

# Neurocranium.

## Az ékcson (os sphenoidale) és a halántékcson (os temporale) anatómiája

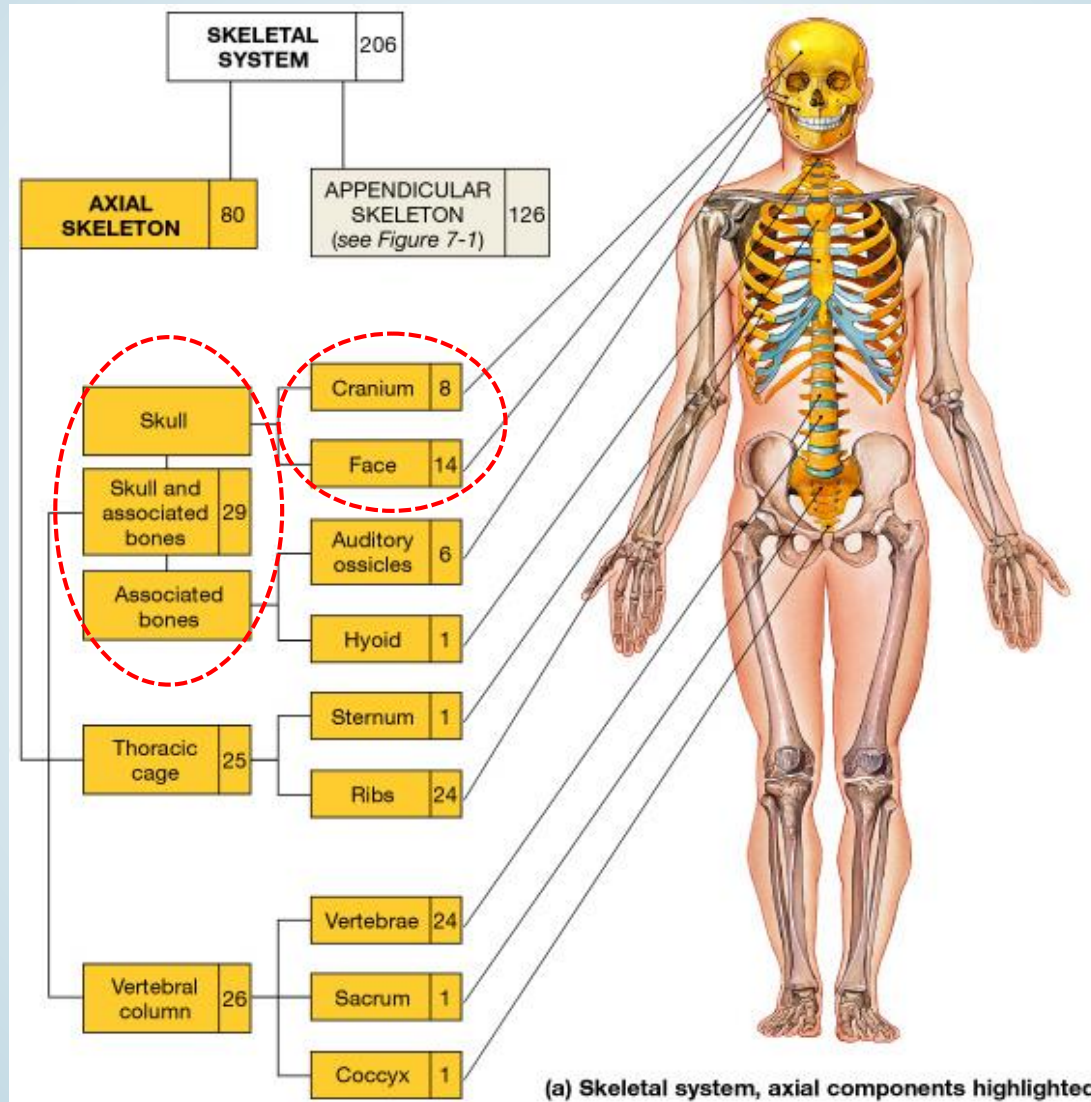


*„To be, or not to be, that is the question...”  
(by: William Shakespeare  
from Hamlet, spoken by Hamlet)*

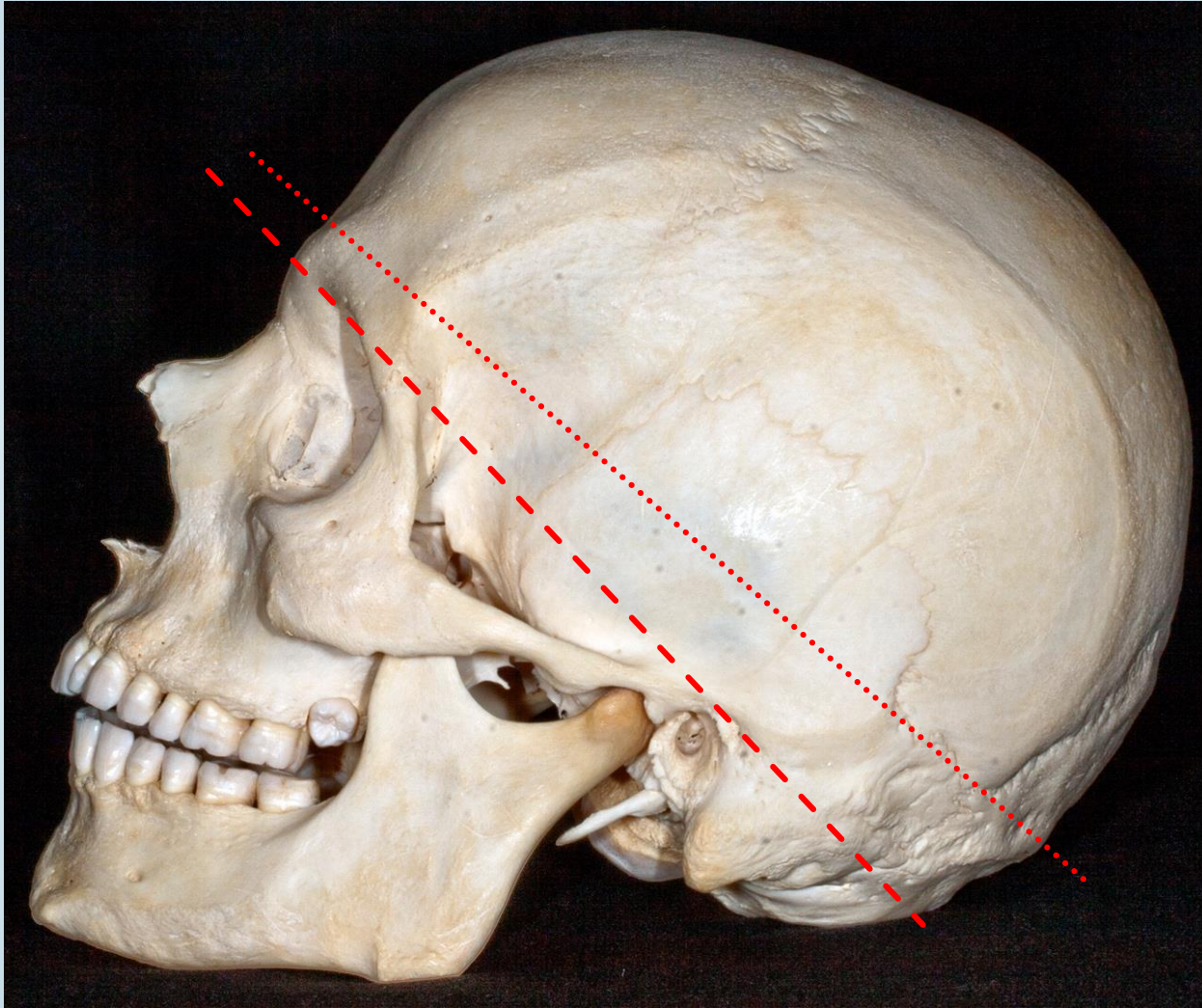
Ph.D., Dr. Lendvai Dávid

Anatómia, Szövet- és Fejlődéstani Intézet  
2019.

# Skeletalis rendszer



# A koponya strukturális felépítése



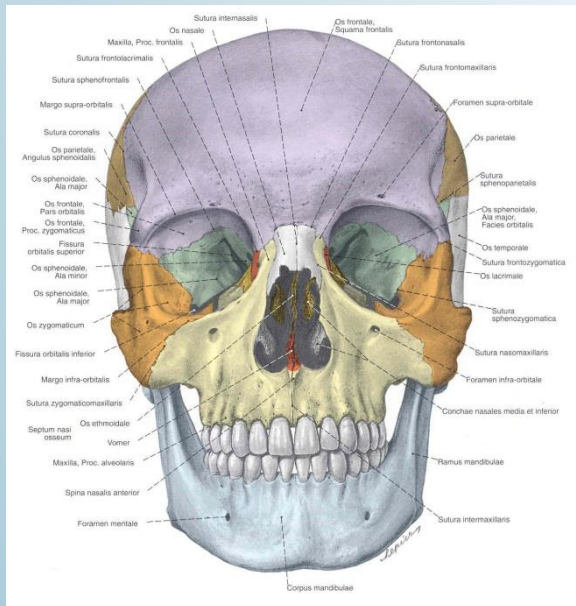
- - - - Határ a viscerocranium és neurocranium között

..... A boncteremben látható metszési sík (calvaria)

# A koponya fő részei

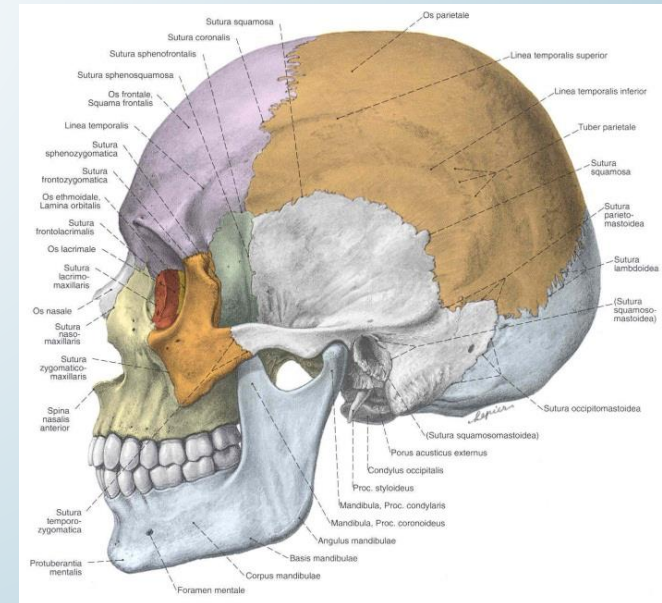
- 22 csontból épül fel:
- *neurocranium* (8) – **PÁRATLAN**: os -frontale, -occipitale, -sphenoidale, -ethmoidale  
**PÁROS**: os -temporale, -parietale
- *viscerocranium* (14) - **PÁRATLAN** : mandibula, vomer.  
**PÁROS**: os nasale, maxilla, -zygomaticum, -lacrimale, -palatinum, concha nasalis inferior

Szerepük - az üregek kialakulása, a zsigerek védelme, fonatio, a gastrointestinális és a légzőrendszer kezdeti szakasza, az izmok eredése/tapadása (rágás, fejmozgások)



## Üregek:

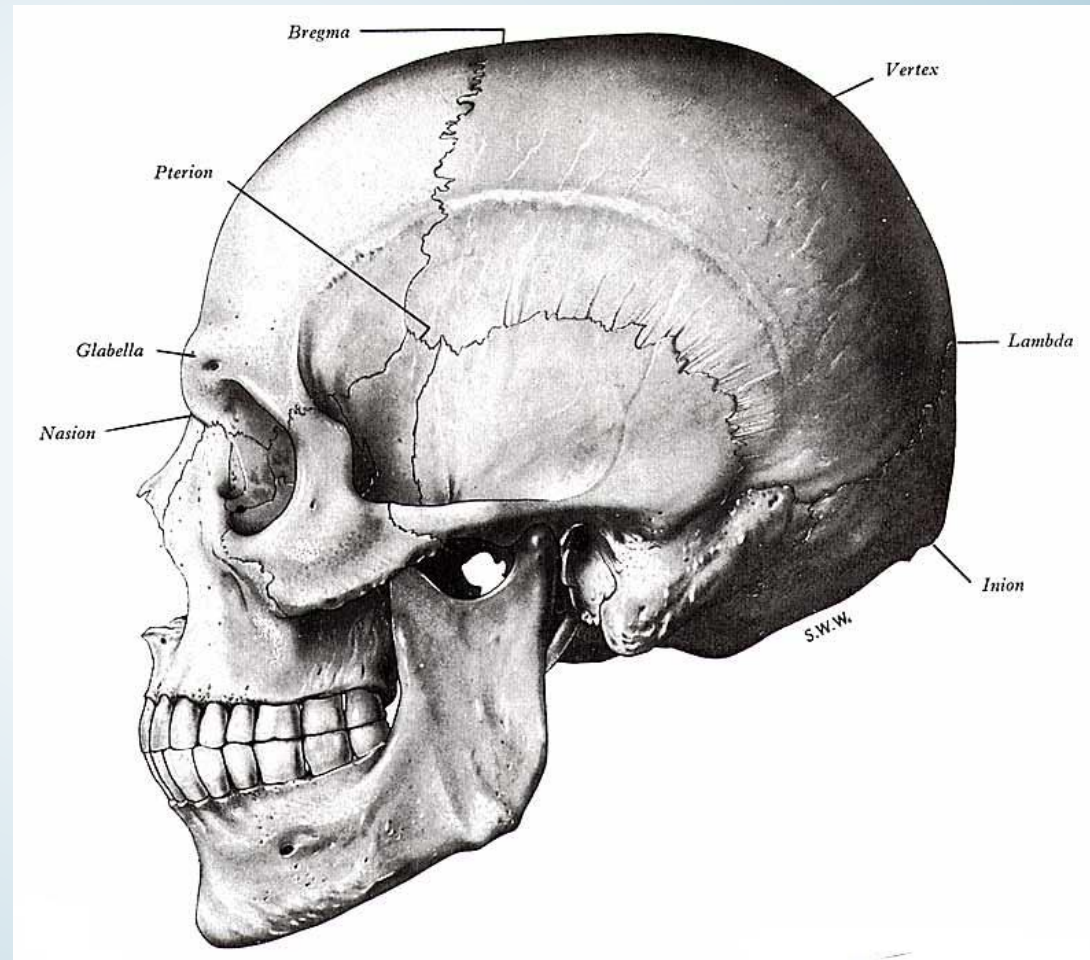
- *Cavum craniale,*
- *Cavum nasi,*
- *Sinus paranasales*
- *Cavum oris,*
- *Orbita,*
- *(Cavum tympani,*  
*Belső fül)*

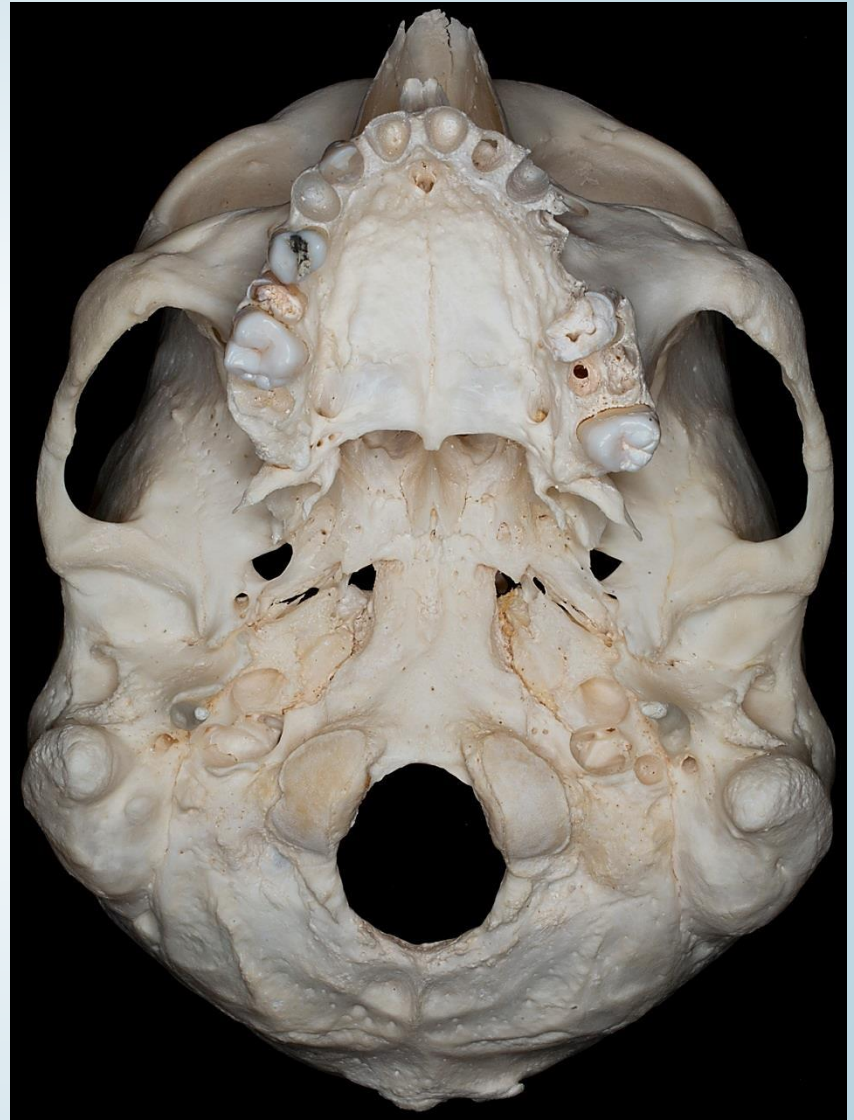
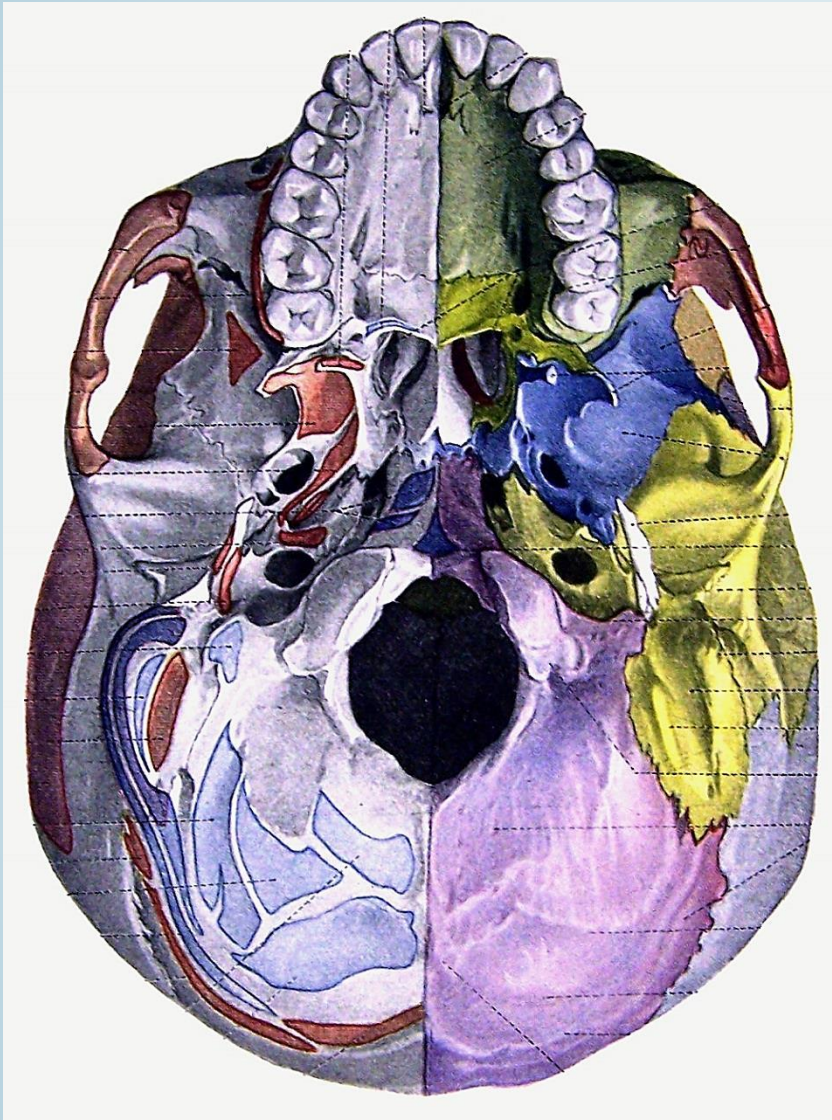


# CRANIUM CEREBRALE

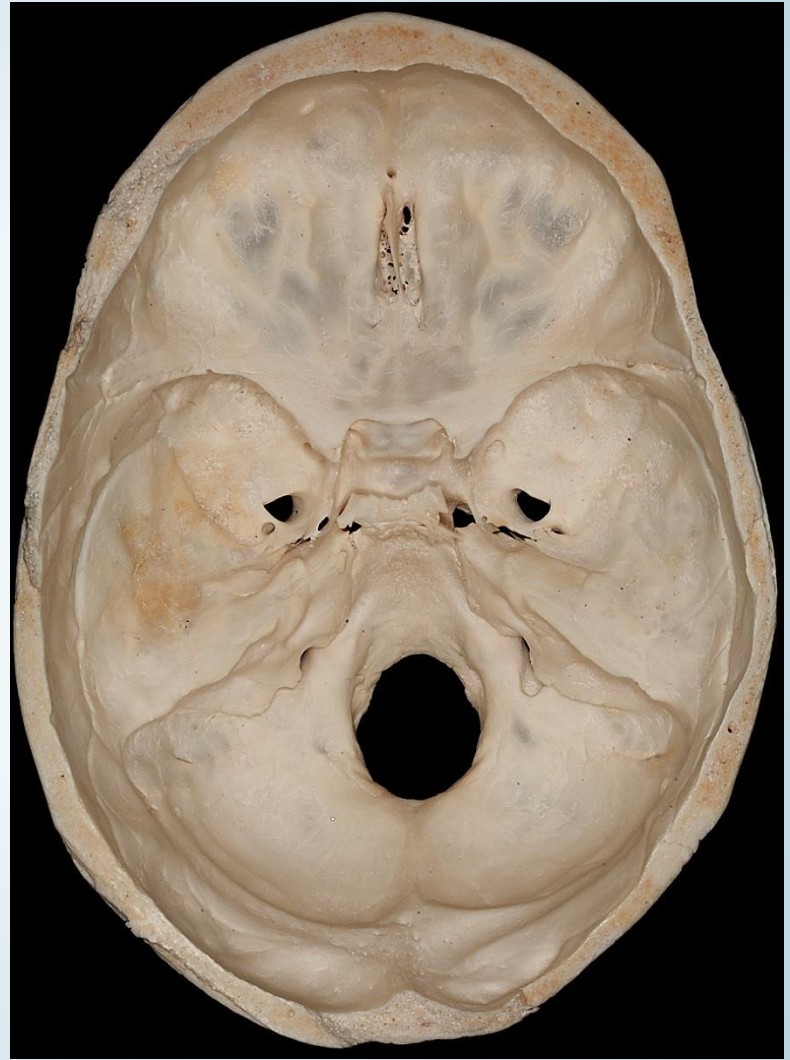
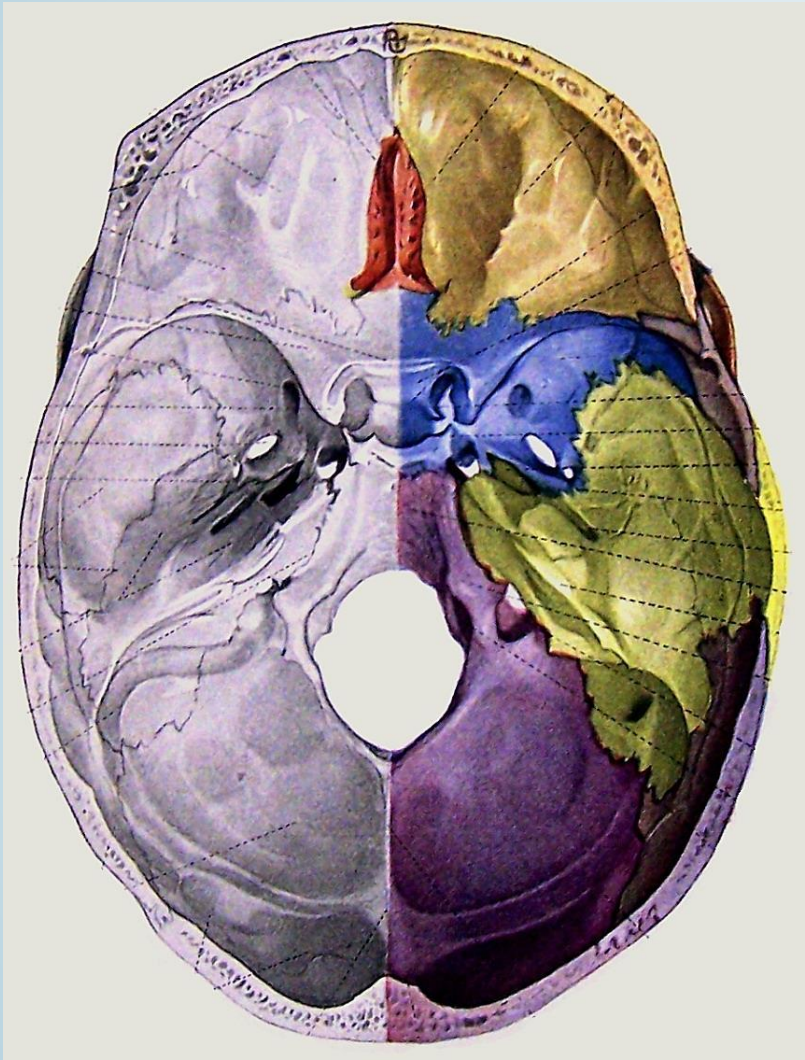
1. calvaria
2. Skull base:
  - Basis cranii int.
  - Basis cranii ext.

Protub. occip. ext. → linea nuchae sup. → beginning of the linea temp. → zygomatic arch → infratemp. crest → ala major → zygomatic process → supraorbital margin → nasofrontalis suture





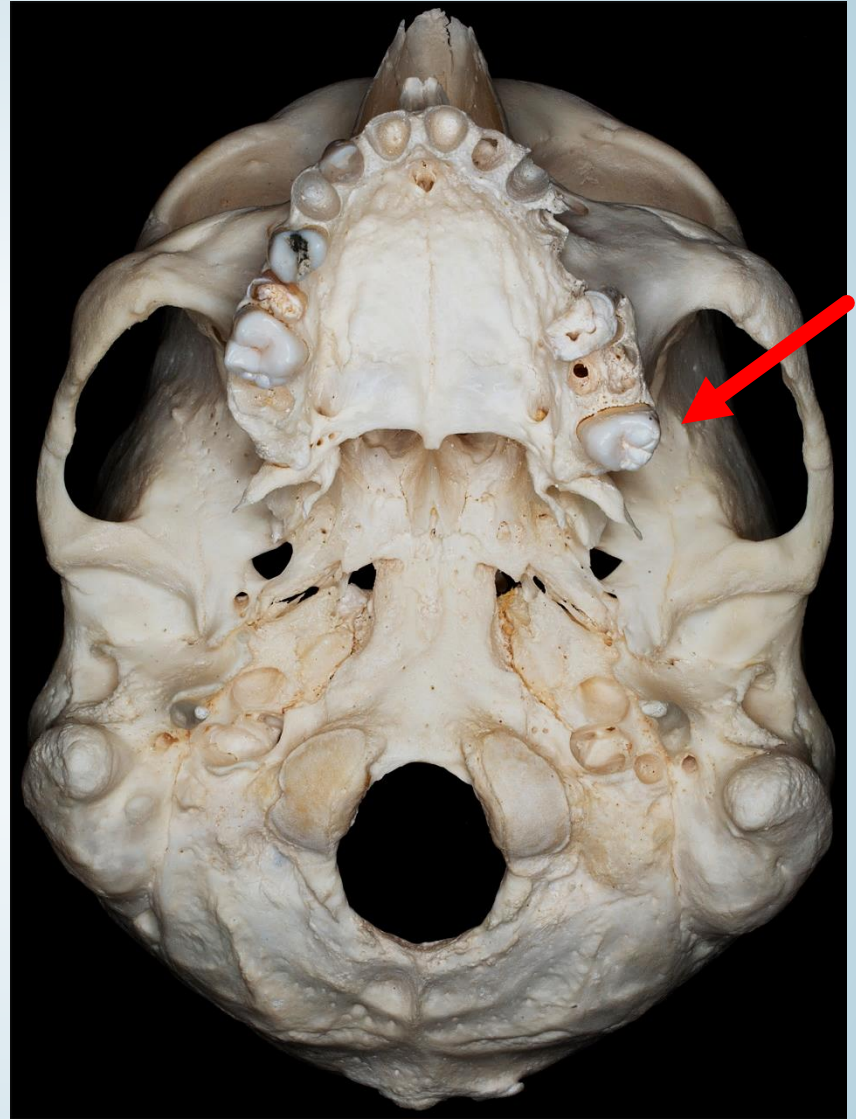
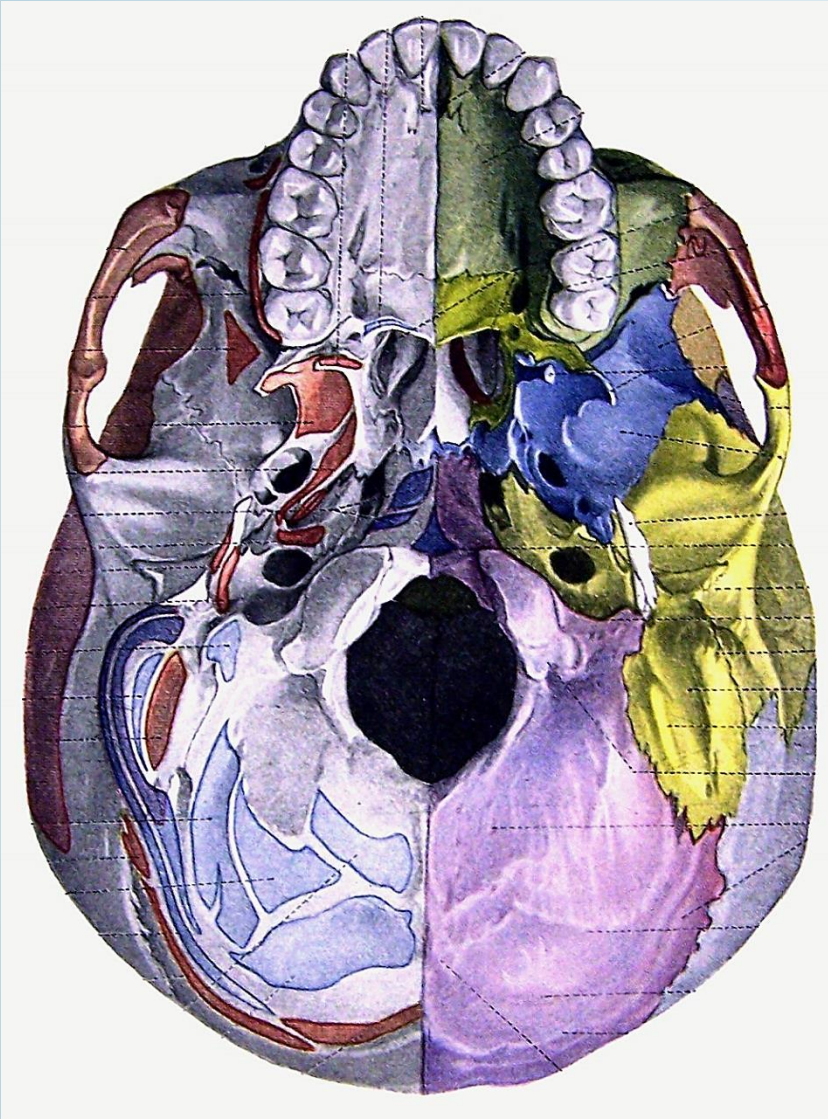
Braus



Braus

# Os sphenoidale

Braus

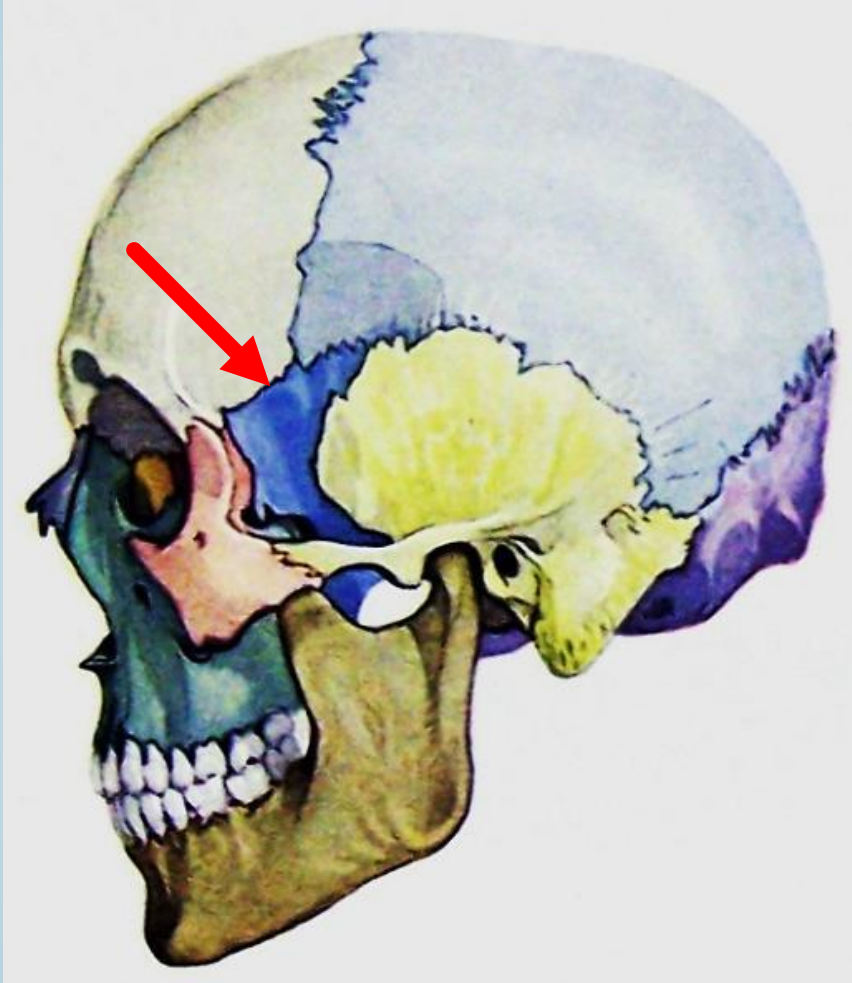


A basis crani externa része (- test (Corpus), processus pterygoideus, nagy szárny (Ala major)



# Os sphenoidale

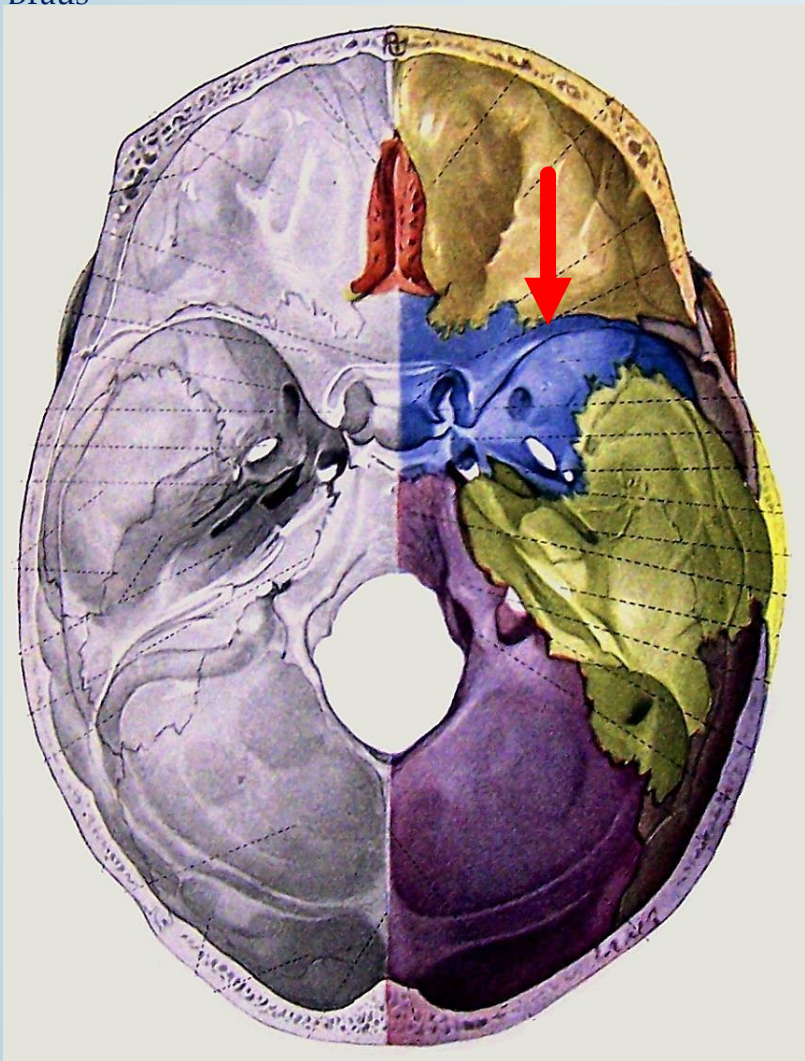
Braus



A fossa temporalis része, nagy szárny (Ala major)

# Os sphenoidale

Braus



A basis crani interna része (Corpus, Ala minor, Ala major)

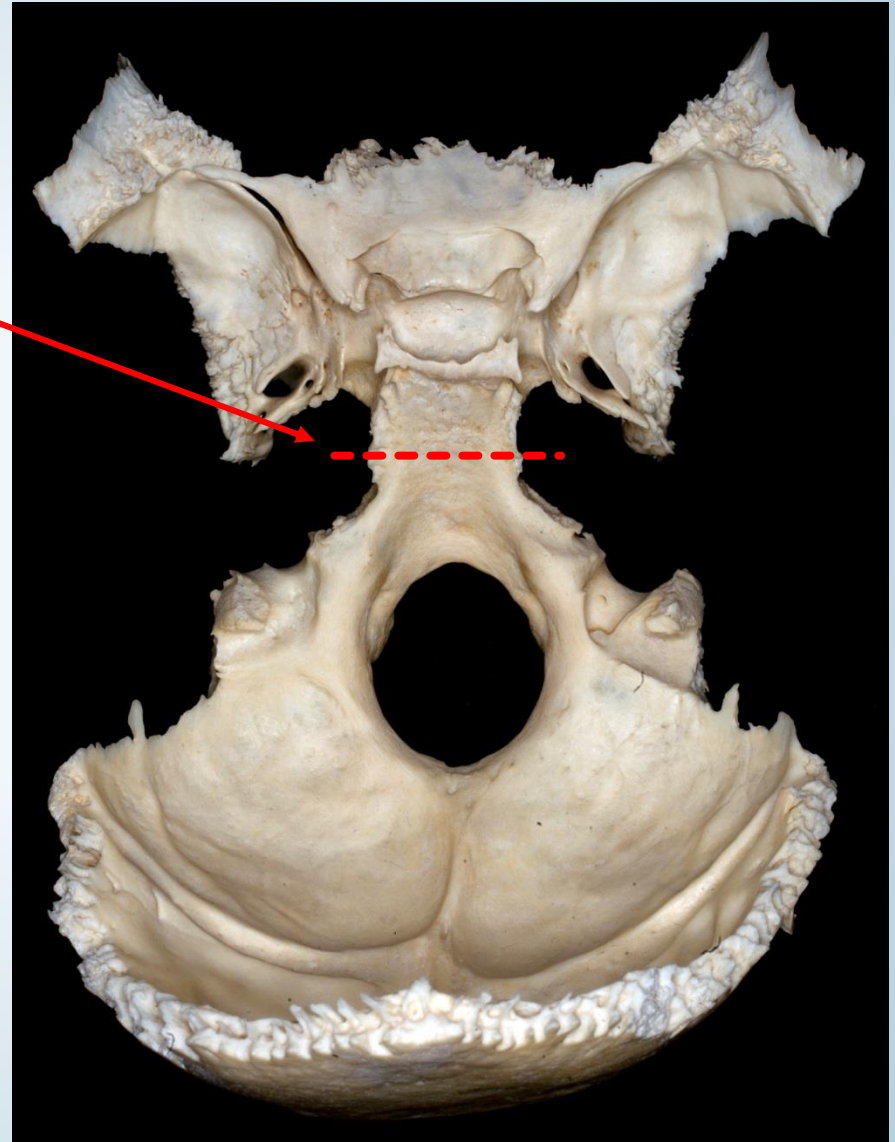
## Os sphenoidale

### **sphenooccipital synchondrosis:**

A felnőttkor kezdetén  
elcsontosodik

Körülbelül 18 éves korban  
az os occipitale és a sphenoidale  
összenő

Más csontokkal való kapcsolata  
(sutura) szintén elcsontosodhat



# Os sphenoidale



Os sphecoideum ~ Wespe (darázs) ~Os vespiforme

Os sphenoidale = ék forma

Os cumeiforme, alatum, pterygoideum, polymorphon, carinae, colatorii, paxillare

# Os sphenoidale

[www.hrlfg.eoldal.hu](http://www.hrlfg.eoldal.hu)



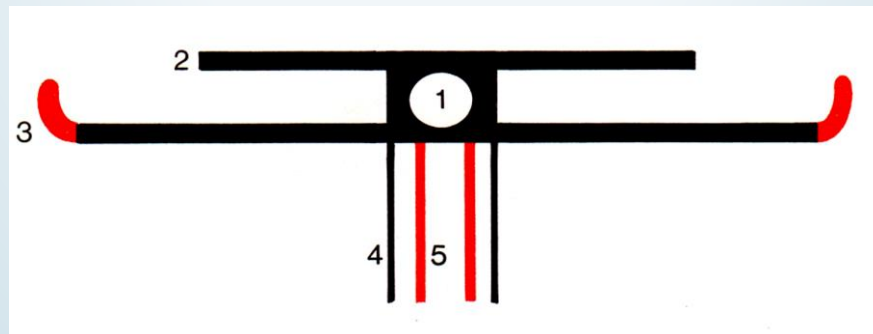
Os sphecoideum ~ Wespe (darázs) ~ Os vespiforme

Os sphenoidale = ék forma

Os cumeiforme, alatum, pterygoideum, polymorphon, carinae, colatorii, paxillare



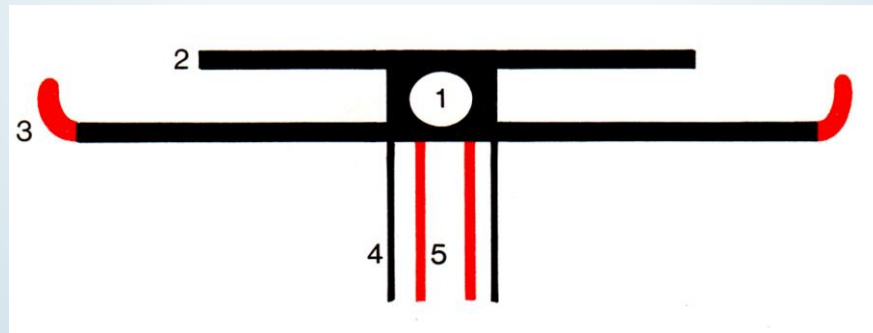
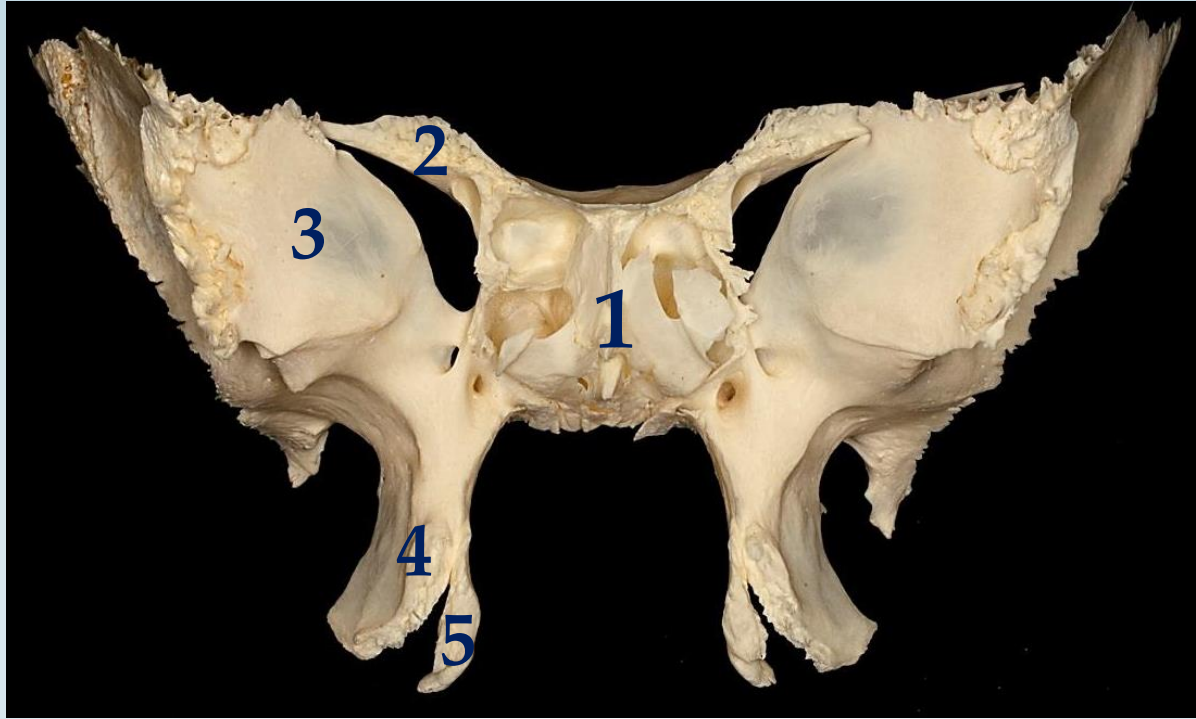
fotó: Semmelweis Egyetem ©



Faller

- 1 Sinus sphenoidalis
- 2 Ala minor ossis sphenoidalis
- 3 Ala major ossis sphenoidalis

- 4 Lamina lateralis processus pterygoidei
- 5 Lamina medialis processus pterygoidei

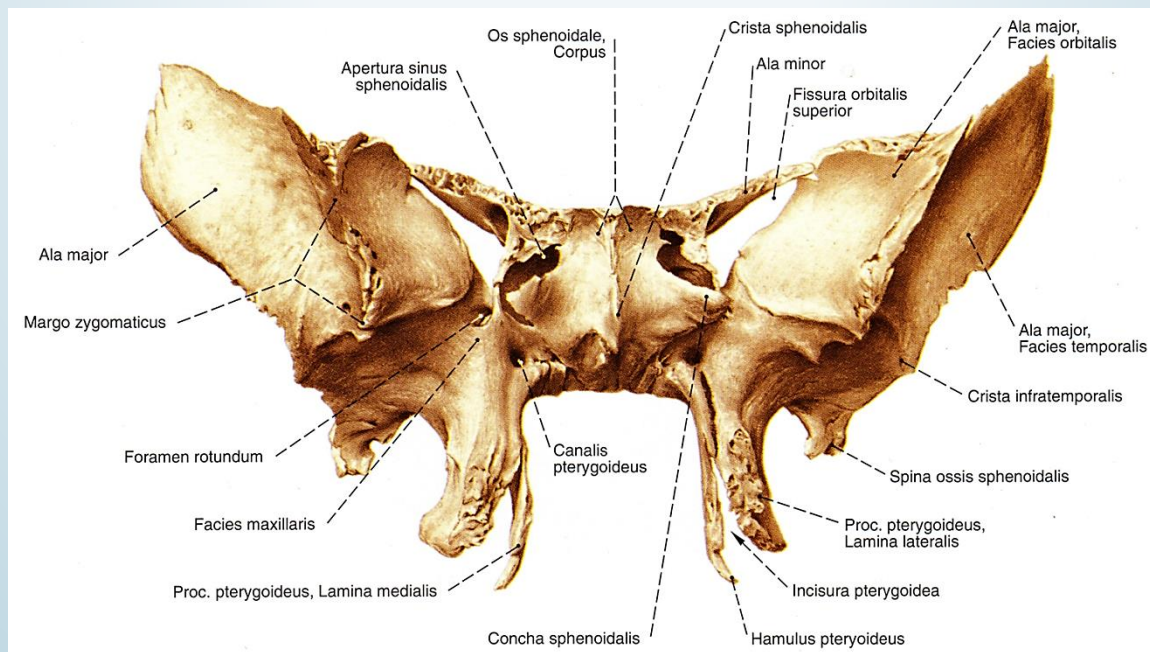


Faller

- 1 Sinus sphenoidalis
- 2 Ala minor ossis sphenoidalis
- 3 Ala major ossis sphenoidalis

- 4 Lamina lateralis processus pterygoidei
- 5 Lamina medialis processus pterygoidei





# Os sphenoidale

## Ala major felszínei:

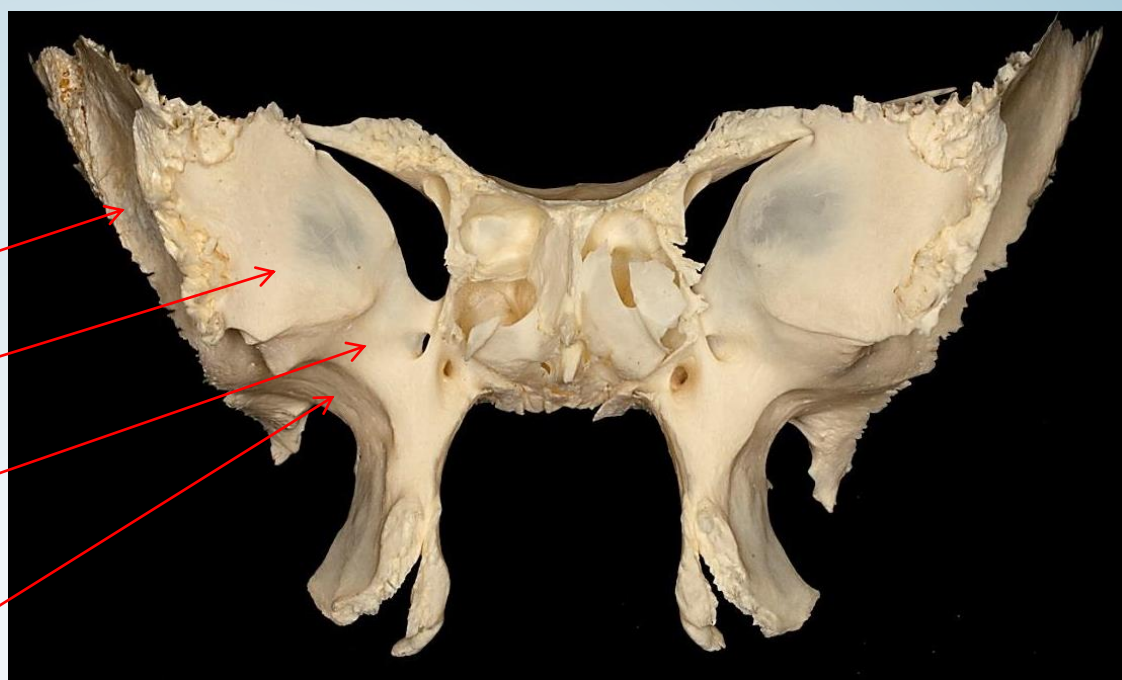
- Temporalis

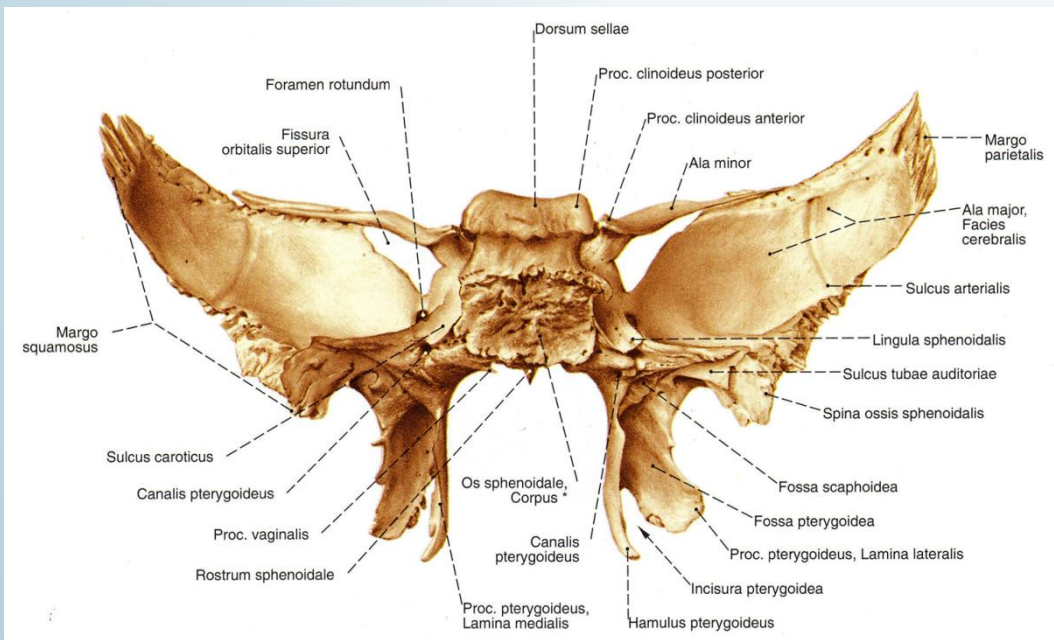
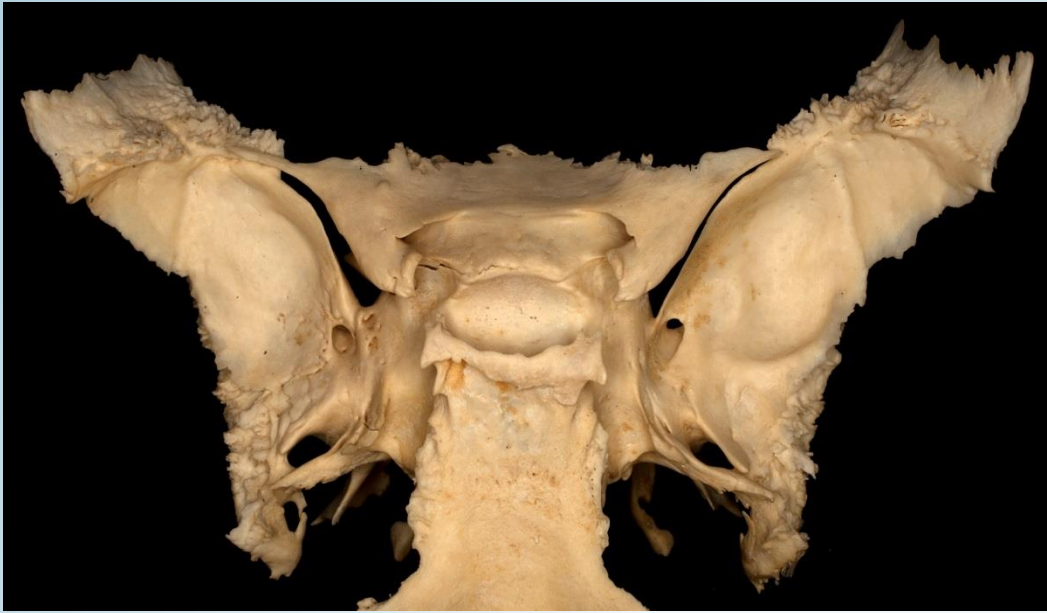
- Orbitalis

- Maxillaris  
(a foramen rotundum körül)

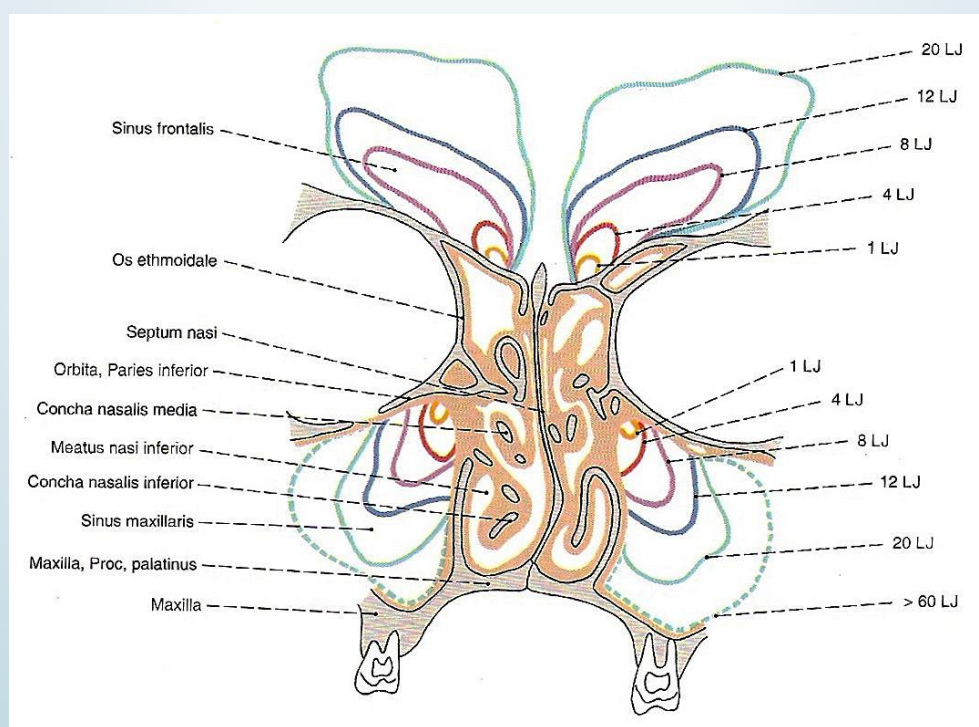
- Infratemporalis

- Cerebralis





[www.mozaweb.hu](http://www.mozaweb.hu)



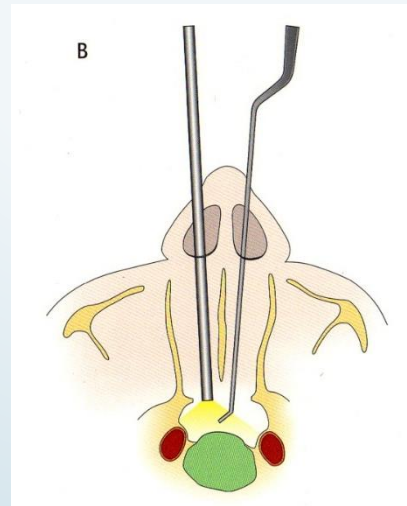
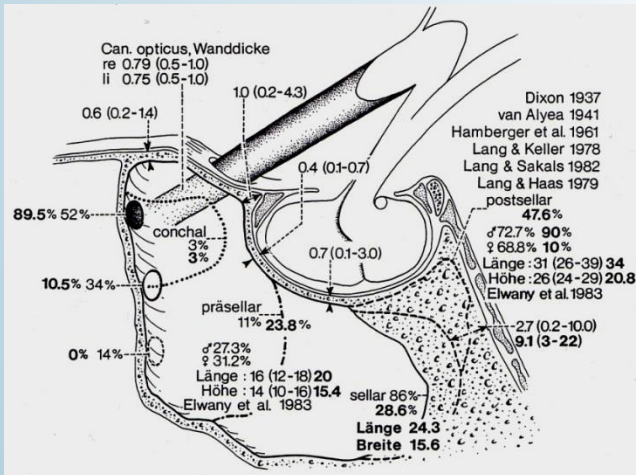
# Sinus sphenoidalis; Sella turcica

Eördögh



Aesculap – B Braun

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Lang

[www.mozaweb.hu](http://www.mozaweb.hu)

**Proust**  
A la recherche  
du temps perdu



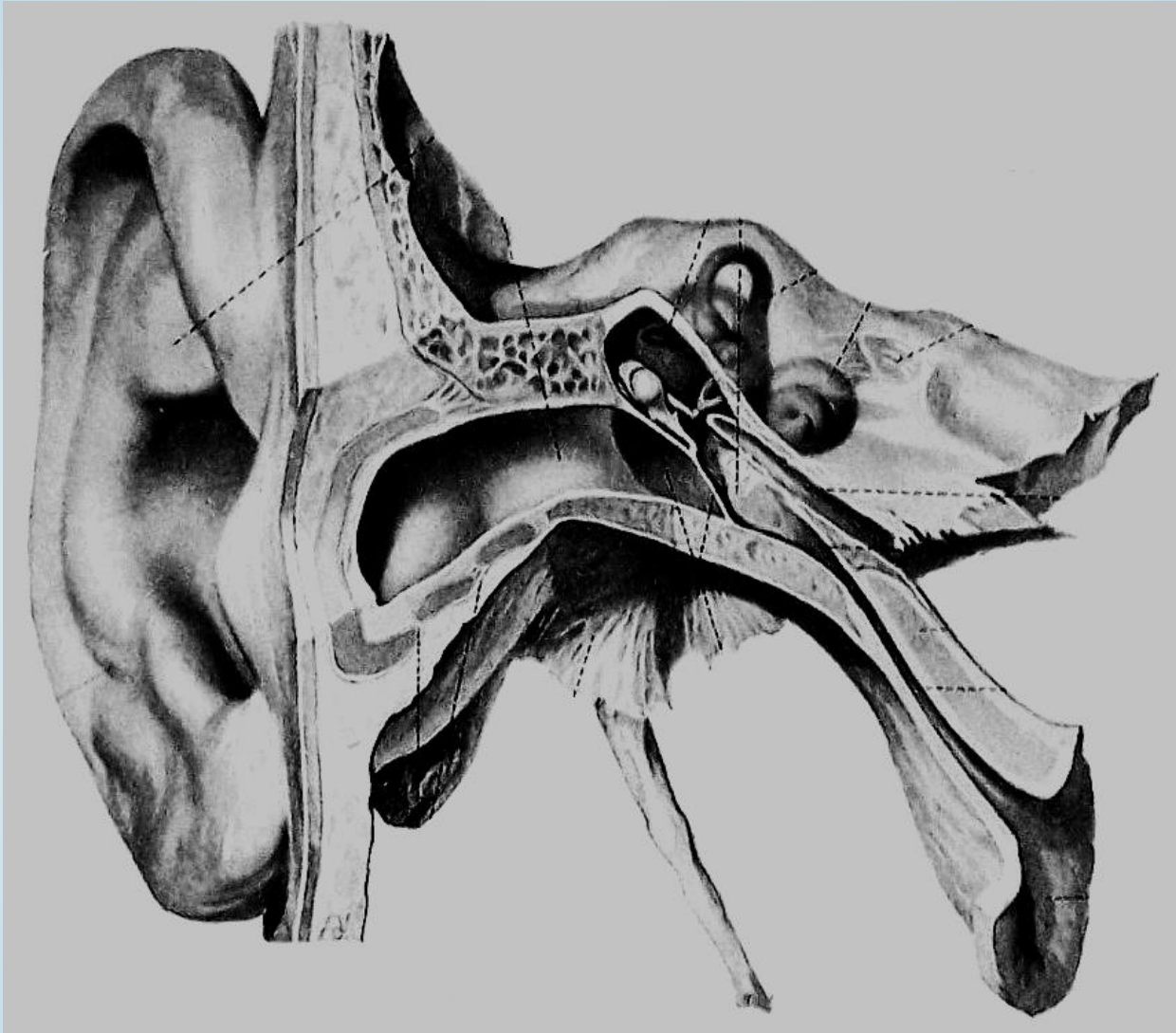
Humanis

„Fuga temporis” = az idő múlása

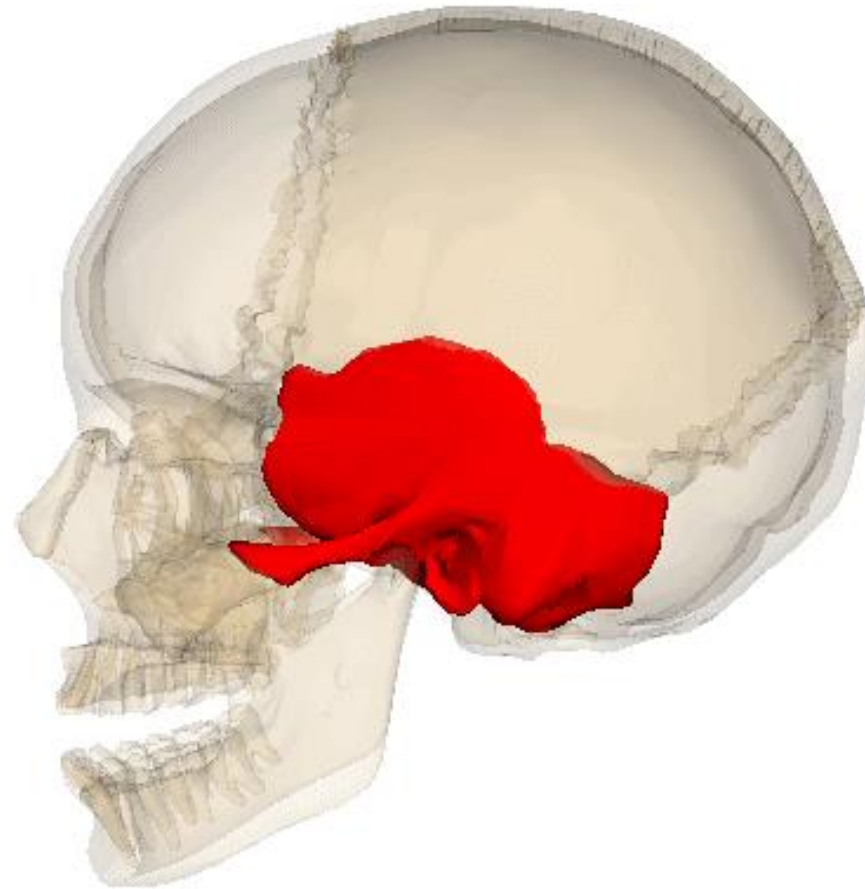
Tempus = Time



P. P. Rubens: *Virgin in  
Adoration before the Christ  
Child*

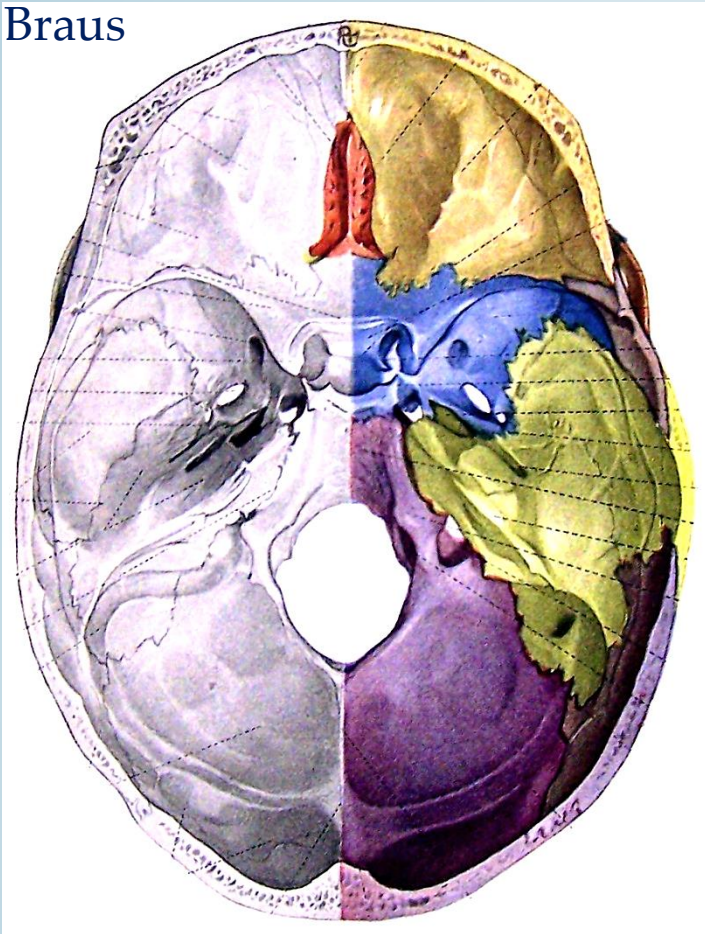


Braus

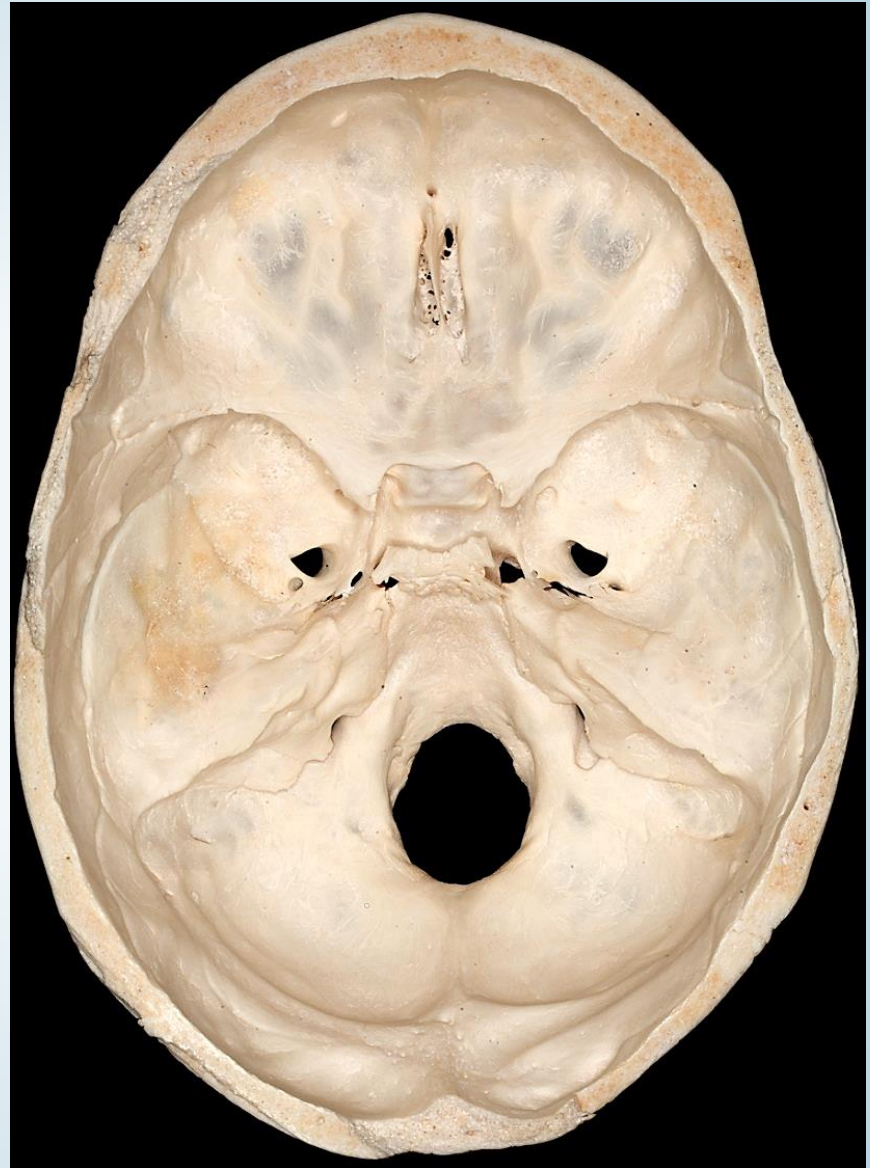




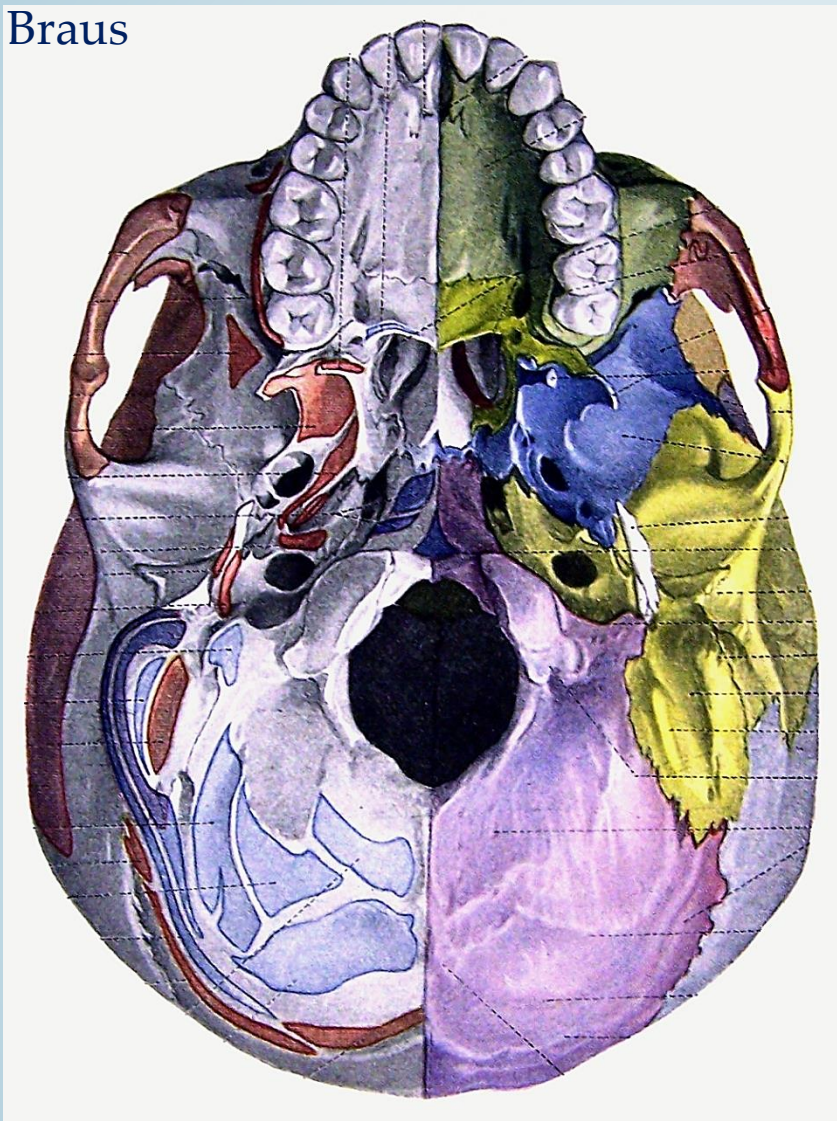
Braus

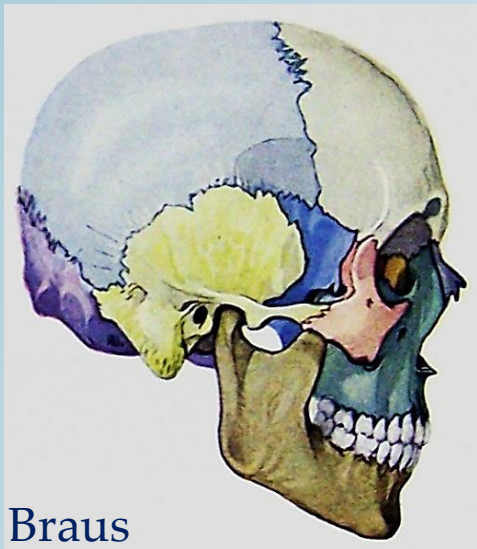


- Os sphenoidale
- Os parietale
- Os occipitale
- Os zygomaticum



Braus



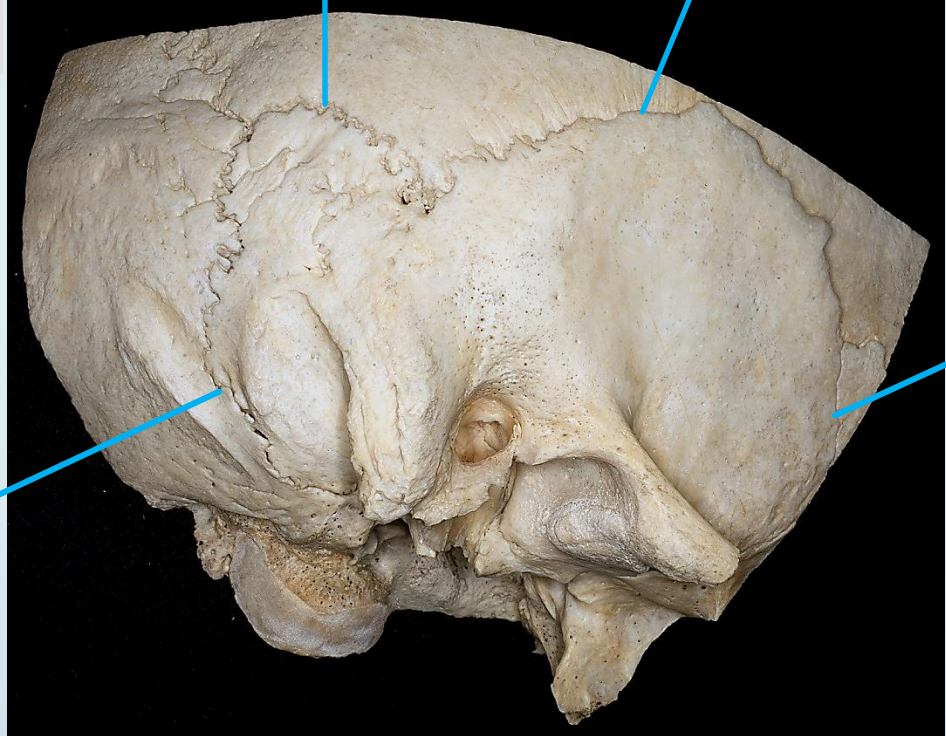


Braus

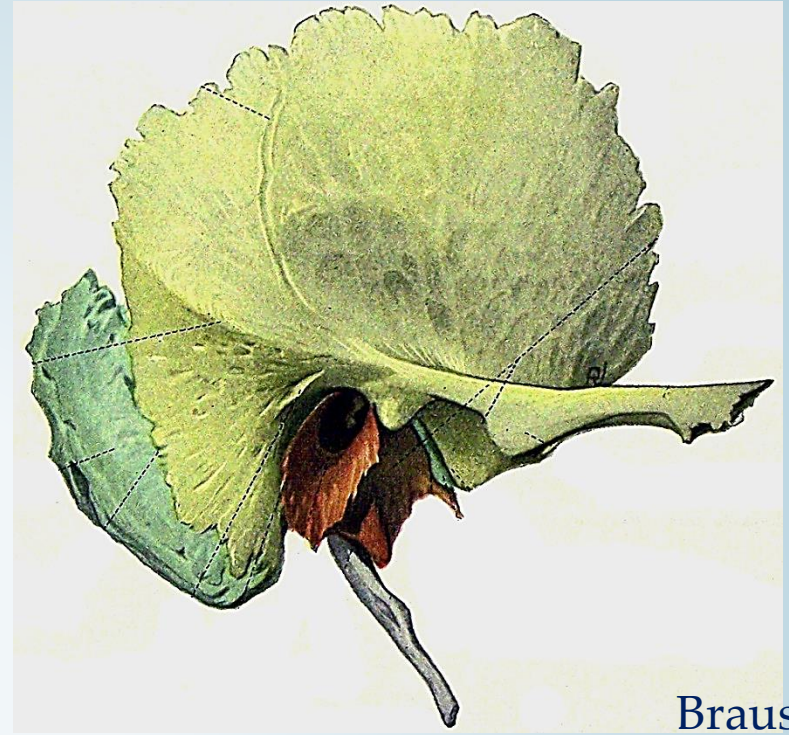
Sutura Parietomastoidea

Sutura squamosa

Sutura Occipito-mastoidea



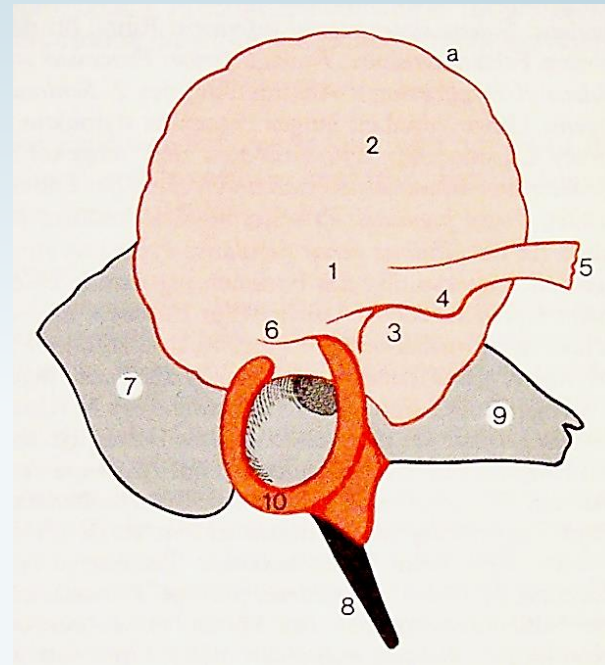
Sutura sphenosquamosa

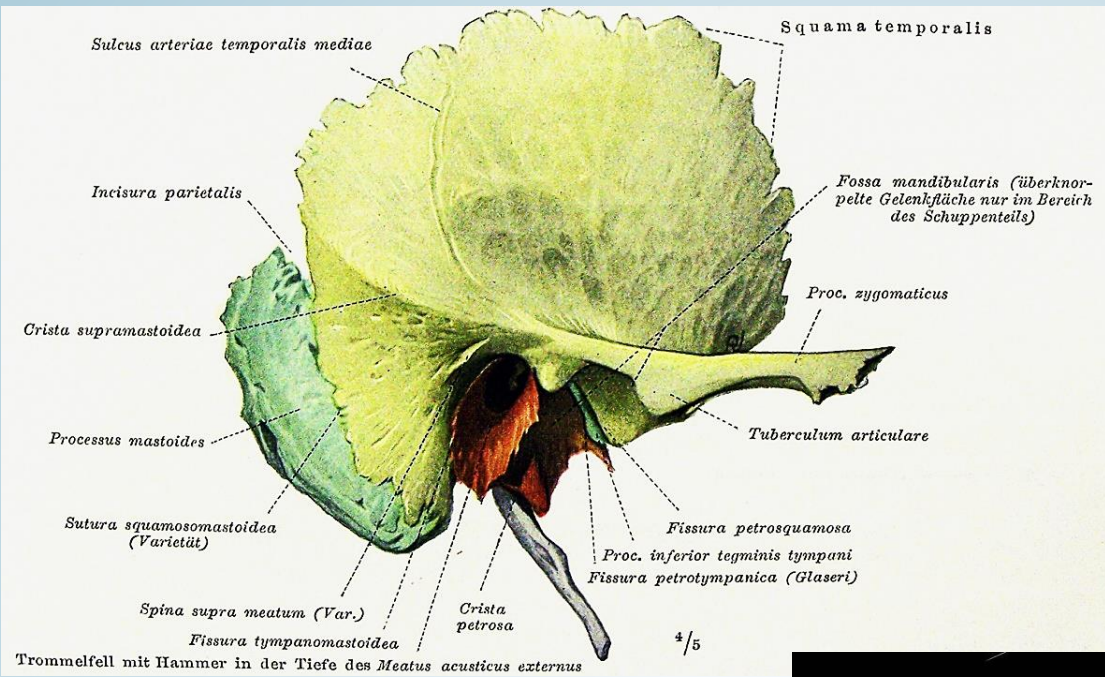


Braus



- Pars Squamosa
- Pars *Mastoidea*
- Pars Tympanica
- Pars Petrosa
- Pars Hyoidea





# Aspectus lateralis



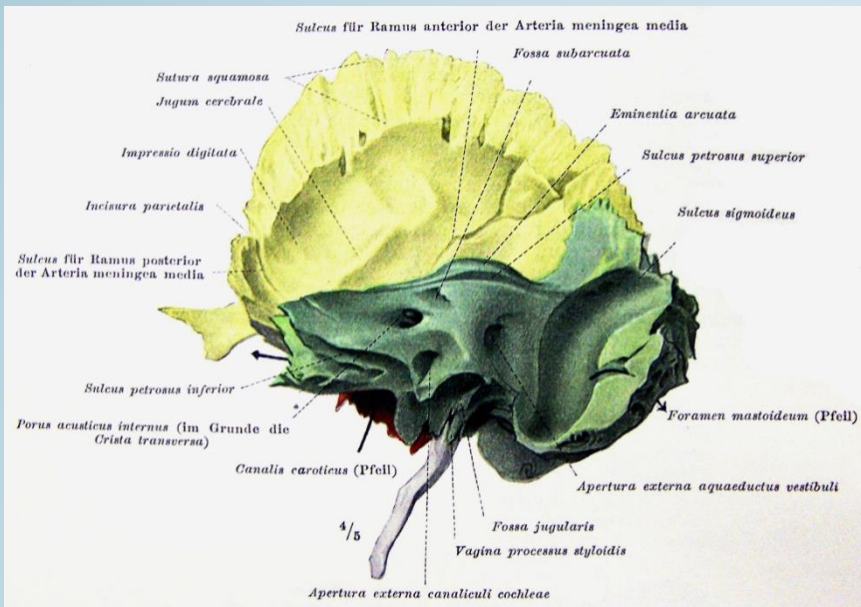


Cellulae mastoideae

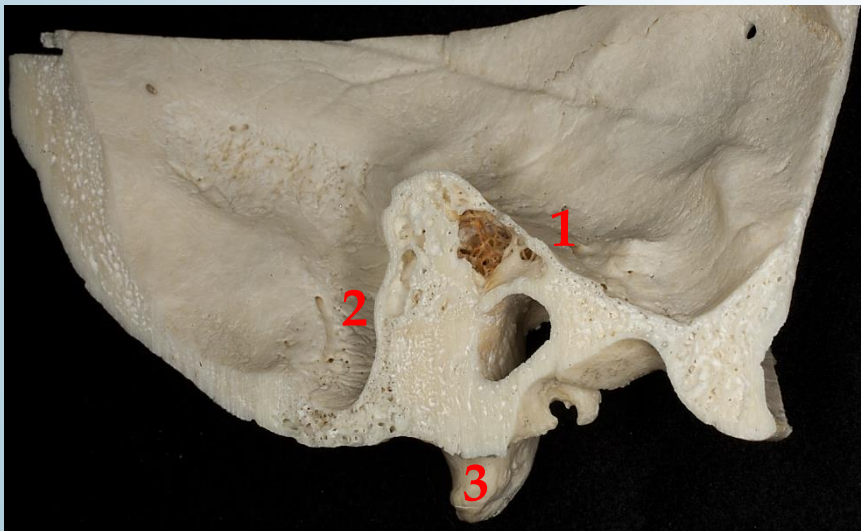
Antrum and Aditus



# Aspectus posterior



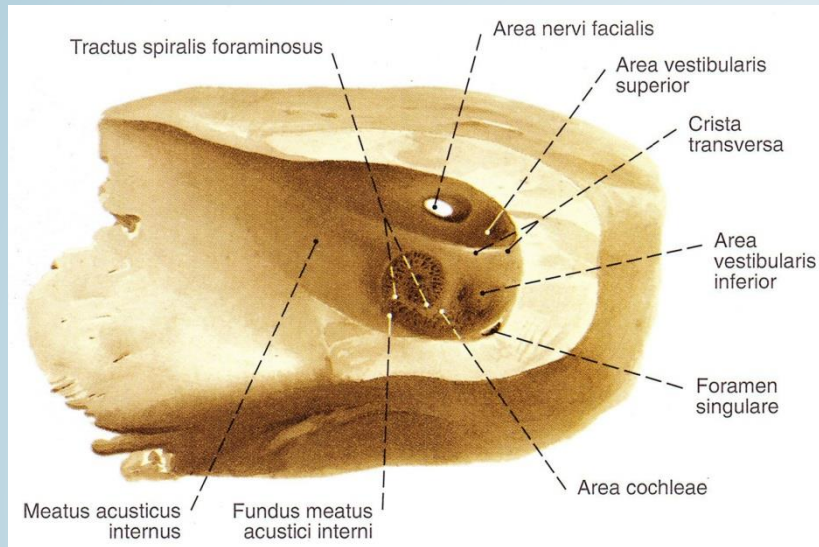
## Braus



- A pyramis 3 felszíné
1. anterior pyramidal
  2. posterior pyramidal
  3. inferior pyramidal



# Sobotta

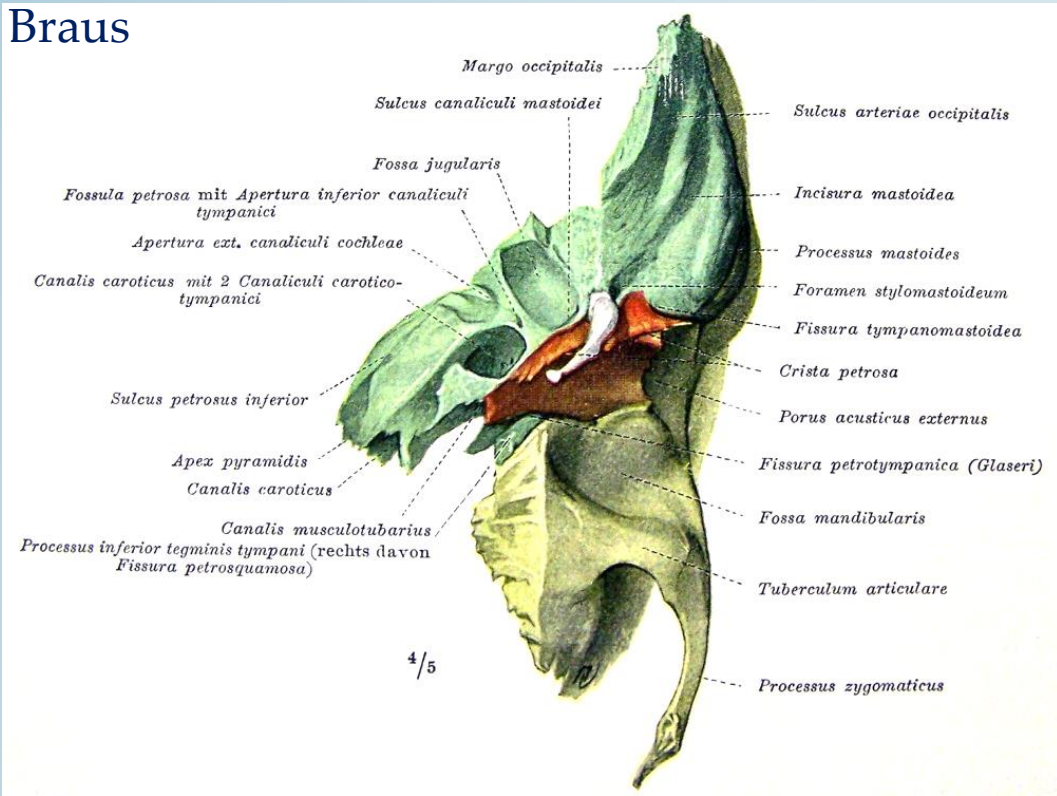


## 4 quadráns:

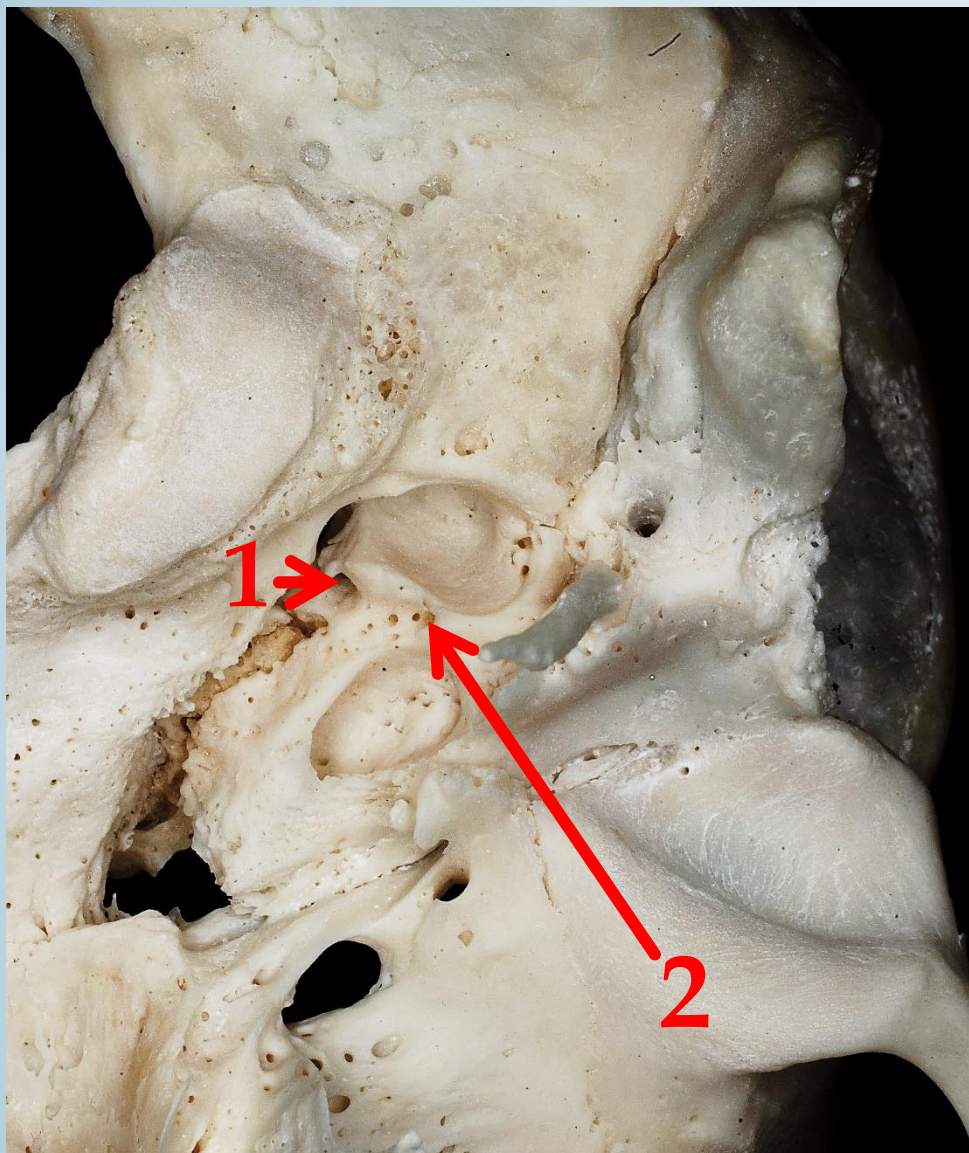
- area facialis
- area vestibularis superior
- area vestibularis inferior és foramen singulate
- area cochlearis



# Braus

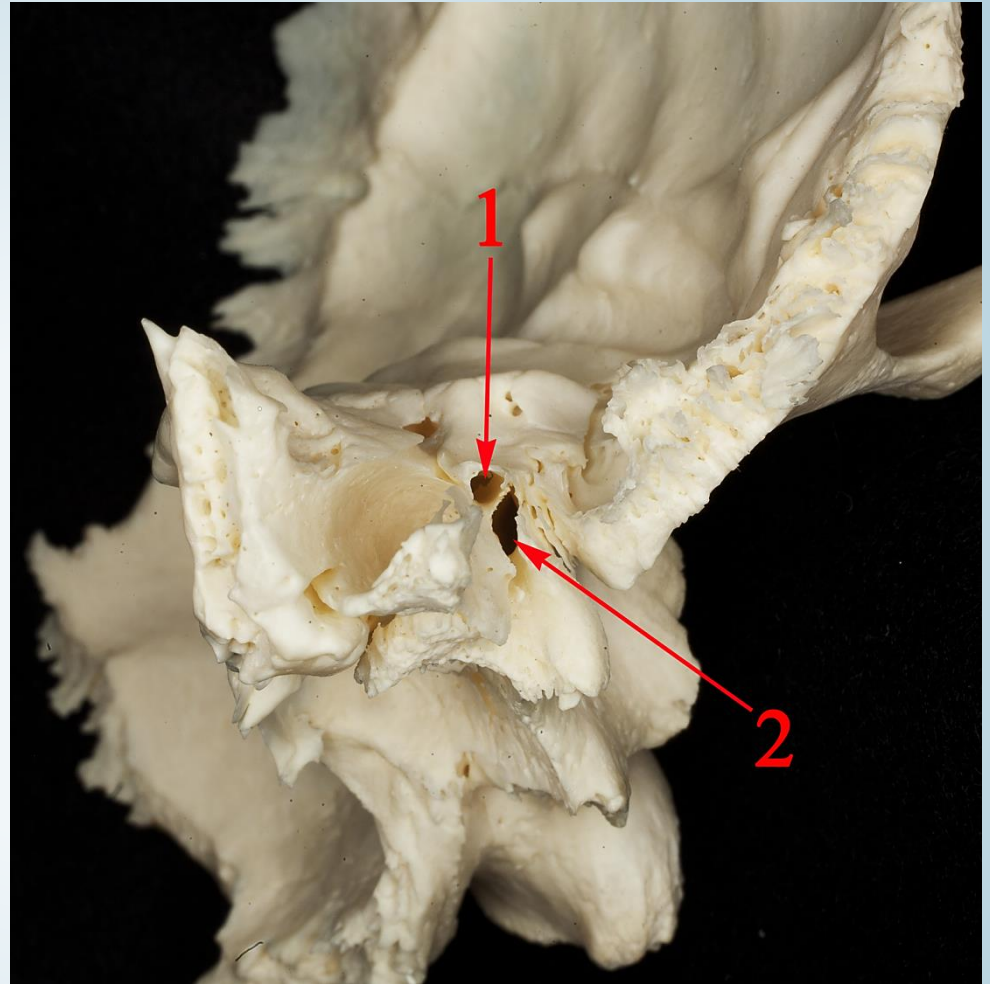


## Aspectus inferior



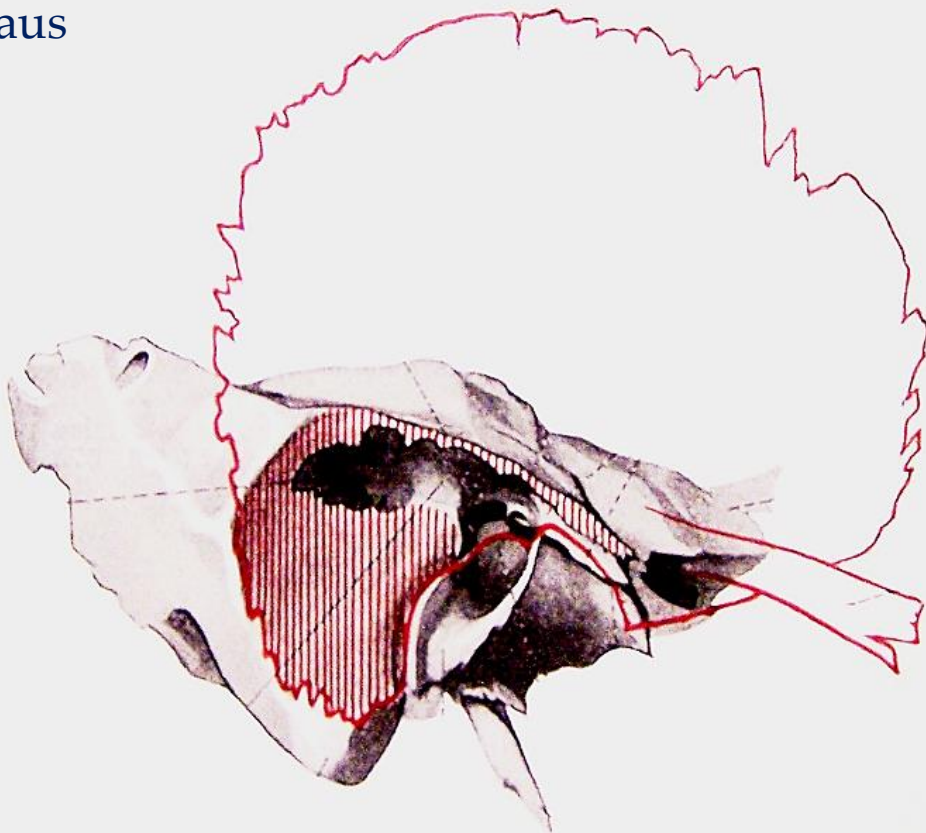
1. canaliculi cochleae  
(a fossula petrosától medialisan)

2. Fossula petrosa és canaliculus tympanicus (a két vascularis nyílás között)



Canalis Musculotubarius = semicanalis m. tensor tympani (1) + semicanal tubae auditivae (2)

Braus



4 / 5

## Tegmen tympani

1. Fissura Petrotympánica  
(*Glaser hasadék*)  
(Chorda tympani ???)

Ann Anat 188 (2006) 7–11



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### Development of the anterior chordal canal

Miklós Tóth<sup>a,\*</sup>, Gerhard Moser<sup>b</sup>, Lajos Patonay<sup>c</sup>, Imre Oláh<sup>a</sup>

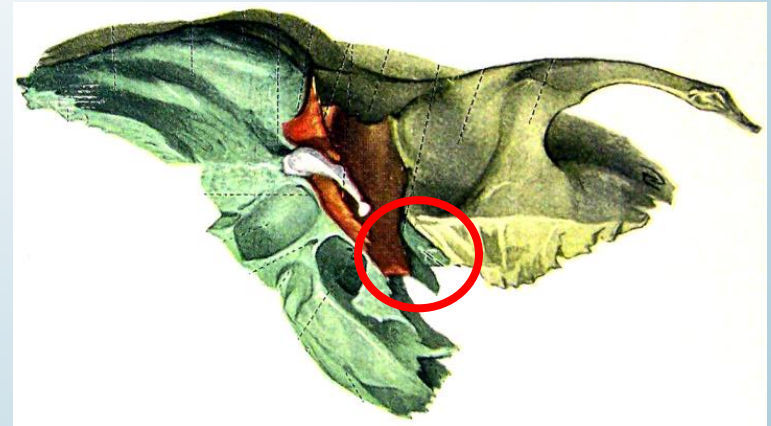
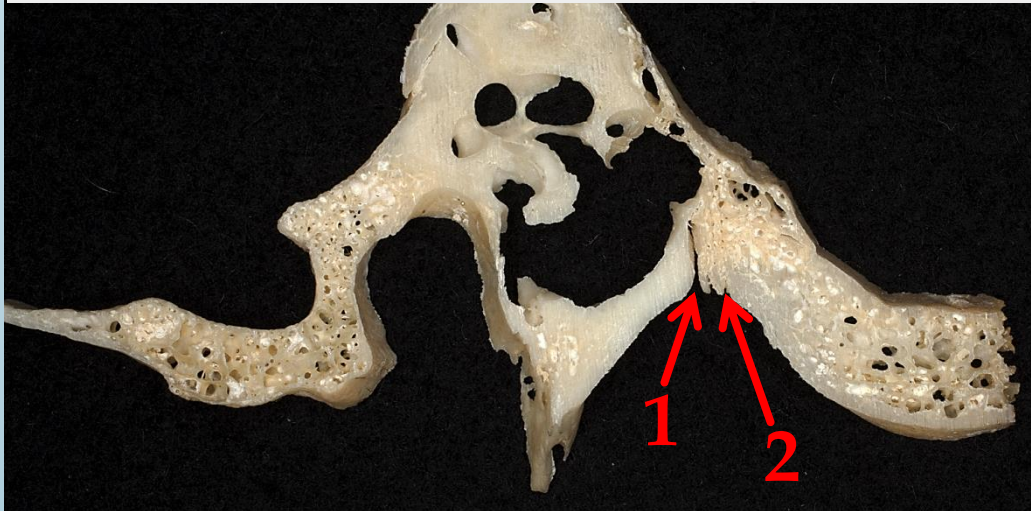
<sup>a</sup>Department of Human Morphology and Developmental Biology, Faculty of Medicine, Semmelweis University, Tűzoltó utca 58, H-1094 Budapest, Hungary

<sup>b</sup>Department of Otorhinolaryngology, Salzburg University Medical School, Salzburg, Austria

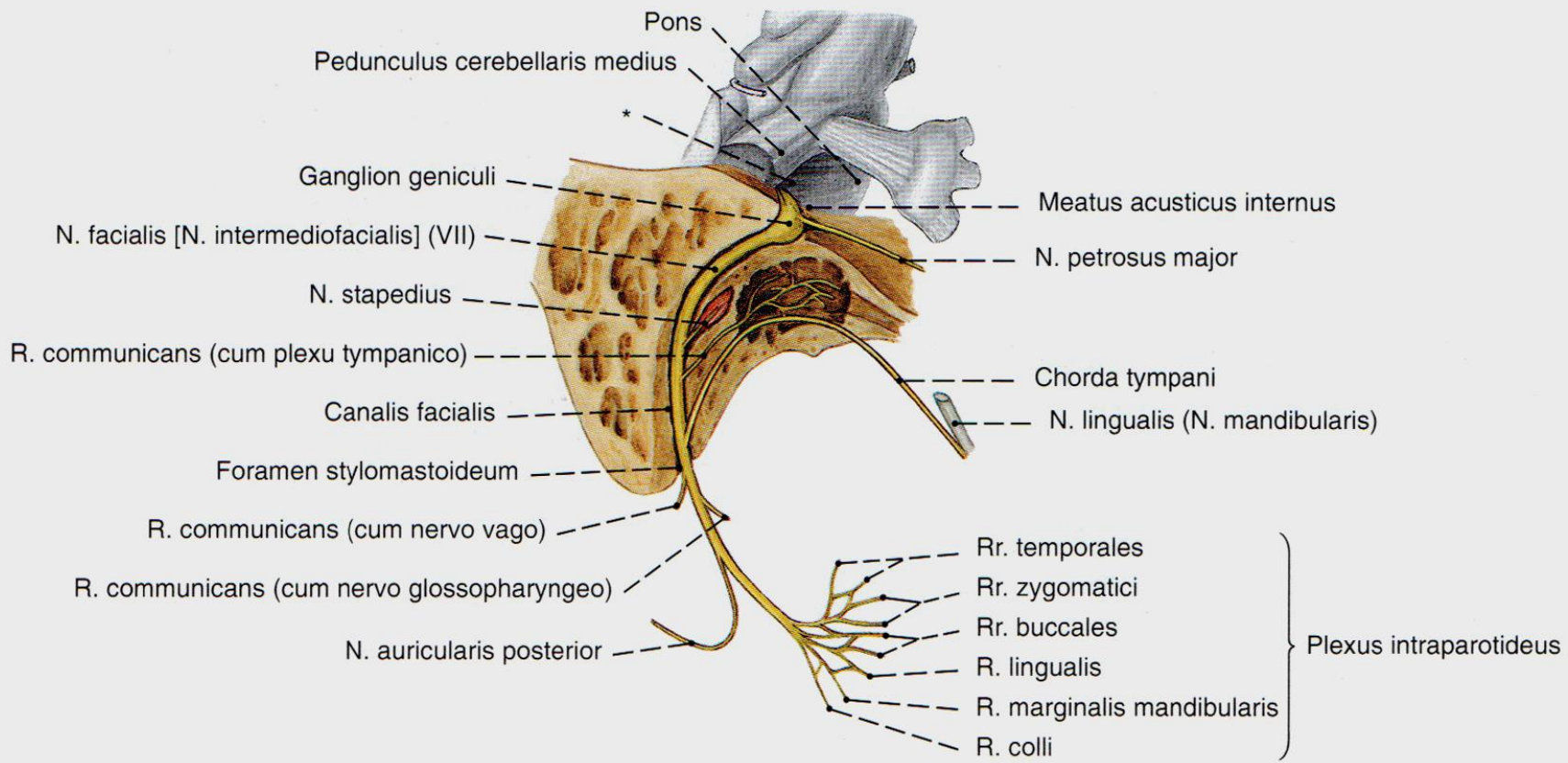
<sup>c</sup>Department of Anatomy, Histology and Embryology, Faculty of Medicine, Semmelweis University, Tűzoltó utca 58, H-1094 Budapest, Hungary

Received 25 January 2005; accepted 5 April 2005

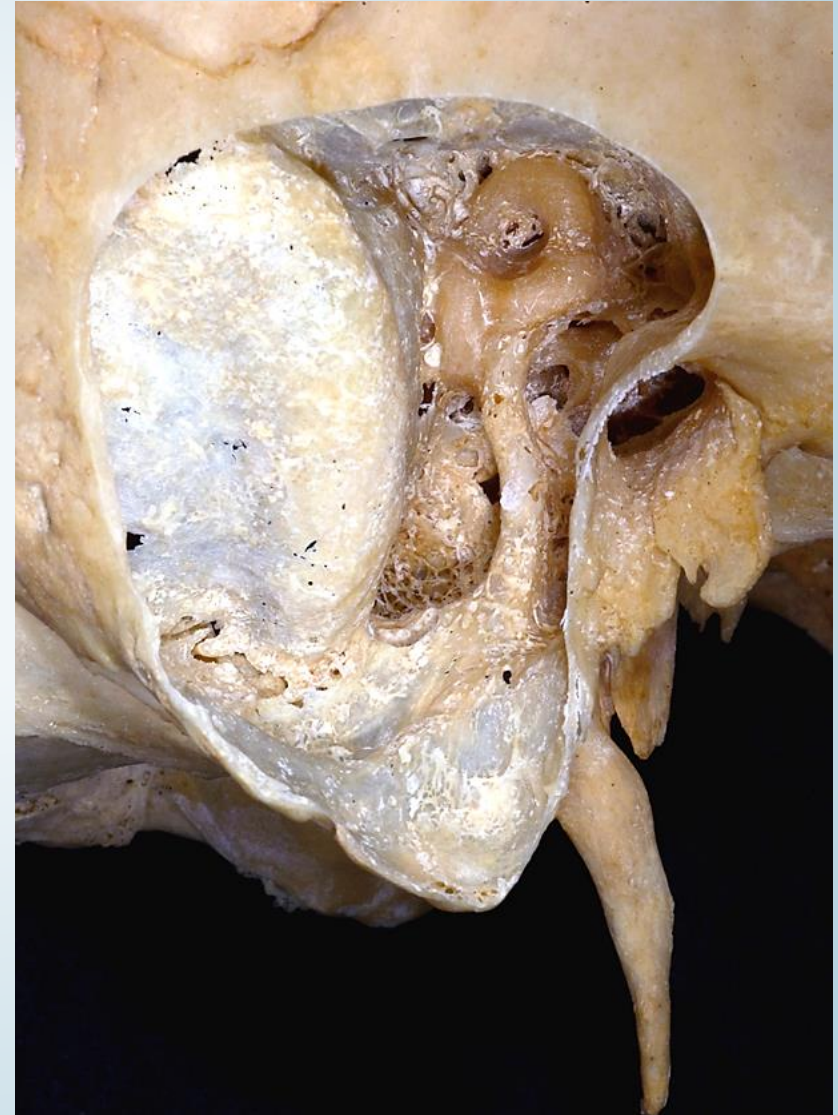
## 2. Fissura Petrosquamosa

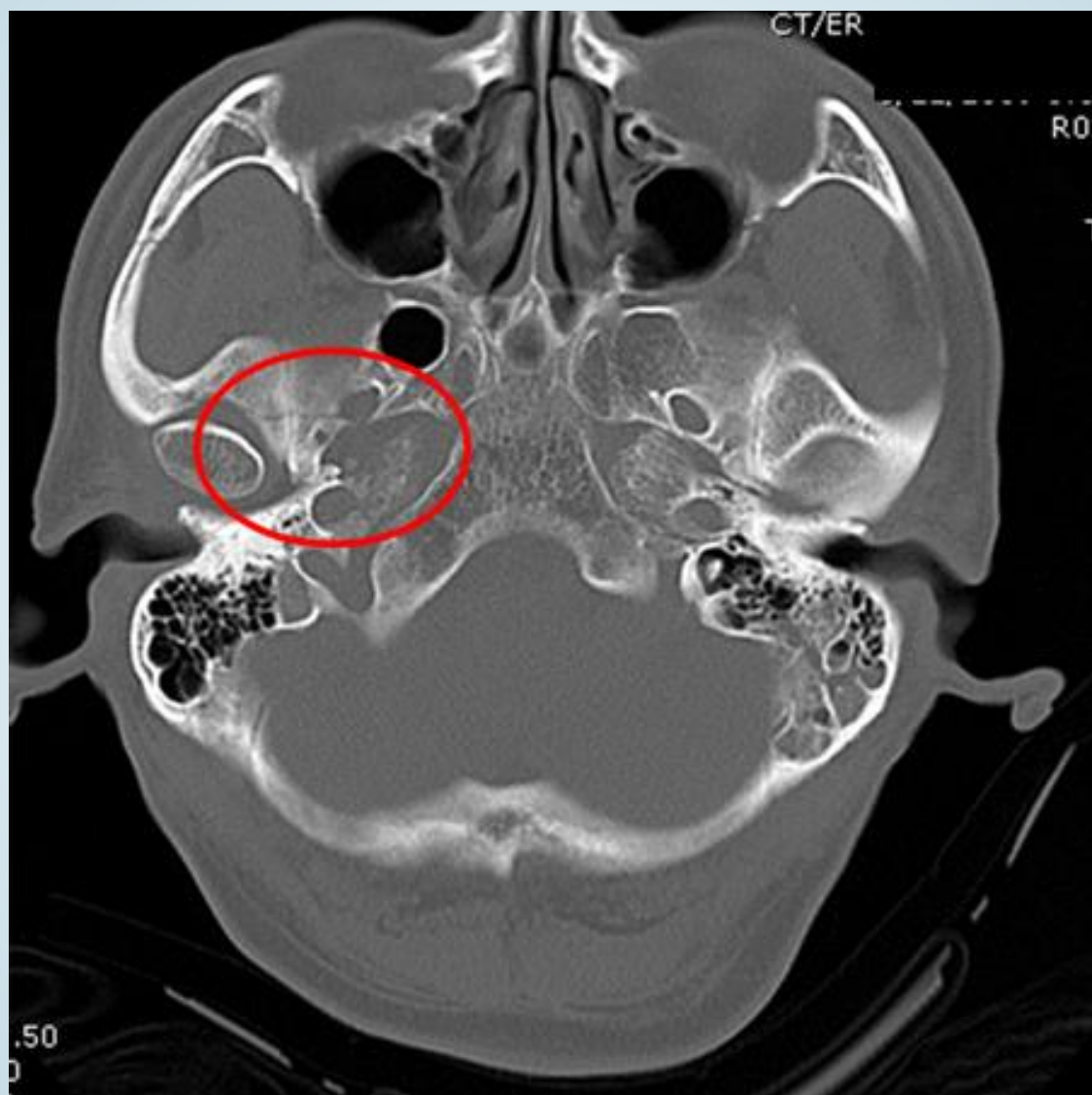


# Canalis facialis (Fallopian canal)



# Canalis facialis (Fallopian canal)

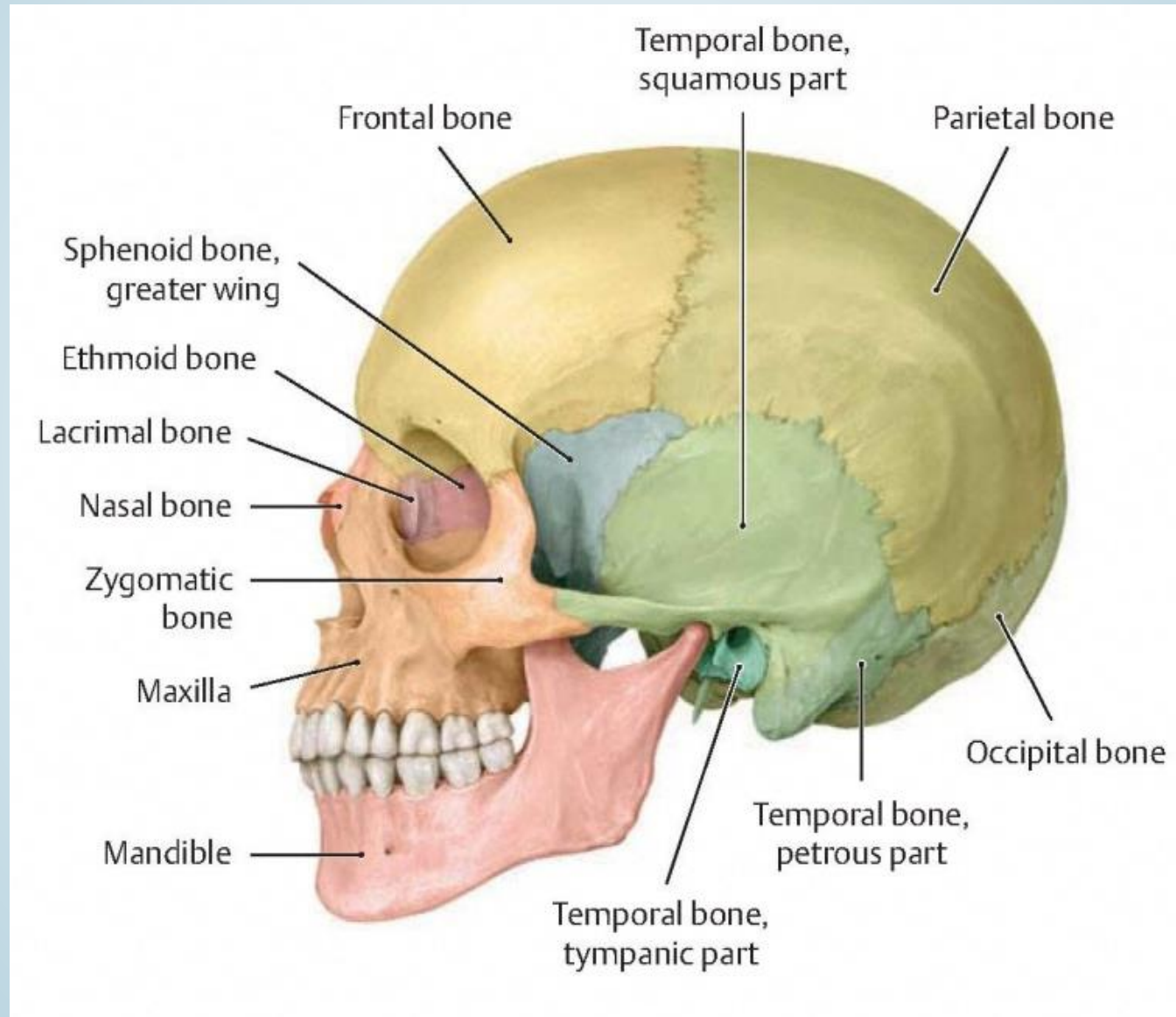




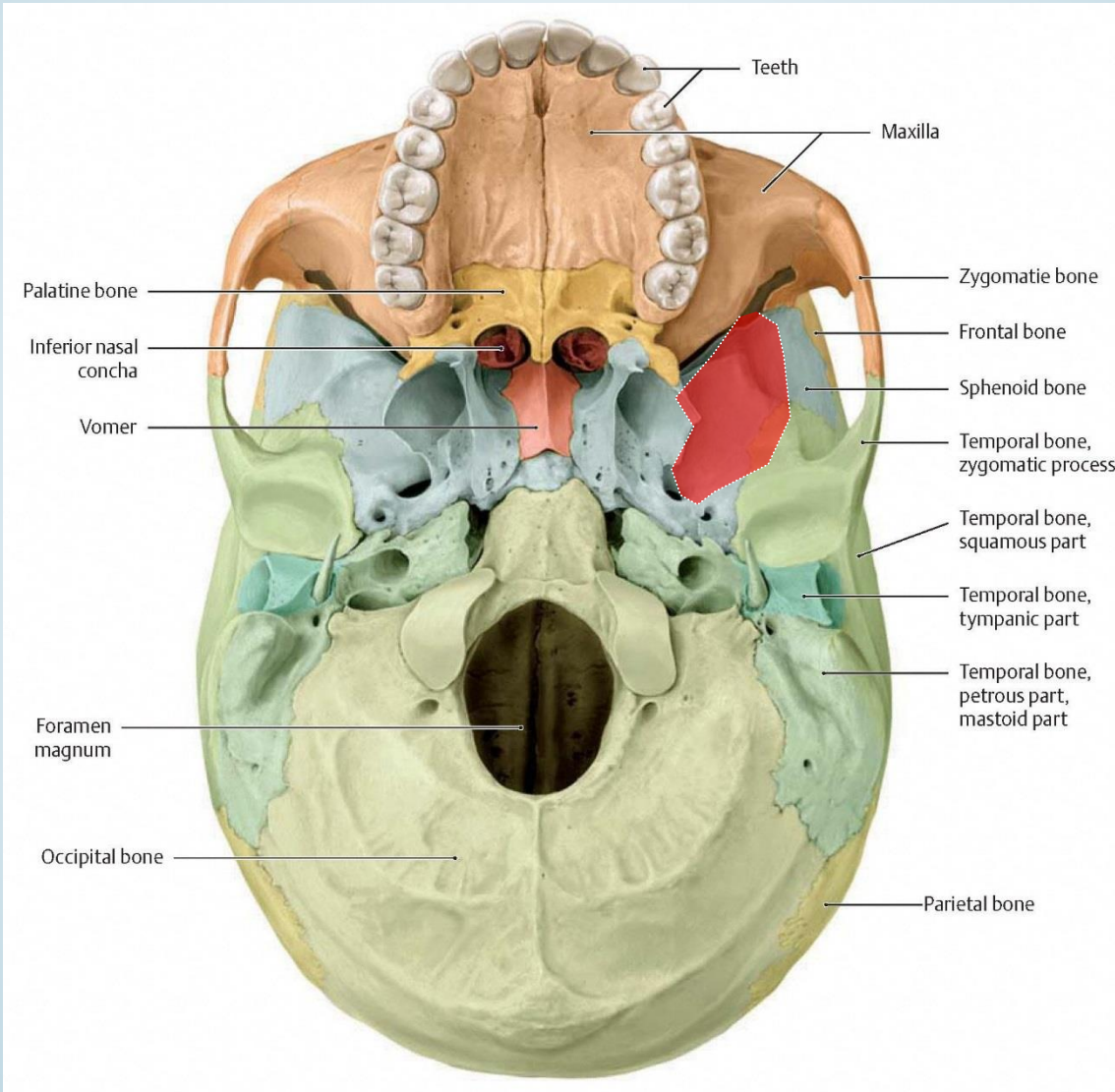


# FOSSA TEMPORALIS ET INFRATEMPORALIS

# TOPOGRAPHIA



# Fossa infratemporalis



# Fossa infratemporalis

## elöl

Tuber maxillae

Facies infratemporalis maxillae

## hátul

Tuberculum articulare (Articulatio temporomandibularis)

## felül

Facies infratemporalis (ala majoris ossis sphenoidalis)

Squama ossis temporalis (bis der crista infratemporalis)

## kívül

Ramus mandibulae

Processus coronoideus

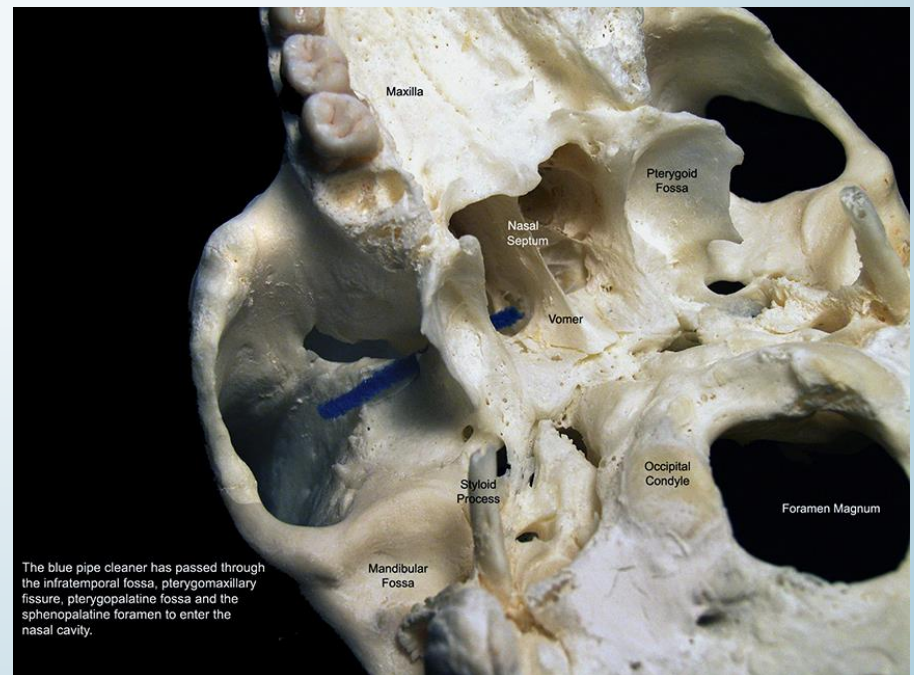
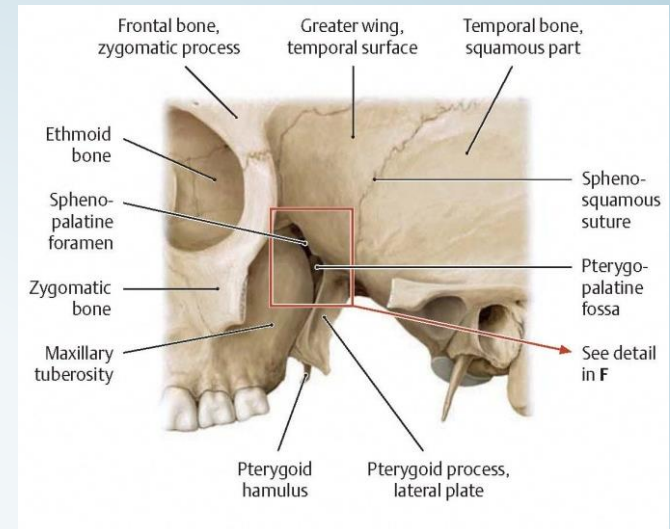
Arcus zygomaticus

## belül

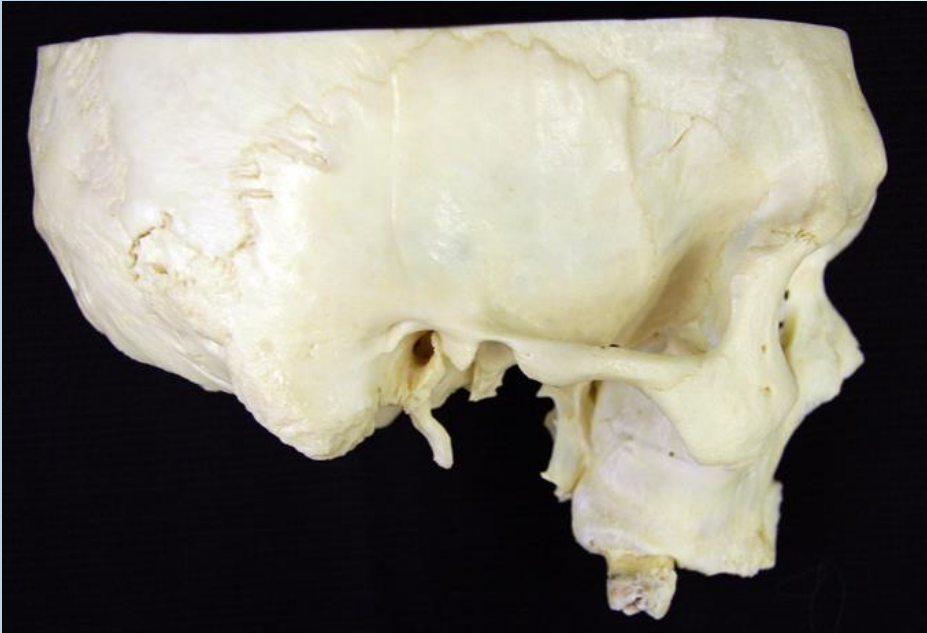
Lamina lateralis processus pterygoidei

Fissura pterygo-maxillaris

*Fissura orbitalis inferior* (vorderer, lateraler Teil)



# A FOSSA INFRATEMPORALIS ÉS FOSSA PTERYGOPALATINA VISZONYAI



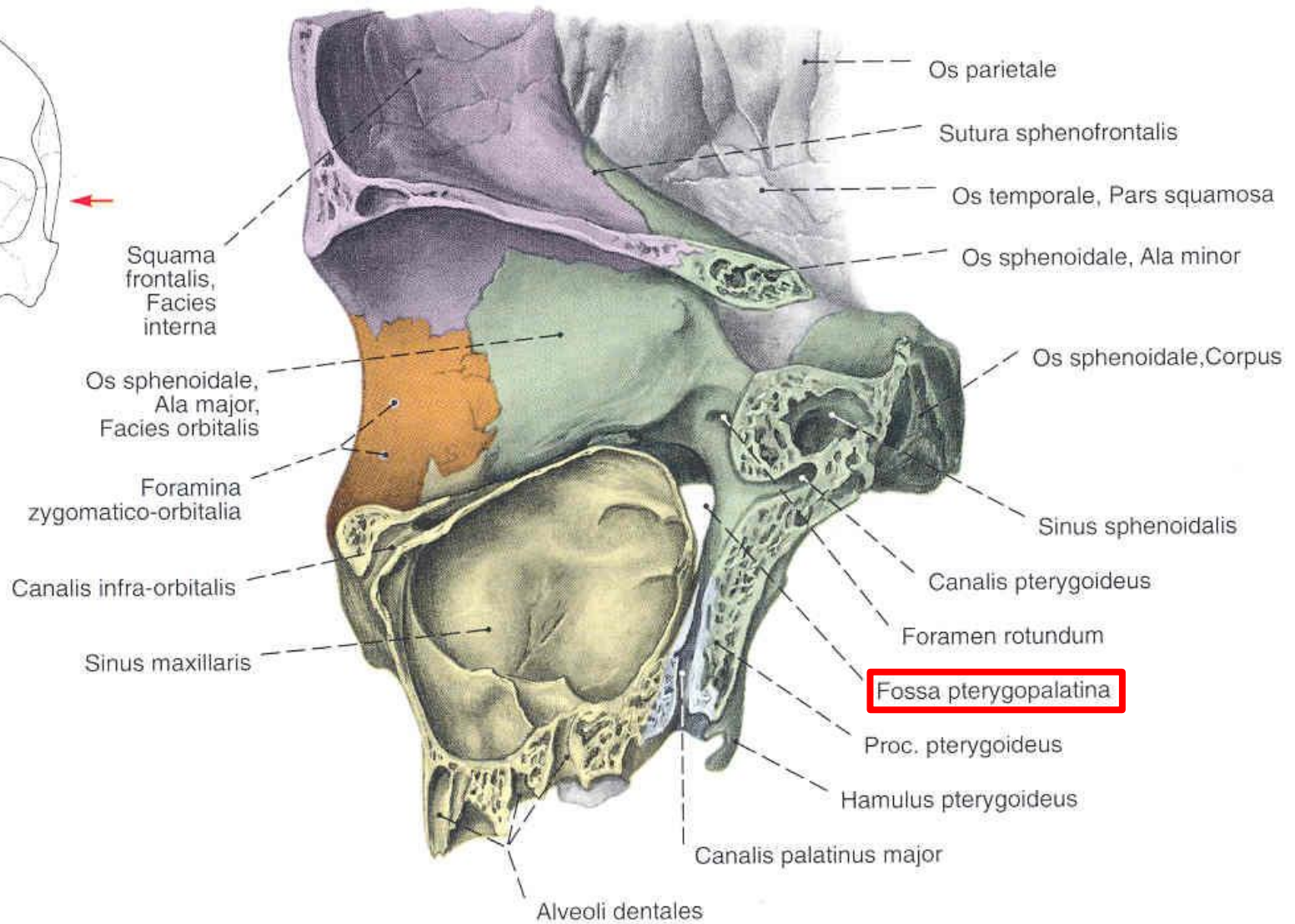
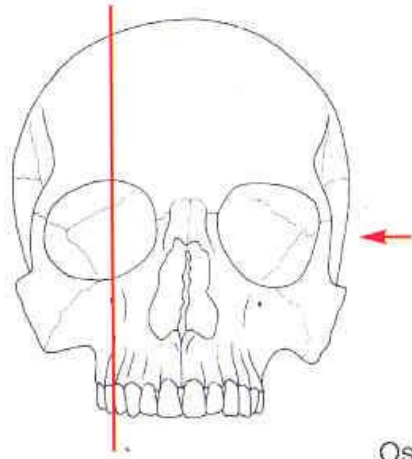
## Fossa infratemporalis

	Wohin (woher)
Fissura pterygomaxillaris	Fossa pterygopalatina
Fissura orbitalis inferior II. (vorderer, lateraler Teil)	Orbita
Foramen ovale	Fossa cranii media
Foramen spinosum	Fossa cranii media
Fissura petrotympanica ( <i>Glaseri</i> )	Cavum tympani
Foramina alveolaria	Zu den oberen Zähne in <i>canales alveolares</i> von Maxilla
Fissura petrosquamosa	Fossa cranii media

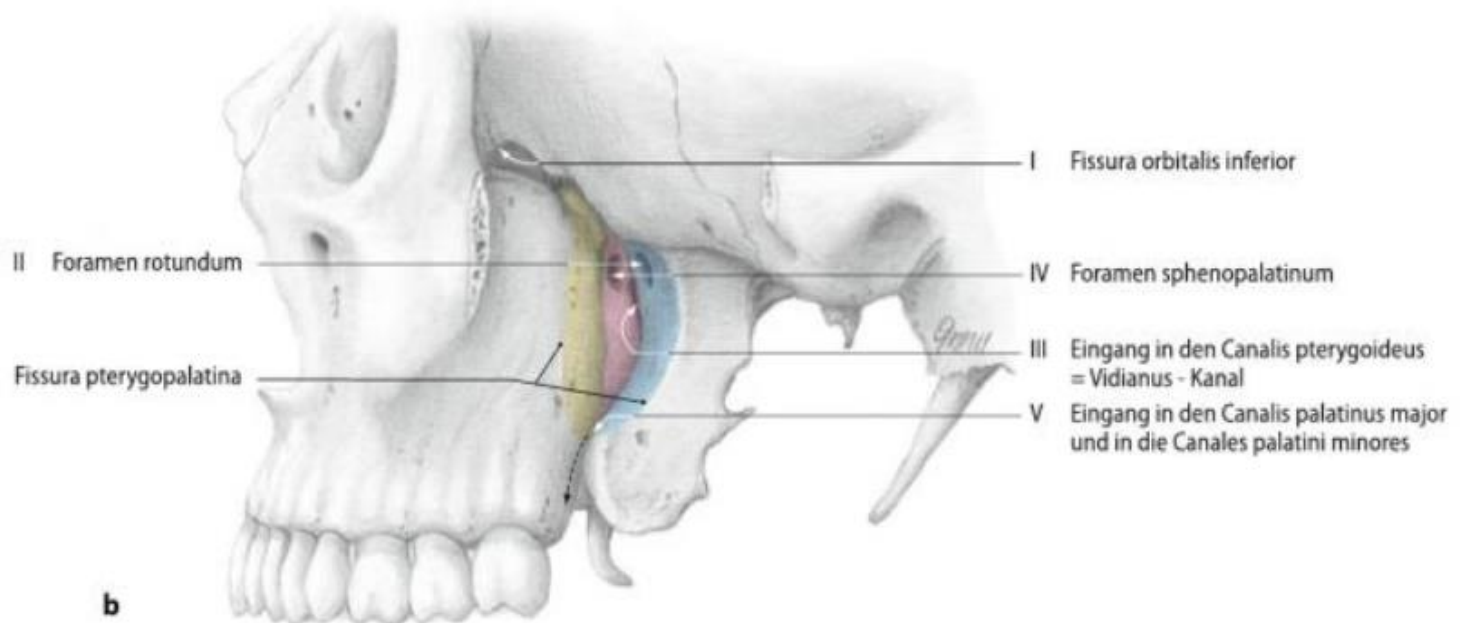
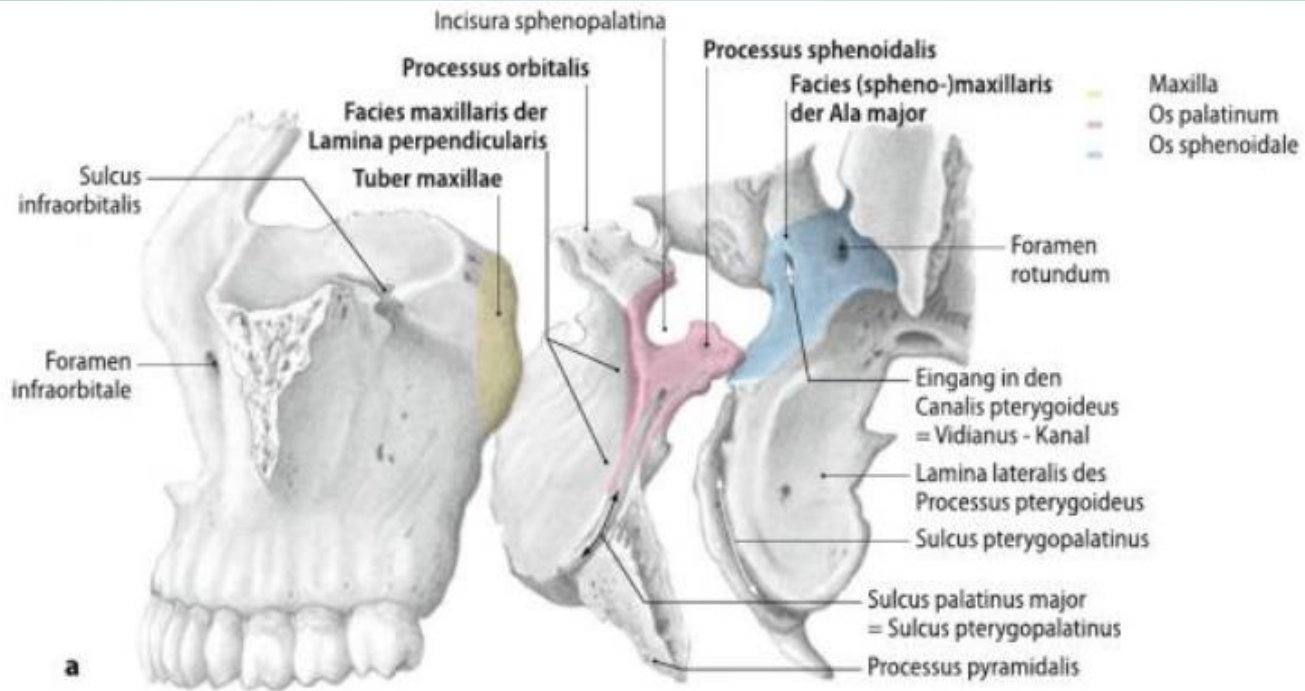
FOSSA  
PTERYGOPALATINA



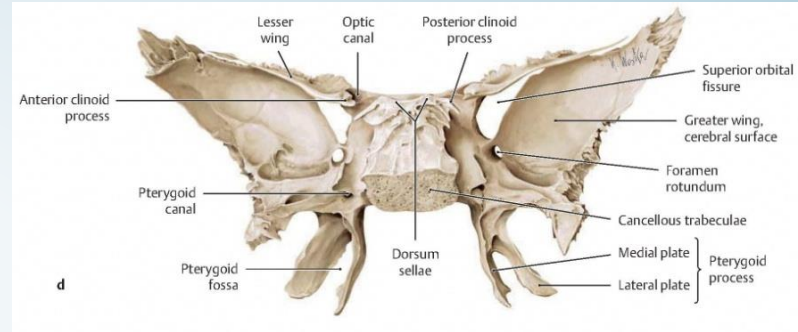
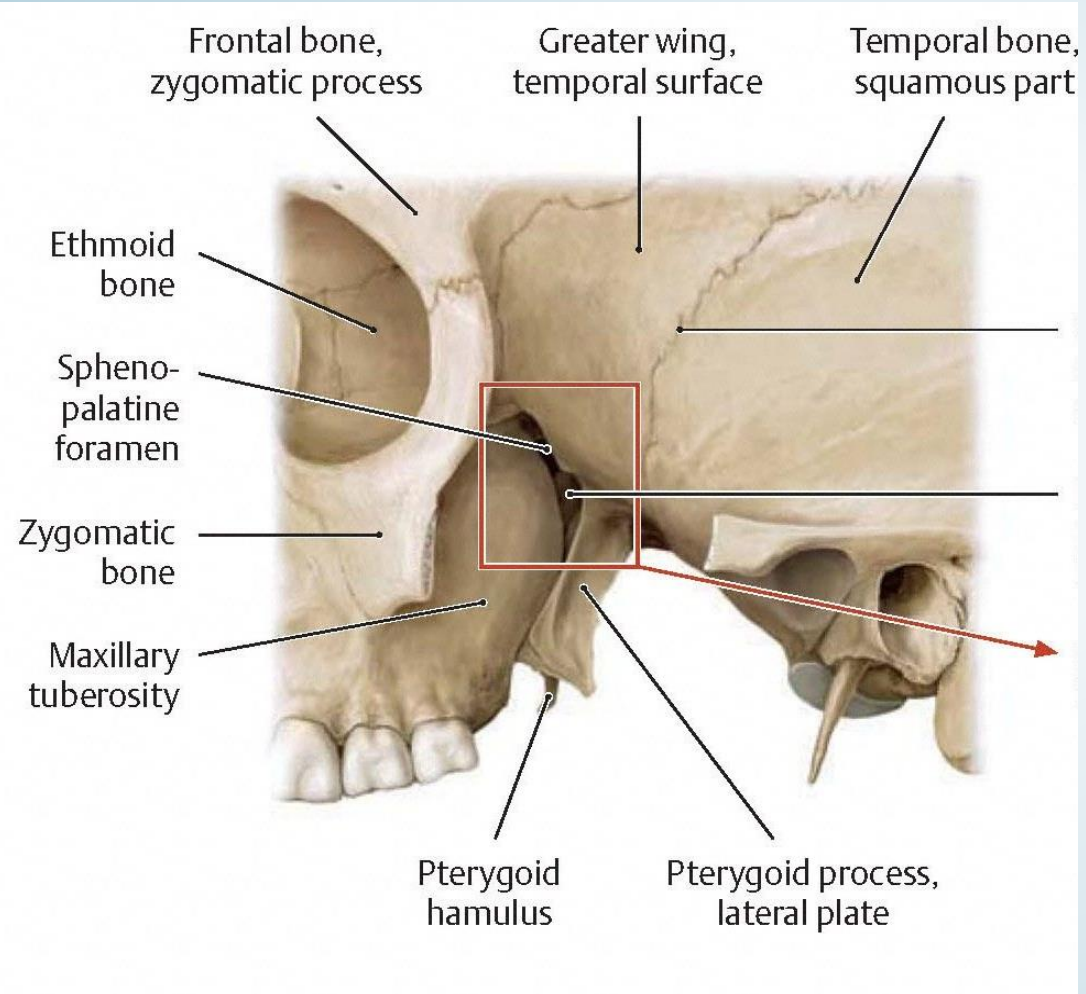
# Fossa pterygopalatina







# FOSSA PTERYGOPALATINA

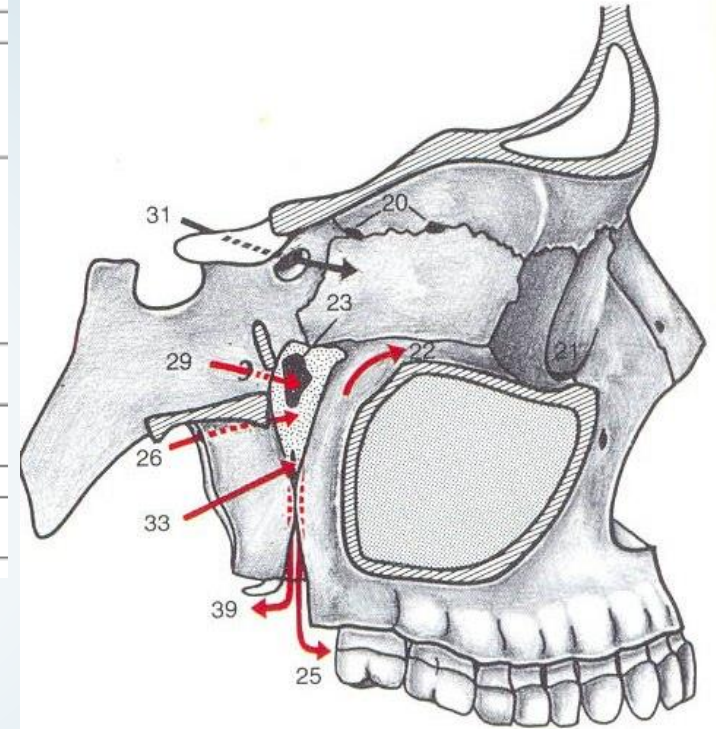


Anterior	Tuber maxillae
Posterior	Processus pterygoideus mit ala major facies maxillaris
Medial	Lamina perpendicularis ossis palatini+ Proc. orbitalis und Proc. sphenoidalis
Lateral	Fossa infratemporalis (durch der fissura pterygo-maxillaris)
Superior	Ala major ossis sphenoidalis mit Corpus Ossis sphenoidalis
Inferior	Processus pyramidalis ossis Palatini

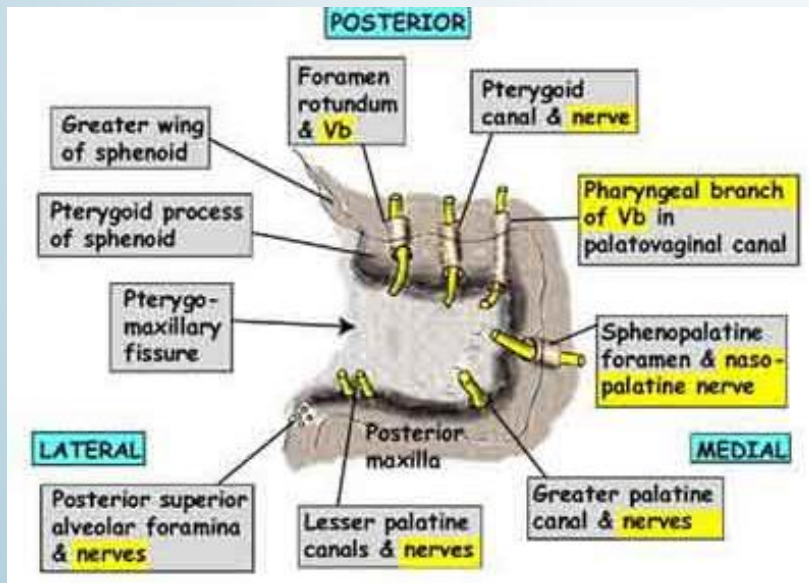
# A fossa pterygopalatina összeköttetései

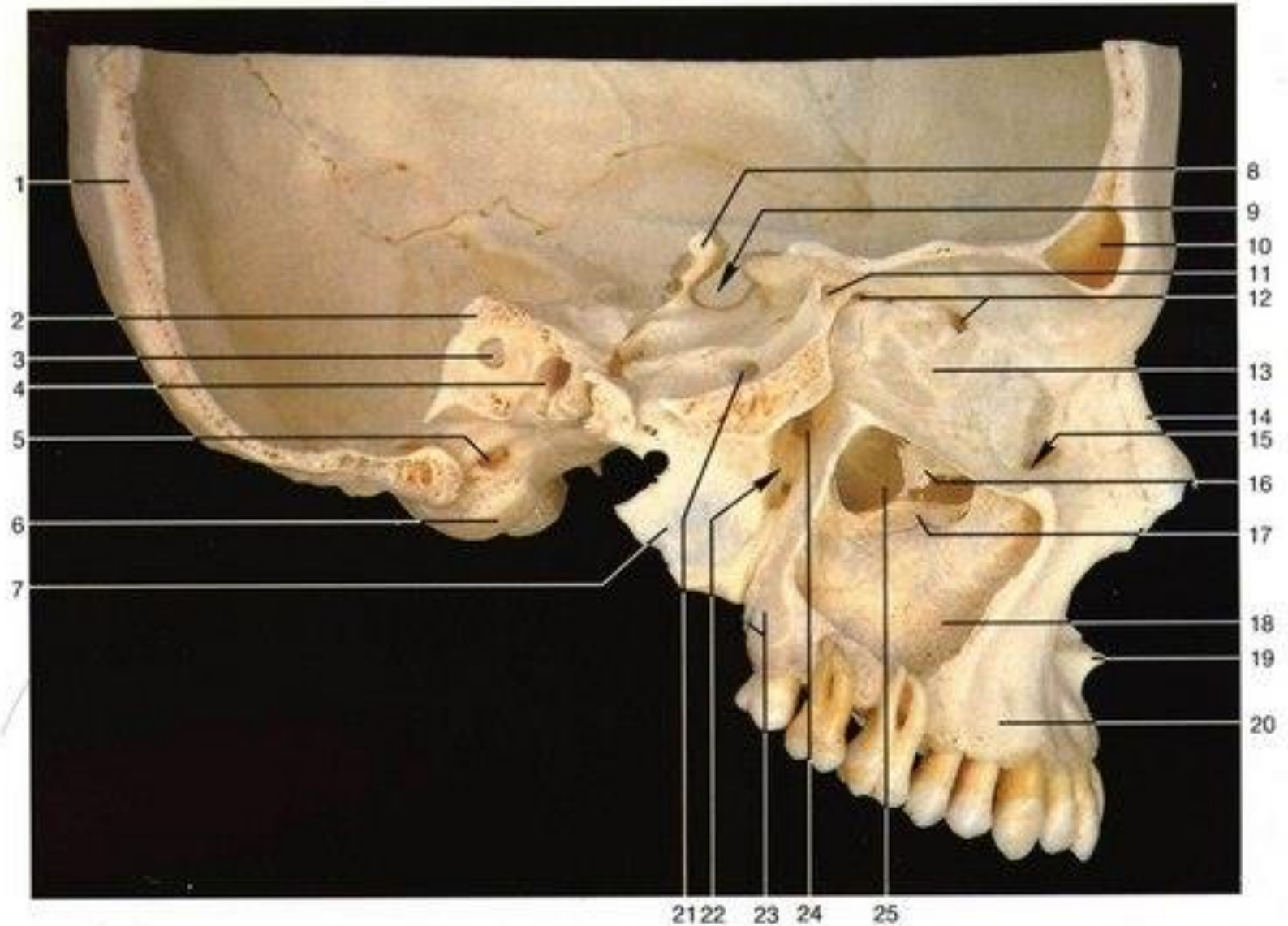
## Fossa pterygopalatina (seu Fossa sphenopalatina)

	Wohin (woher)
Canalis pterygoideus ( <i>Vidii</i> )	Basis cranii externa
Canalis palatinus major seu Canalis pterygopalatinus/ sphenopalatinus major (öffnet sich mit <i>Foramen palatinum majus</i> )	Cavum oris
Canales palatini minores seu Canales pterygopalatini/ sphenopalatini minores (öffnen sich mit <i>Foramina palatina minora</i> )	
Fissura orbitalis inferior I. (hinterer, medialer Teil)	Orbita
Fissura pterygomaxillaris	Fossa infratemporalis
Foramen rotundum	Fossa cranii media
Foramen sphenopalatinum seu pterygopalatinum	Cavum nasi (Meatus nasi communis)

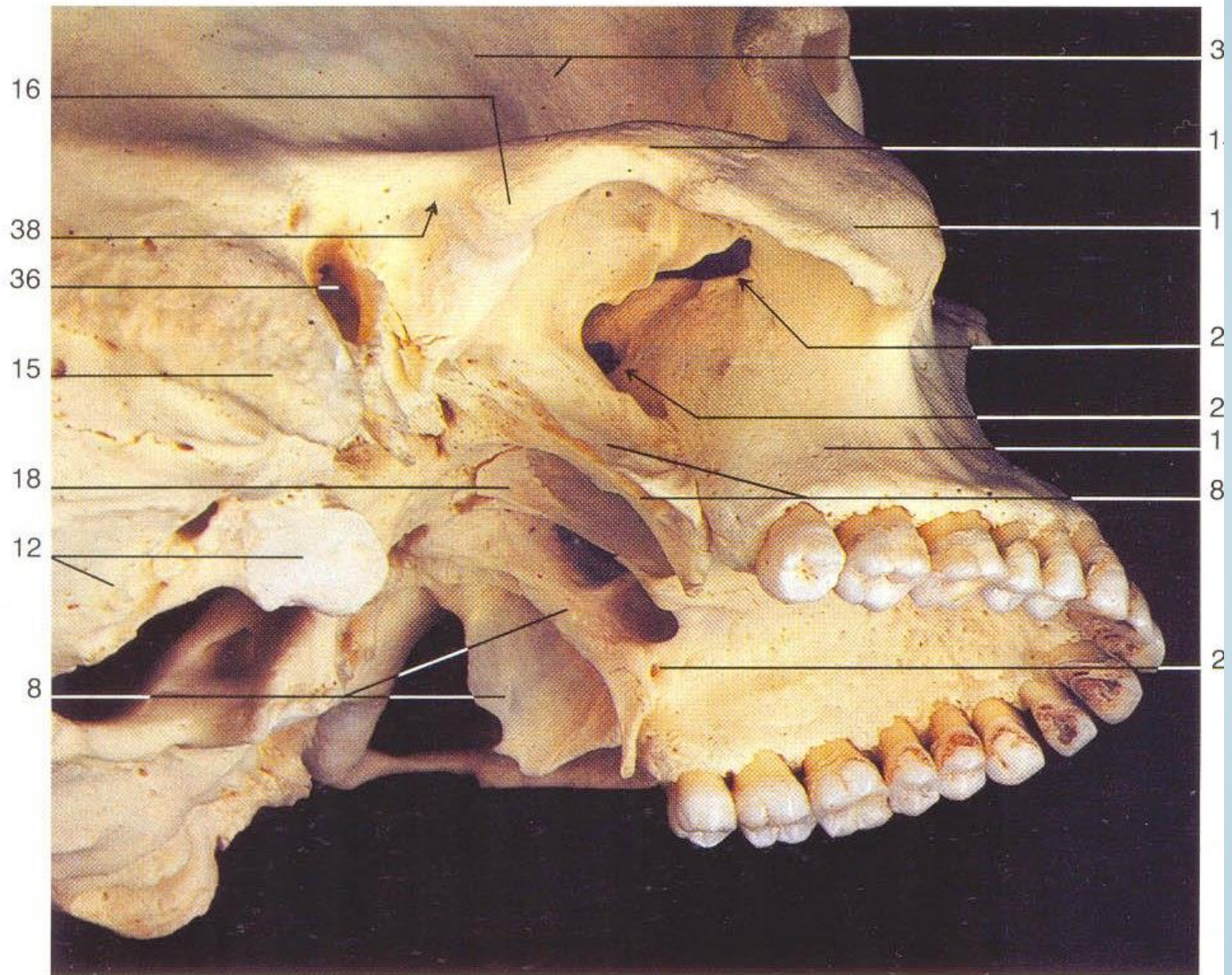


Openings and canals of the pterygo-palatine fossa. Schematic drawing.

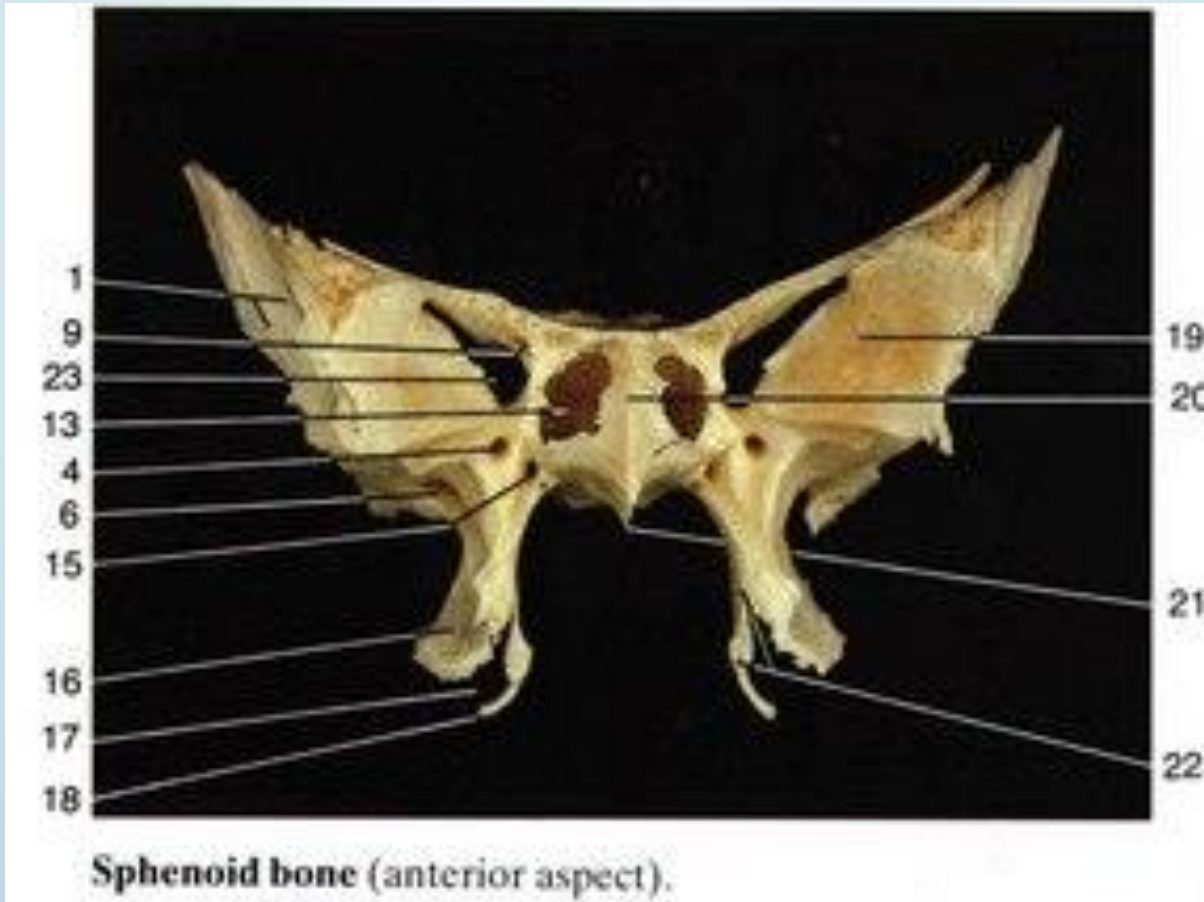
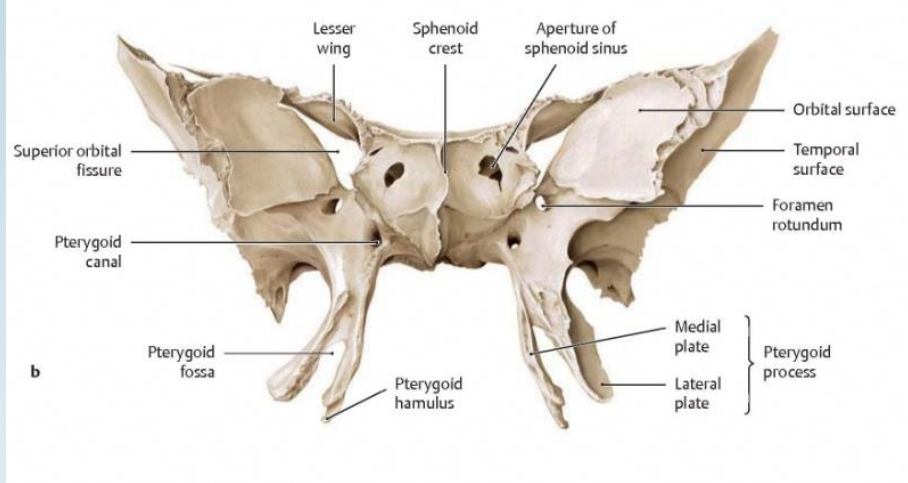


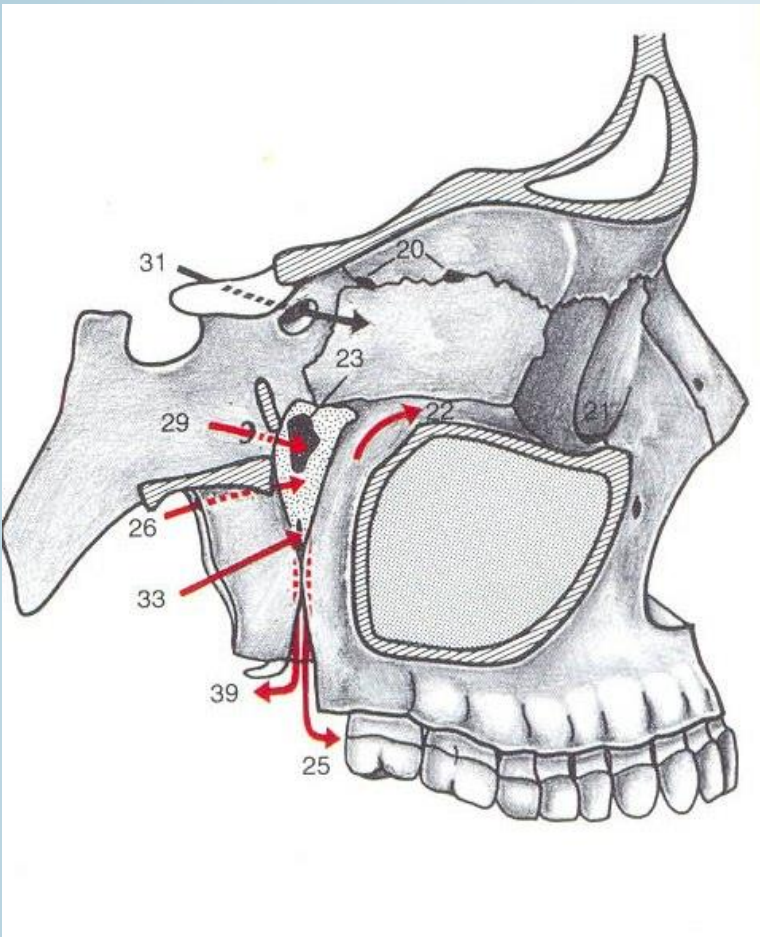


**Paramedian section through the skull, right side (lateral aspect). Frontal and maxillary sinus are opened.**

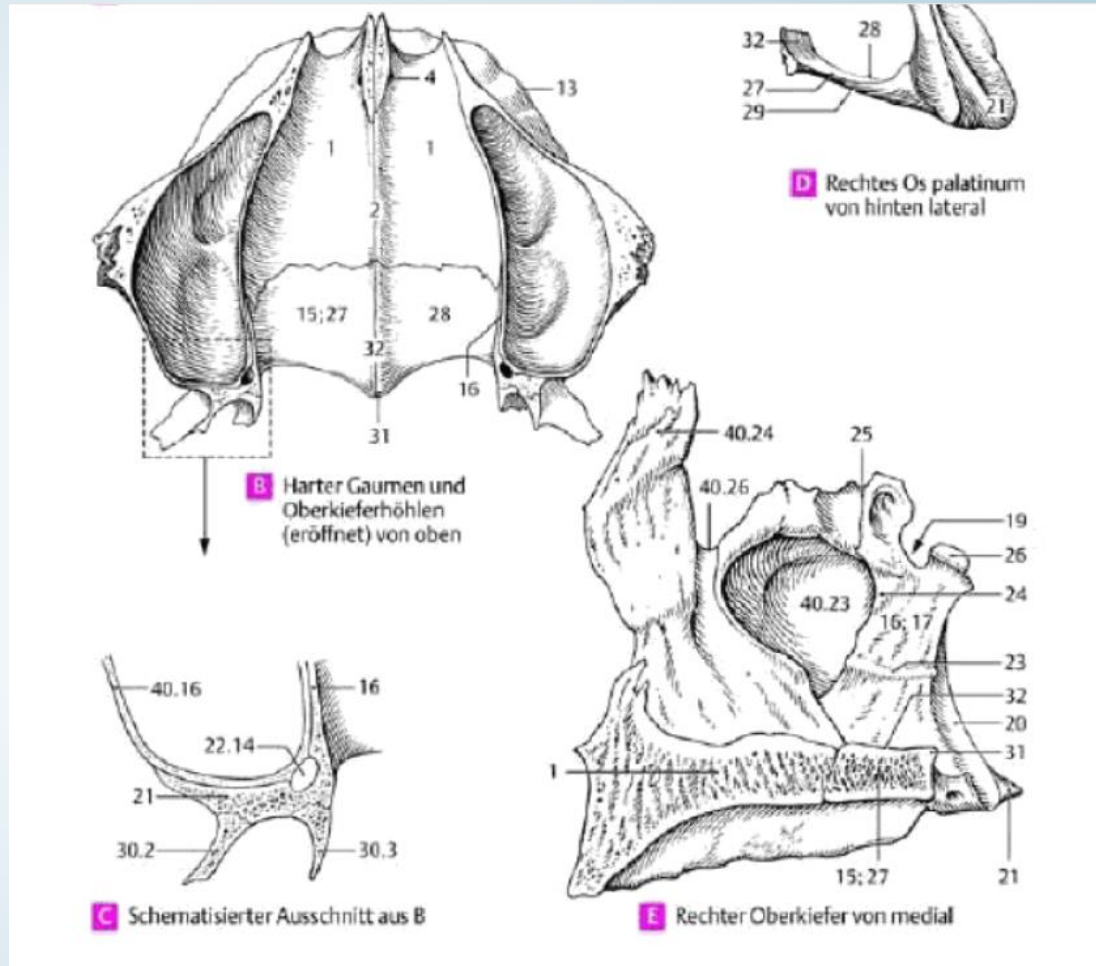


**Oblique lateral aspect of the base of the skull. Facial skeleton.**





**Openings and canals of the pterygo-palatine fossa. Schematic drawing.**



**C** Schematisierter Ausschnitt aus B

**E** Rechter Oberkiefer von medial

**D** Rechtes Os palatinum von hinten lateral

**B** Harter Gaumen und Oberkieferhöhlen (eröffnet) von oben

# Forrásmunkák

Braus Anatomie des Menschen Band I (Verlag von Julius Springer 1929.)

Faller: Anatomie in Stichworten: Ein Arbeitsbuch für Medizinstudenten und praktische Ärzte (Ferdinand Enke Verlag 1988.)

Sobotta: Az ember anatómiájának atlasza (Urban & Fischer 2000.)

Thumfart: Operative Zugangswege in der HNO-Heilkunde (Thieme 1998.)

Az előadásban bemutatott anatómiai készítmények fényképeinek szerzői jogai a preparátort illetik.