

# Splanchnocranium

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LECTURE 5

DENTISTRY AUTUMN 2015

RNDr. Michaela Račanská, Ph.D.

# Splanchnocranium

**Maxilla**

**Os nasale**

**Os lacrimale**

**Os zygomaticum**

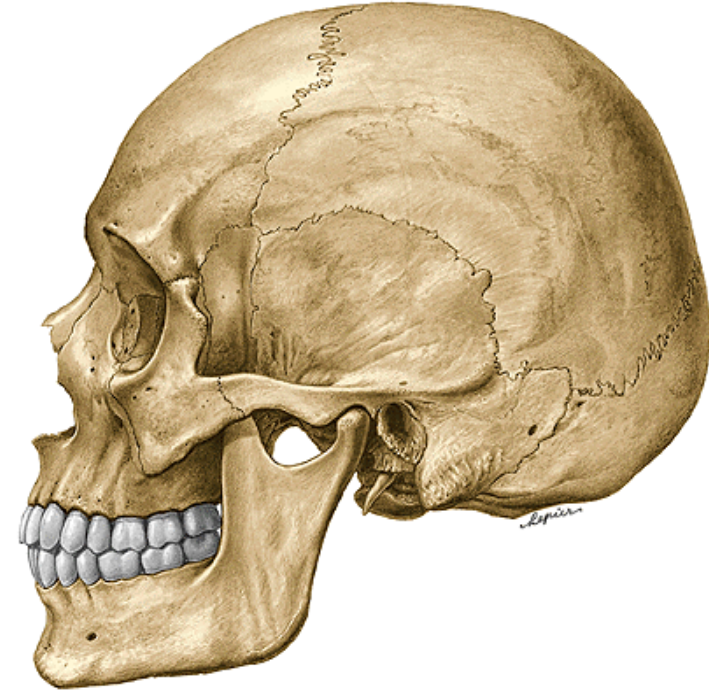
**Vomer**

**Os palatinum**

**Concha nasalis inferior**

**Mandibula**

**Os hyoideum**





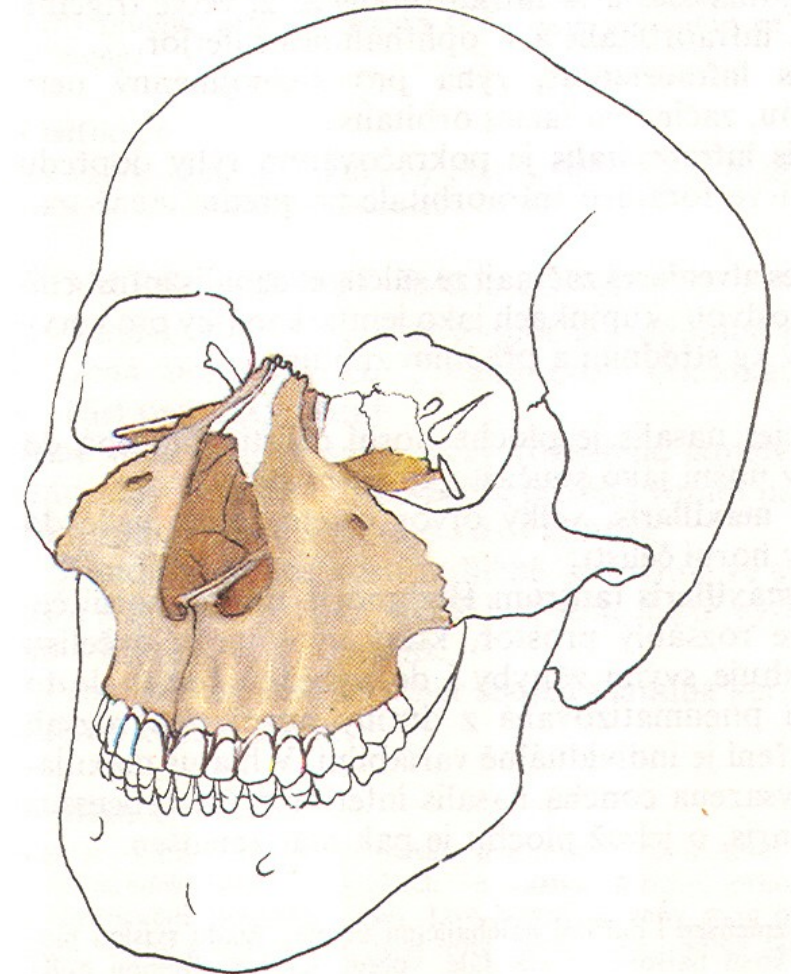
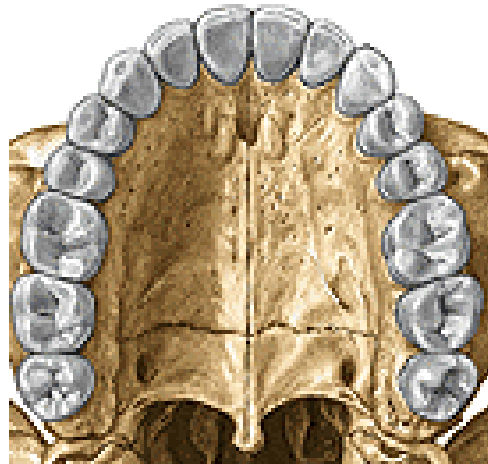
# Maxilla

## Corpus maxillae

- Facies anterior
- Facies nasalis
- Facies orbitalis
- Facies infratemporalis

## Processus maxillae

- Processus frontalis
- Processus zygomaticus
- Processus alveolaris
- Processus palatinus



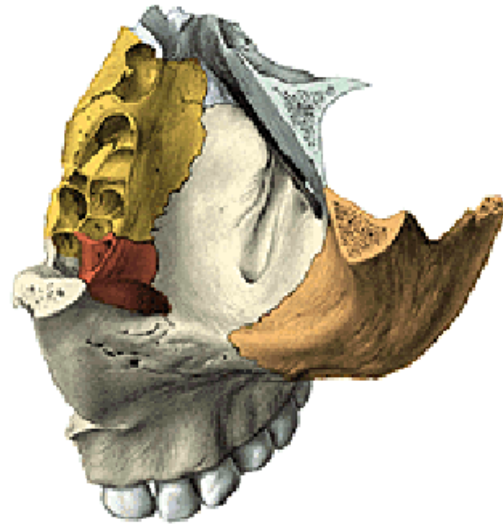


# Corpus maxillae



**Facies anterior**

foramen infraorbitale  
fossa canina  
incisura nasalis  
spina nasalis anterior



**Facies orbitalis**

margo infraorbitalis  
sulcus infraorbitalis  
canalis infraorbitalis  
(canales alveolares)



**Facies nasalis**

sinus maxillaris  
hiatus maxillaris  
(antrum Highmori)

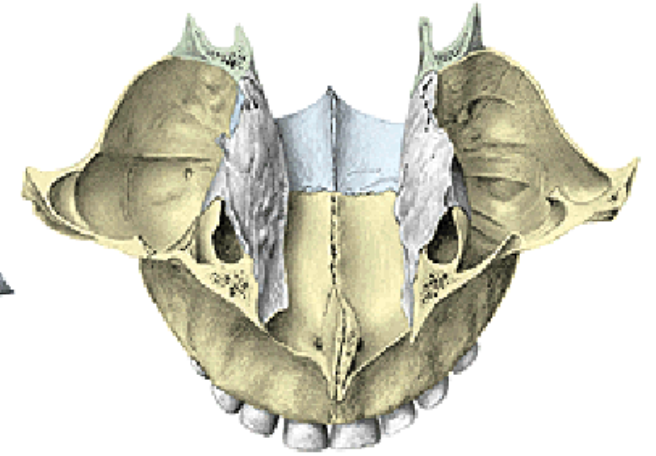
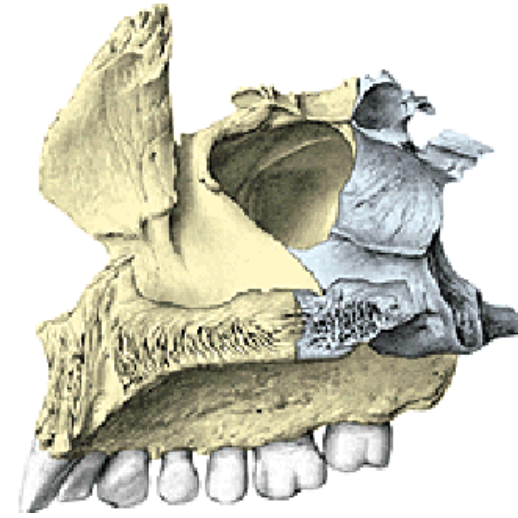


**Facies infratemporalis**

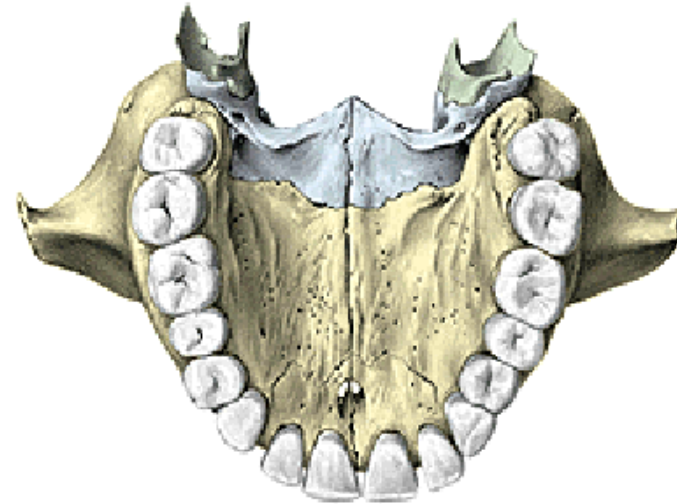
crista infrazygomatica  
tuber maxillae  
foramina et canales alveolares

## Processus frontalis maxillae

- Incisura nasalis  
(apertura piriformis)
- Crista lacrimalis anterior
- Crista ethmoidalis
- Crista conchalis



## Processus zygomaticus maxillae

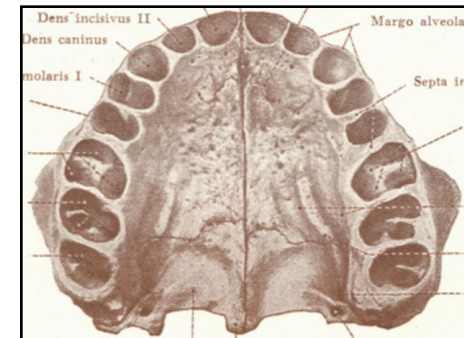
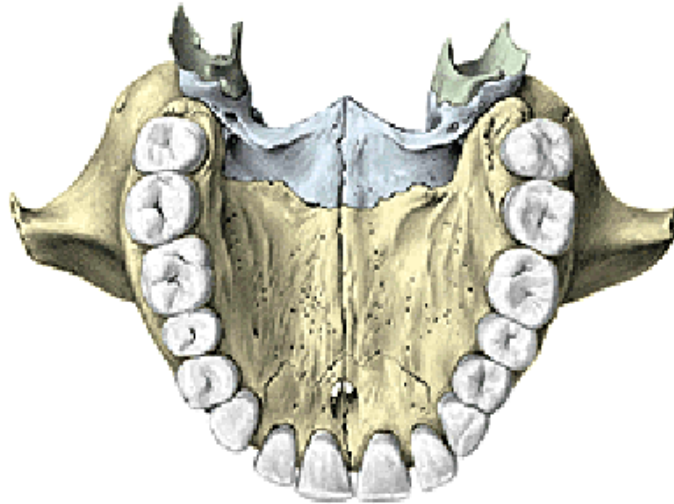
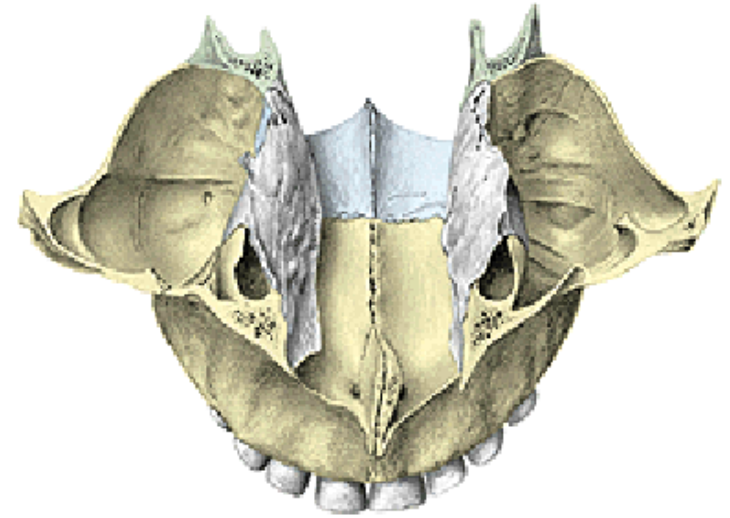


## Processus palatinus maxillae

- Os incisivum (praemaxilla)
- Foramen incisivum
- Canalis incisivus
- Crista nasalis
- Torus palatinus

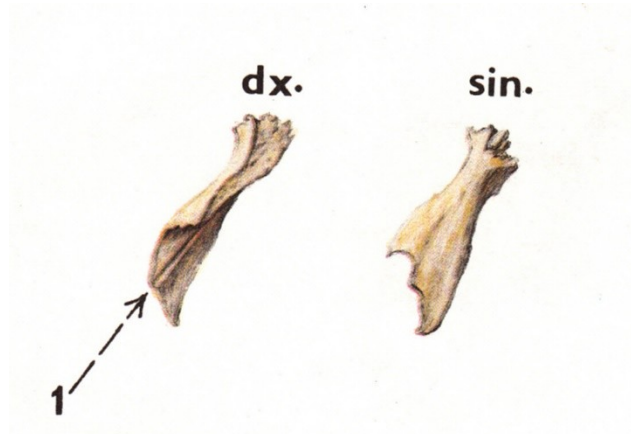
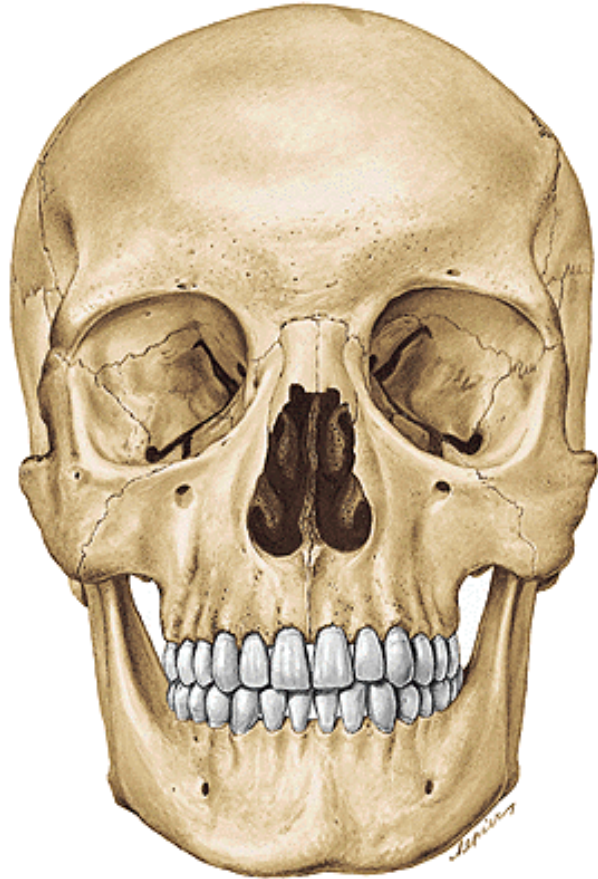
## Processus alveolaris maxillae

Arcus alveolaris  
Alveoli dentales  
Juga alveolaria  
Septa interalveolaria  
Septa intraalveolaria

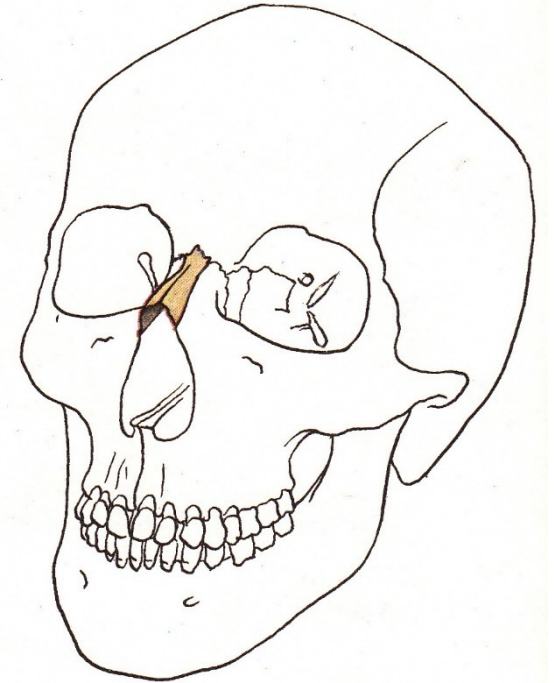


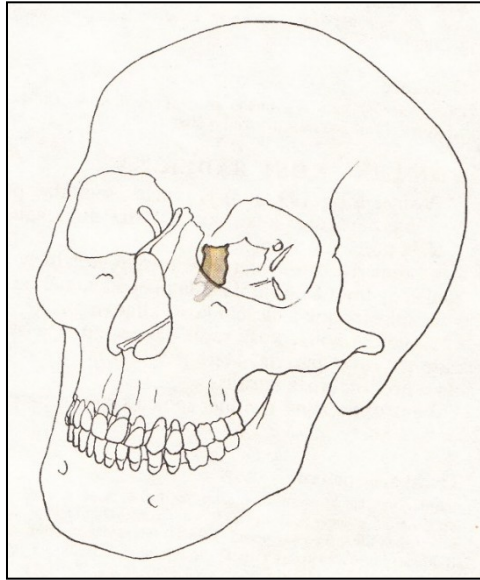


# Os nasale



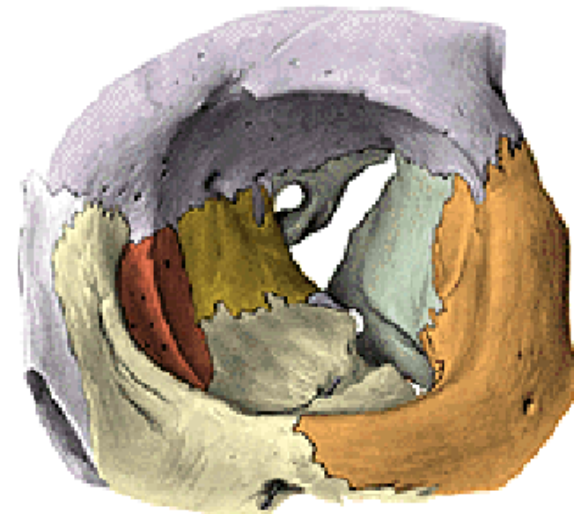
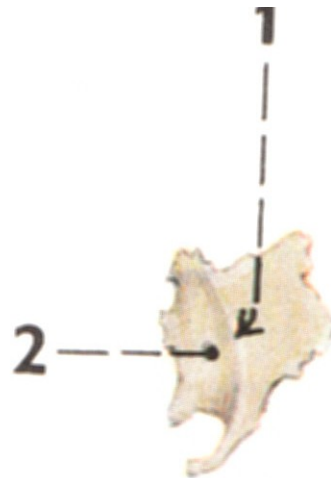
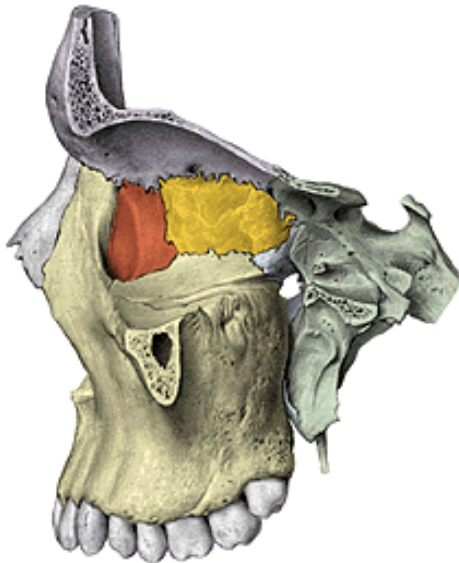
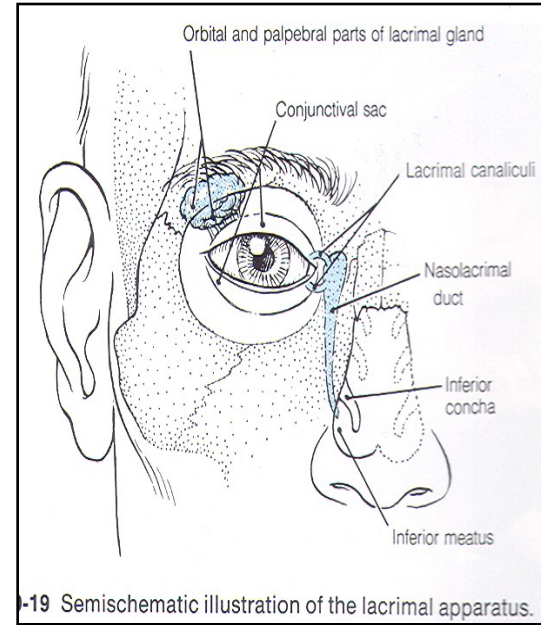
Sulcus ethmoidalis





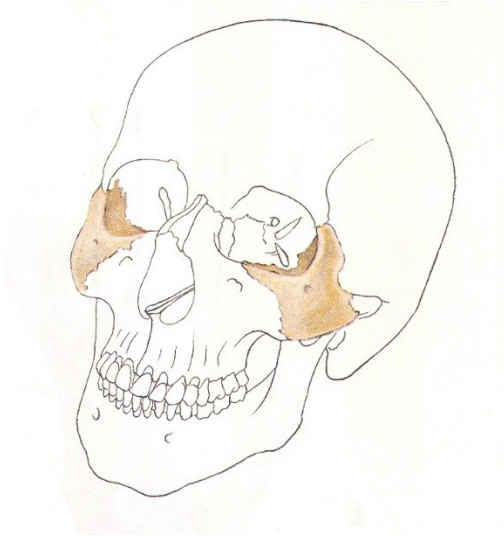
# Os lacrimale

- Crista lacrimalis posterior
- Sulcus lacrimalis
- Fossa sacci lacrimalis
- Canalis nasolacrimalis
- Hamulus lacrimalis





# Os zygomaticum

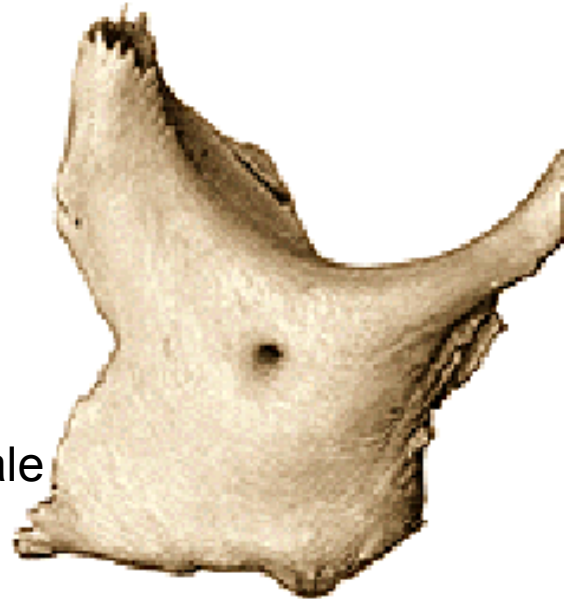


## Corpus

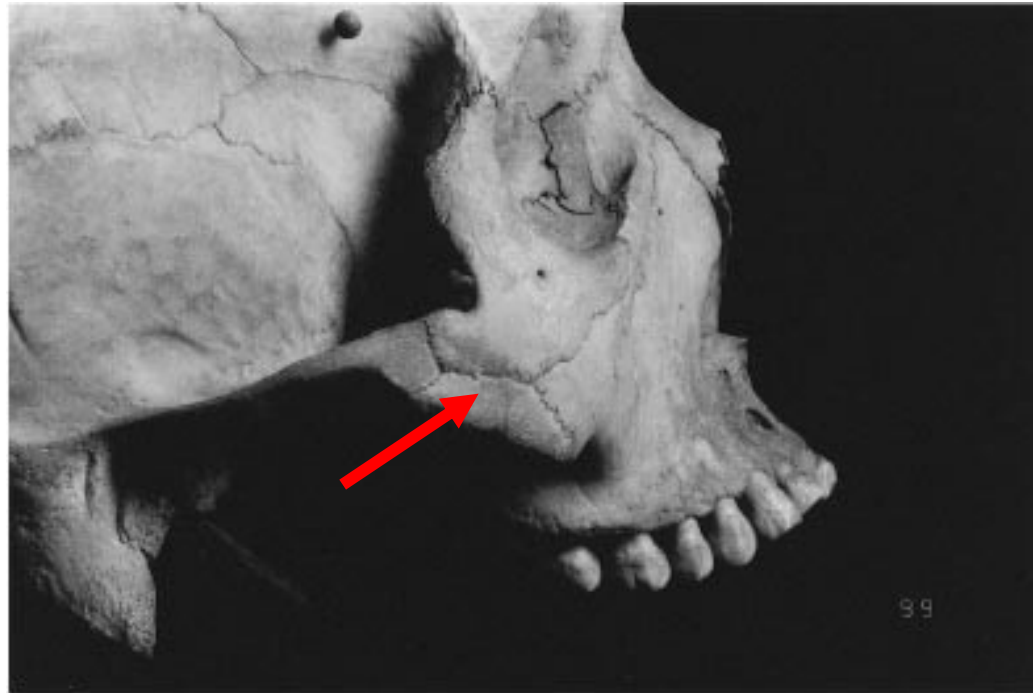
- Facies lateralis - foramen zygomaticofaciale
- Facies orbitalis - foramen zygomaticoorbitale
- Facies temporalis - foramen zygomaticotemporale

**Processus** maxillaris, frontalis, zygomaticus

Arcus zygomaticus

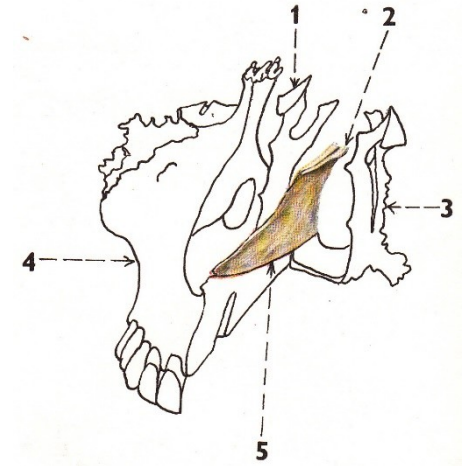
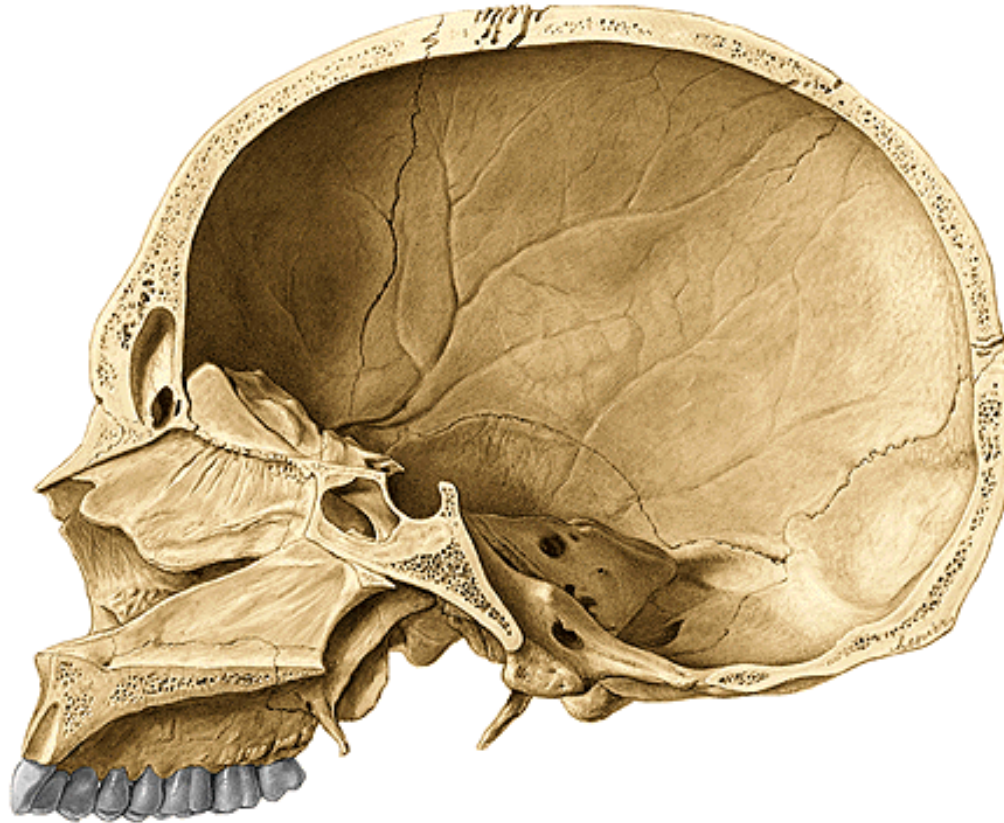
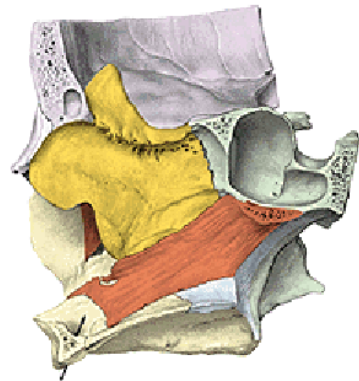


**Os zygomaticum bipartitum (os japonicum) – sutura (mostly horizontal one).**



# Vomer

Alae vomeris (rostrum ossis sphenoidalis)

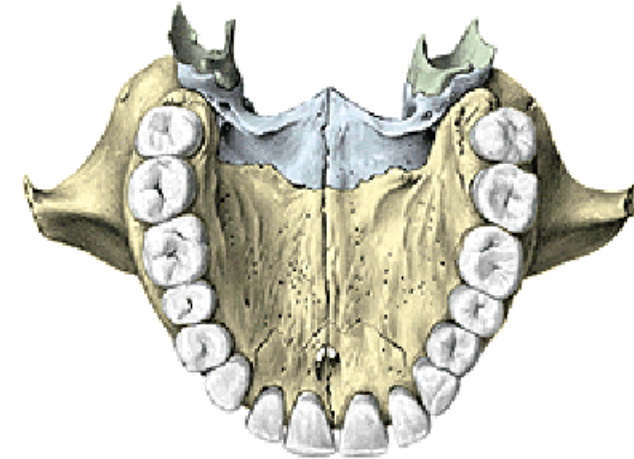
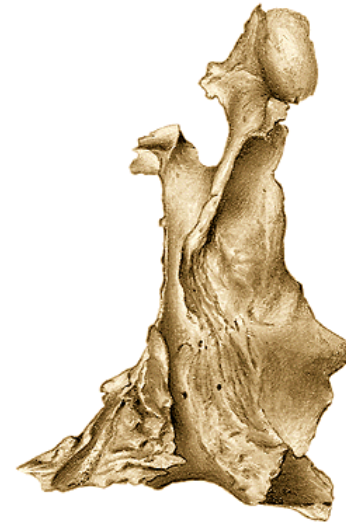




# Os palatinum

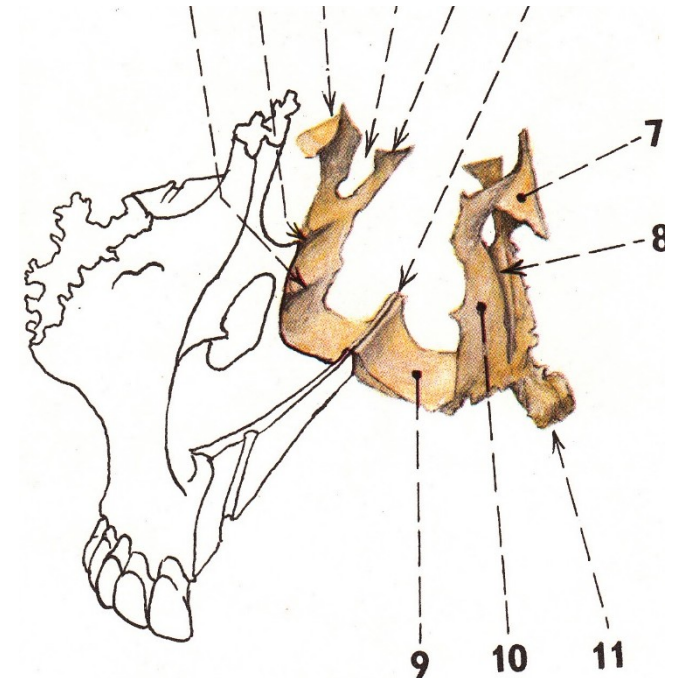
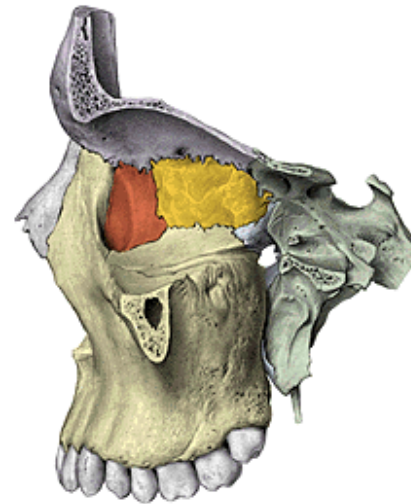
## Lamina horizontalis

- Spina nasalis posterior
- Crista nasalis
- Foramen palatinum majus
- Processus pyramidalis
- Foramina palatina minora



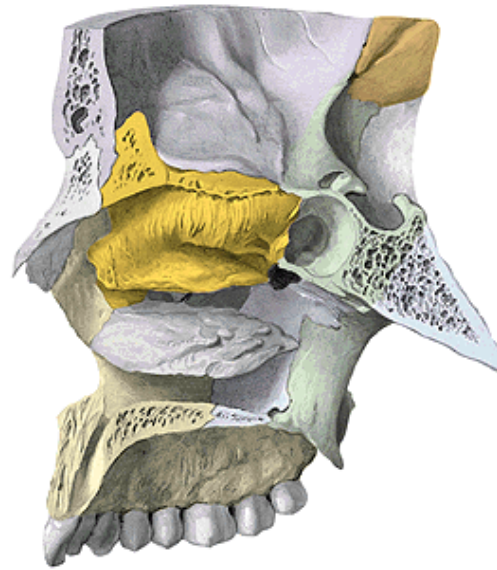
## Lamina perpendicularis

- Crista conchalis
- Crista ethmoidalis
- Processus orbitalis et sphenoidalis
- Incisura (foramen) sphenopalatinum
- Sulcus palatinus major (pterygopalatinus)



# Concha nasalis inferior

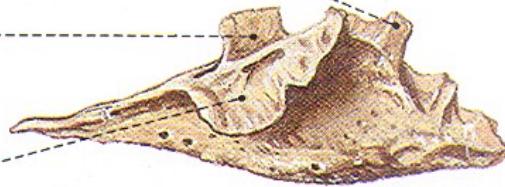
Processus maxillaris  
Processus lacrimalis  
Processus ethmoidalis



Proc. lacrimalis

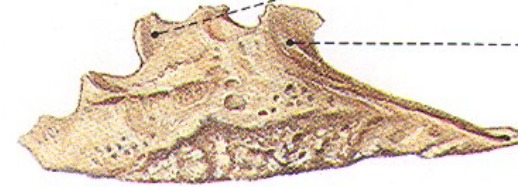
Proc. ethmoidalis

Proc. maxillaris



Proc. lacrimalis

Proc. ethmoidalis

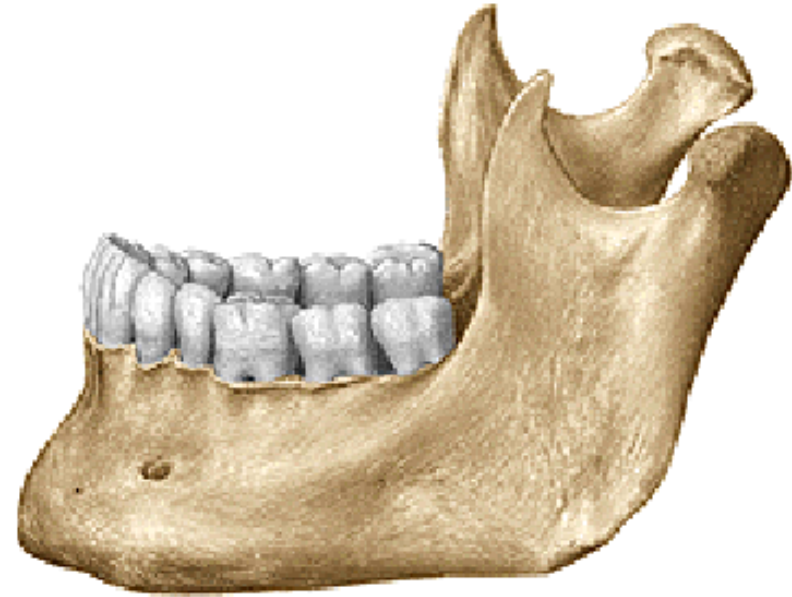


# Mandibula

Corpus mandibulae (basis mandibulae)

Ramus mandibulae dx. et sin.

Angulus mandibulae dx. et sin.





# Corpus mandibulae

Fossa digastrica

Spina mentalis (sup. et inf.)

Linea mylohyoidea

Fovea sublingualis

Fovea submandibularis

Crista buccinatoria

Trigonum retromolare



# Corpus mandibulae

Tuberculum mentale

Protuberantia mentalis

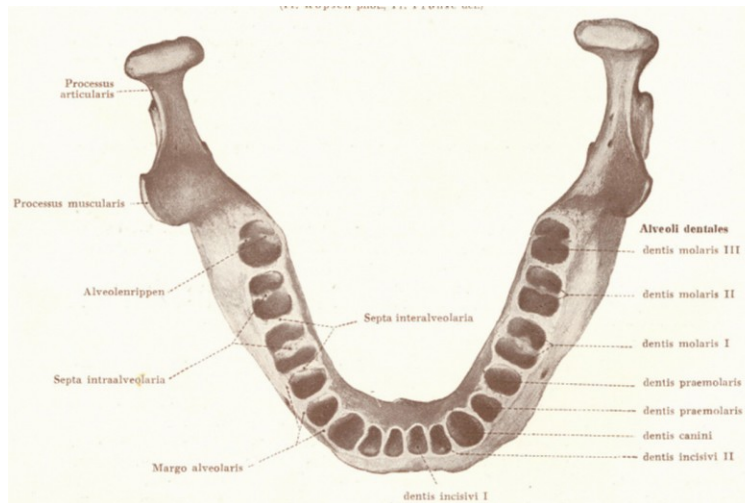
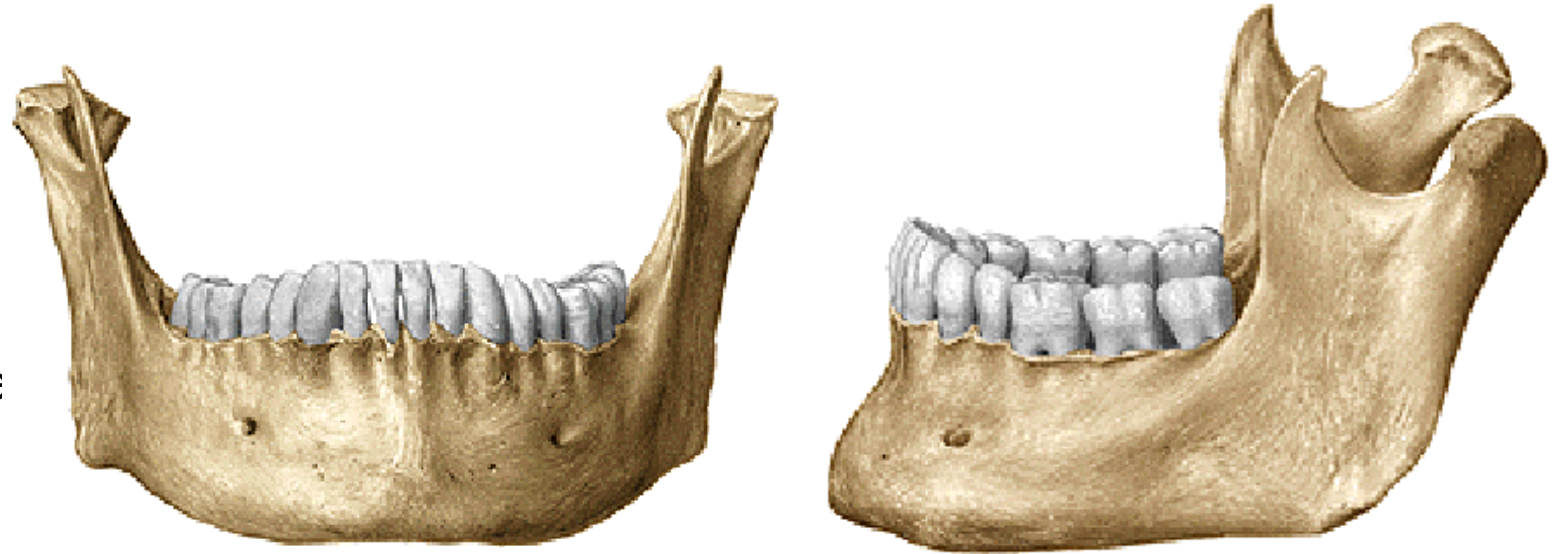
Foramen mentale

Linea obliqua (trigonum retromolare)

**Pars alveolaris**

Alveoli dentales, juga alveolaria

Septa interalveolaria, intraalveolaria



# Ramus mandibulae

Processus condylaris

Caput mandibulae

Collum mandibulae

Fovea pterygoidea

Processus coronoideus

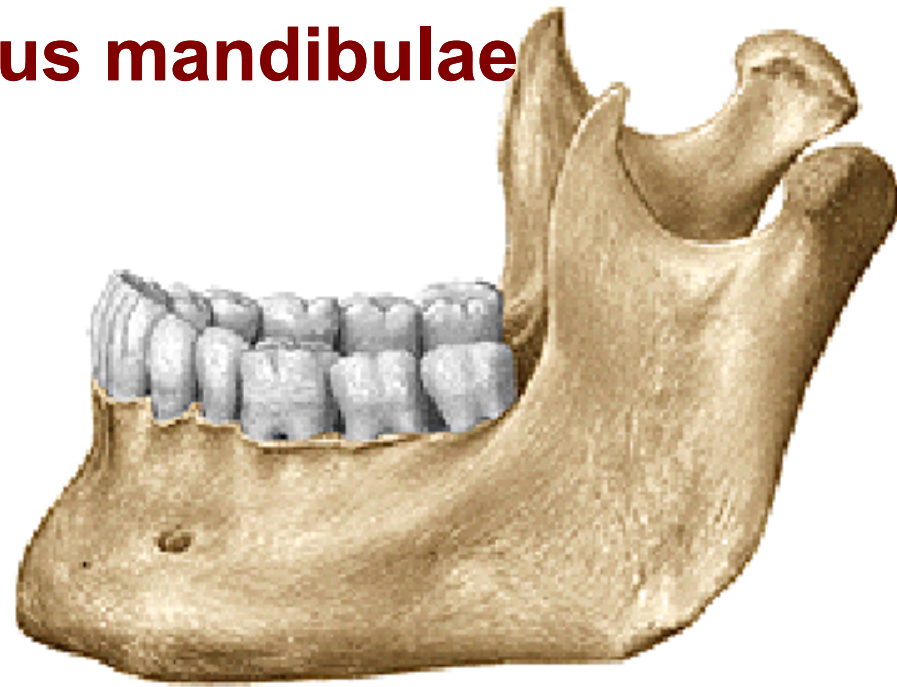
Incisura mandibulae

Foramen mandibulae

Canalis mandibulae

Lingula mandibulae

Sulcus mylohyoideus





# Angulus mandibulae (120°-125°)

Tuberositas masseterica

Tuberositas pterygoidea



Mandible of the newborn



Mandible of an senilis

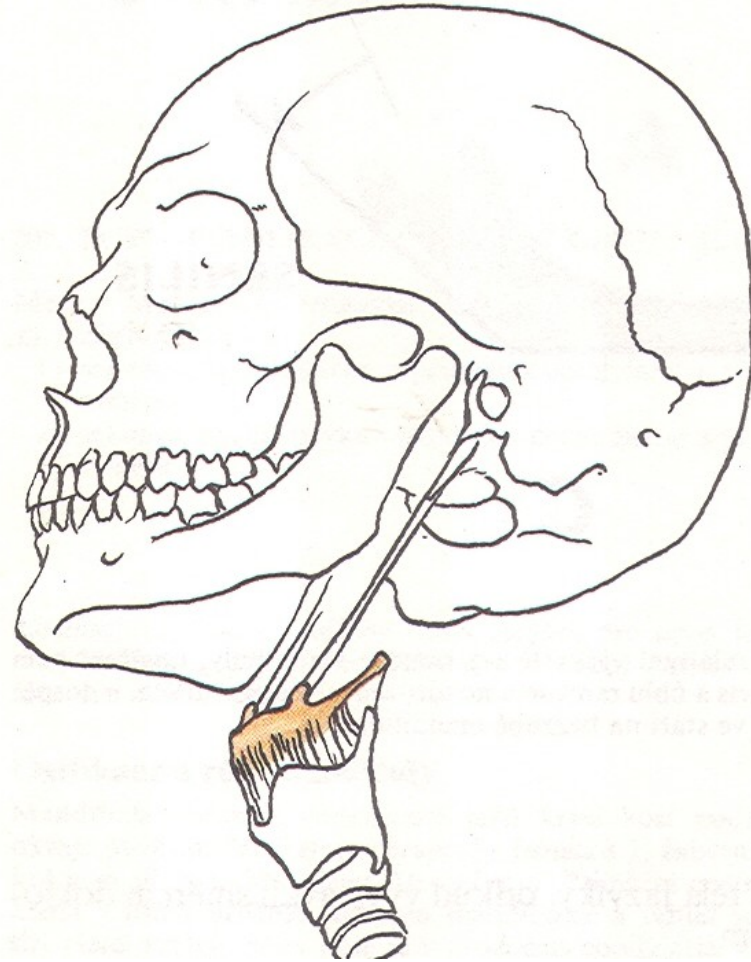
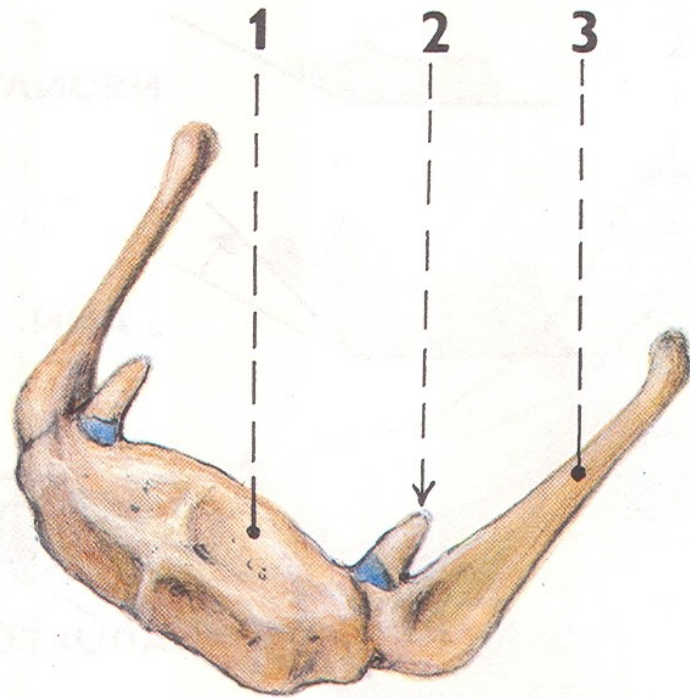


# Os hyoideum

Corpus ossis hyoidei

Cornua minora ossis hyoidei

Cornua majora ossis hyoidei





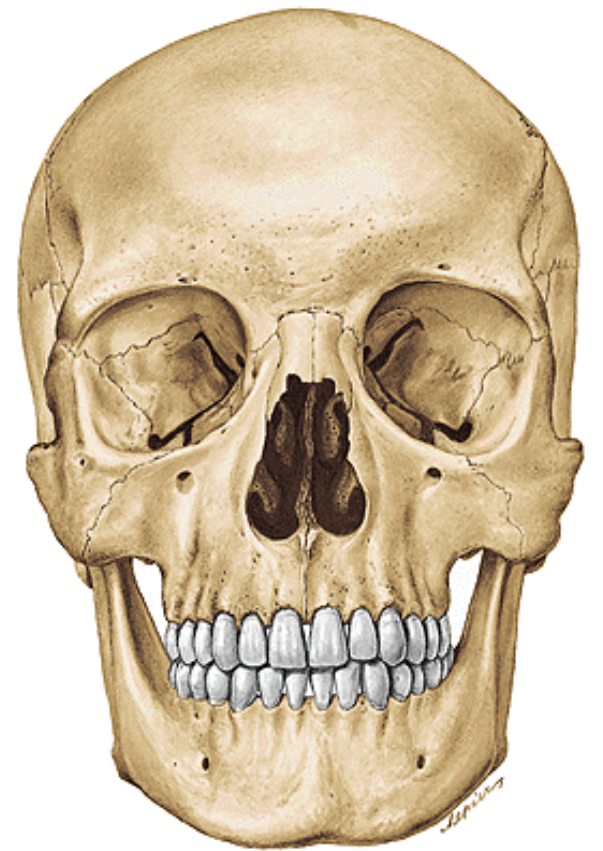
# Skull cavities

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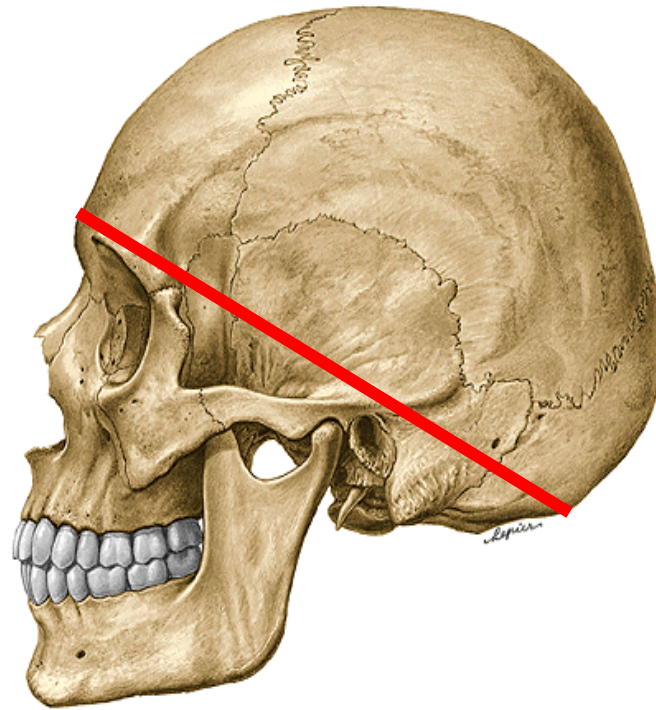
LECTURE 6

DENTISTRY AUTUMN 2015

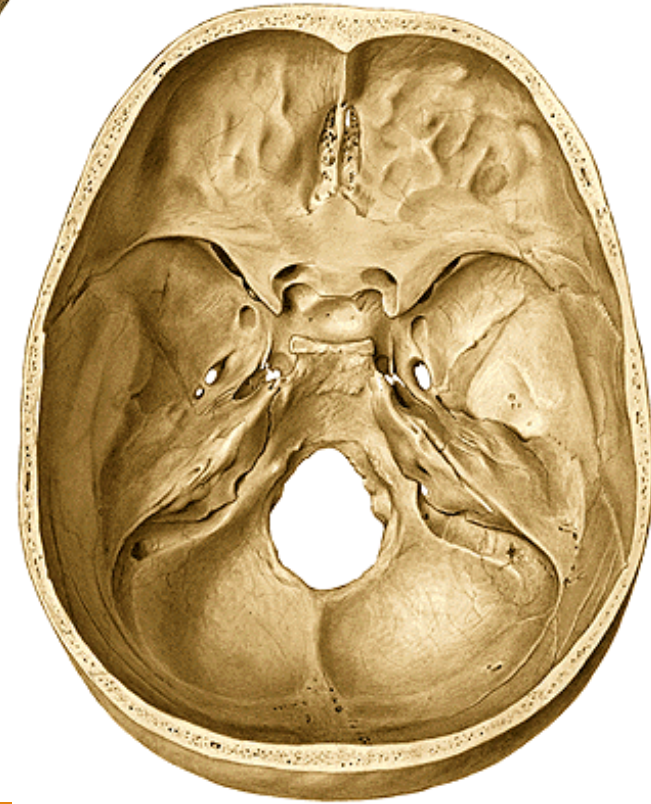
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**Calvaria**



**Basis cranii**



## Calvaria



**frons, vertex, occiput**

**sutura sagittalis, coronalis,  
lambdoidea, squamosa**

**tubera frontalia, parietalia**

**linea temporalis superior et inferior,**

**foramina parietalia**



**impressiones gyrorum**

**juga cerebraalia**

**foveolae granulares**

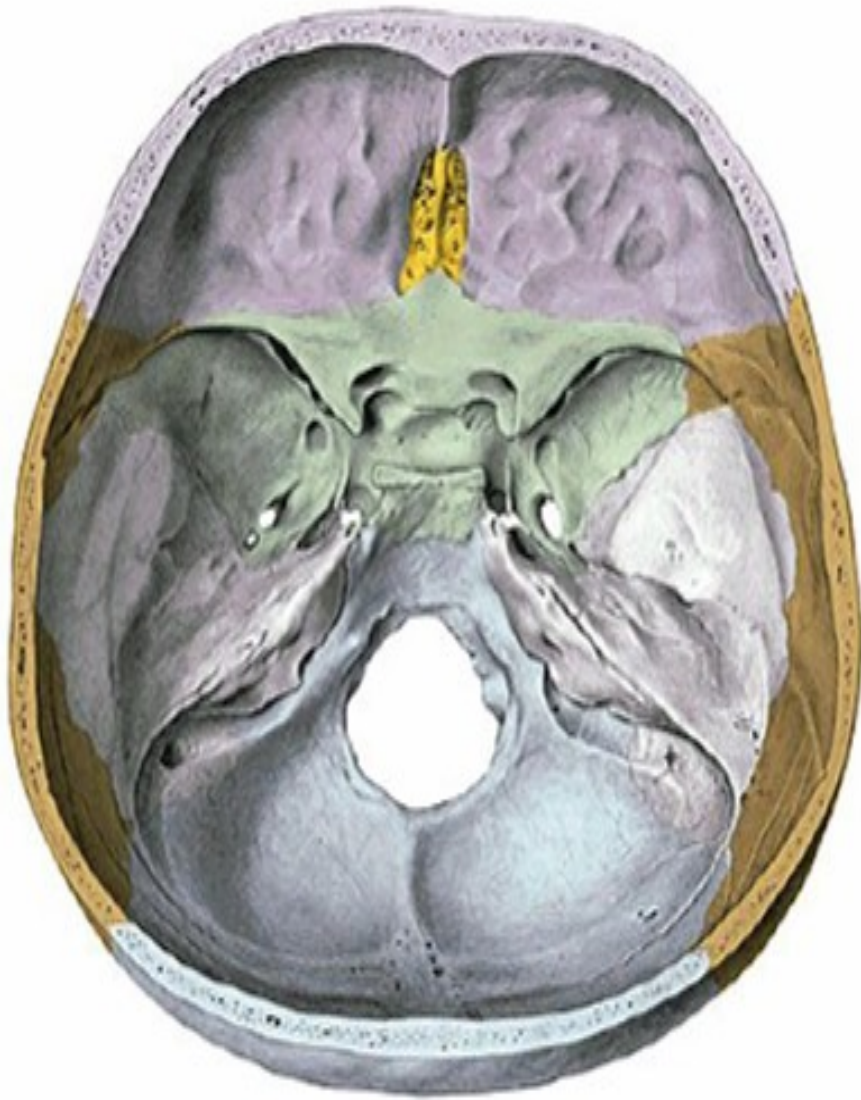
**sulci arteriosi**

**sulcus sinus sagittalis**

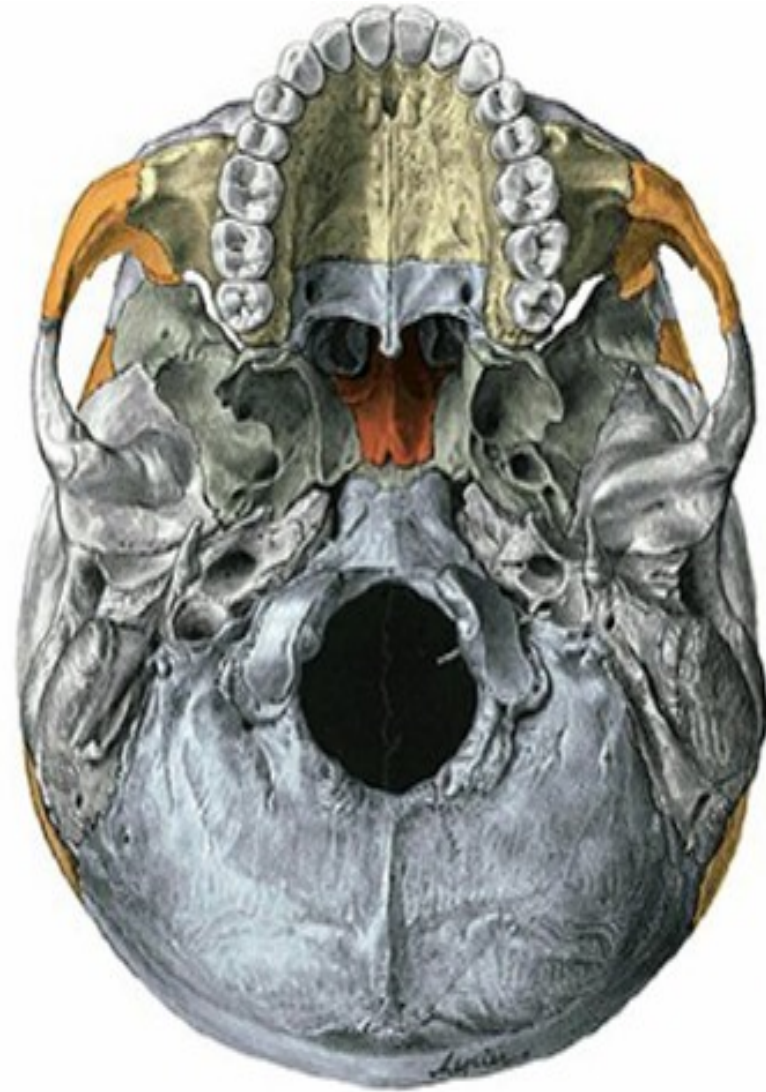
**superior**

**sulcus sinus transversi**





**Basis cranii interna**



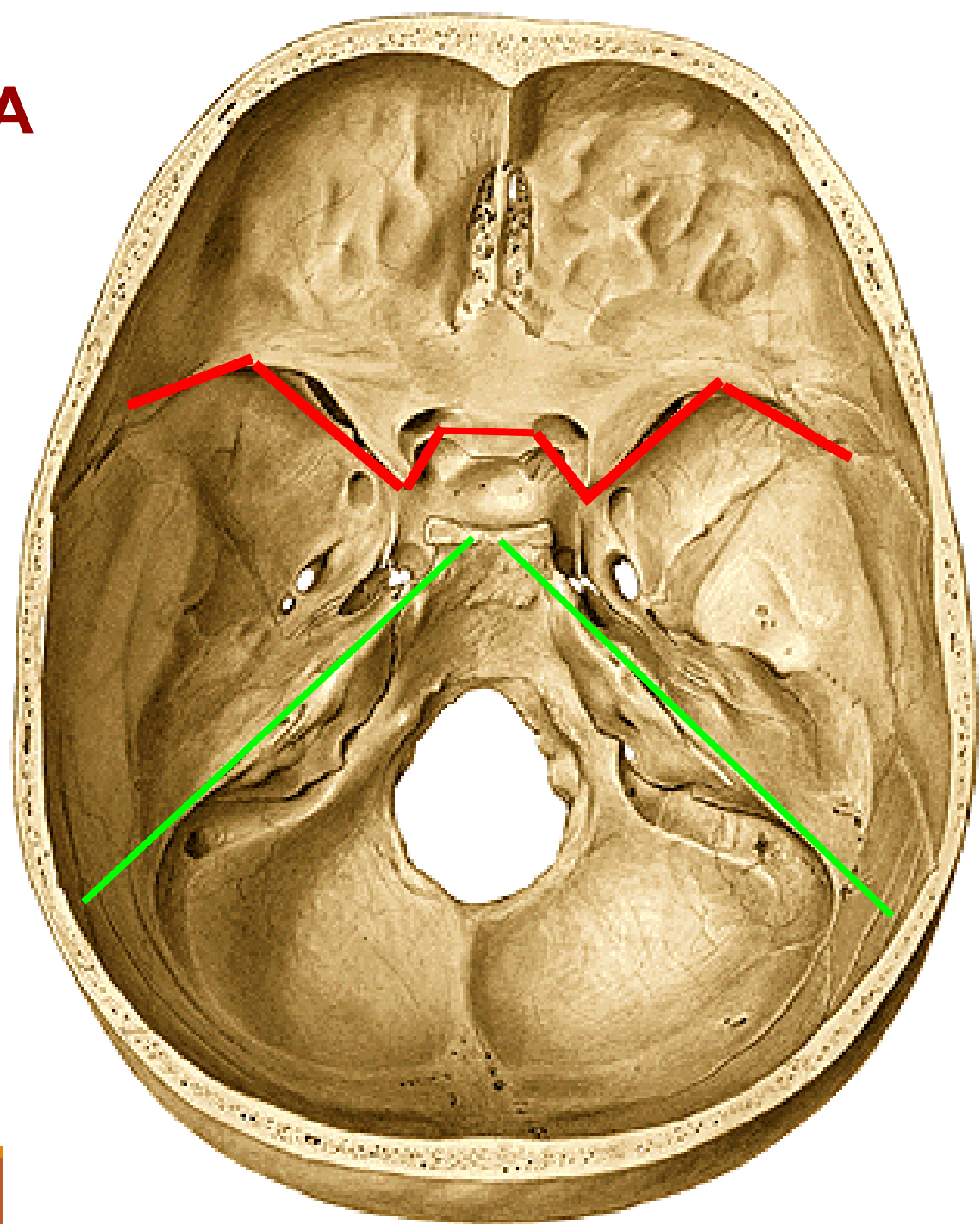
**Basis cranii externa**

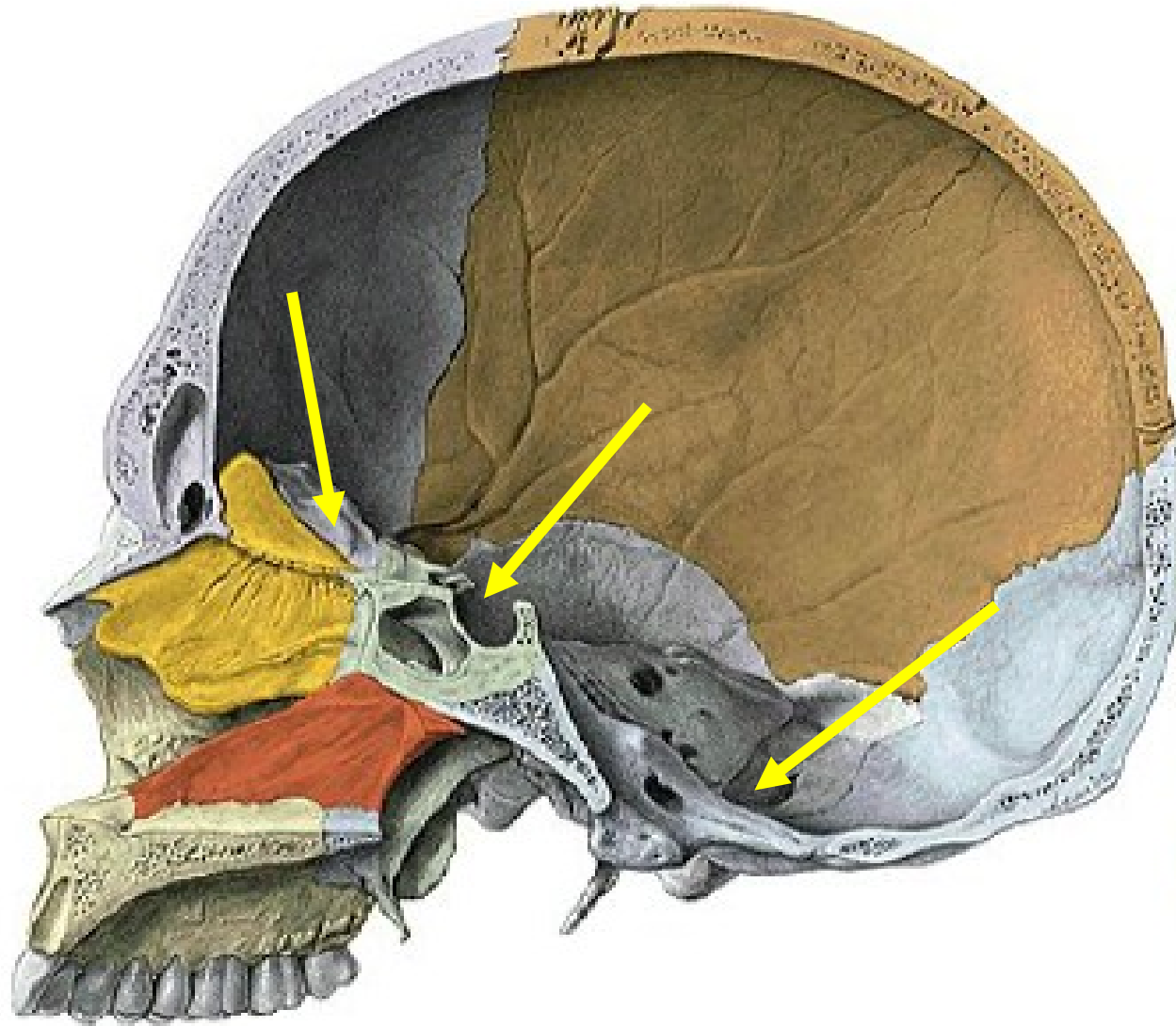
# BASIS CRANII INTERNA

Fossa cranii anterior

Fossa cranii media

Fossa cranii posterior





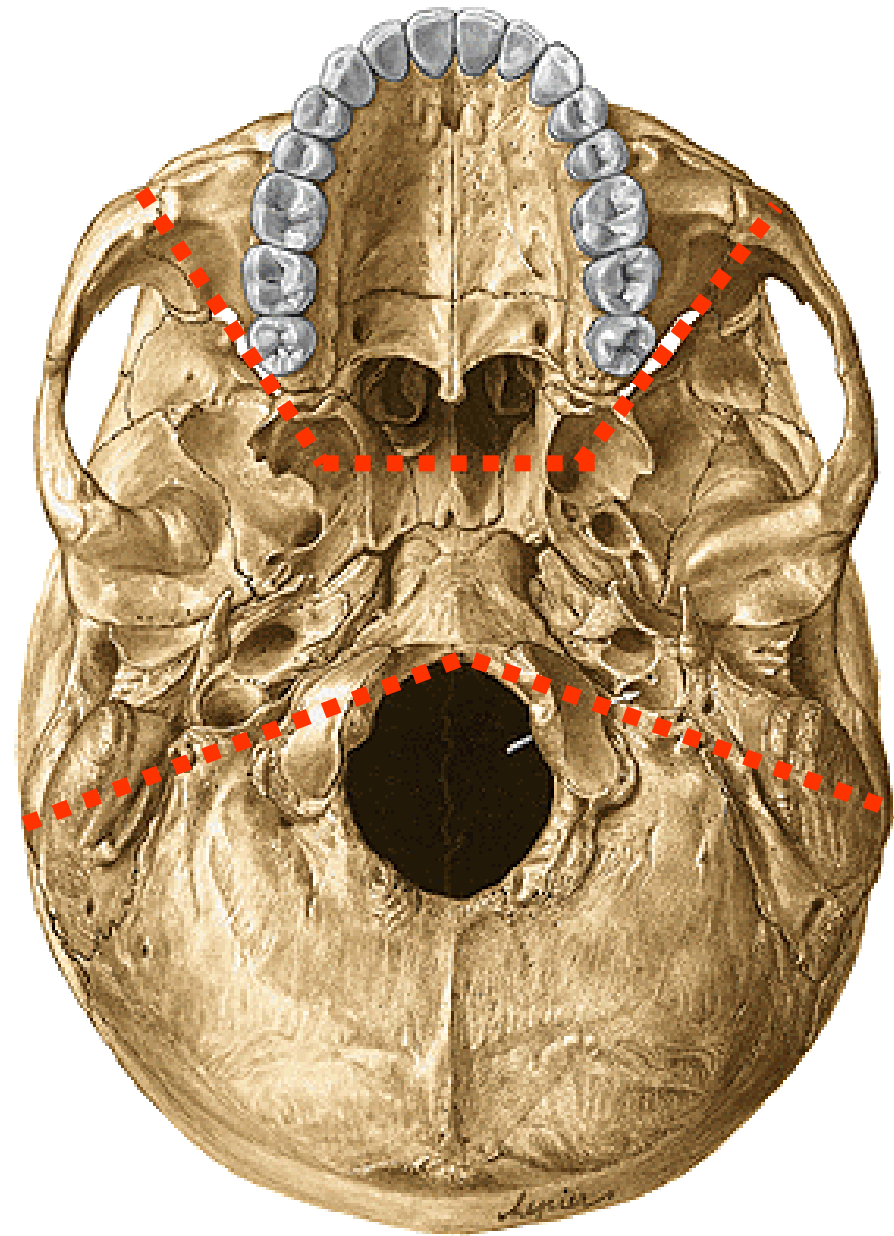


# BASIS CRANII EXTERNA

Fossa cranii anterior

Fossa cranii media

Fossa cranii posterior



# FOSSAE CRANII

**FOSSA TEMPORALIS**

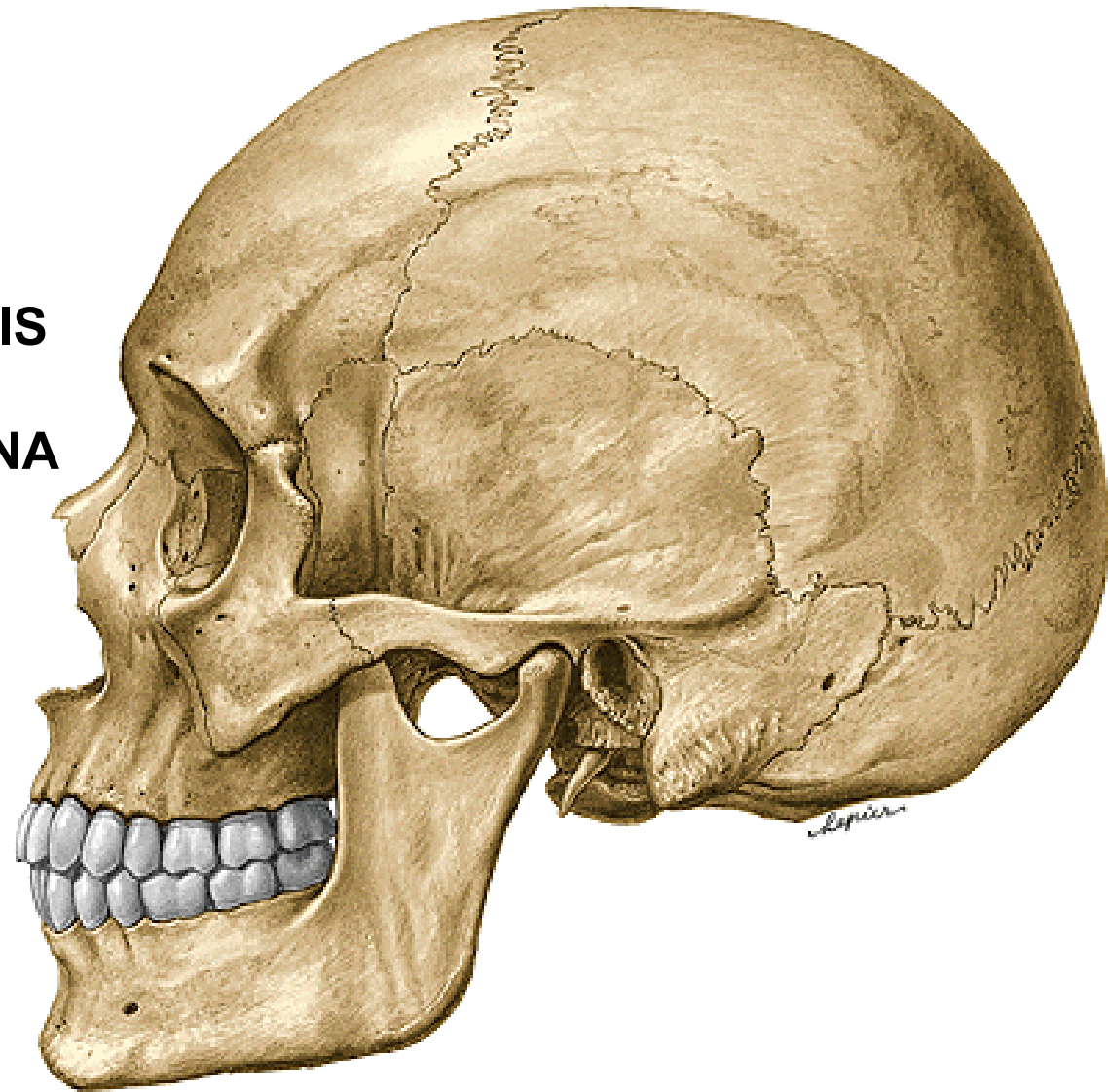
**FOSSA INFRATEMPORALIS**

**FOSSA PTERYGOPALATINA**

**ORBITA**

**CAVITAS NASI OSSEA**

**CAVUM ORIS**



# Fossa temporalis

## Medial wall

linea temporalis superior (os frontale, os parietale)  
facies temporalis alae majoris ossis sphenoidalis  
pars squamosa ossis temporalis

## Ventral wall

facies temporalis ossis zygomatici (processus frontalis)  
processus zygomaticus ossis frontalis

## Lateral wall

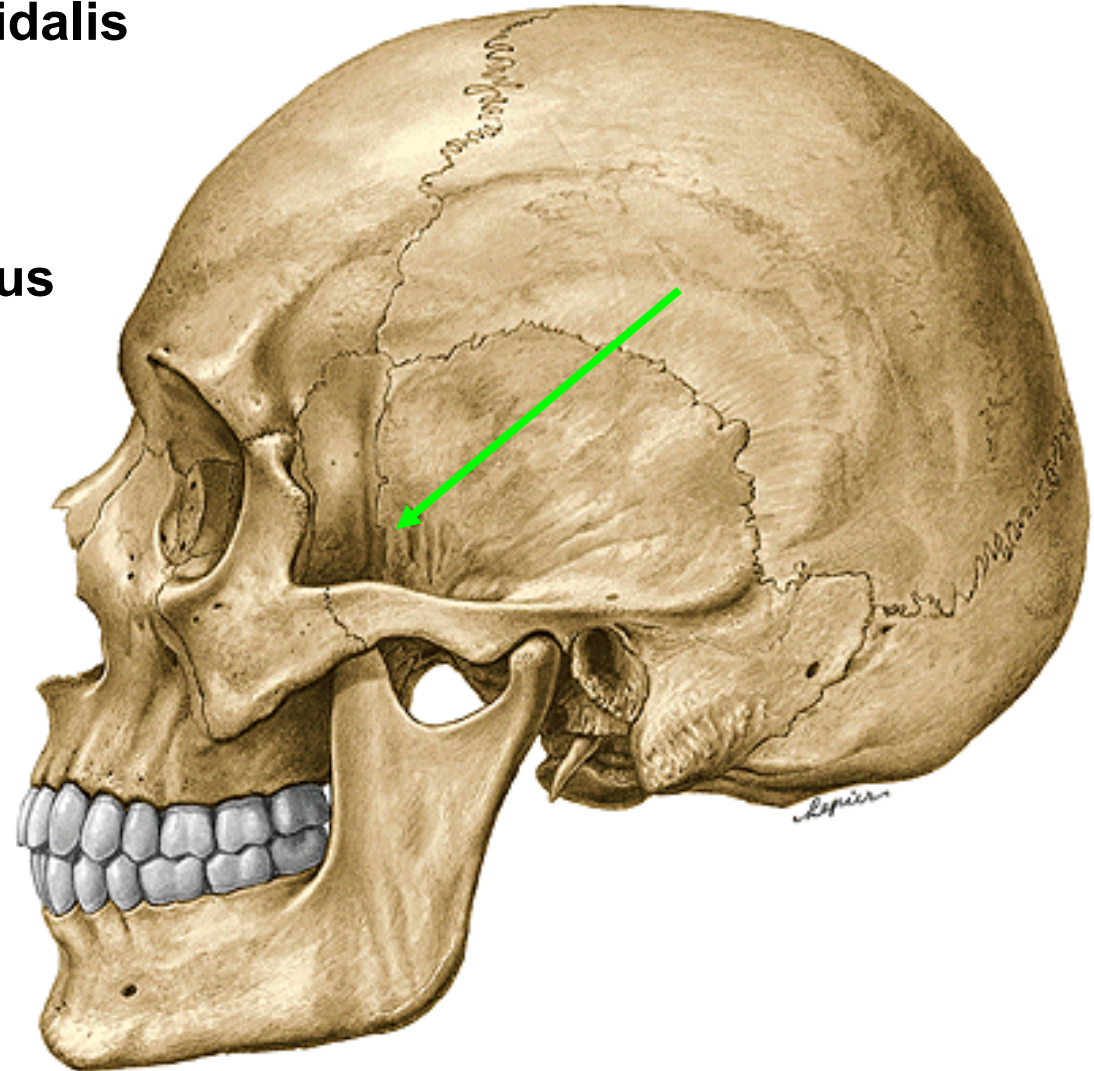
arcus zygomaticus  
crista infratemporalis

## Content

m. temporalis + nerves + vessels

## Conections

orbita fissura orbitalis inferior  
fossa infratemporalis





## Roof

Crista infratemporalis

Facies infratemporalis alae majoris ossis sphenoidalis

## Medial wall

Lamina lateralis processus pterygoidei

## Lateral wall

Ramus mandibulae

## Ventral wall

Facies infratemporalis corporis maxillae (tuber maxillae)

## Content

mm. pterygoidei + nerves + vessels

## Openings

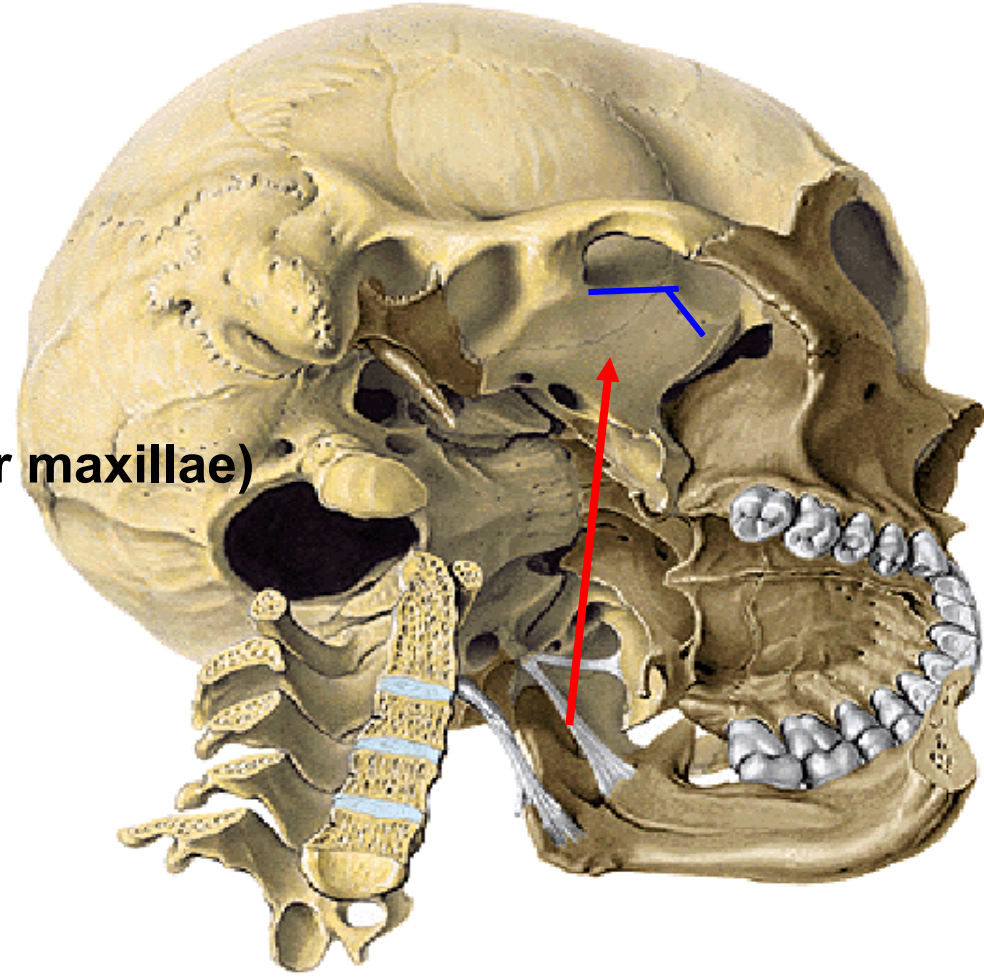
foramen ovale

foramen spinosum

foramen mandibulare

fissura orbitalis inferior

# Fossa infratemporalis



# Fossa pterygopalatina

## Roof

*Facies maxillaris alae majoris ossis sphen*

## Medial wall

*Lamina perpendicularis ossis palatini*

## Ventral wall

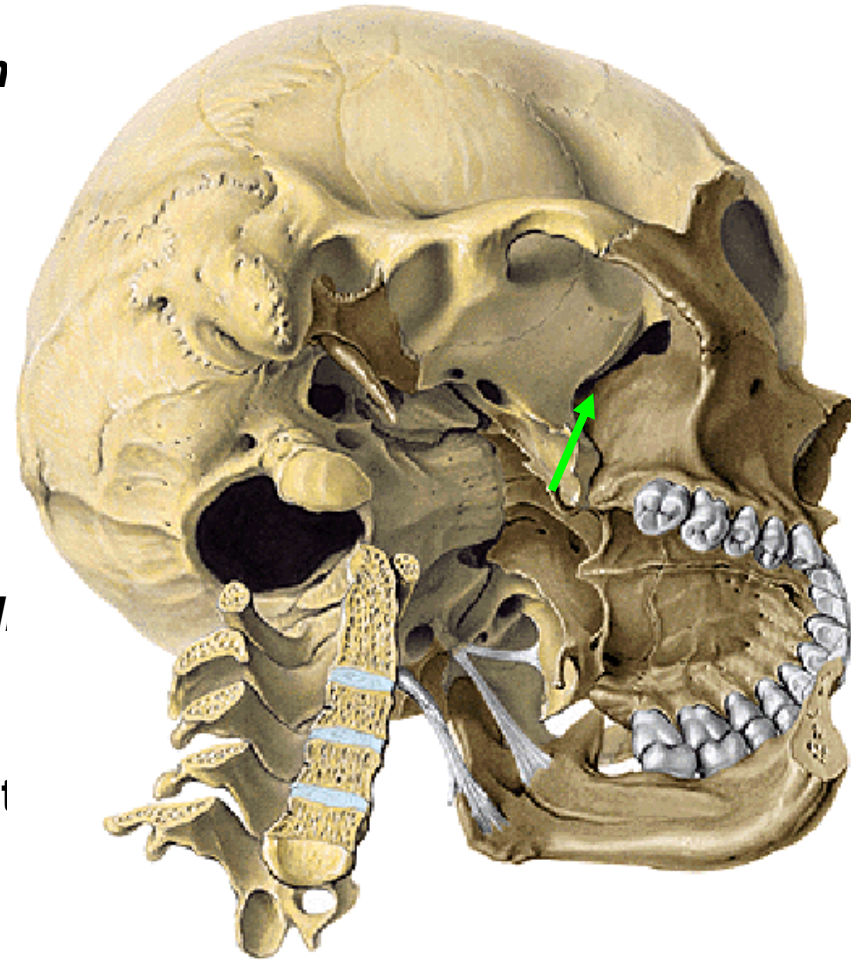
*tuber maxillae*

## Dorsal wall

*Processus pterygoideus ossis sphenoidal*

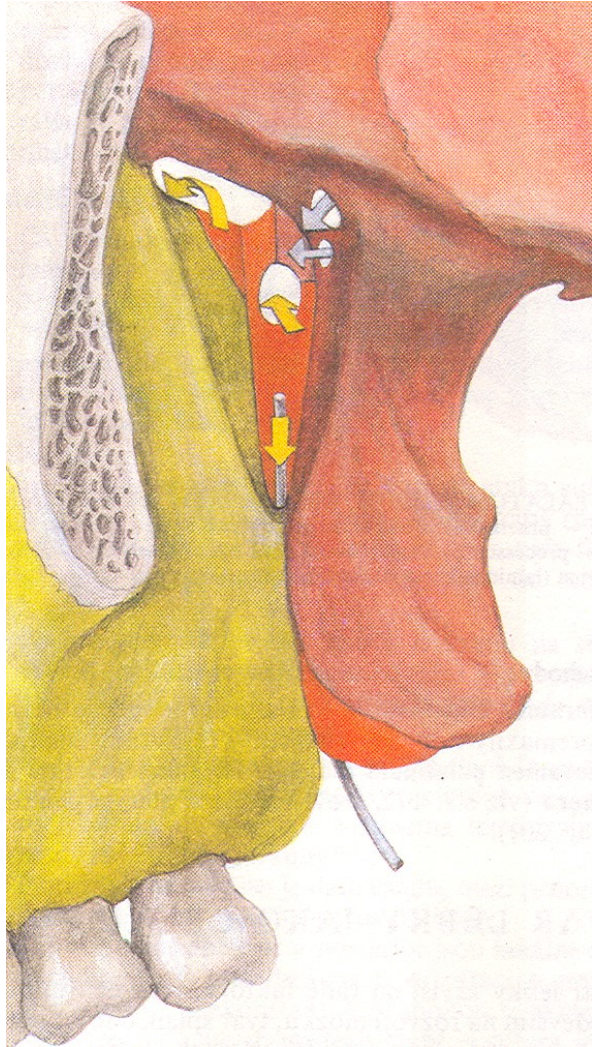
## Content

Vessels and nerves (ganglion pterygopalat





# Fossa pterygopalatina – openings and communications



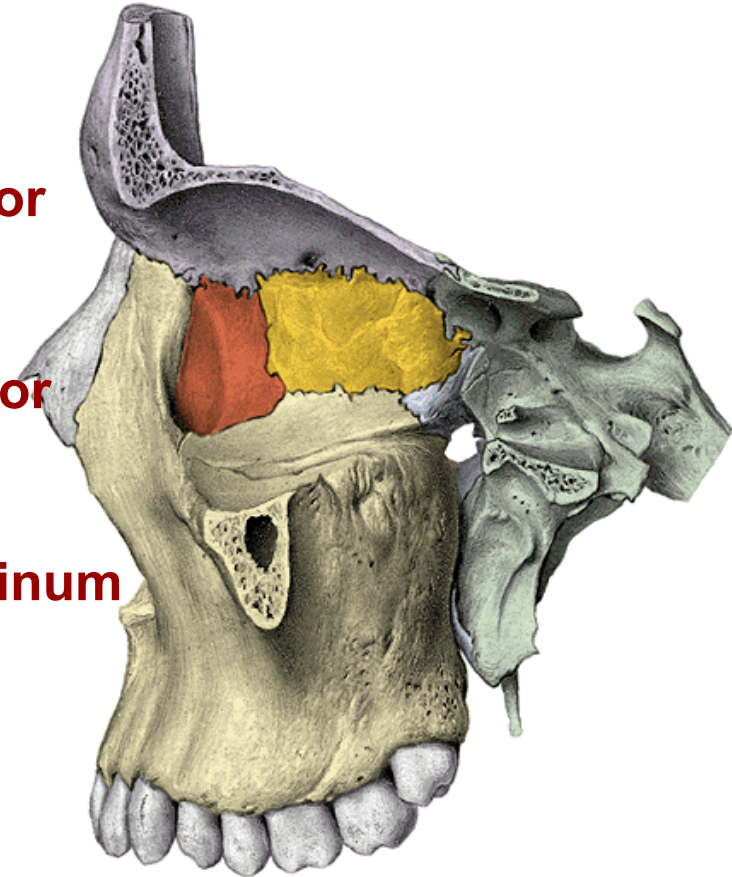
**foramen rotundum**  
fossa cranii media

**canalis palatinus major**  
cavum oris

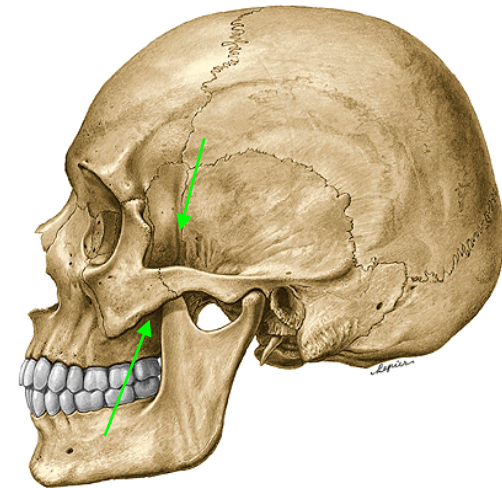
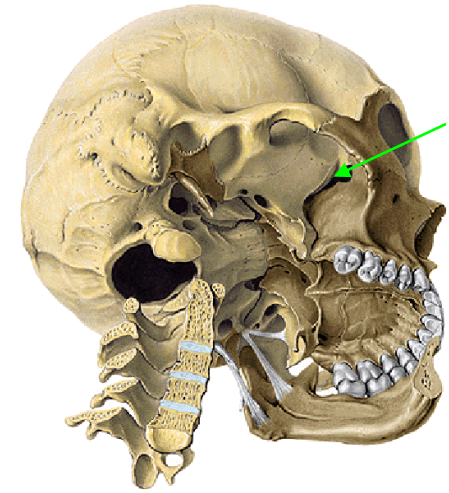
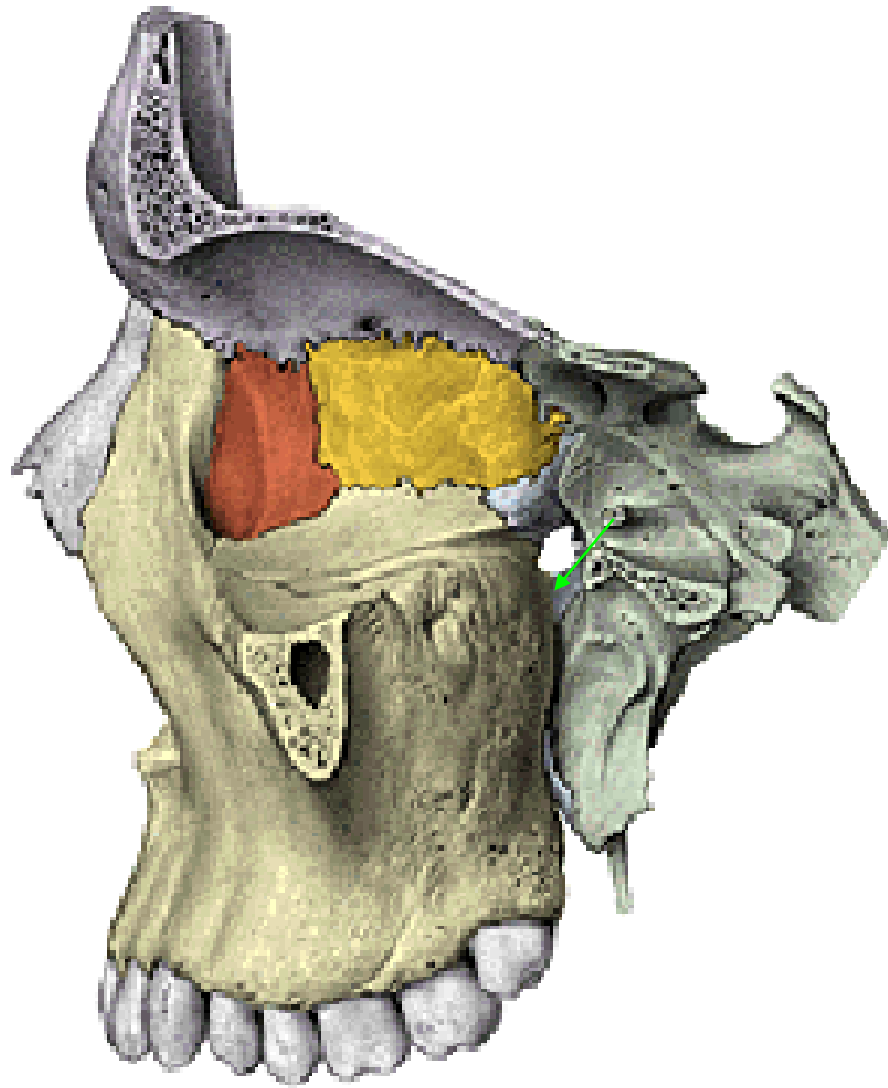
**fissura orbitalis inferior**  
orbita

**foramen sphenopalatinum**  
cavum nasi osseum

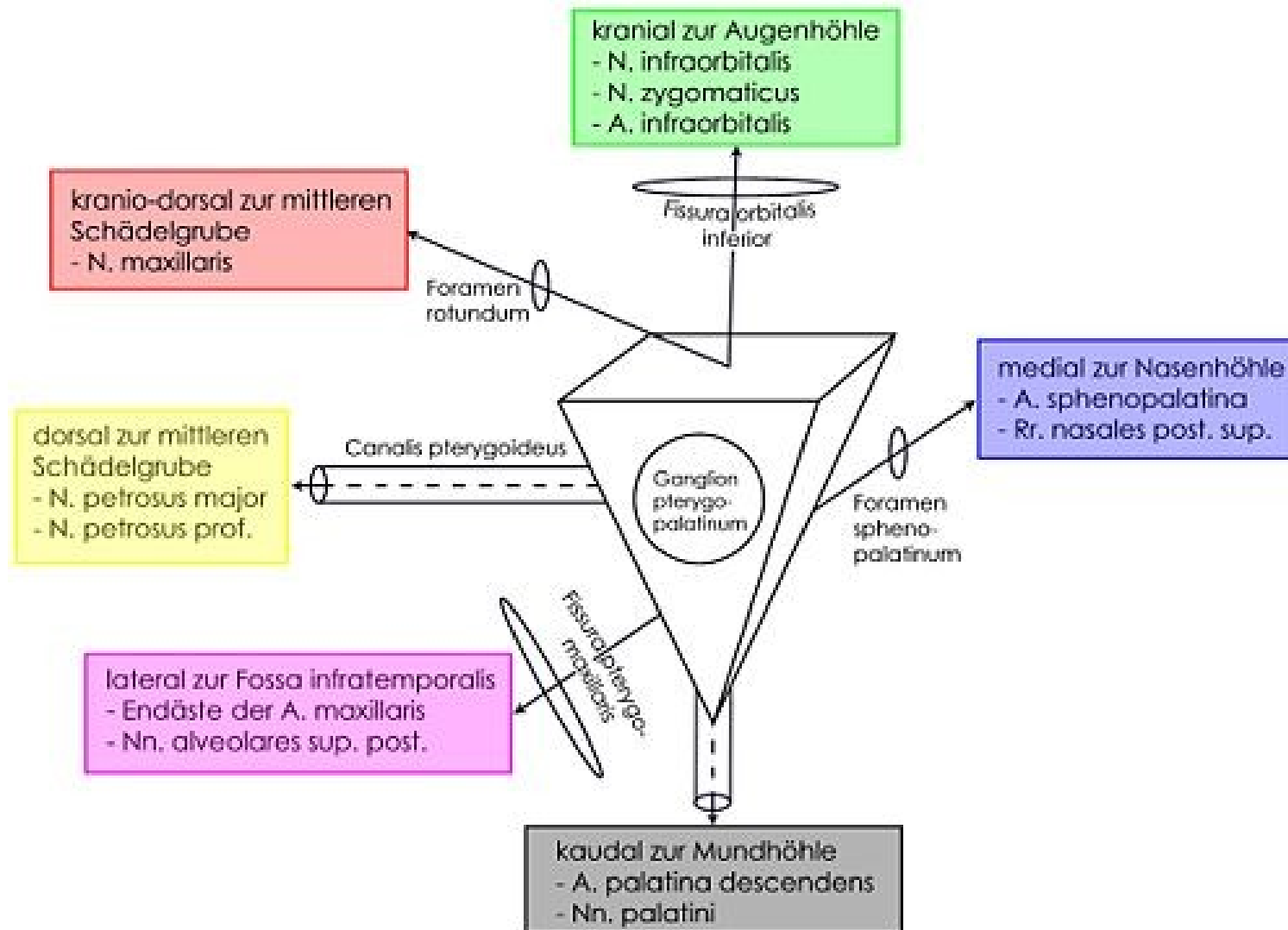
**canalis pterygoideus**  
basis cranii externa



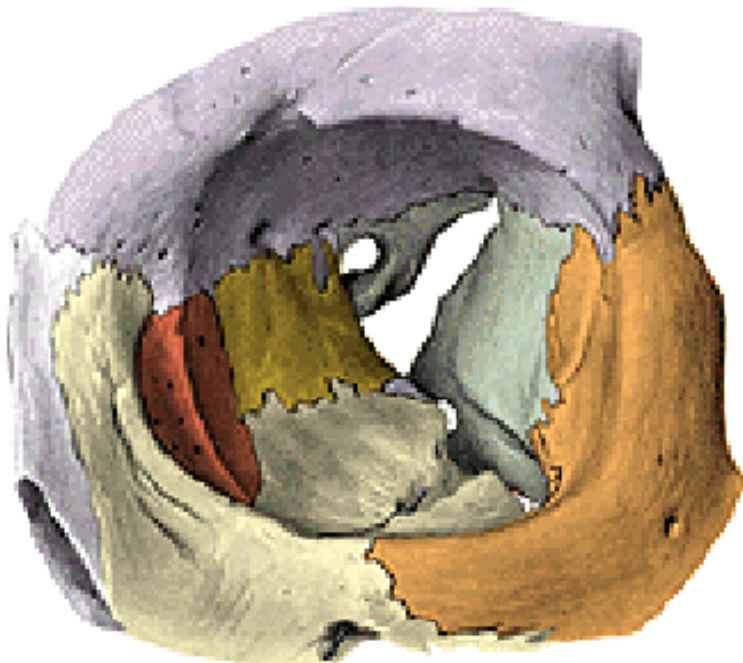




**Fossa pterygopalatina**



# Orbita



## **Aditus orbitae (base)**

**margo supraorbitalis, infraorbitalis**

## **Apex**

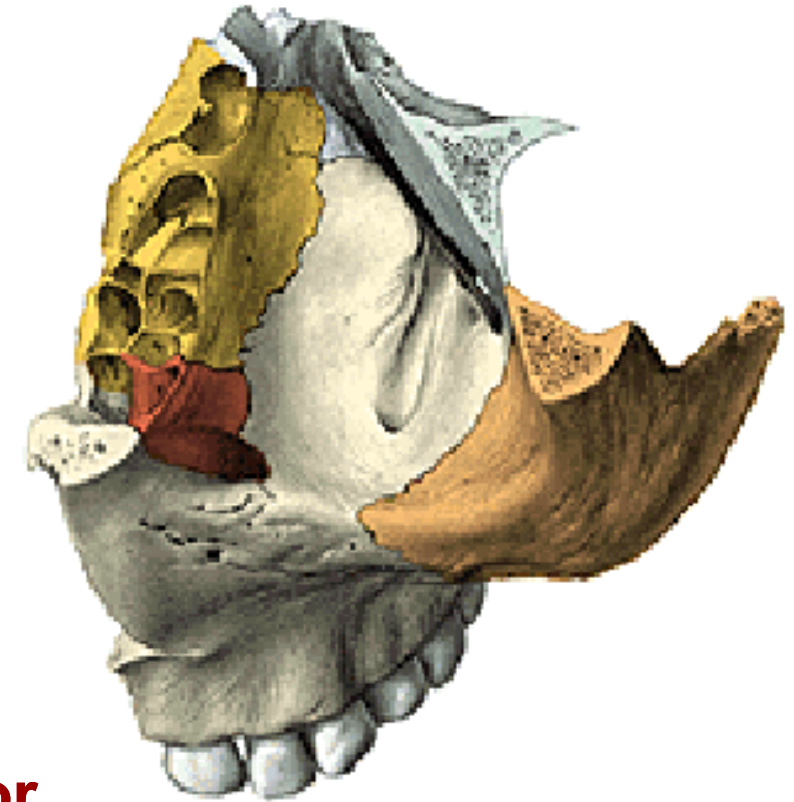
**Canalis opticus**

## **Roof**

**pars orbitalis ossis frontalis**

**ala minor ossis sphenoidalis**

**(fovea trochlearis, fossa glandulae lacrimalis)**



## **Floor**

**facies orbitalis corporis maxillae**

**(sulcus & canalis infraorbitalis)**

**facies orbitalis ossis zygomatici**

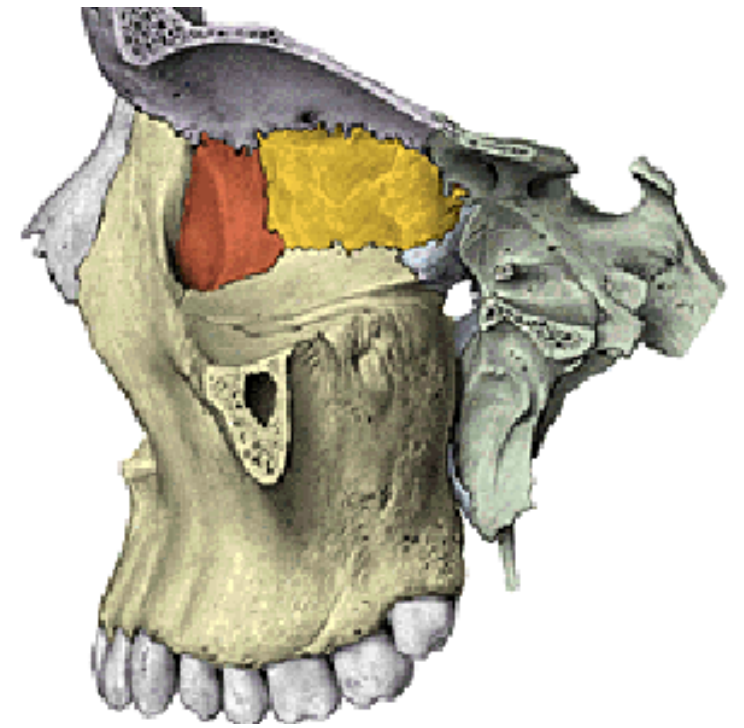
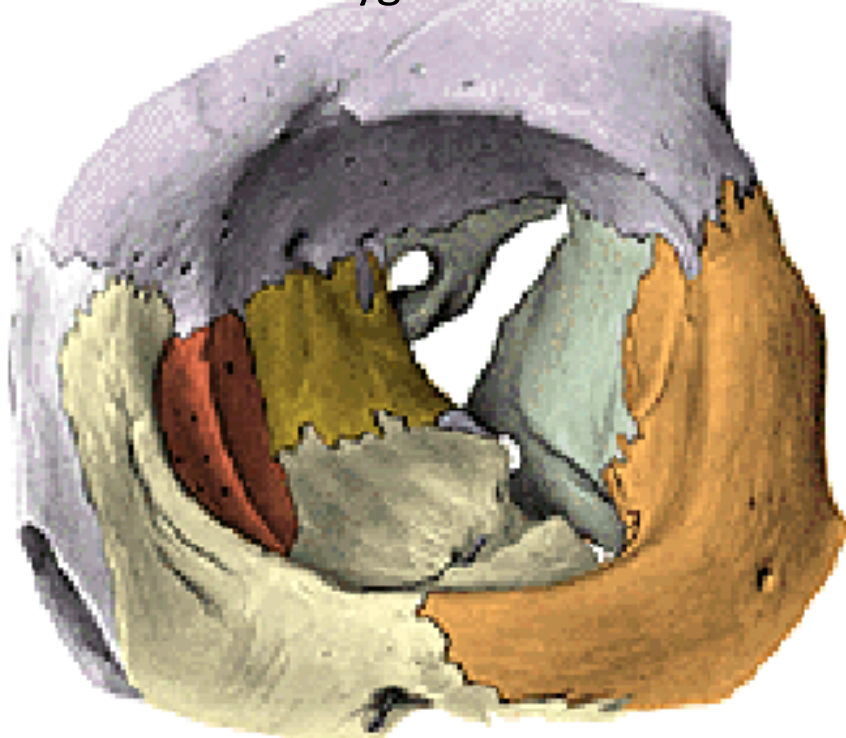
**processus orbitalis ossis palatini**



## **Lateral wall**

**facies orbitalis ossis zygomatici**  
**facies orbitalis alae majoris ossis**  
**sphenoidalis**

**openings:** fissura orbitalis superior  
fissura orbitalis inferior  
foramen zygomaticoorbitale



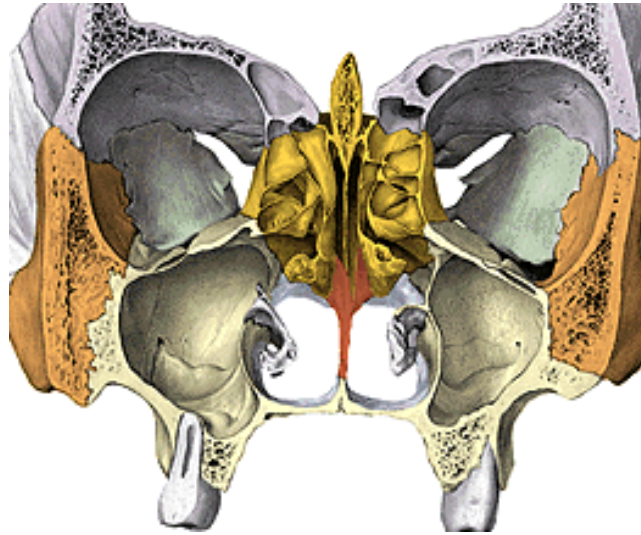
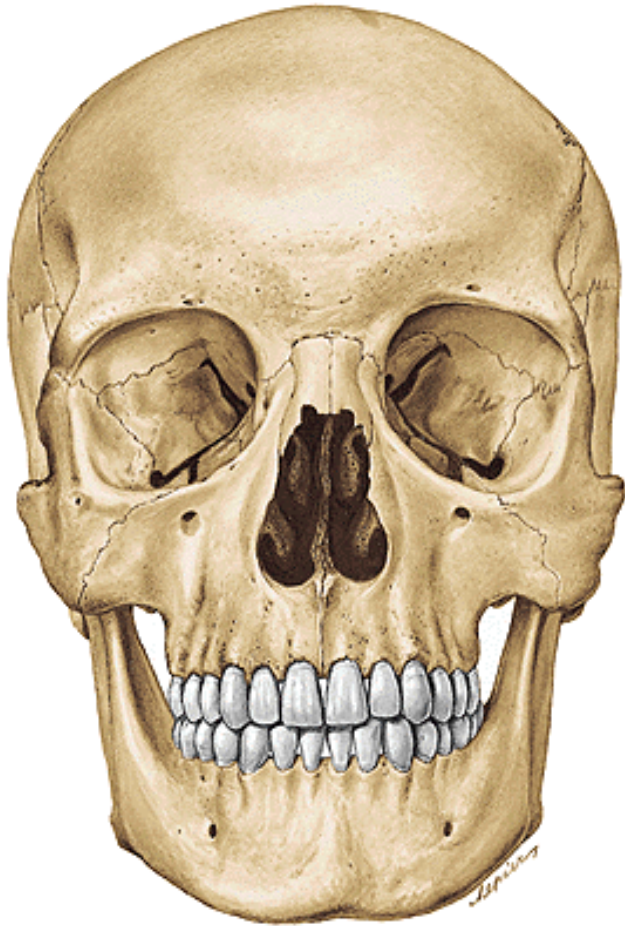
## **Medial wall**

**processus frontalis maxillae**  
**os lacrimale**  
**lamina orbitalis ossis ethmoidalis**  
(fossa sacci lacrimalis)  
**ala minor ossis sphenoidalis**

**openings:** foramen ethmoidale anterius  
foramen ethmoidale posterius

## **Cavitas nasi ossea**

**Apertura piriformis  
Choanae**



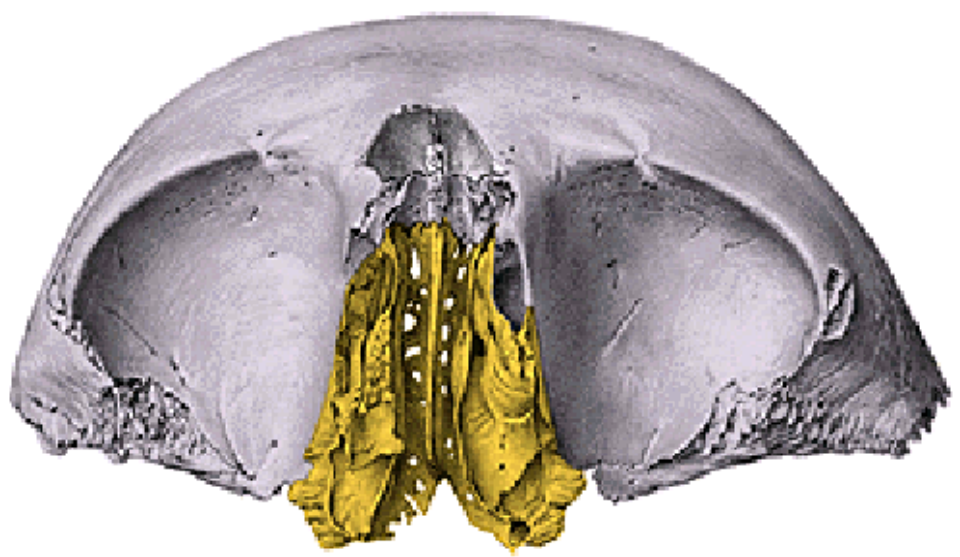
**Roof**

**Floor (palatum durum)**

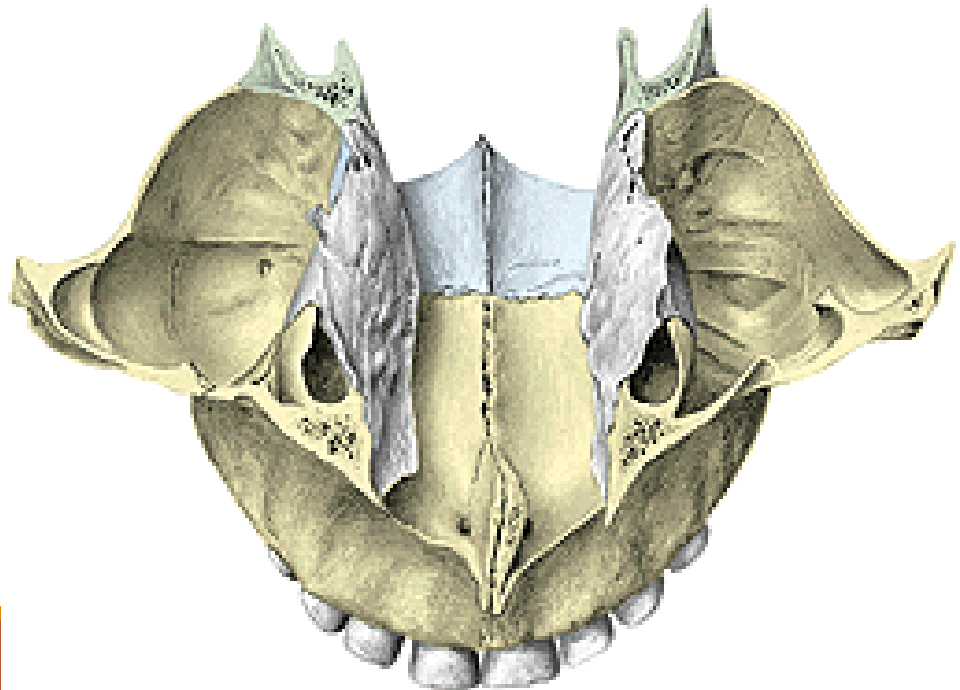
**Medial wall (septum nasi)**

**Lateral wall (3 layers)**

**Roof:** ossa nasalia,  
pars nasalis ossis frontalis,  
lamina cribrosa ossis  
ethmoidalis,  
corpus ossis sphenoidalis

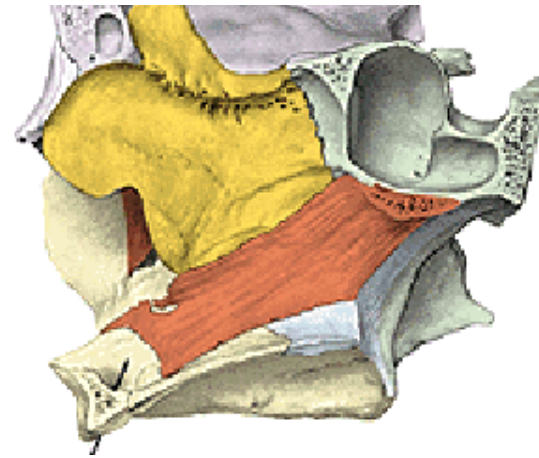
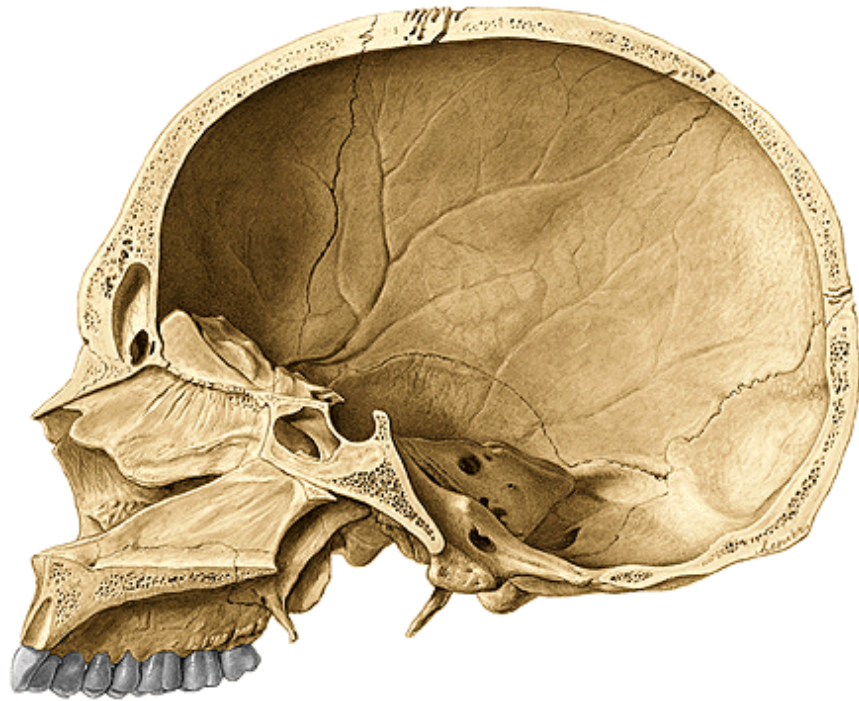


**Floor:** (palatum durum)  
processus palatini maxillae  
lamina horizontalis ossis palatini  
(os incisivum)





**Medial wall (septum nasi)** lamina perpendicularis ossis ethmoidalis  
vomer

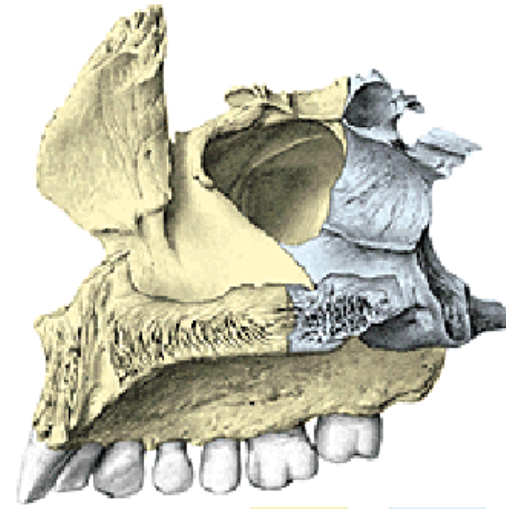




## Lateral wall

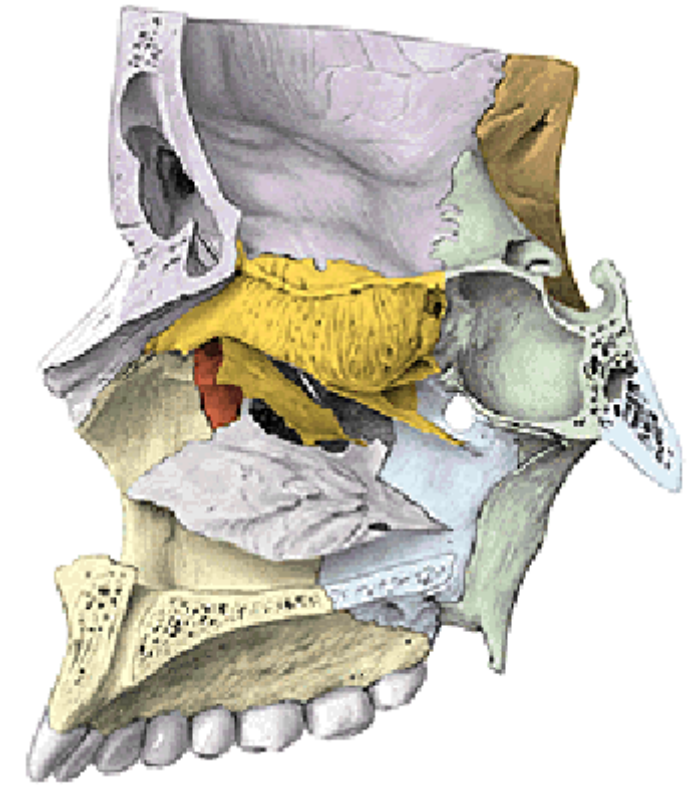
### Lateral layer

processus frontalis maxillae  
corpus maxillae  
lamina medialis processus pterygoidei



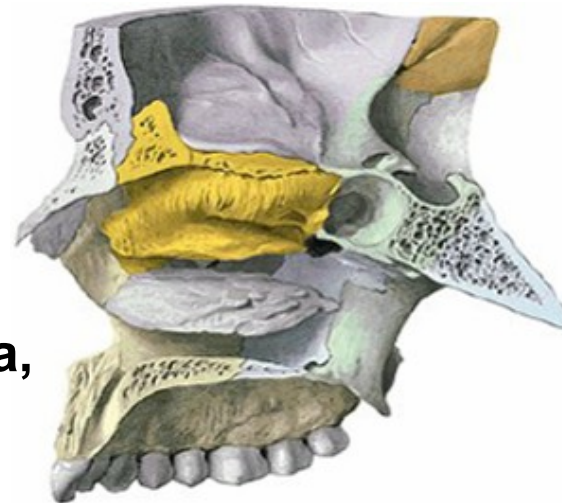
### Middle layer

os lacrimale  
lamina perpendicularis ossis palatini



### Medial layer

concha nasalis inferior  
labirintus ethmoidalis  
**(concha nasalis superior et media,  
bulla ethmoidalis, processus  
uncinatus)**



## Meatus nasi:

### Meatus nasi superior:

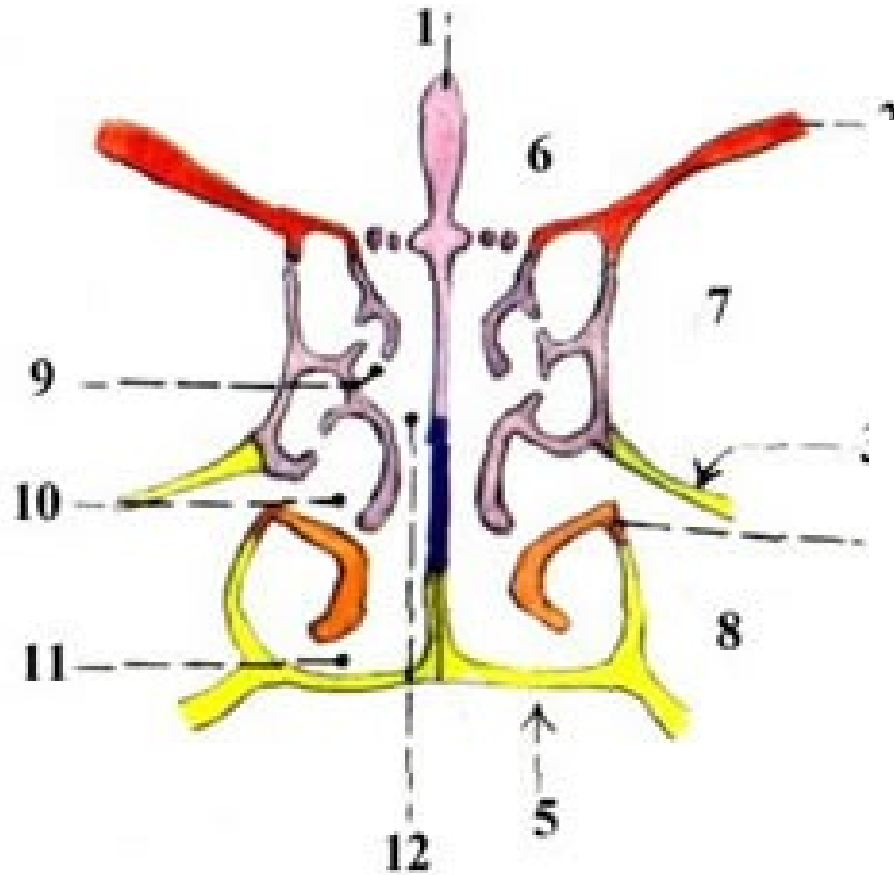
-Above concha nasalis media  
cellulae ethmoidales posteriores  
sinus sphenoidalis

### Meatus nasi medius:

-between concha nasalis media and  
concha nasalis inferior  
sinus frontalis  
sinus maxillaris  
cellulae ethmoid. ant. et med

### Meatus nasi inferior:

-below concha nasalis inferior

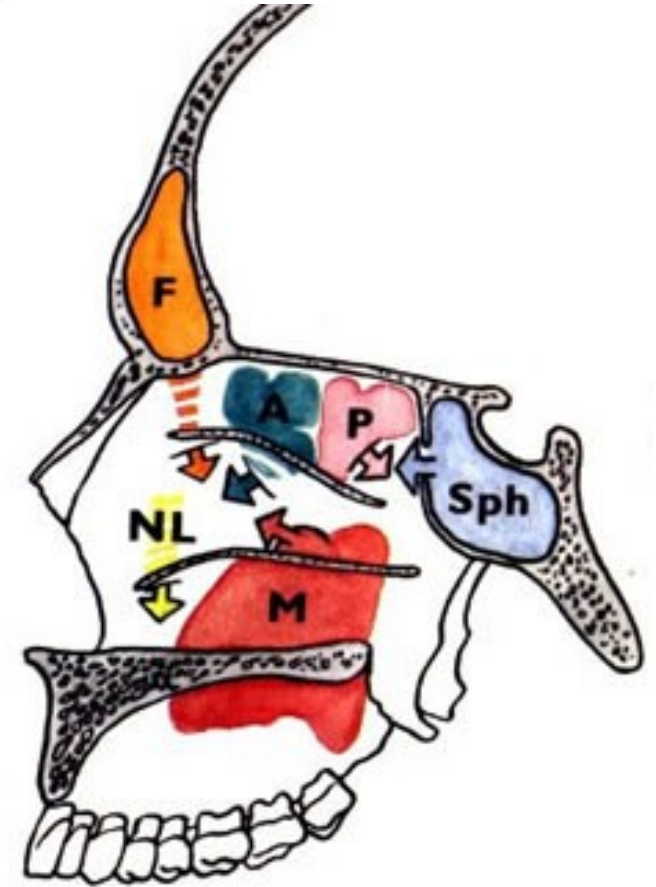


### Meatus nasi communis:

-Between margins of conchae  
and septal part

### Meatus nasopharyngeus

-Behind posterior margins of conchae and choanas



## Cavum oris osseum

### Roof (palatum durum)

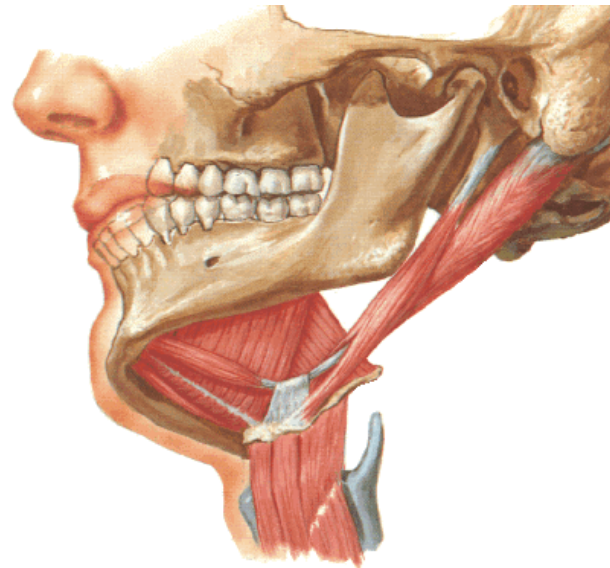
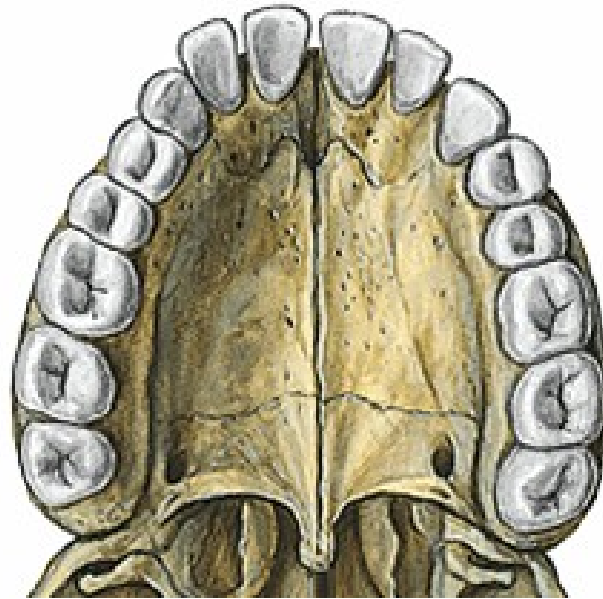
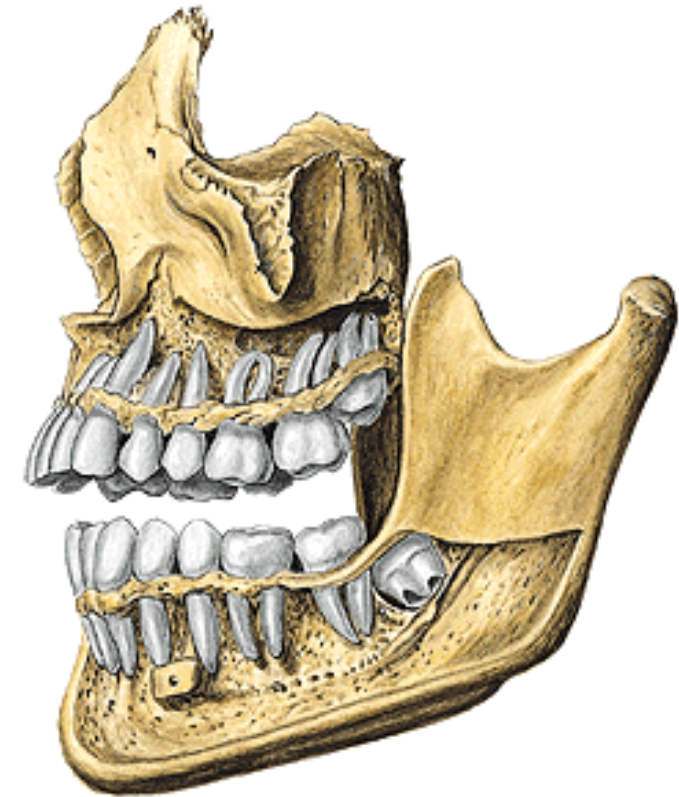
processus palatinus maxillae  
os incisivum  
lamina horizontalis ossis palatini

### Lateral and anterior walls

processus alveolares maxillae and  
mandibulae

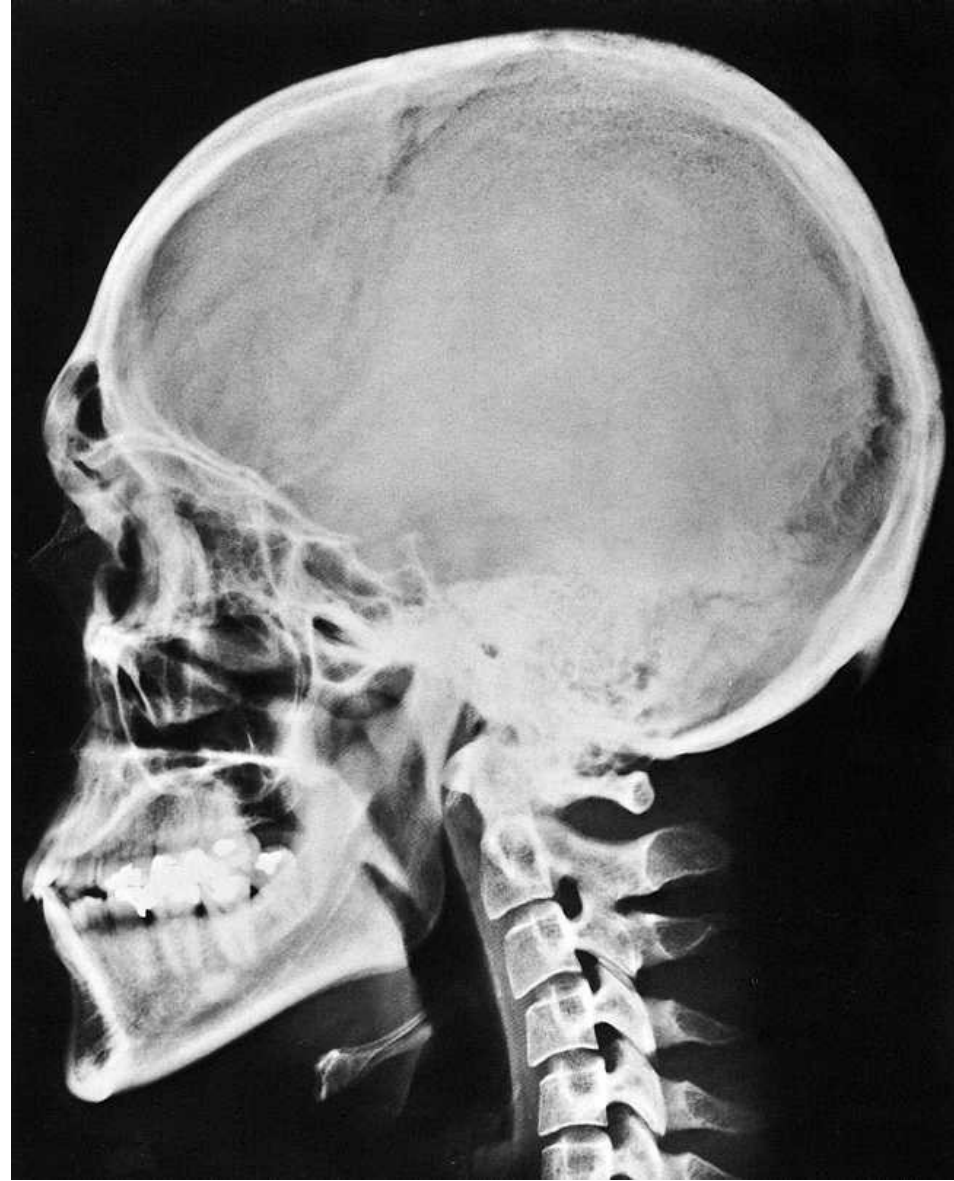
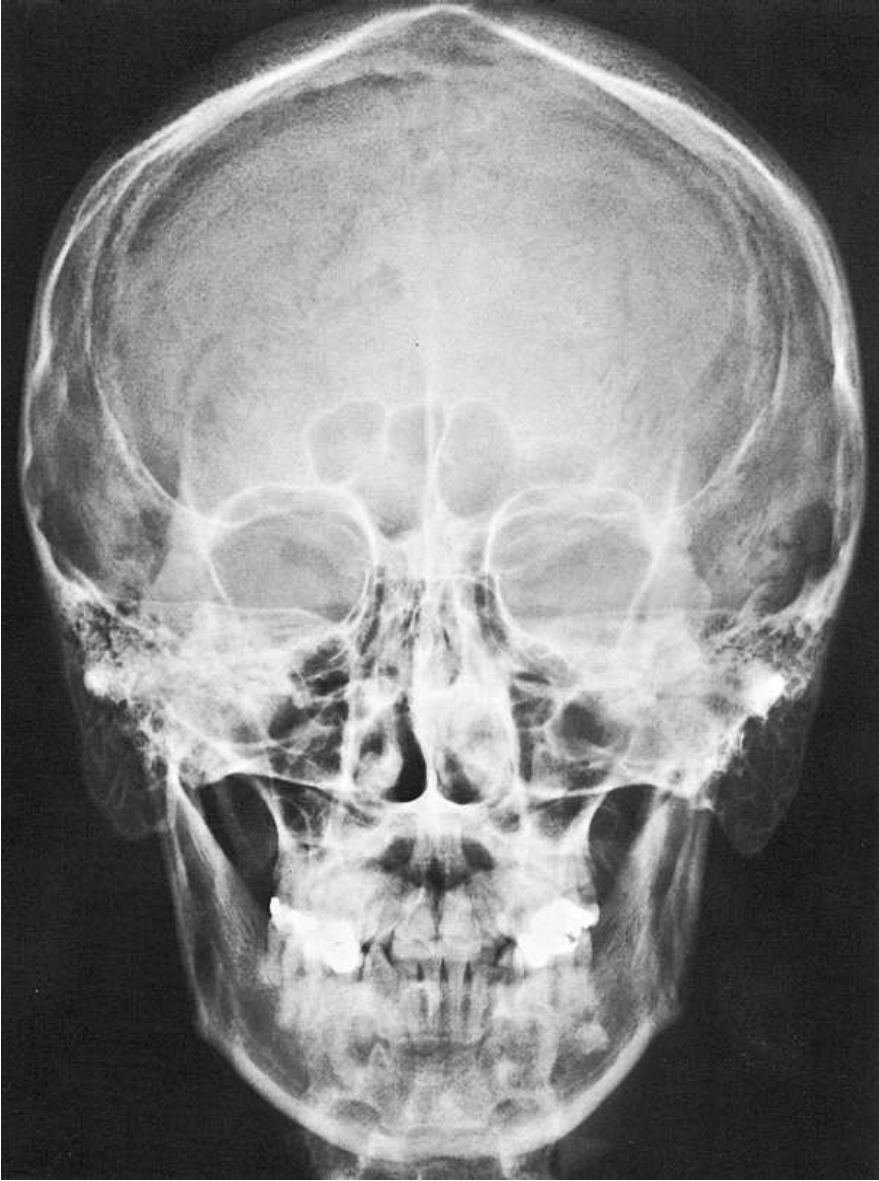
### Floor

Muscles!!!!!!!





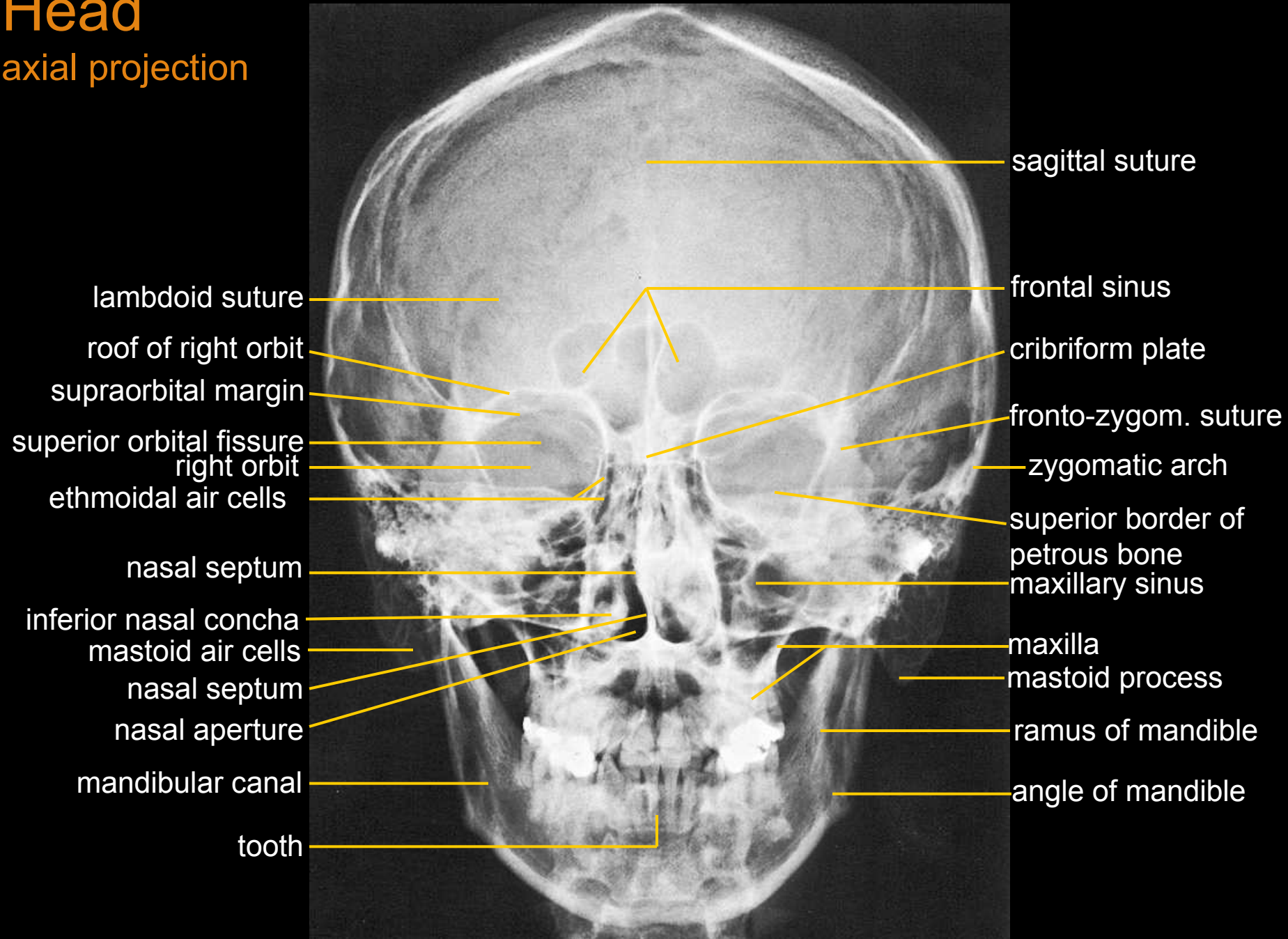
## X-ray of the head





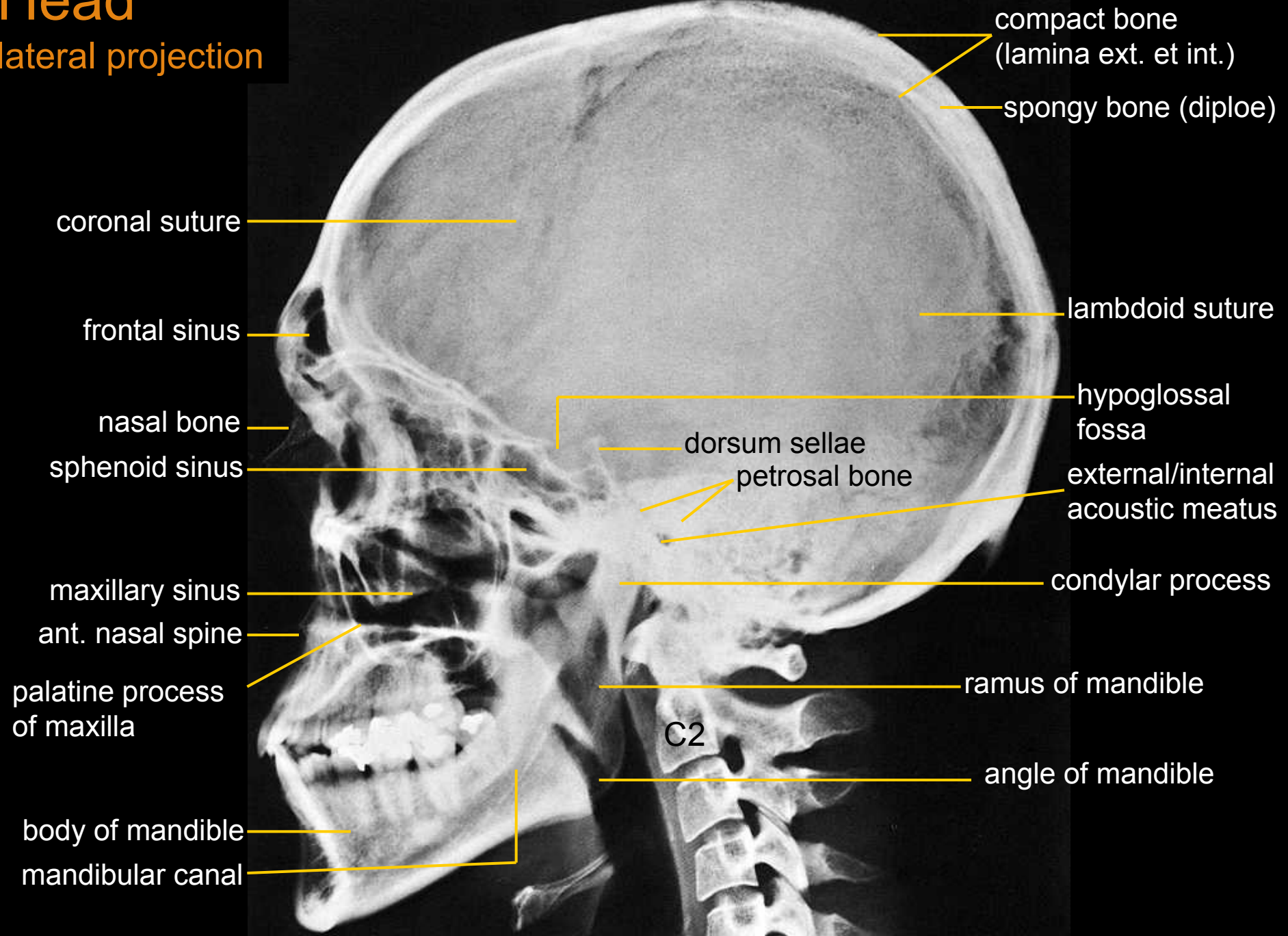
# Head

axial projection



# Head

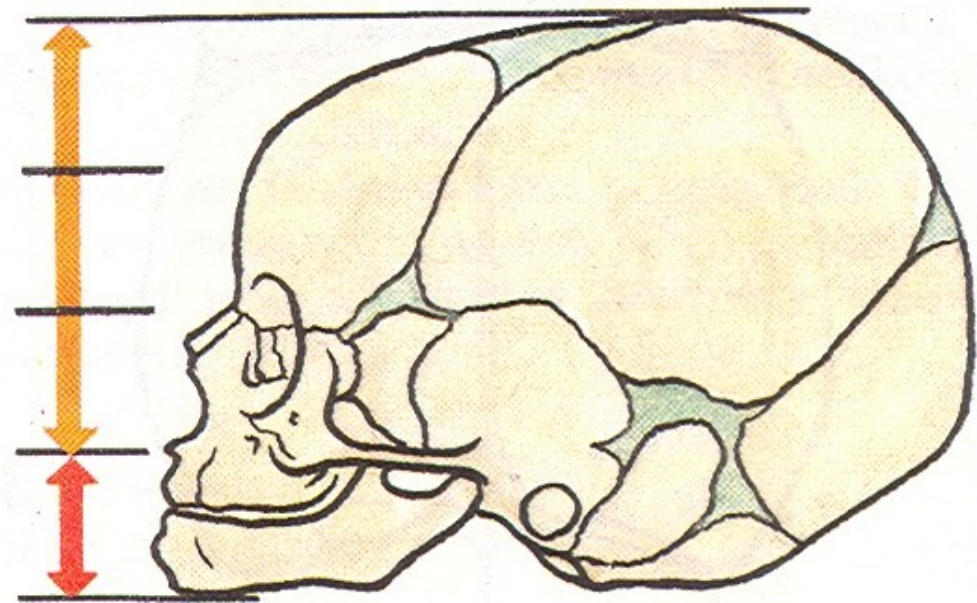
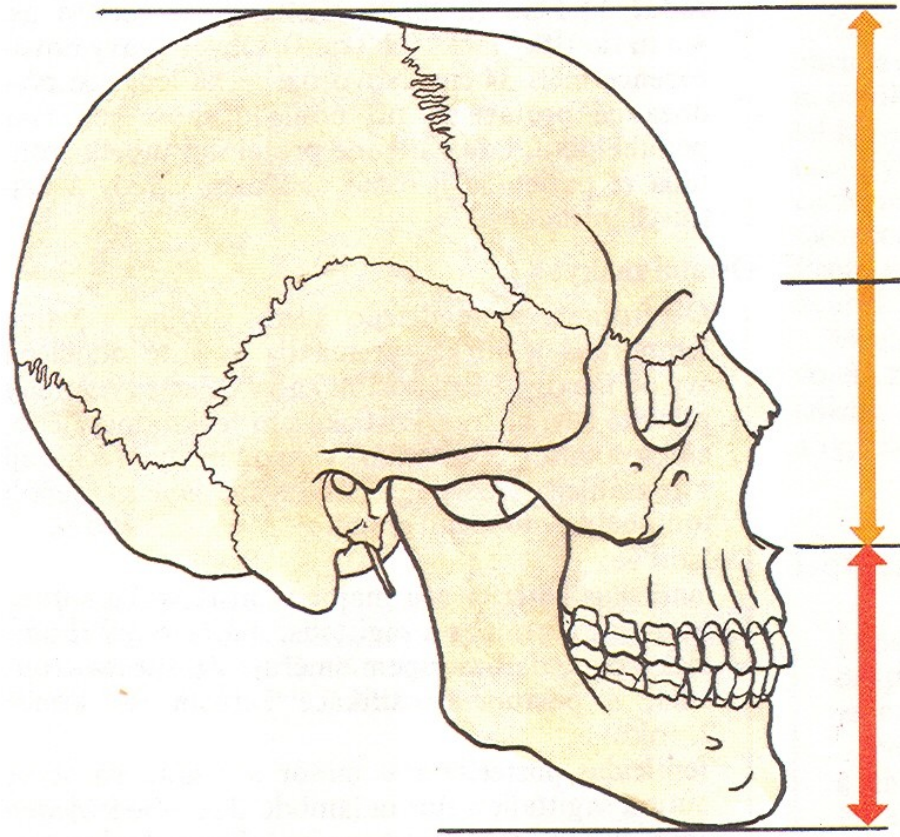
lateral projection





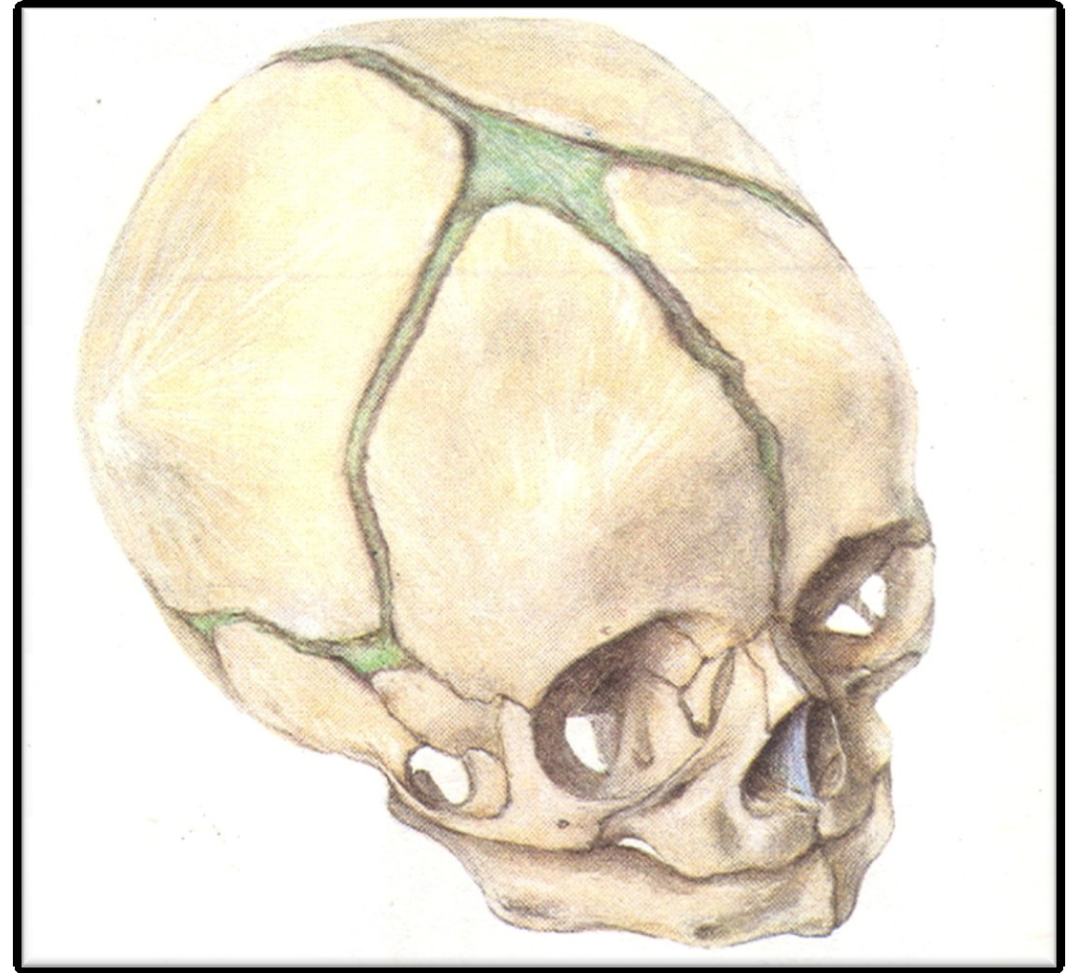
# Newborn skull

Neurocranium : Splanchnocranium  
8 : 1



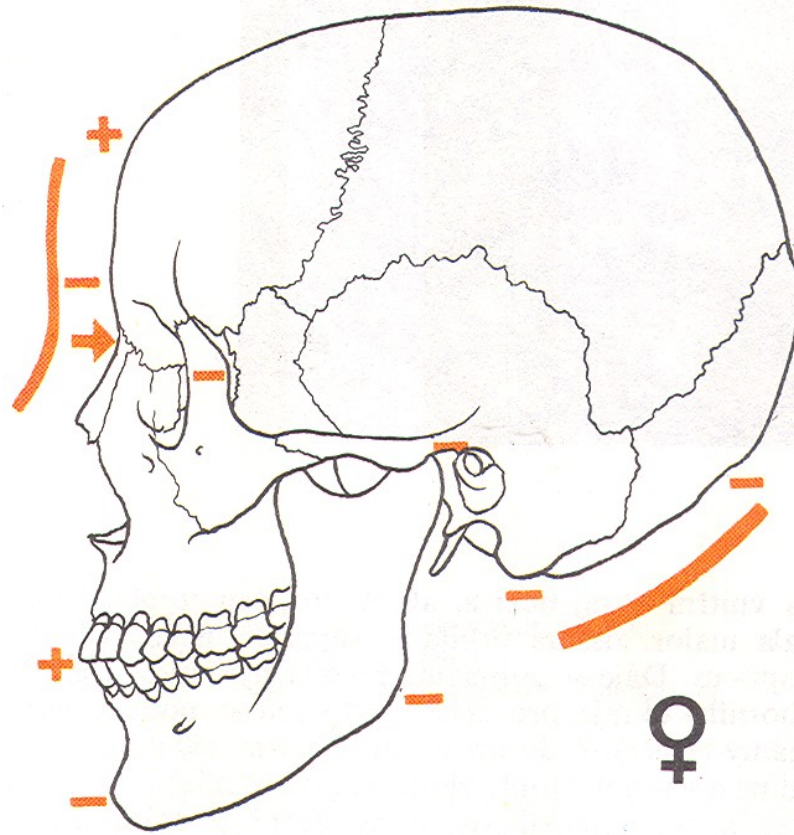
## Newborn skull

- capacity 370 ccm
- circumference 34 cm
- length 11-12 cm, width 9-10 cm
- big neurocranium
- fonticuli (major, minor, sphenoidalis, mastoideus)
- low splanchnocranium
- without processus alveolares (maxillae et mandibulae)
- without paranasal sinuses
- sutura frontalis
- anulus tympanicus
- symphysis menti
- mandibular angle 150 - 170°

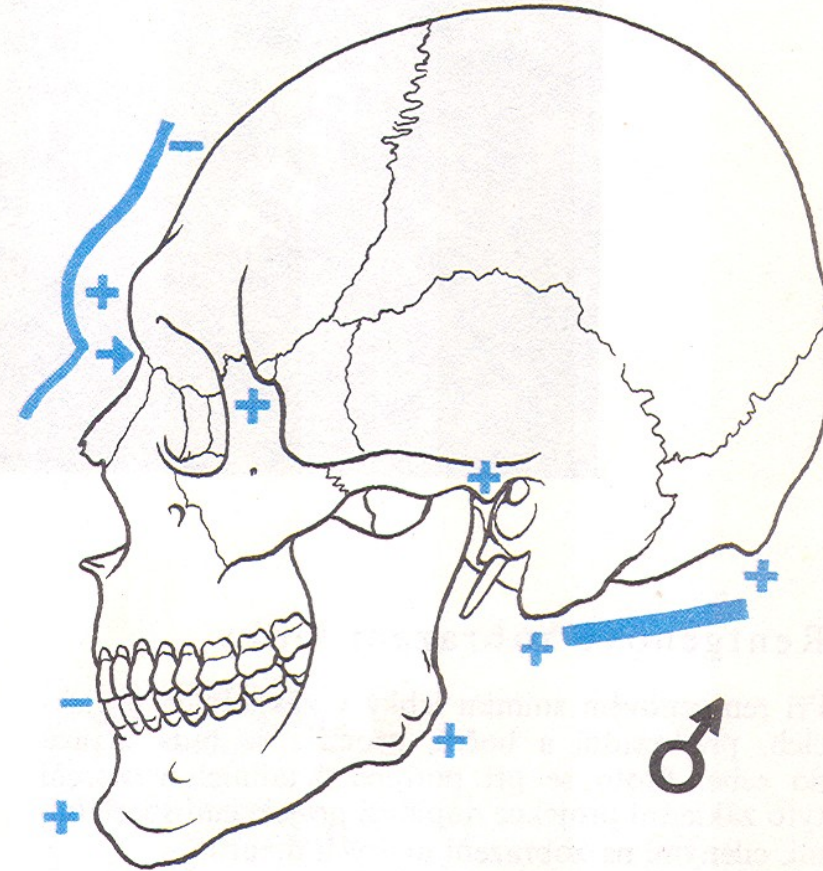




## Gender differences of the skull



**glabella, arcus superciliares  
tubera frontalia and parietalia  
processus mastoideus**



**protuberantia occipitalis externa (regio nuchae)  
protuberantia mentalis  
tuberositas masseterica  
processus alveolares**

The pictures used in this lecture were taken from following sources:

Putz, R. (2008):

Atlas of Human Anatomy Sobotta. Elsevier Books.

Keith L. Moore, Arthur F. Dalley (2005):

Clinically Oriented Anatomy. Williams and Wilkins.

Platzer, W., Kahle, W., Leonhardt H. (1992):

Locomotor system. Georg Thieme Verlag, Stuttgart,  
New York, 4th edition.

Čihák, R. (1987): Anatomie 1. Avicenum, Zdravotnické nakladatelství.

Netter, F. H. (1997):

**Interactive Atlas of Clinical Anatomy. Novartis, USA.**