethmoid
 - vomer
- **Cartilage**
 - Septal cartilage



NASAL CAVITY

- Extend from nares to choanae
 - Nares – external opening
 - Choana- opening into pharynx
- **Vestibule**
 - Skin and hairs
 - Skin mucosal junction (limeni nasi)

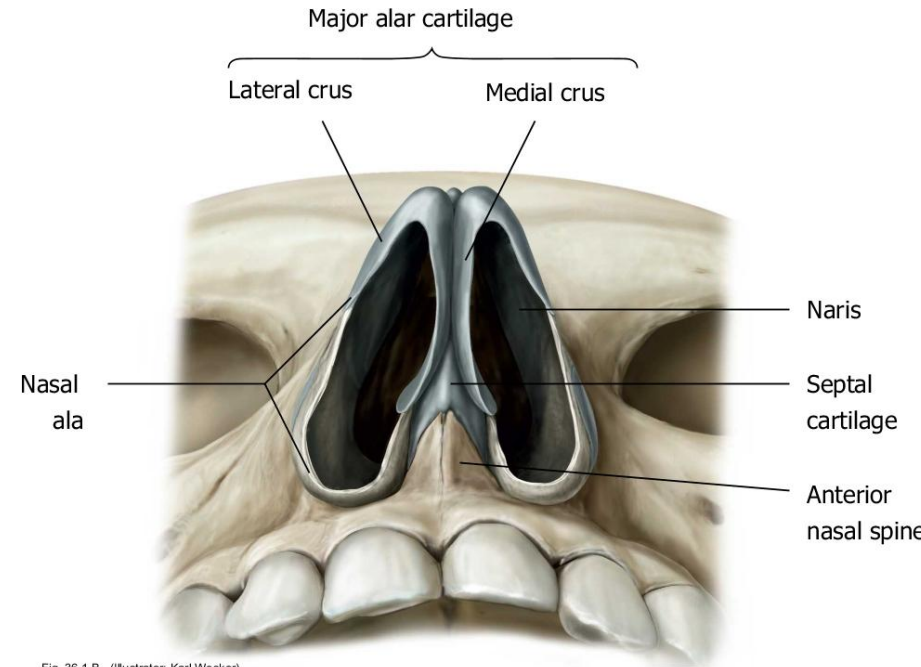
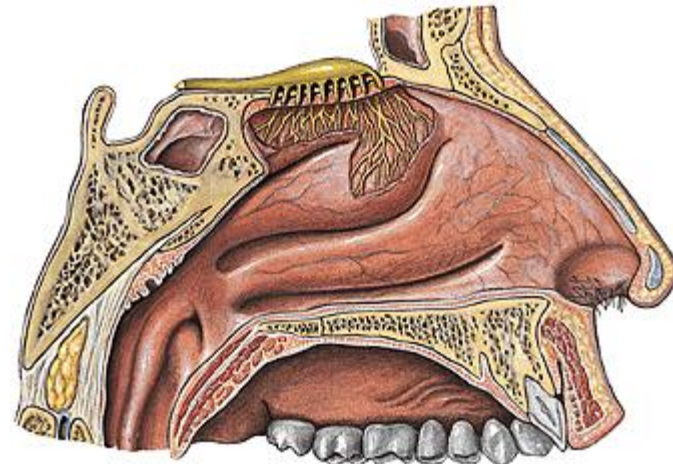


Fig. 36.1 B (Illustrator: Karl Wesker)
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NASAL CAVITY

- **Nasal mucosa**
 - Superior $\frac{1}{3}$ olfactory
 - Inferior $\frac{2}{3}$ respiratory
 - *The later extends into all chambers, cavities and sinuses communicating with nasal cavities*

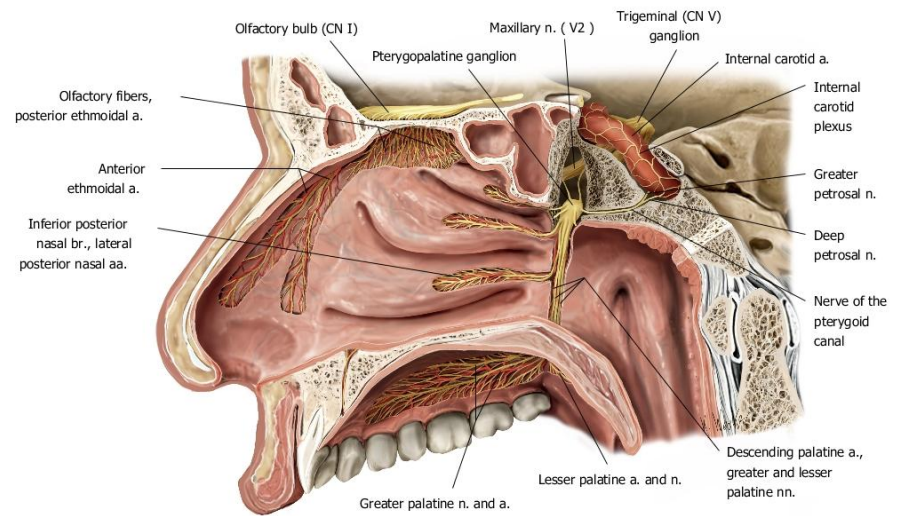


Fig. 36.8.B (Rudolf and Mooser)
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NASAL CAVITY

- **Boundaries**

- **roof** – frontonasal, cribriform plate, sphenoid bone
- **Floor**- palatine process of the maxilla, horizontal plate of palatine bone
- **Medial wall**- nasal septum
- **Lateral wall**- maxilla, lacrimal, ethmoid, inferior nasal concha

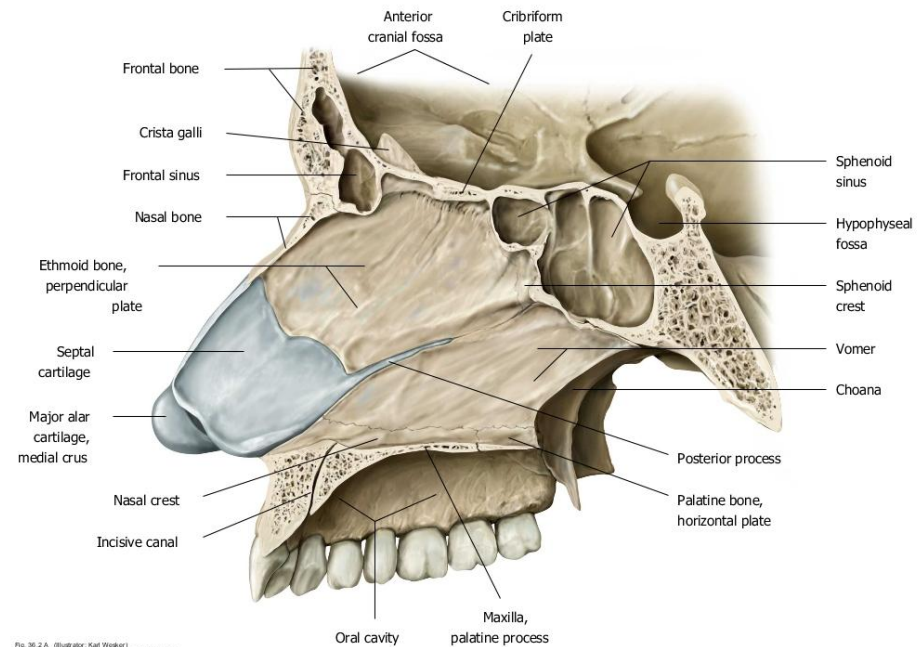
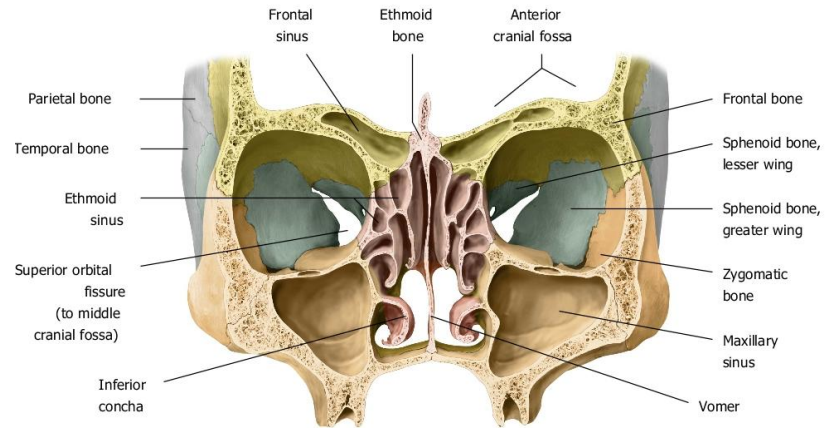


Fig. 36.2.A. (Illustrator: Karl Wesker)
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NASAL CONCHAE

- **Horizontal projections from the lateral wall**
 - Superior concha (ethmoid)
 - Middle concha (ethmoid)
 - Inferior concha (maxilla)

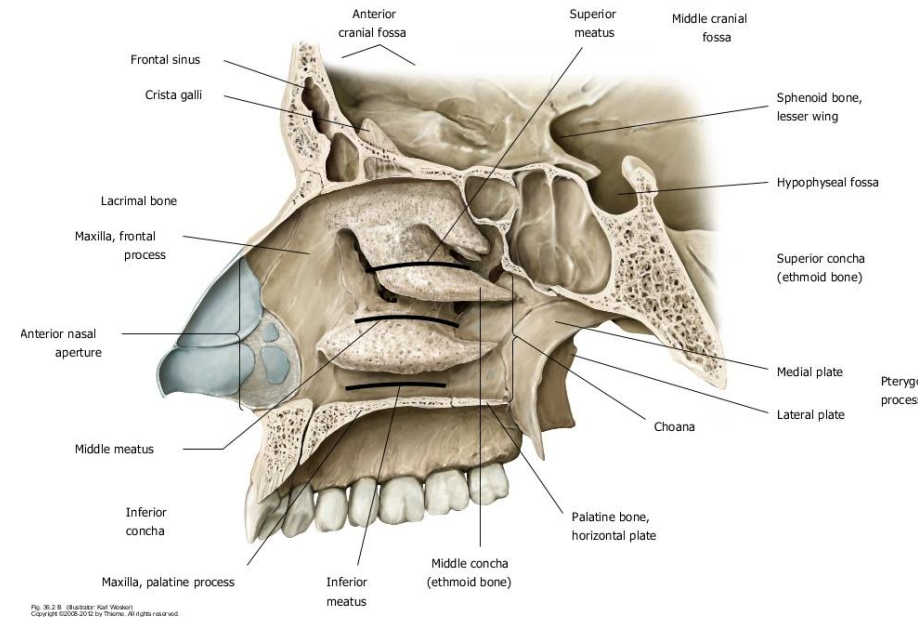
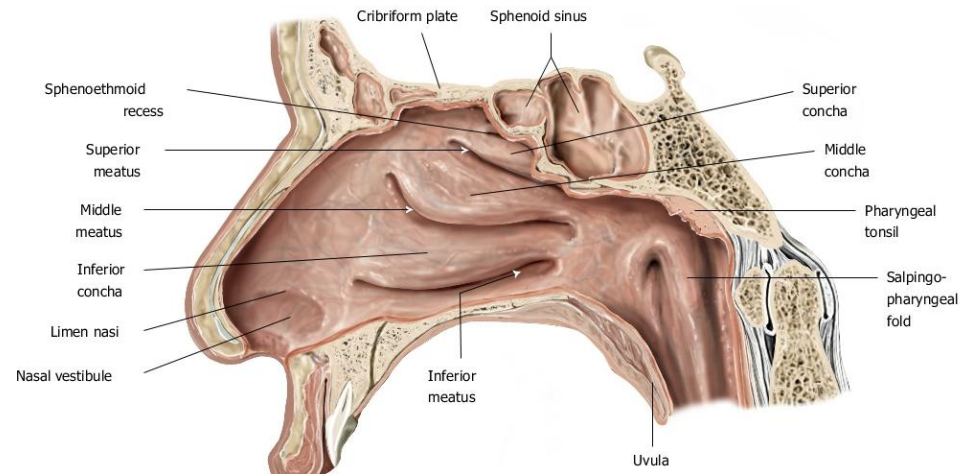
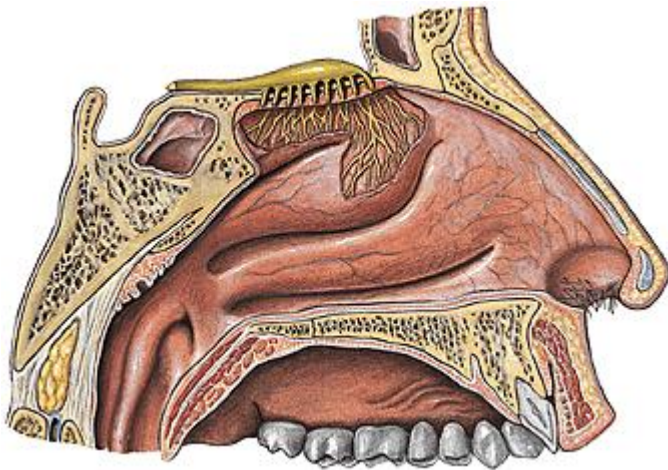


Fig. 36.2.8. (Illustrator: Noel Henderson) Copyright © 2008, 2010 by Thieme. All rights reserved.

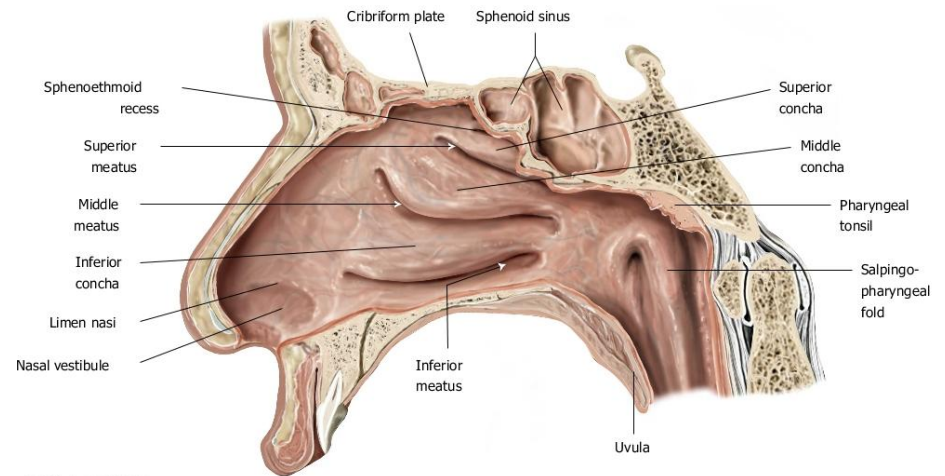


- **Divide lateral wall of nasal cavity into:**
 - Sphenoethmoidal recess
 - Superior meatus
 - Middle meatus
 - Inferior meatus



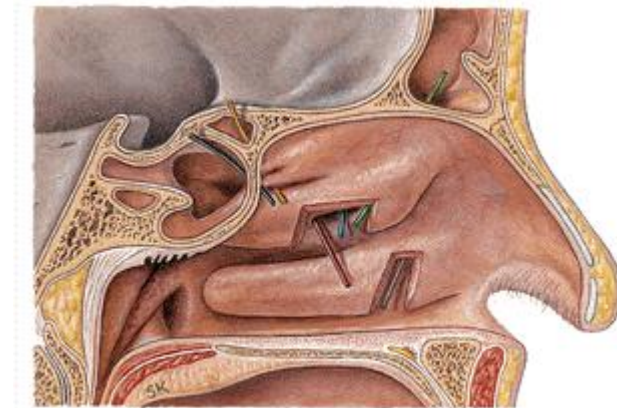
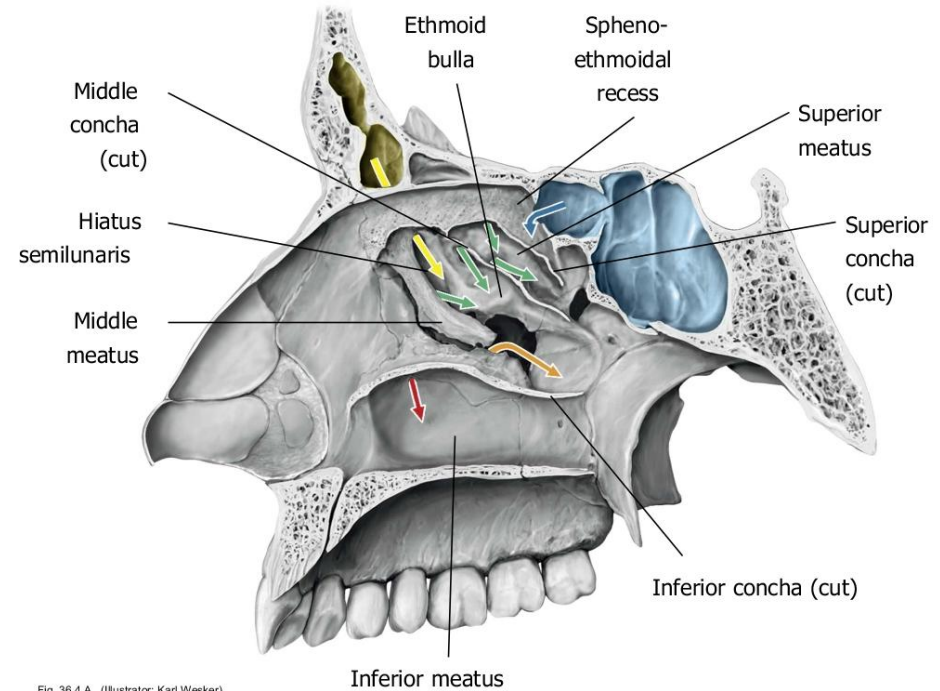
NASAL PASSAGES

- **Sphenoethmoidal recess-**
 - lies superoposterior to superior concha
 - Receives opening from sphenoid sinus



NASAL PASSAGES

- **Superior meatus**
 - Between superior and middle conchae
 - Opening for posterior ethmoidal sinuses
- **Middle meatus**
 - Wider than superior
 - *Bulla ethmoidalis*-middle ethmoidal cells-sinus



- **Middle meatus receives**

- Anterior ethmoidal sinus
- Frontal sinus
- Maxillary sinus

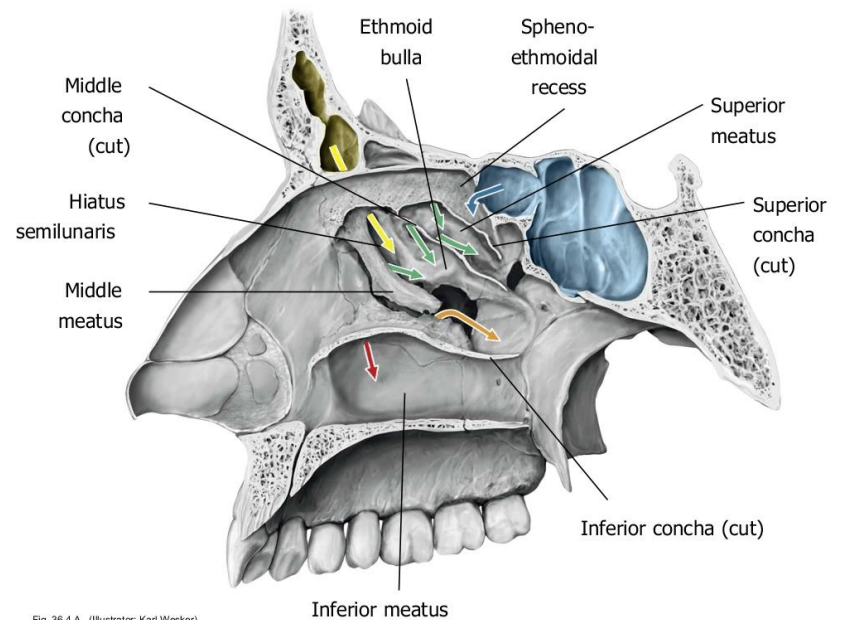
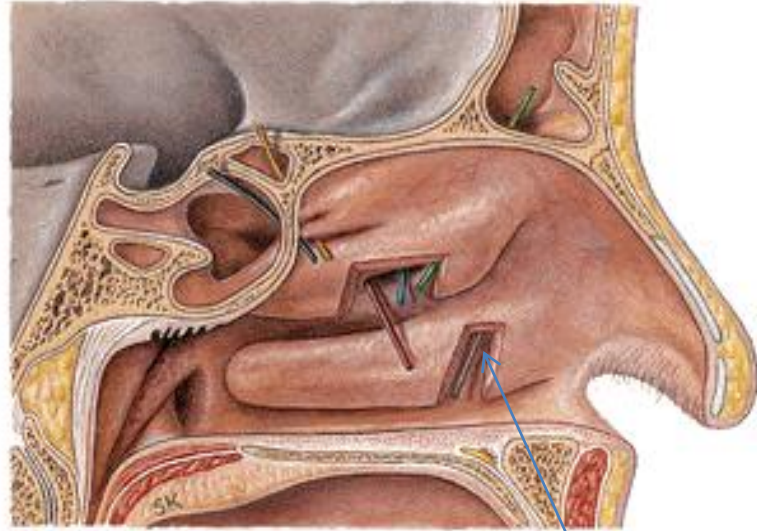


Fig. 36.4 A (Illustrator: Karl Wesker)
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- **Inferior meatus**

- Below the inferior concha
- Drains tears through **nasolacrimal duct**



Nasolacrimal duct

BLOOD SUPPLY

- **Arteries**

- Maxillary a:-
 - ✓ Sphenopalatine a
 - ✓ Greater palatine a
- Ophthalmic a –
 - ✓ Anterior and posterior ethmoidal arteries
- Facial a-
 - ✓ Superior labial & lateral nasal branches of facial artery

- **Veins**

- Sphenopalatine veins
- Facial veins
- Ophthalmic veins

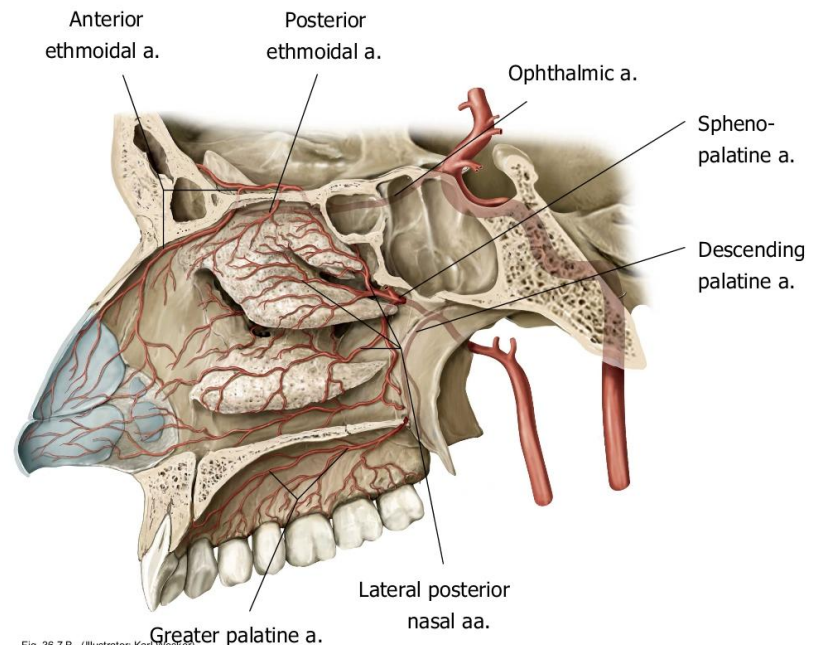


Fig. 36.7 B (Illustrator: Karl T. Weiskopf)
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INNERVATION

- **Nerves**

- Maxillary nerve branches

- ✓ Nasopalatine
 - ✓ Lateral palatine nerve

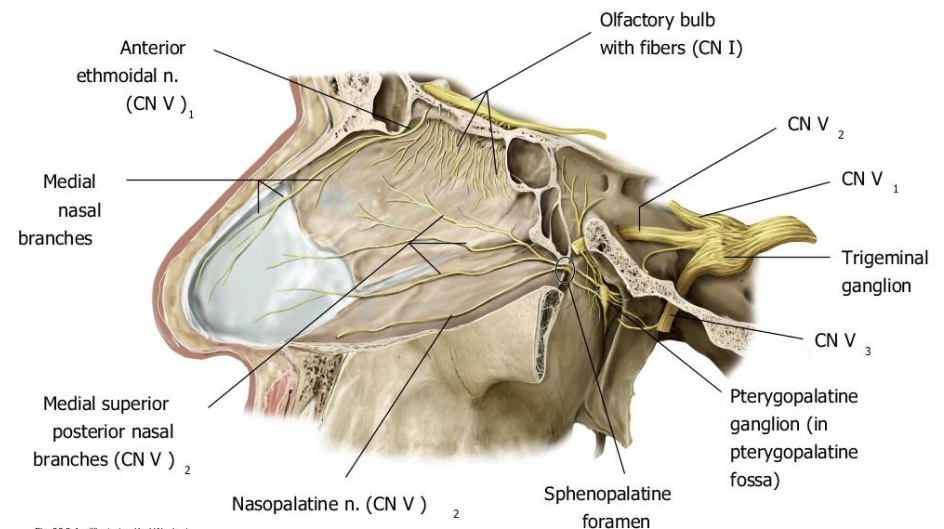
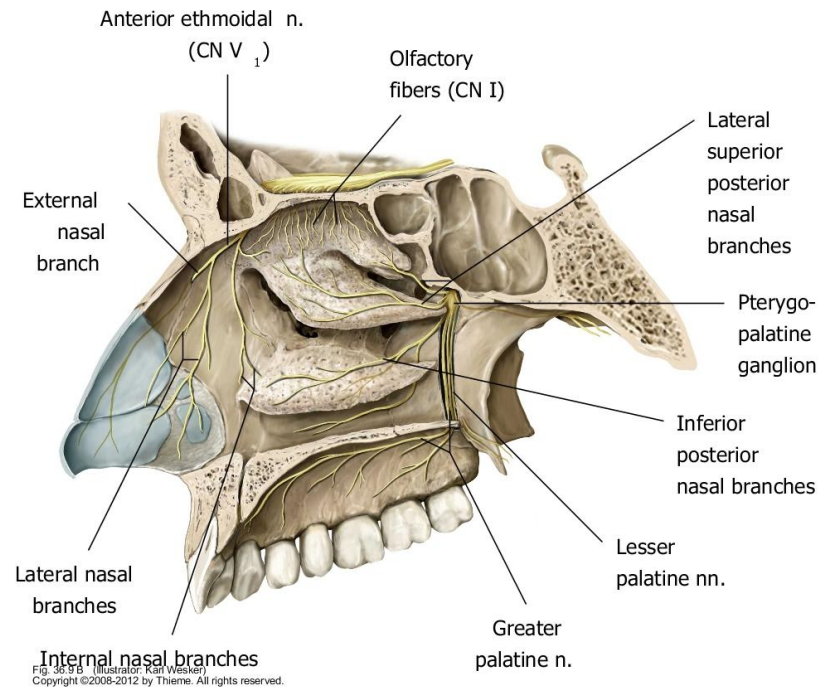
- Ophthalmic nerve-

- ✓ Nasociliary branch
 - Ant & post ethmoidal nerve

- **Lymph**

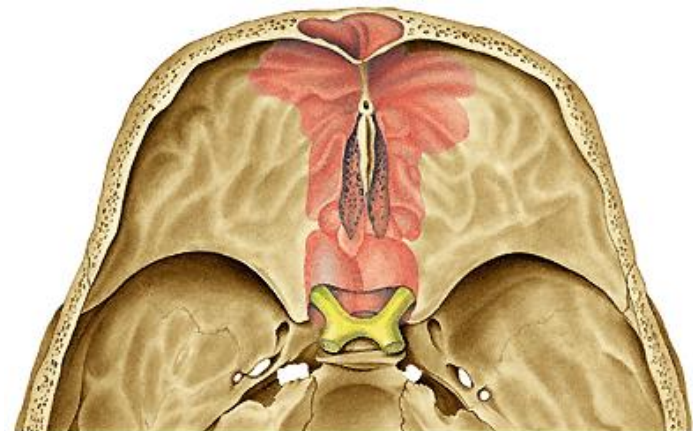
- **retropharyngeal nodes**

- Anterior nasal cavity to **submandibular nodes**



PARANASAL SINUSES

- Extensions of nasal cavity into
 - maxillary
 - ethmoid
 - frontal
 - sphenoid bones
- Lined with **respiratory epithelium**
- Present at **birth**
- Air filled



LOCATION

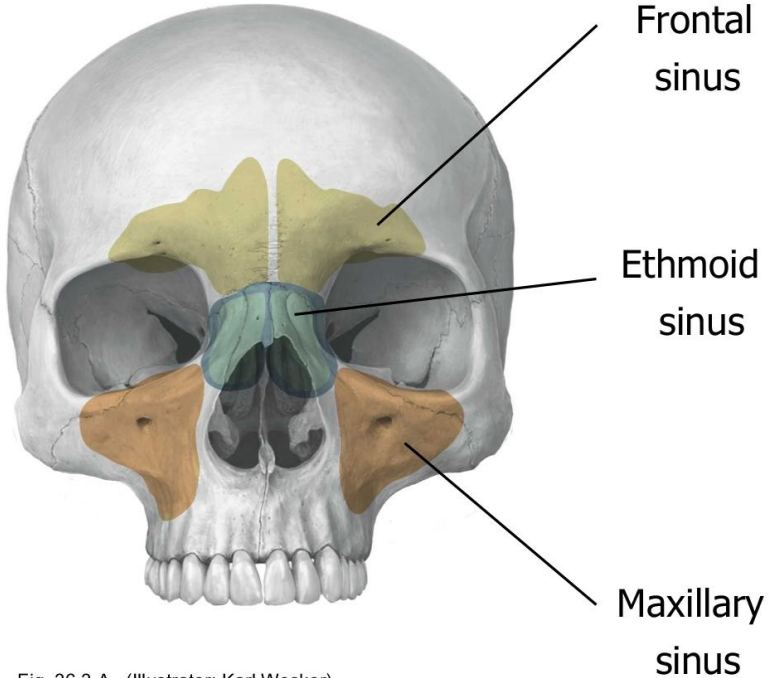


Fig. 36.3 A (Illustrator: Karl Wesker)
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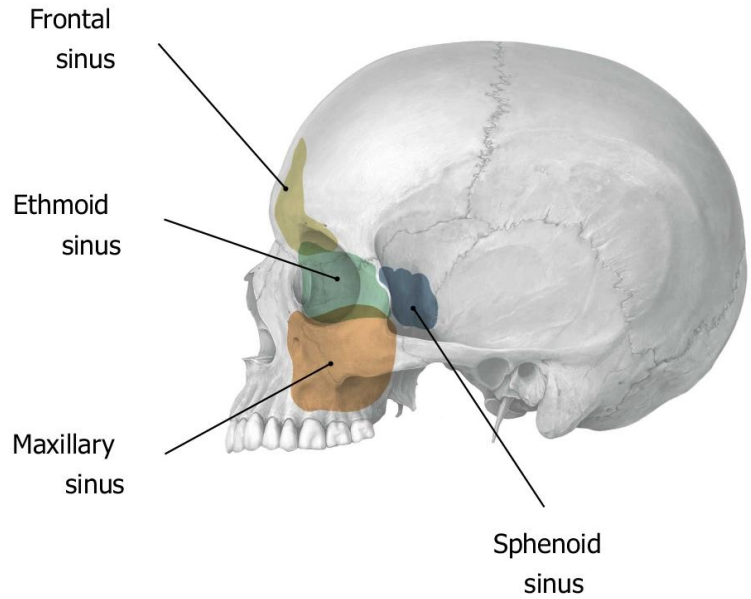


Fig. 36.3 B (Illustrator: Karl Wesker)
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- **Functions:**

- Humidification of air
- Regulation of intranasal pressure
- Immune defence
- Increase of the mucosal surface area
- Lightening of the skull
- Voice resonance
- Shock absorber
- **Facial growth**

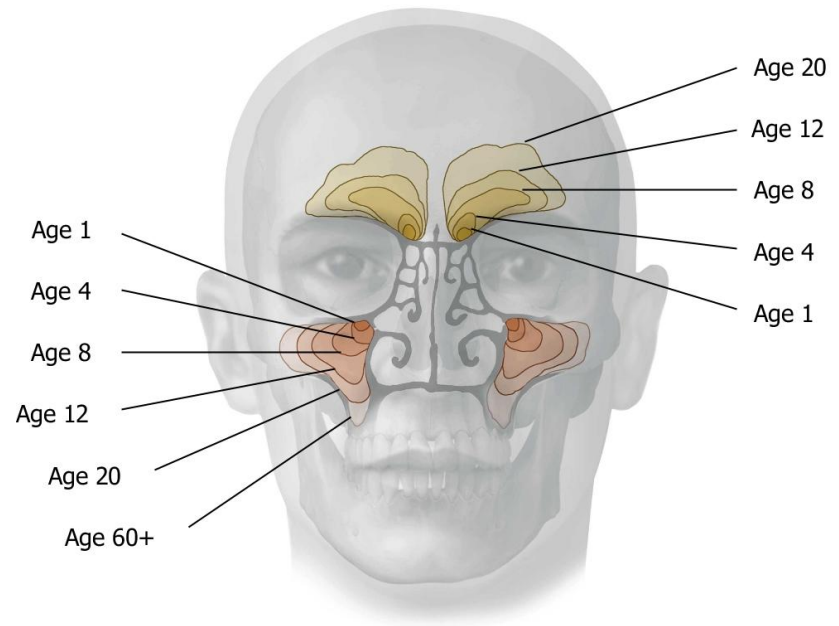


Fig. 36.3 C (Illustrator: Karl Wesker)
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PARANASAL SINUSES

- **Frontal sinus**
 - Lies in the frontal bone
 - Detectable at age of **7**
 - Drains to the middle meatus
 - **Supraorbital nerve**

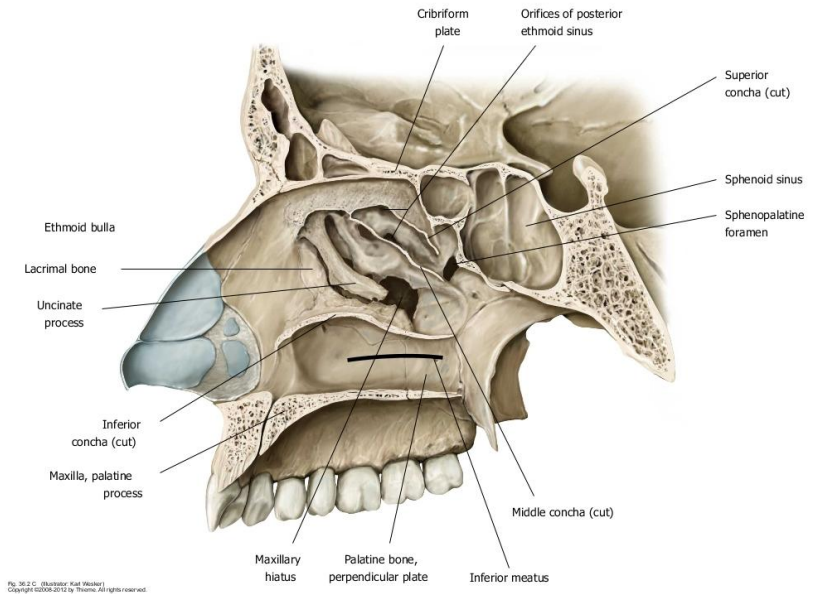


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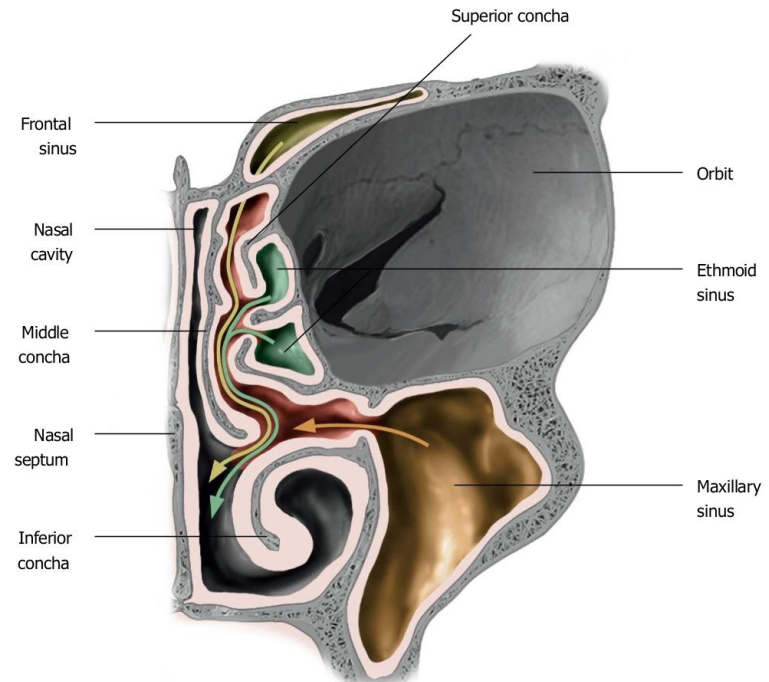


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- **Ethmoidal sinuses**

- Several in number
- Anterior group drains - infundibulum → middle meatus
- Middle cells- ethmoid bulla
- Posterior cells- superior meatus

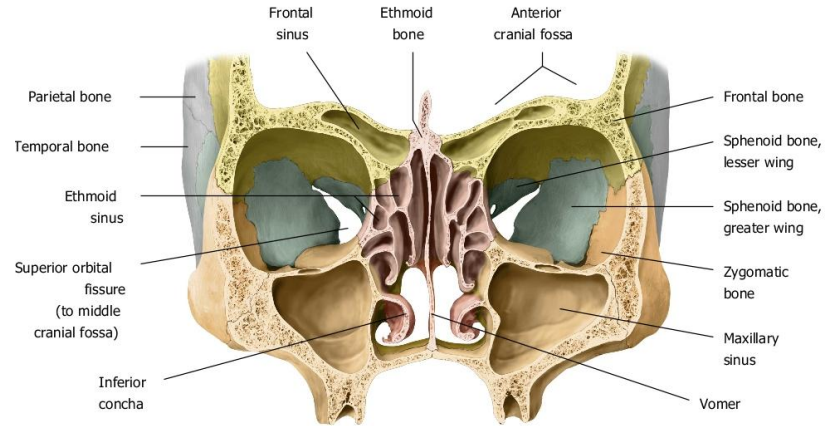
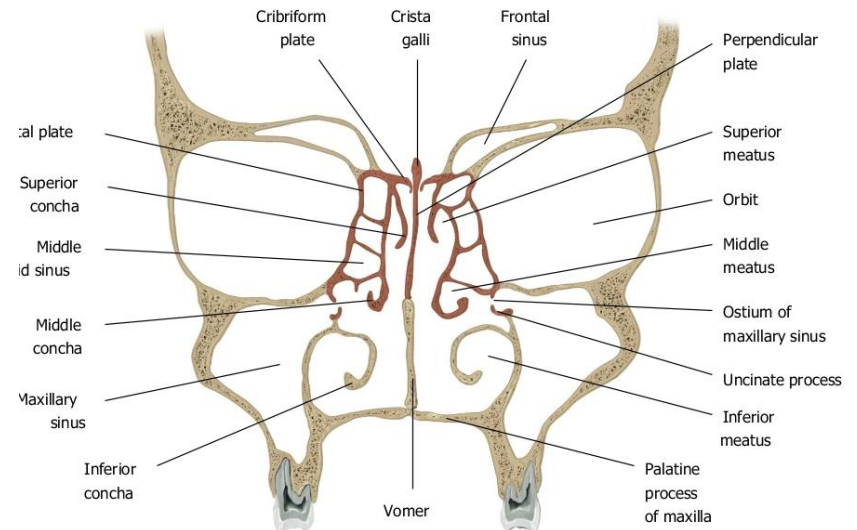


Fig. 36.5 A. (Illustrator: Karl Wesker) Copyright © 2008-2012 by Thieme. All rights reserved.



- **Drainage**



- **Sphenoidal sinuses**

- Found in the sphenoid bone
- Numbers vary on either side
- Drains through **Sphenoethmoidal recess**
drains it

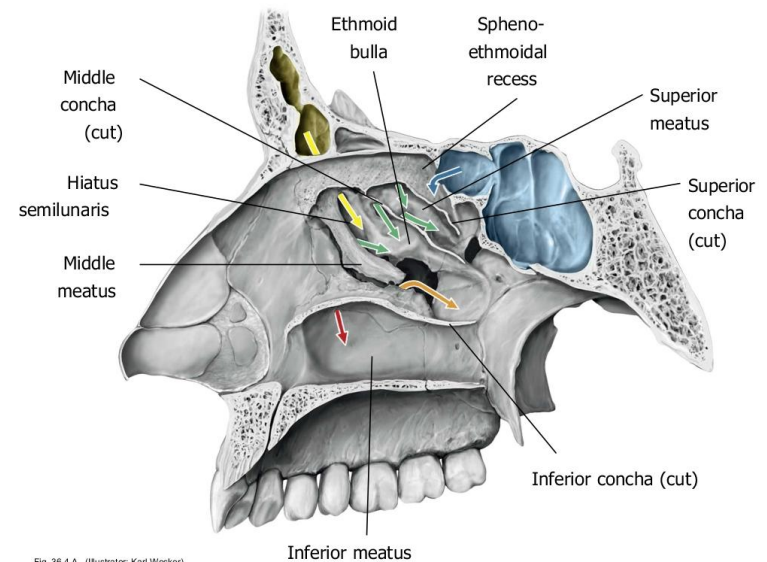
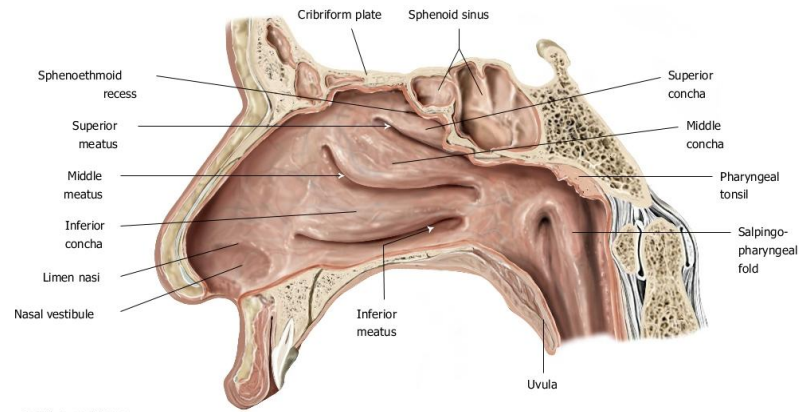


Fig. 36.4 A. (Illustrator: Karl Wesker)
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- **Maxillary sinuses**

- largest and pyramidal
- Occupies the body of the maxilla
- Drains into middle meatus

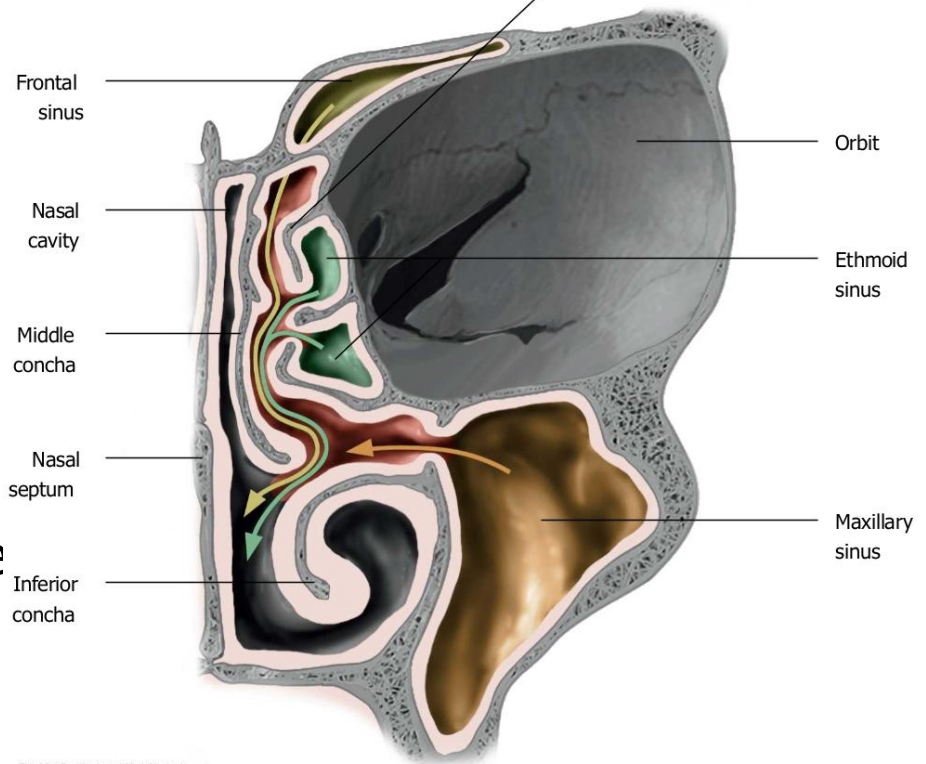
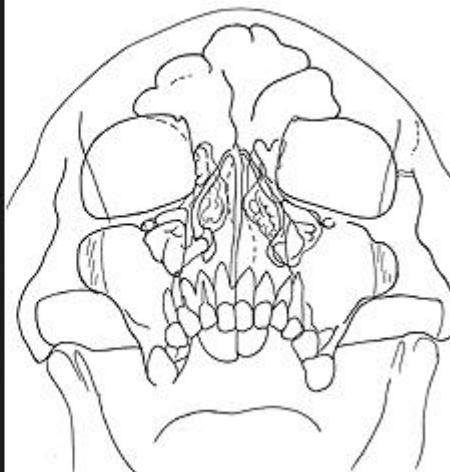


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SUMMARY

- The nose has olfactory and respiratory mucosa
- Understand its blood supply & innervation
- Nose bleeding
- Sinusitis & drainage of sinus





Thank you