

Biology 223

Human Anatomy for Biology Majors

Week 8; Lecture 1; Monday

Dr. Stuart S. Sumida

Overview of Structure of the Adult Skull

The developing skull has three component origins:

- Condrocranium (base of skull / braincase)
- Dermatocranium (flat bones of skull)
- Splanchnocranium (bones derived from gill arch elements)

Mode of
Formation

Germ Layer
Origin

Condrocranium

Endochondral

Mesoderm

Dermatocranium

Dermal

Neural Crest

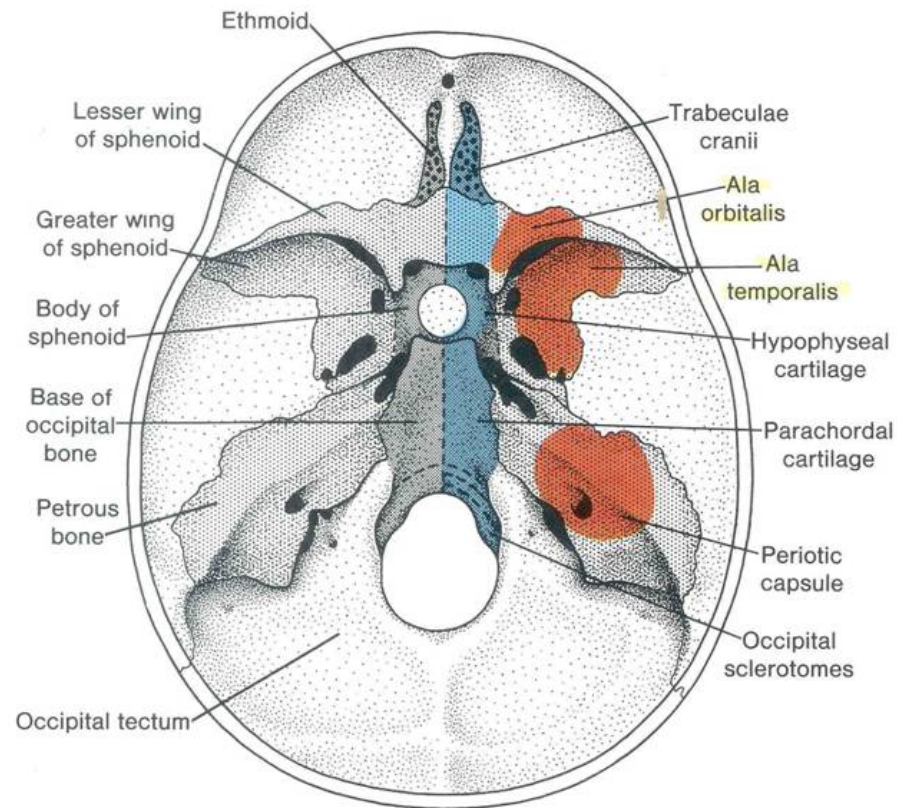
Splanchnocranium

Endochondral

Neural Crest

CHONDROCRANIUM: Bones of the base of the skull.

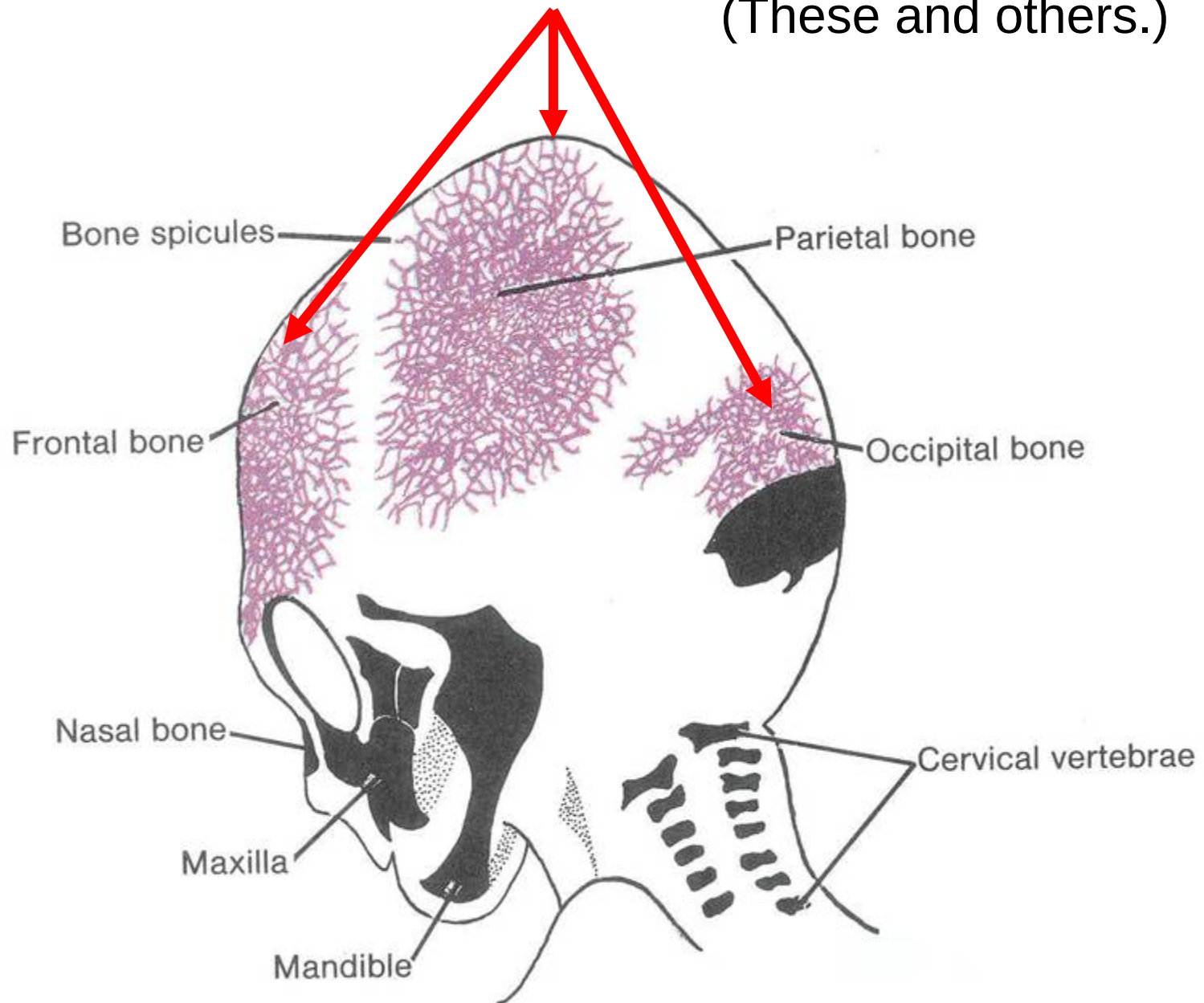
- Most major cranial nerves escape the skull through these.
- Endochondral
- Mesodermal
- Include: ethmoid, sphenoid (part), occipital (part) right and left temporal (parts).



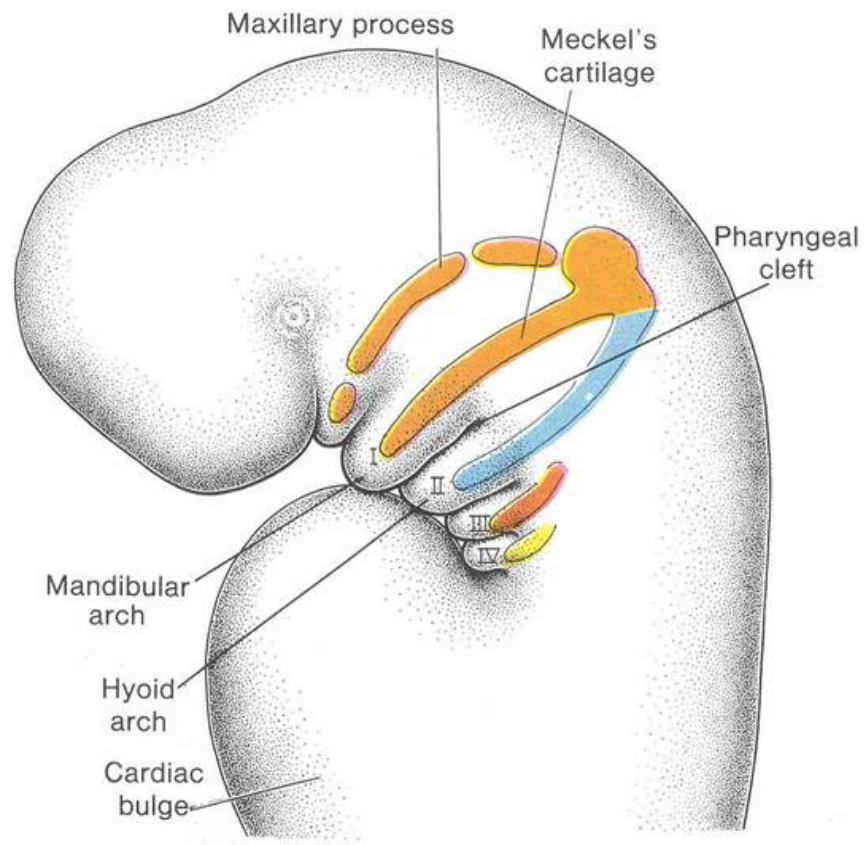
Schematized dorsal view of the chondrocranium or base of the skull in the adult. On the right are indicated in blue the various embryonic components participating in the formation of the median part of the chondrocranium; in red the components for the lateral part of the chondrocranium. On the left are indicated the names of the adult structures.

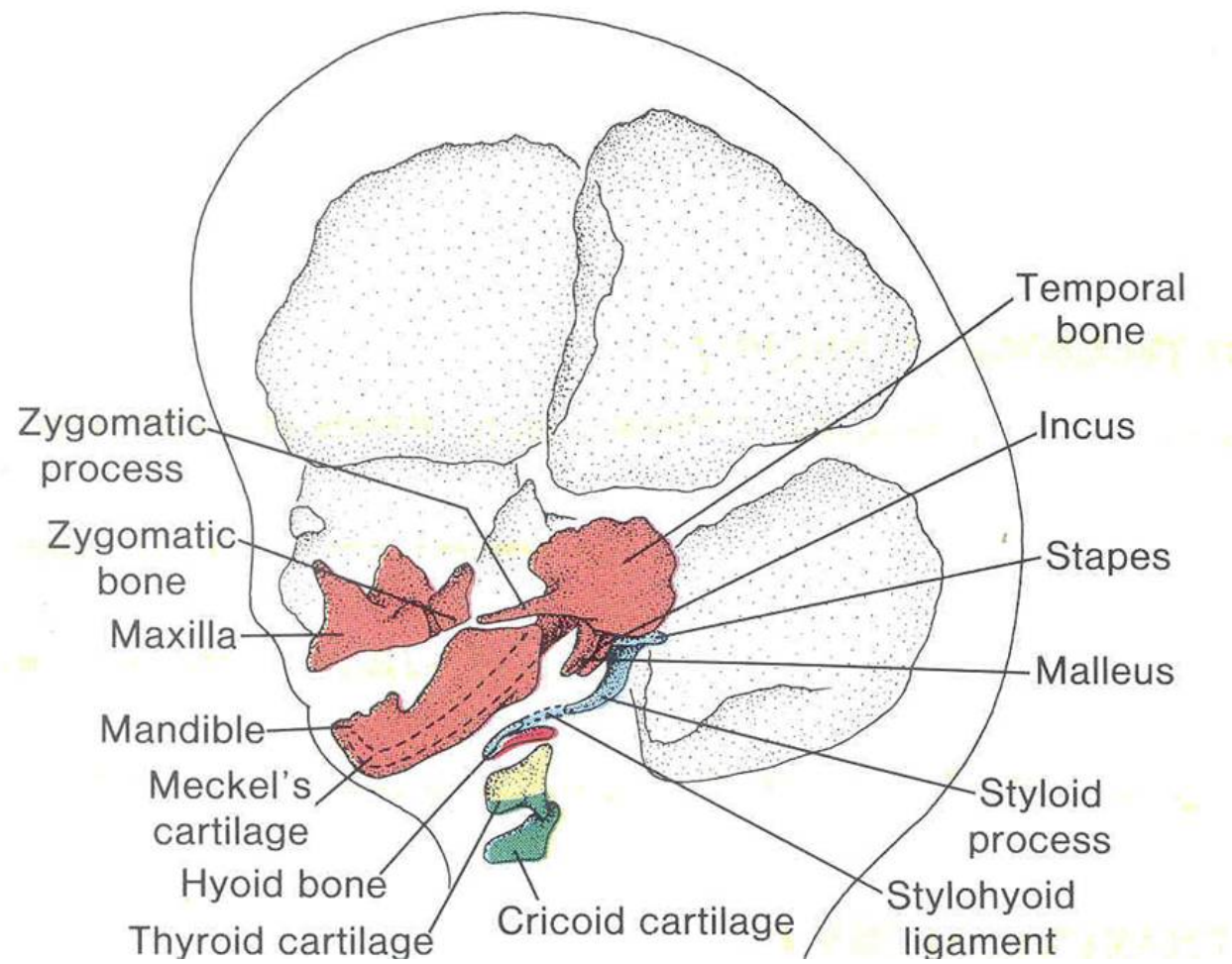
Flat bones of skull: DERMATOCRANIUM

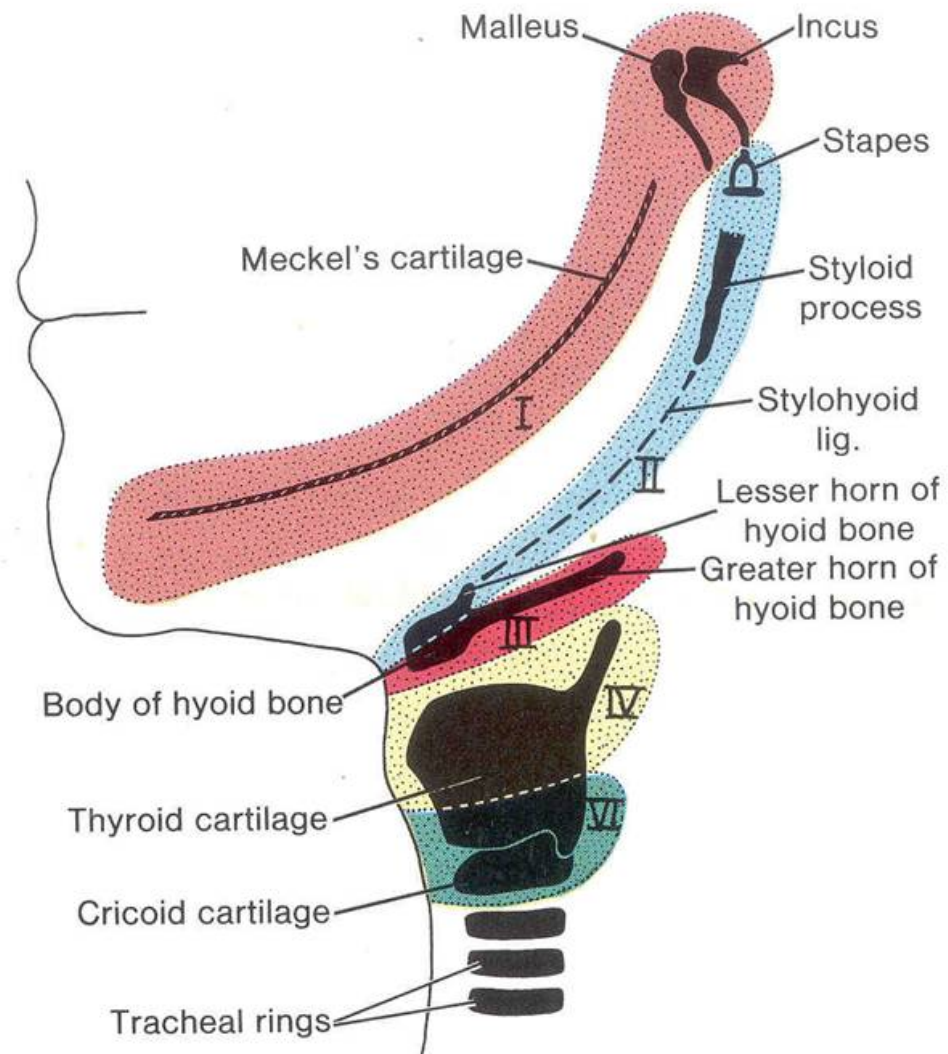
(These and others.)

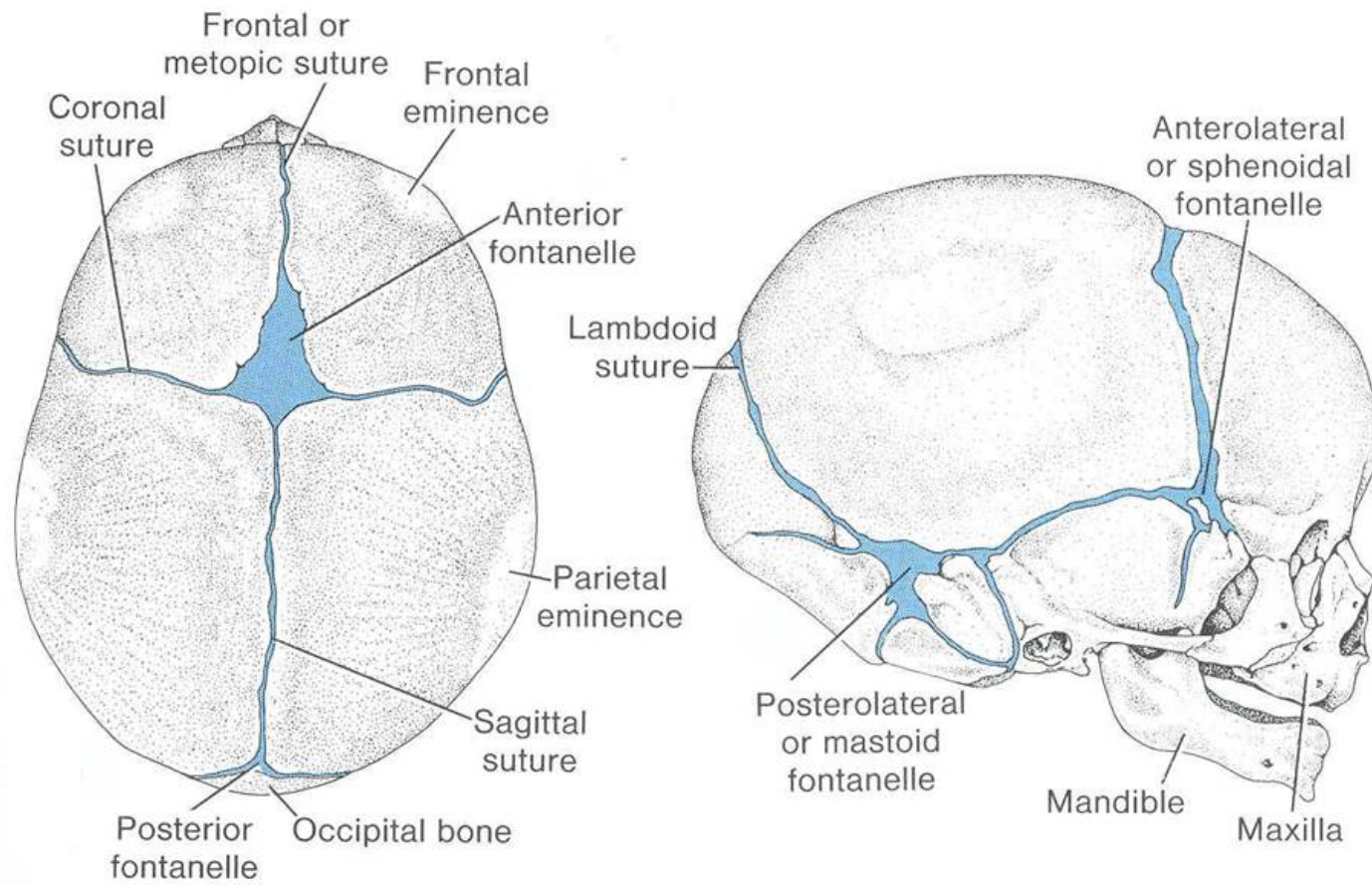


Gill slit bones: become SPLANCHNOCRANIUM

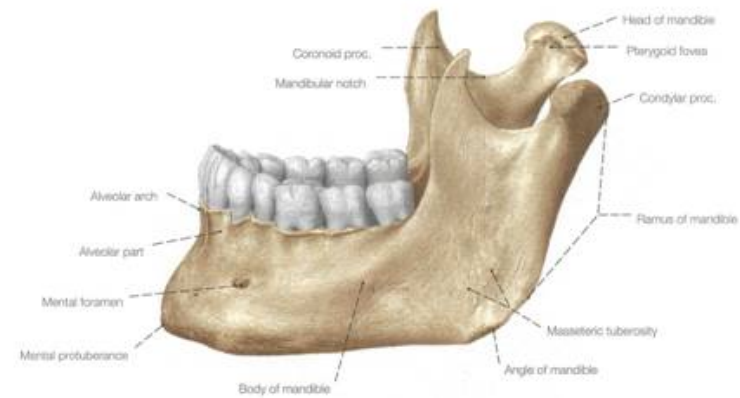




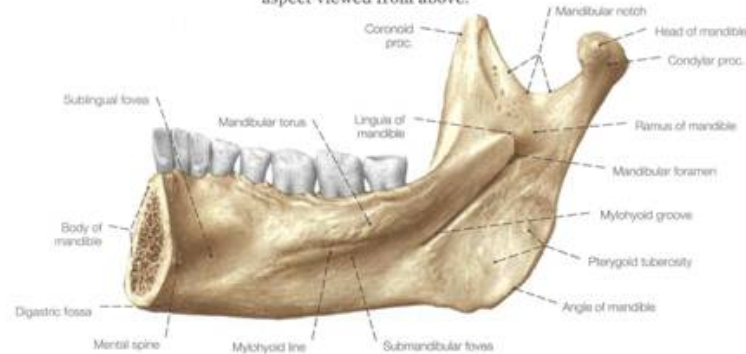




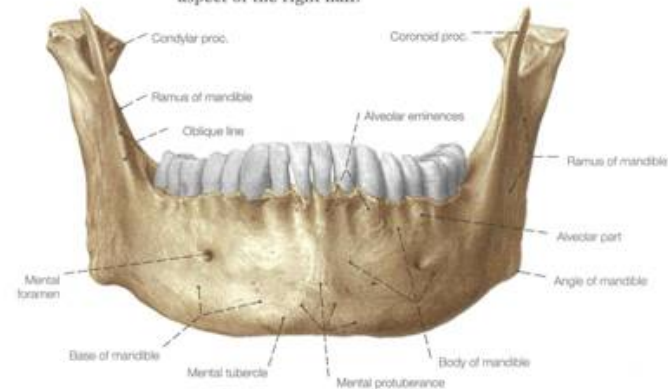
Mandible (Lower Jaw)



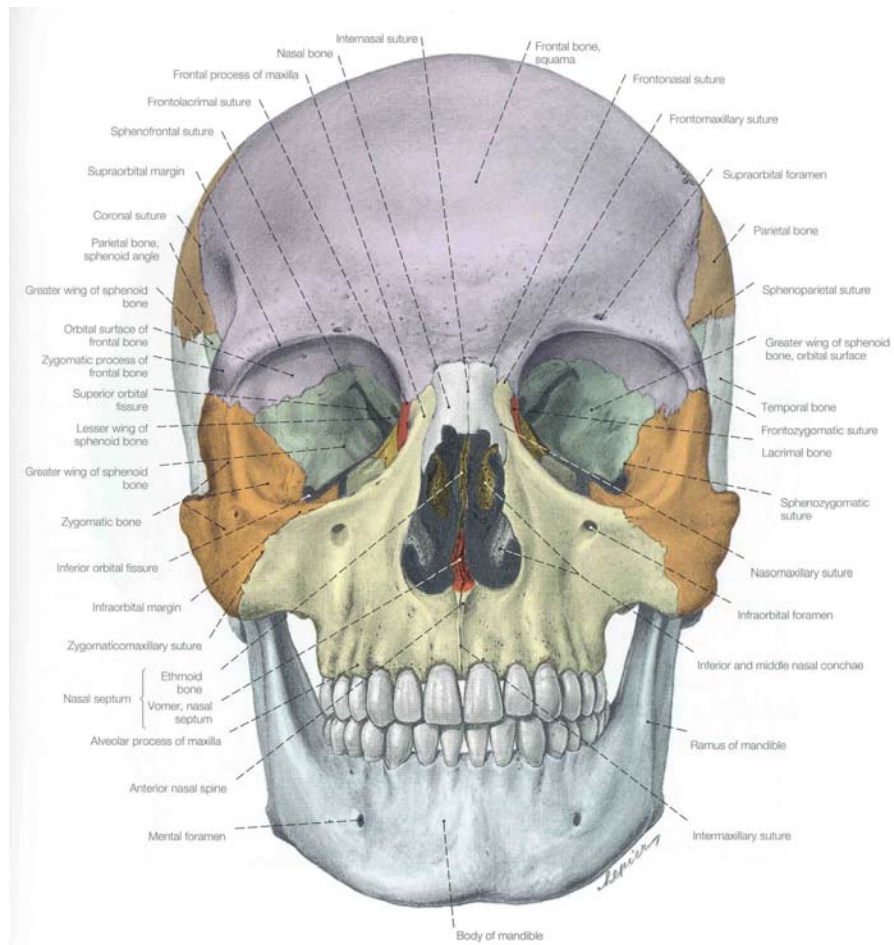
The mandible, lateral aspect viewed from above.



The mandible, medial aspect of the right half.

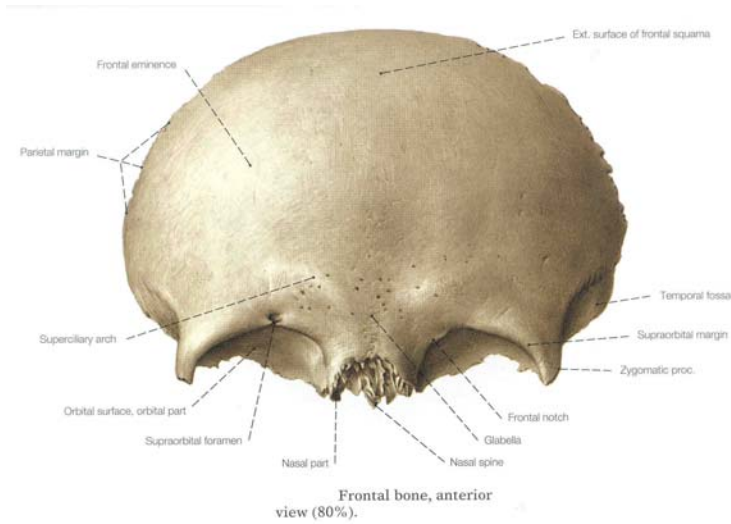


Skull – Anterior View

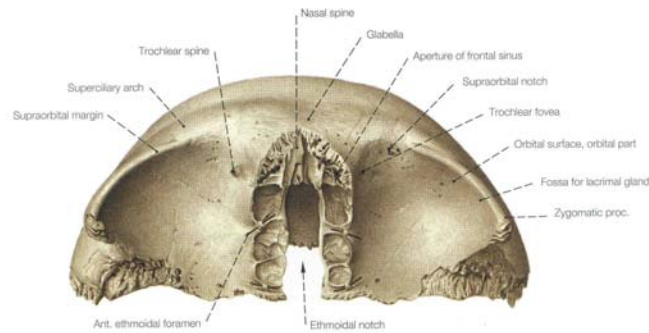


 Frontal bone	 Temporal bone	 Vomer
 Nasal bone	 Inferior nasal concha	 Ethmoid bone
 Maxilla	 Mandible	 Parietal bone
 Zygomatic bone	 Lacrimal bone	 Sphenoid bone

Frontal

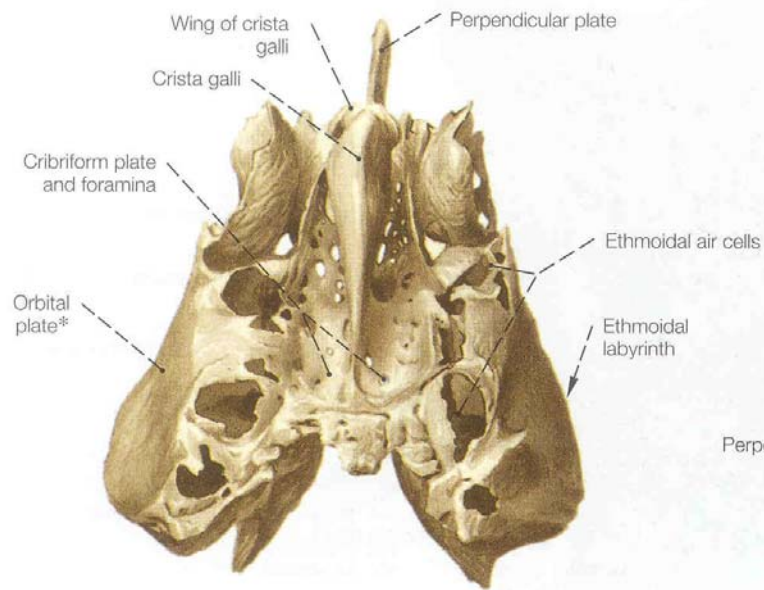


Anterior

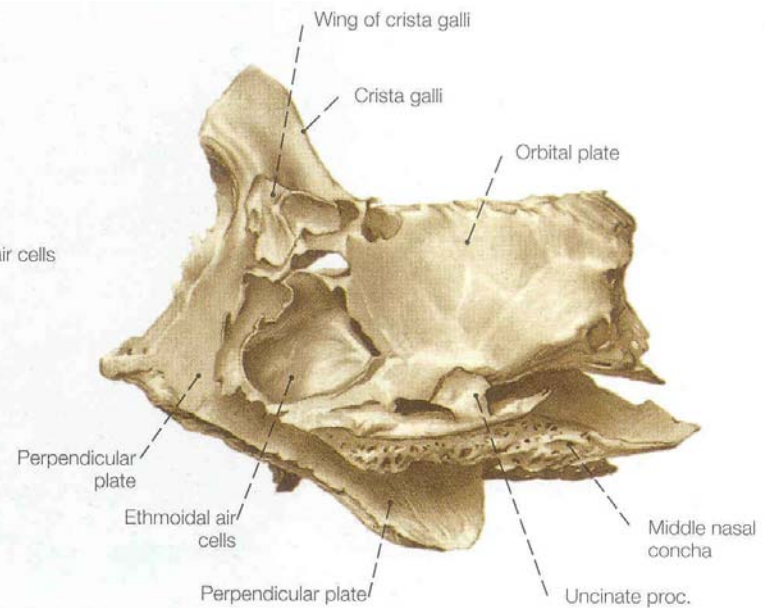


Inferior

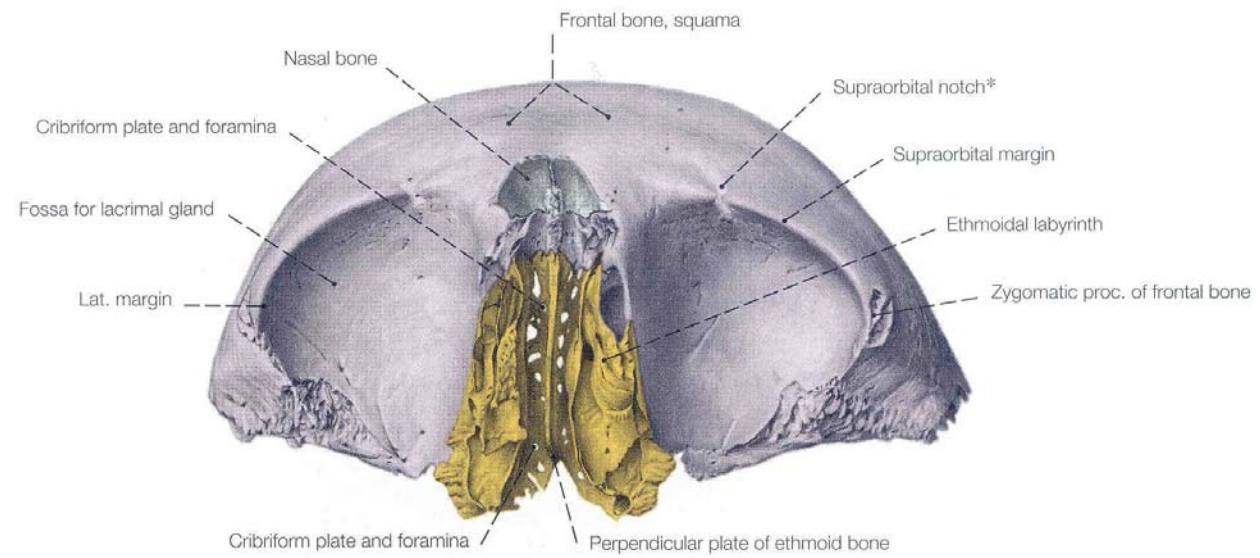
Ethmoid



superior



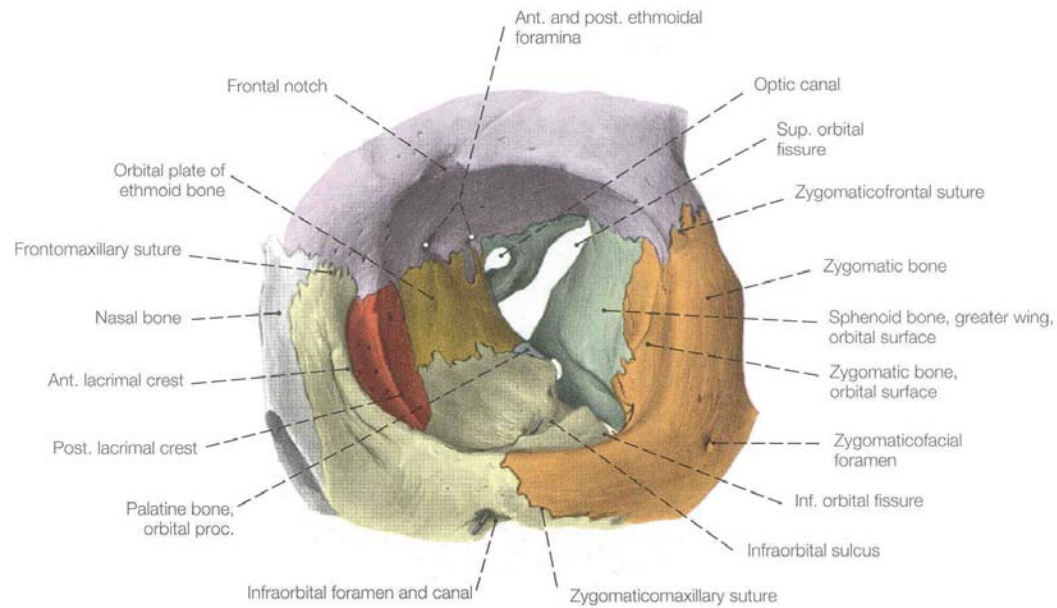
lateral



Frontal bone

Ethmoid bone

Nasal bone

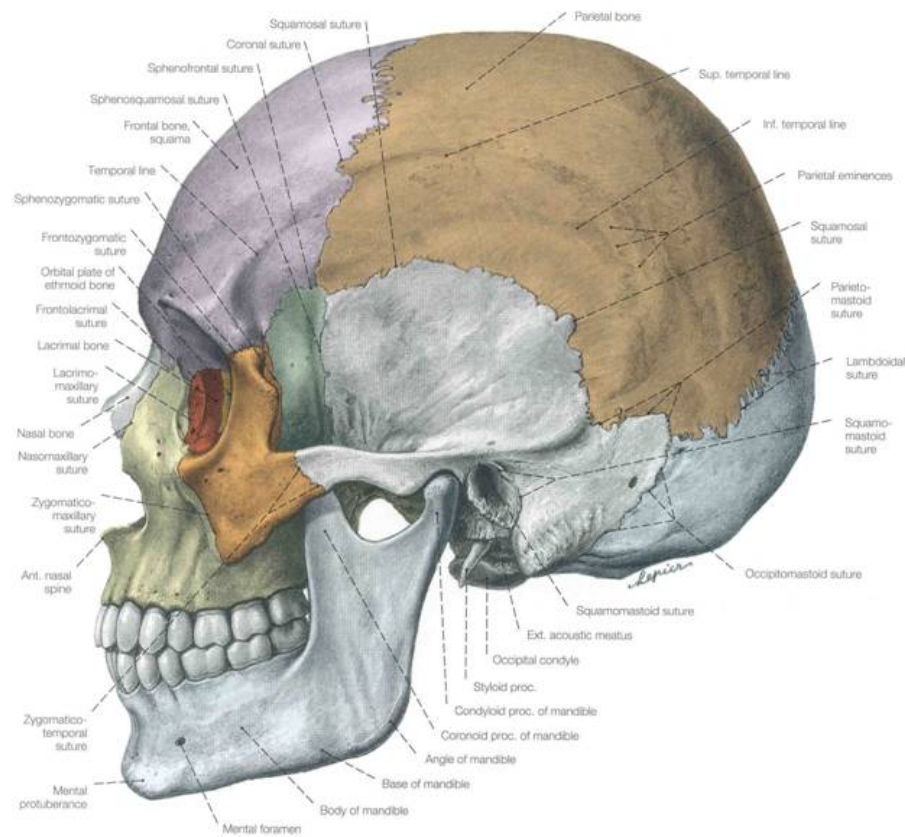


The left orbit, anterolateral view (110%). The probe is in the infraorbital canal.

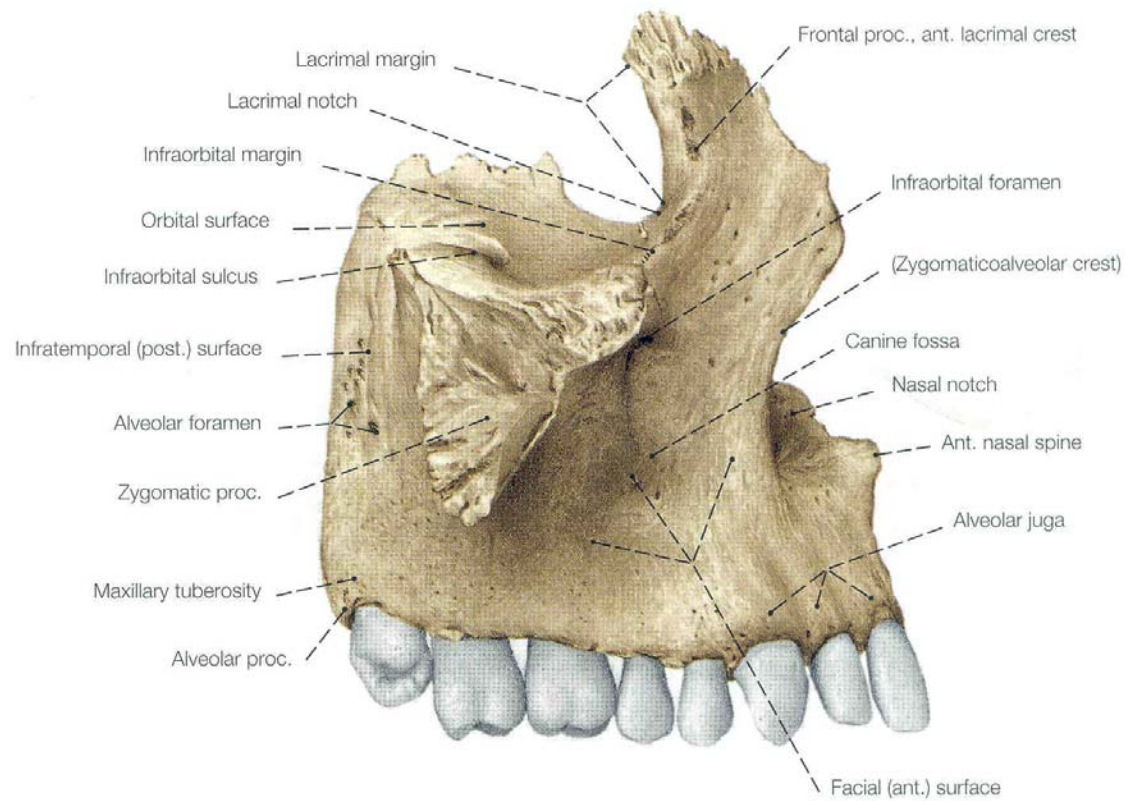
	Nasal bone		Vomer		Temporal bone
	Frontal bone		Zygomatic bone		Inf. nasal concha
	Palatine bone		Maxilla		Sphenoid bone
	Ethmoid bone				Lacrimal bone

Bones of the Orbit

Skull – Lateral View

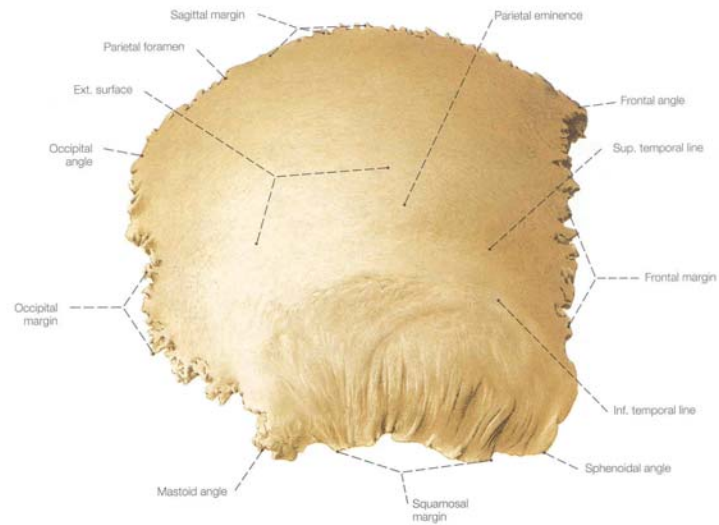


Frontal bone	Lacrimal bone	Temporal bone
Parietal bone	Zygomatic bone	Maxilla
Occipital bone	Sphenoid bone	Mandible
Nasal bone	Ethmoid bone	



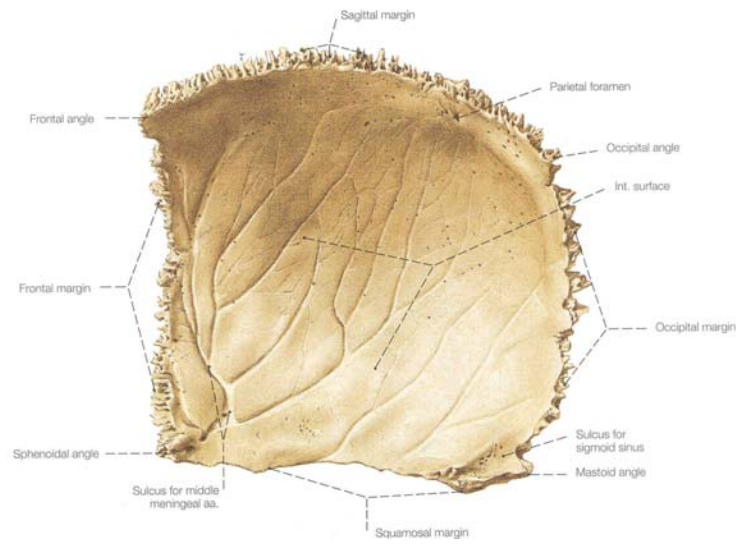
Maxilla: Lateral View

Parietal



The right parietal bone,
lateral aspect

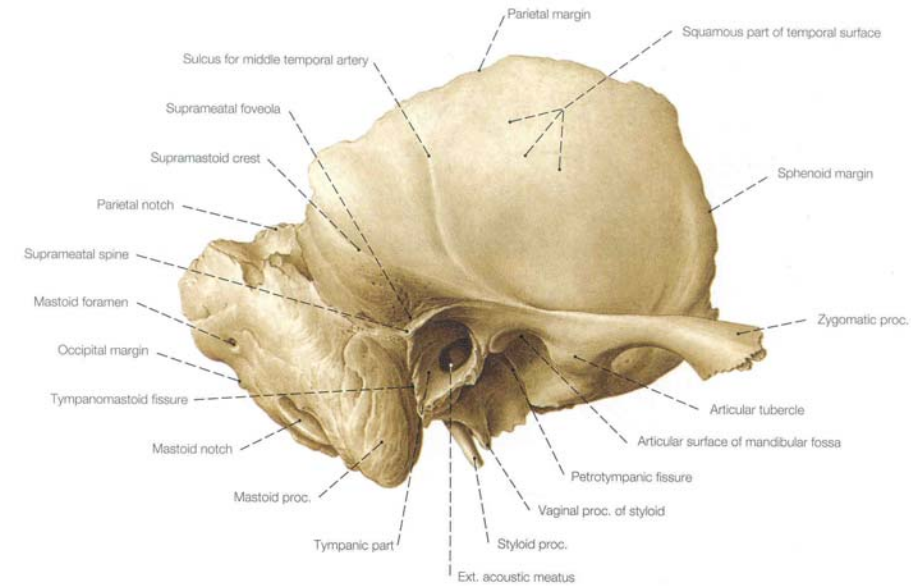
External



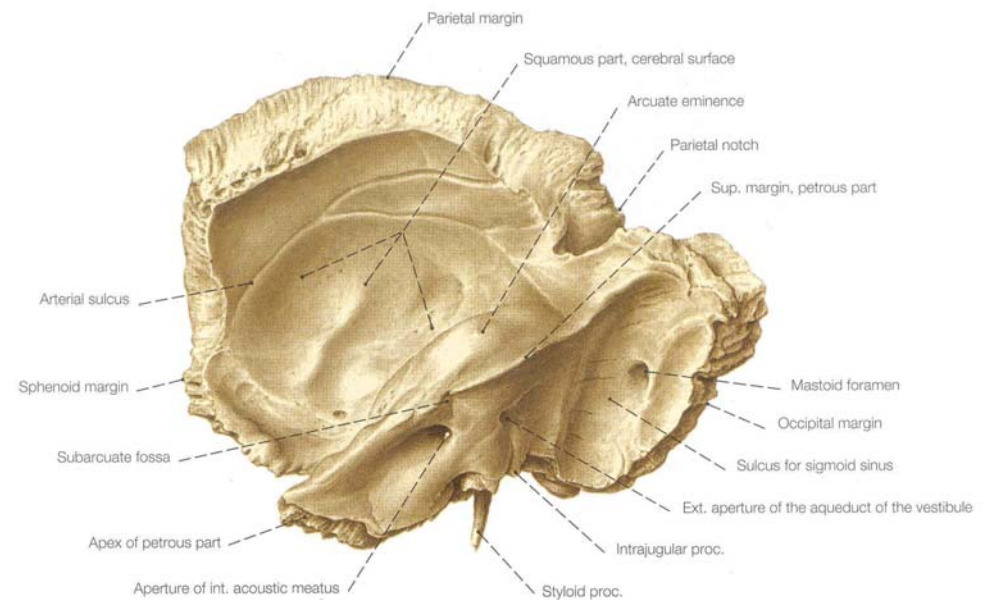
Internal

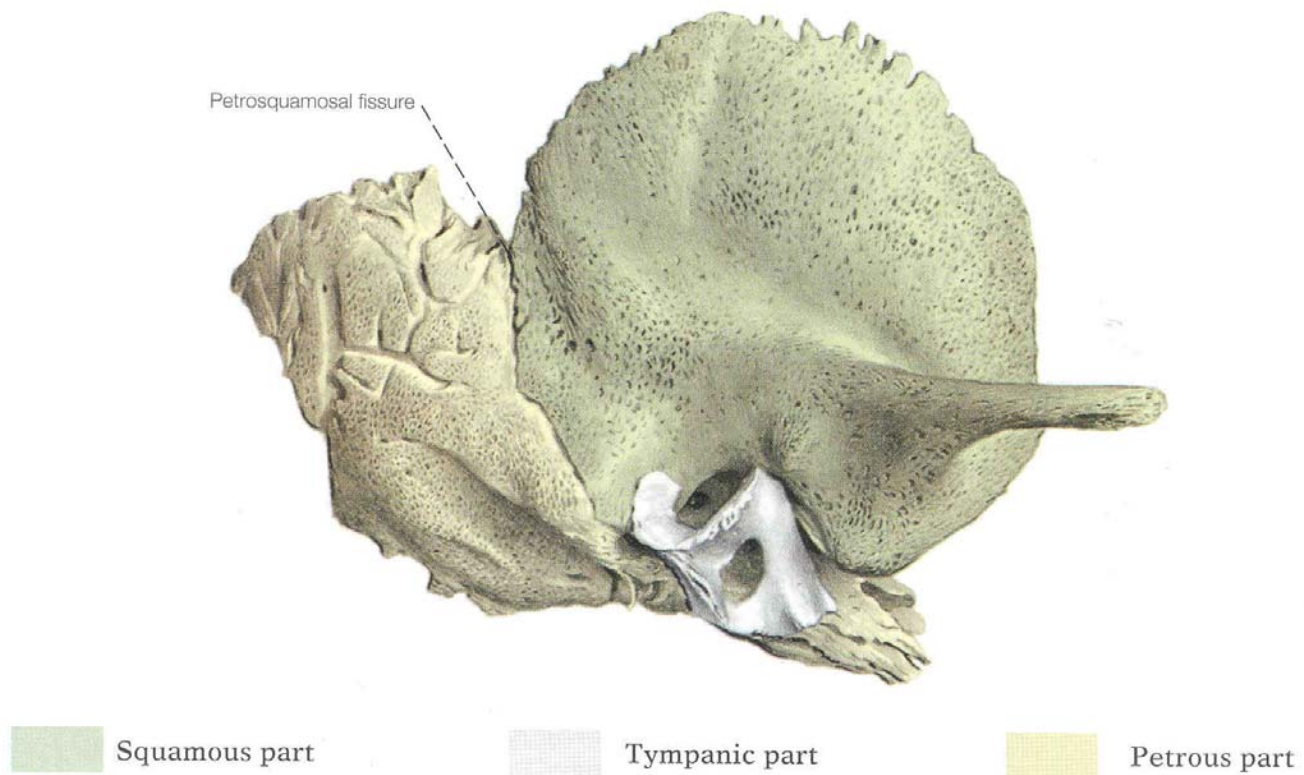
Temporal

Internal



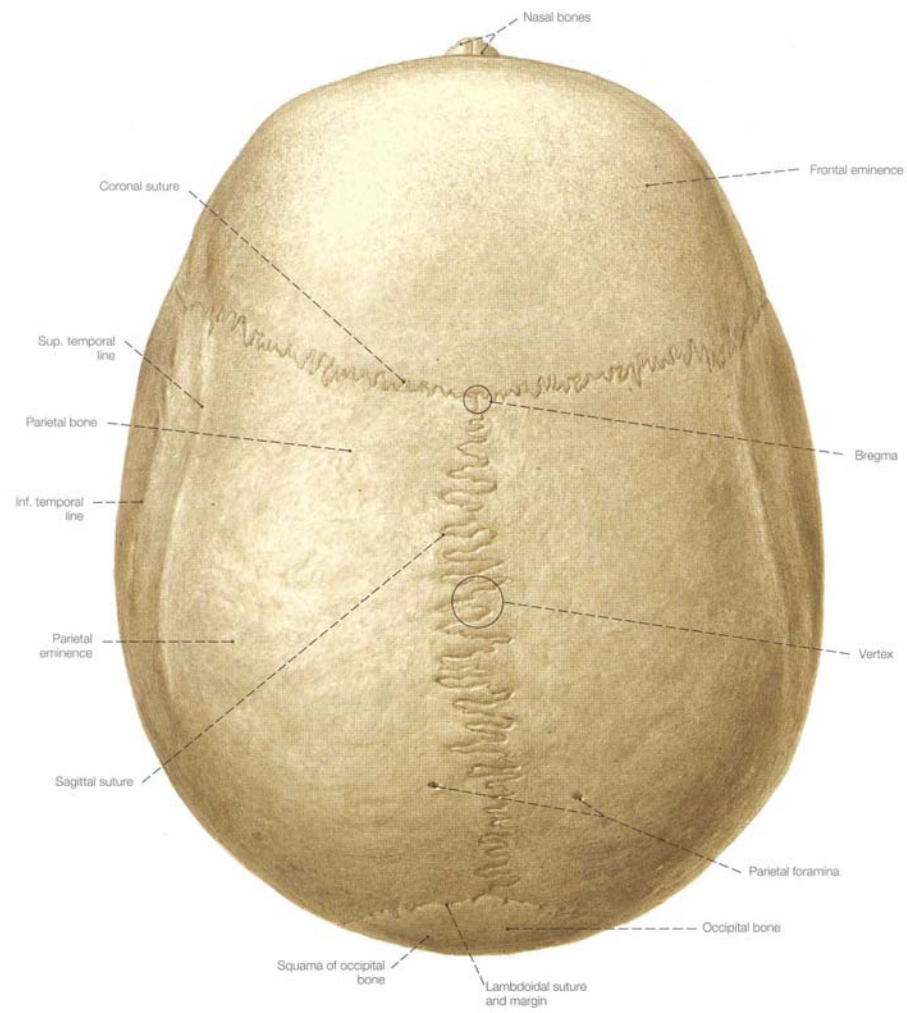
External



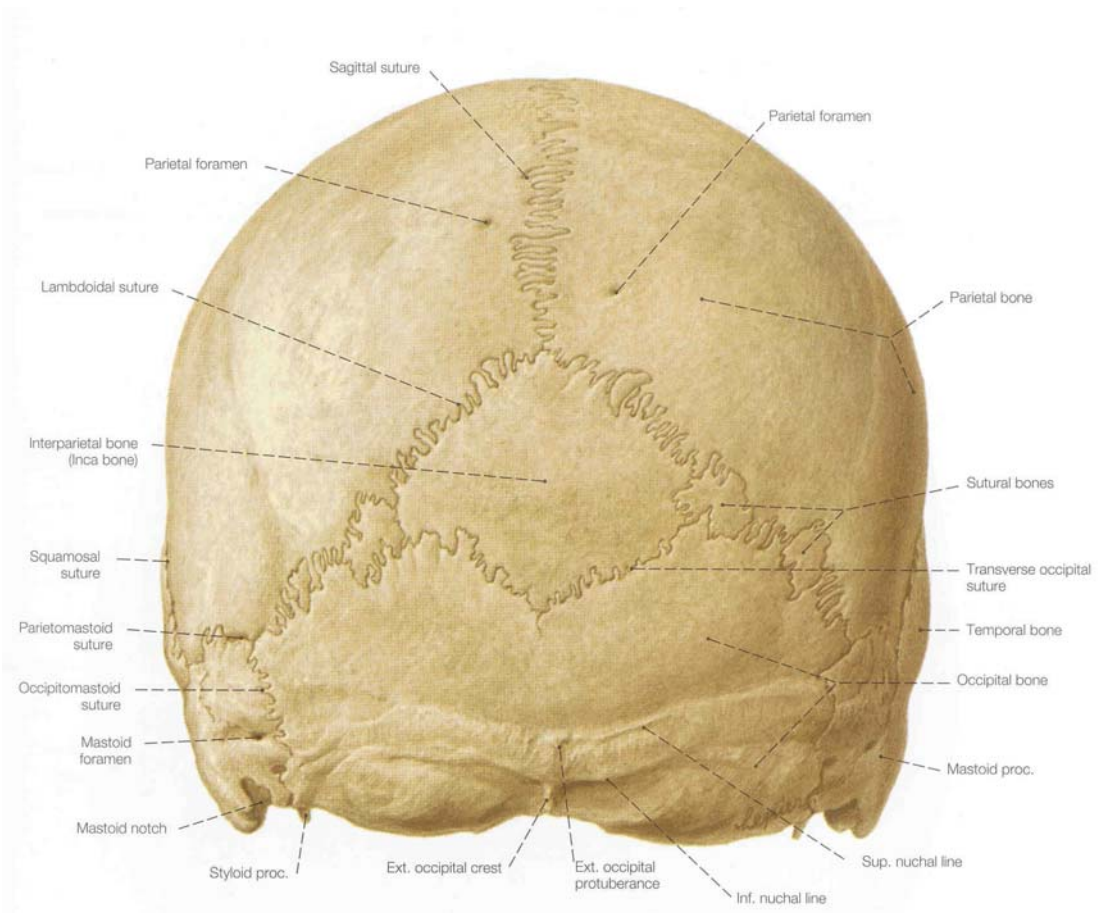


Neonatal Temporal Bone

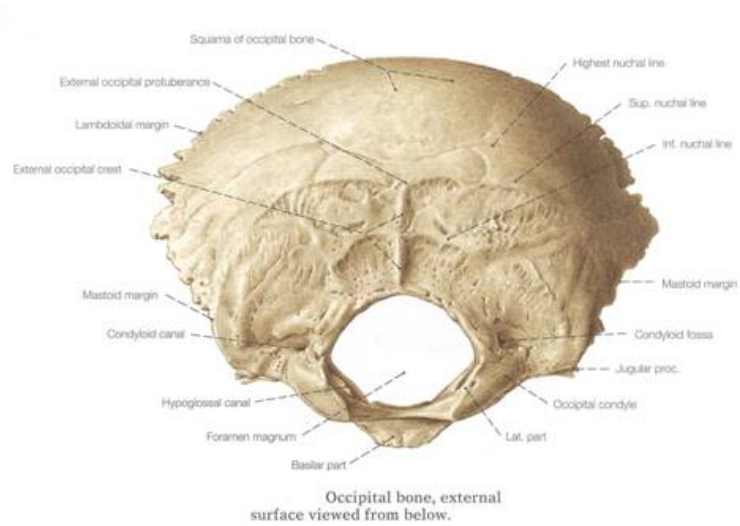
Skull – Superior View



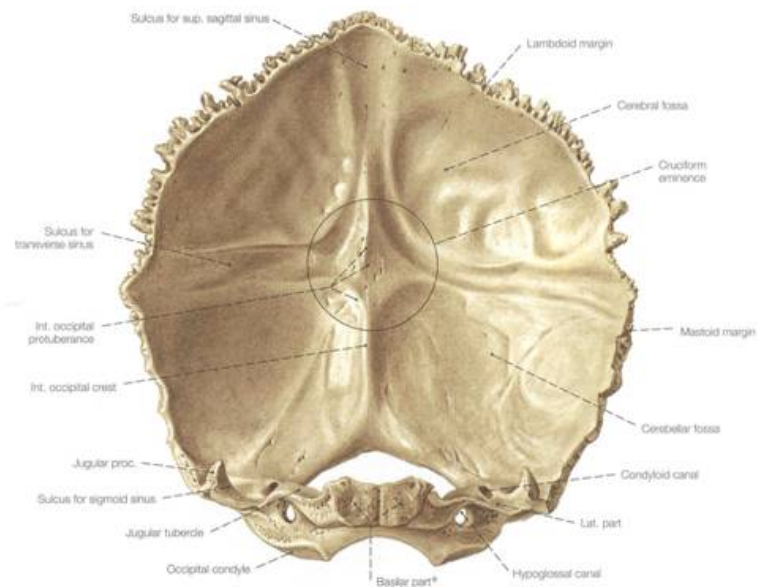
Skull – Posterior View



Occipital

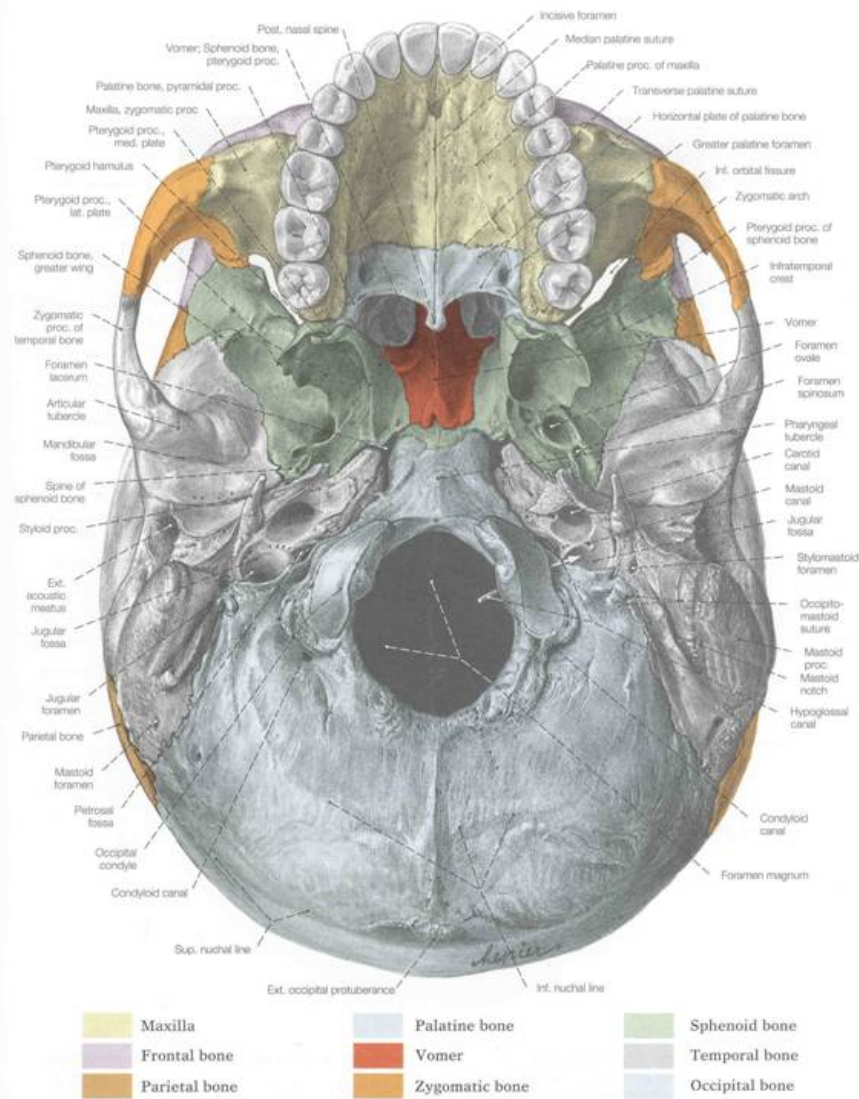


Inferior

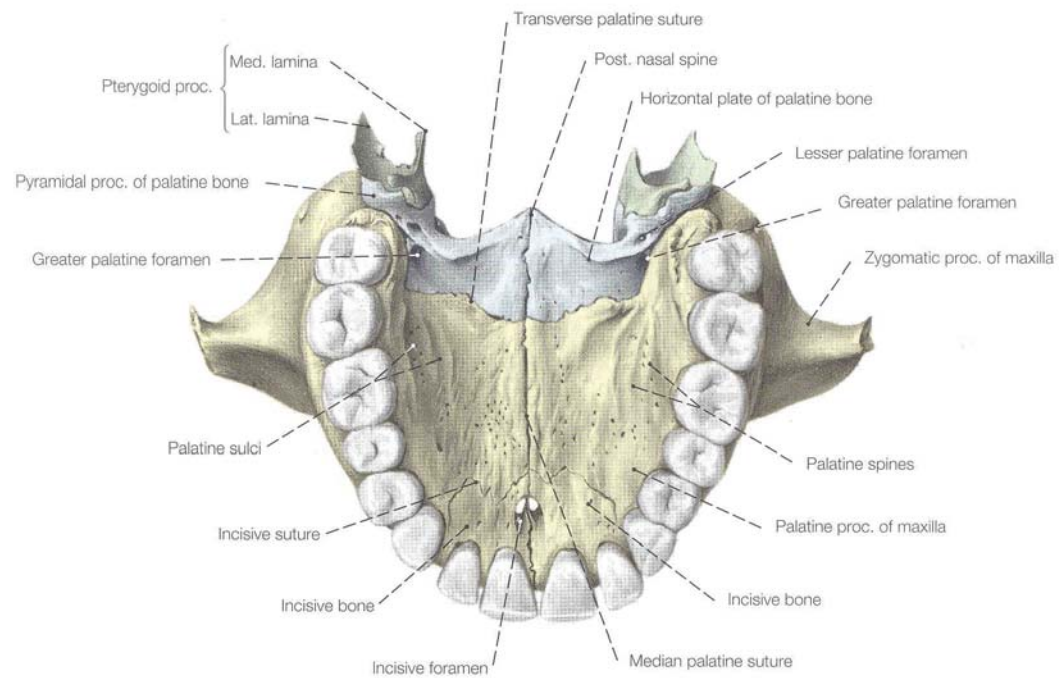


Internal

Skull – Inferior View

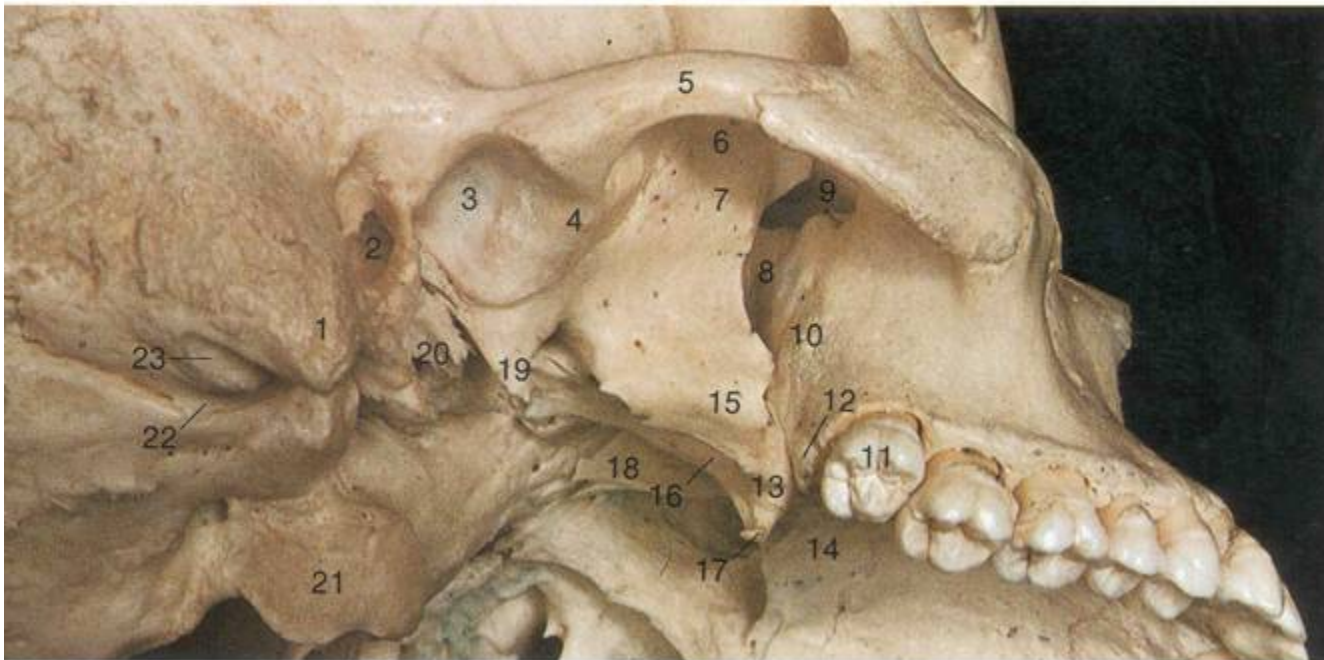


Maxilla	Sphenoid bone
Palatine bone	Inferior nasal concha



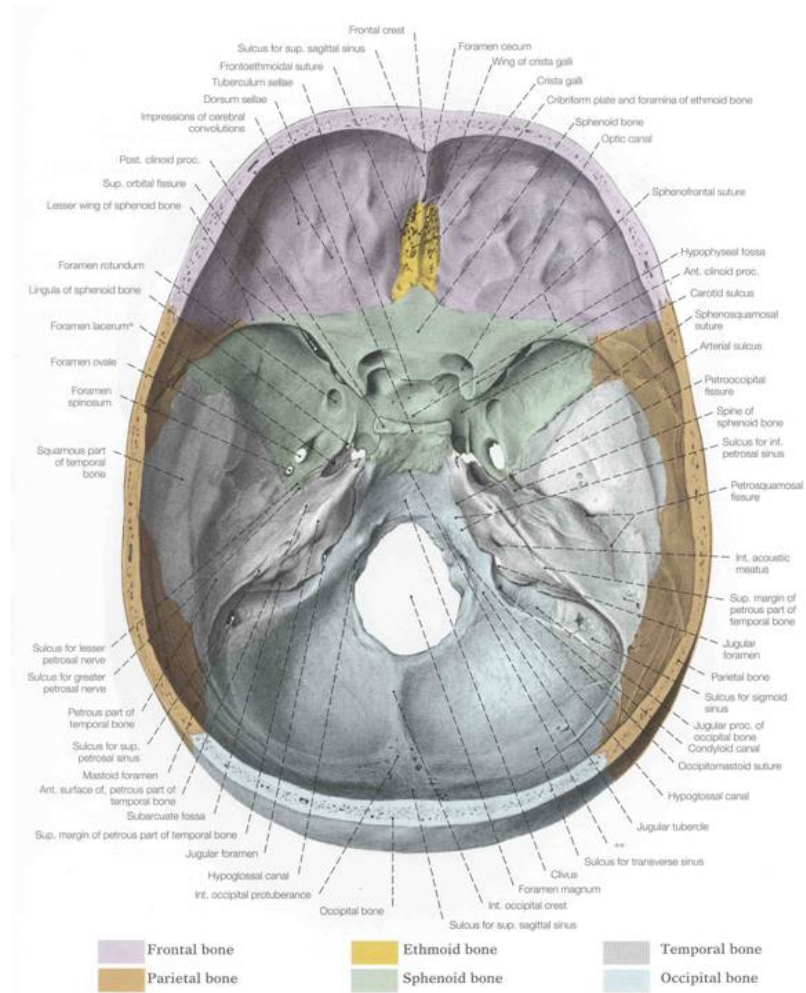
Hard Palate

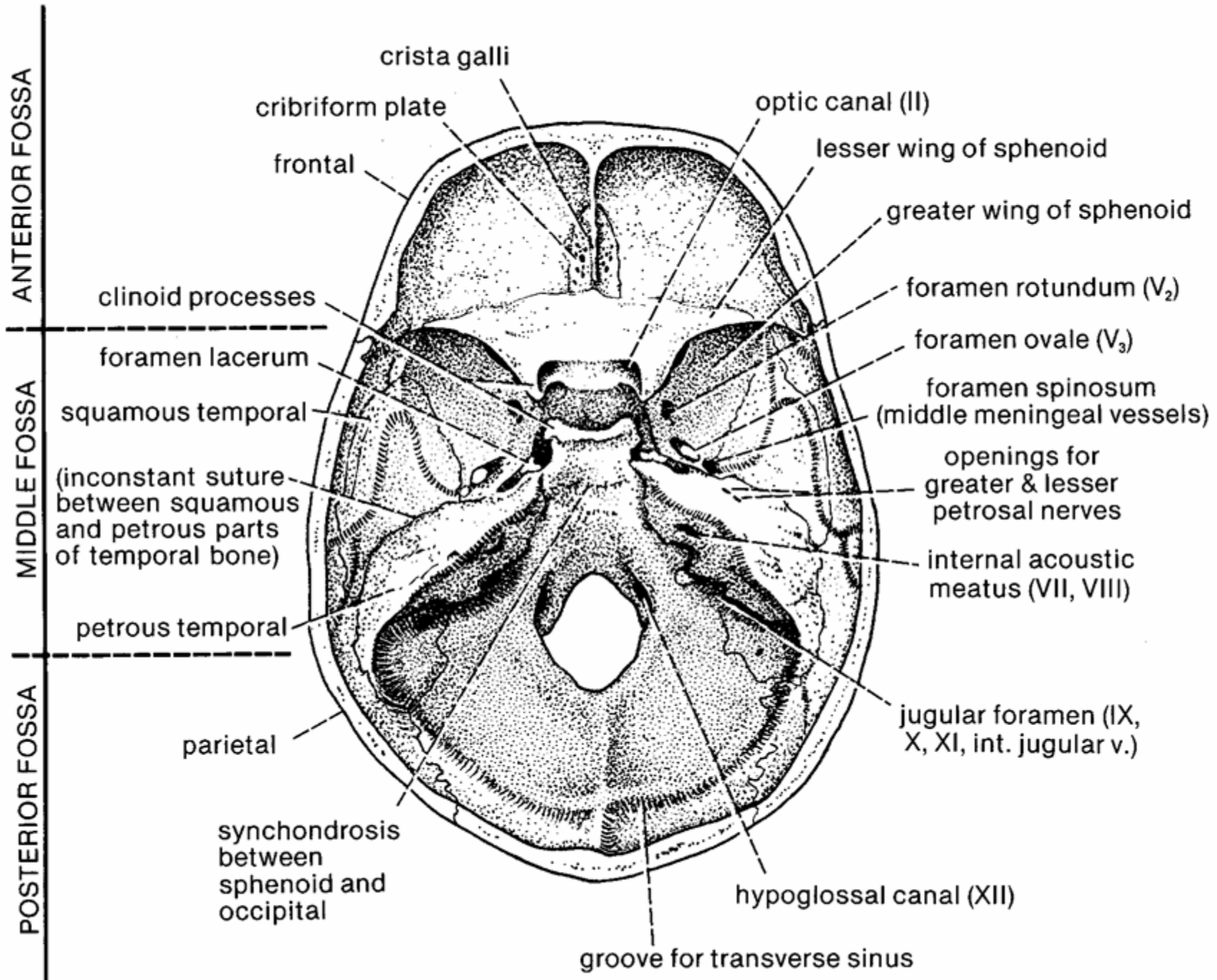
Infratemporal Region

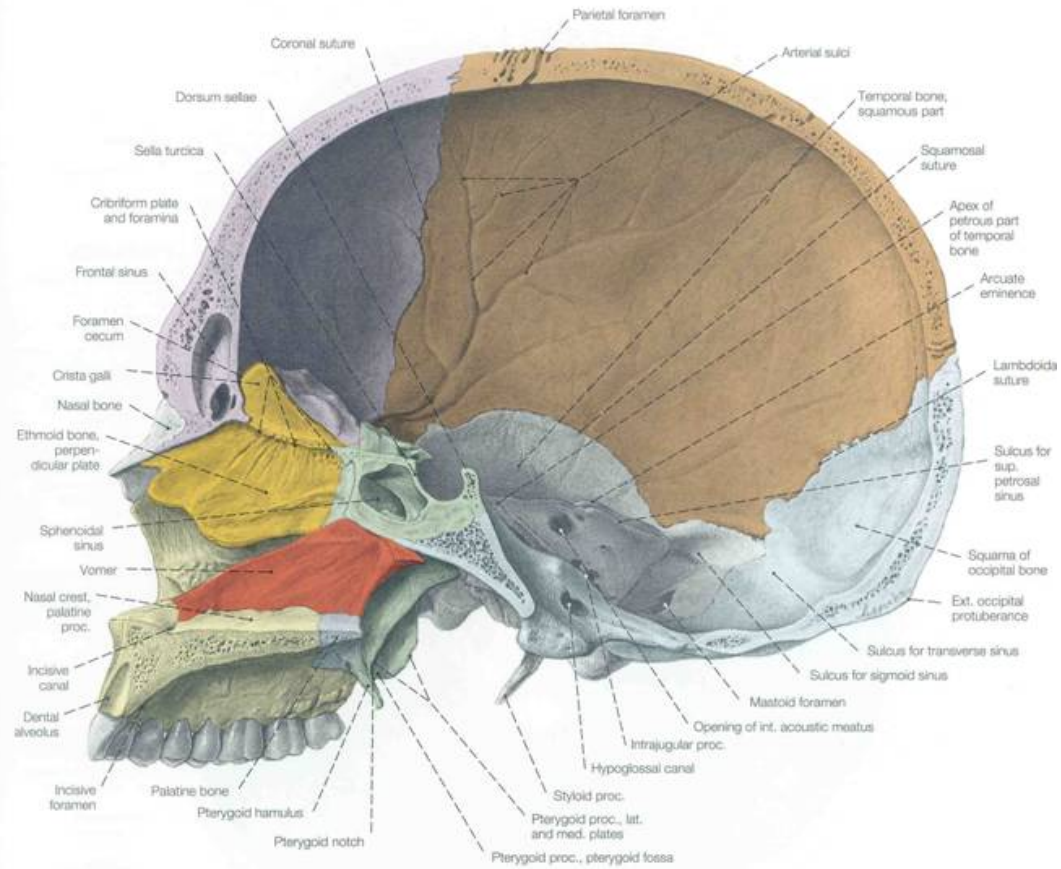


- 1 Mastoid process
- 2 External acoustic meatus
- 3 Mandibular fossa
- 4 Articular tubercle
- 5 Zygomatic arch
- 6 Infratemporal crest
- 7 Infratemporal surface of greater wing of sphenoid bone
- 8 Pterygomaxillary fissure and pterygopalatine fossa
- 9 Inferior orbital fissure
- 10 Infratemporal (posterior) surface of maxilla
- 11 Third molar tooth
- 12 Tuberosity of maxilla
- 13 Pyramidal process
- 14 Horizontal plate
- 15 Lateral
- 16 Medial
- 17 Pterygoid hamulus
- 18 Vomer
- 19 Spine of sphenoid bone
- 20 Styloid process and sheath
- 21 Occipital condyle
- 22 Occipital groove
- 23 Mastoid notch

Skull – Internal View



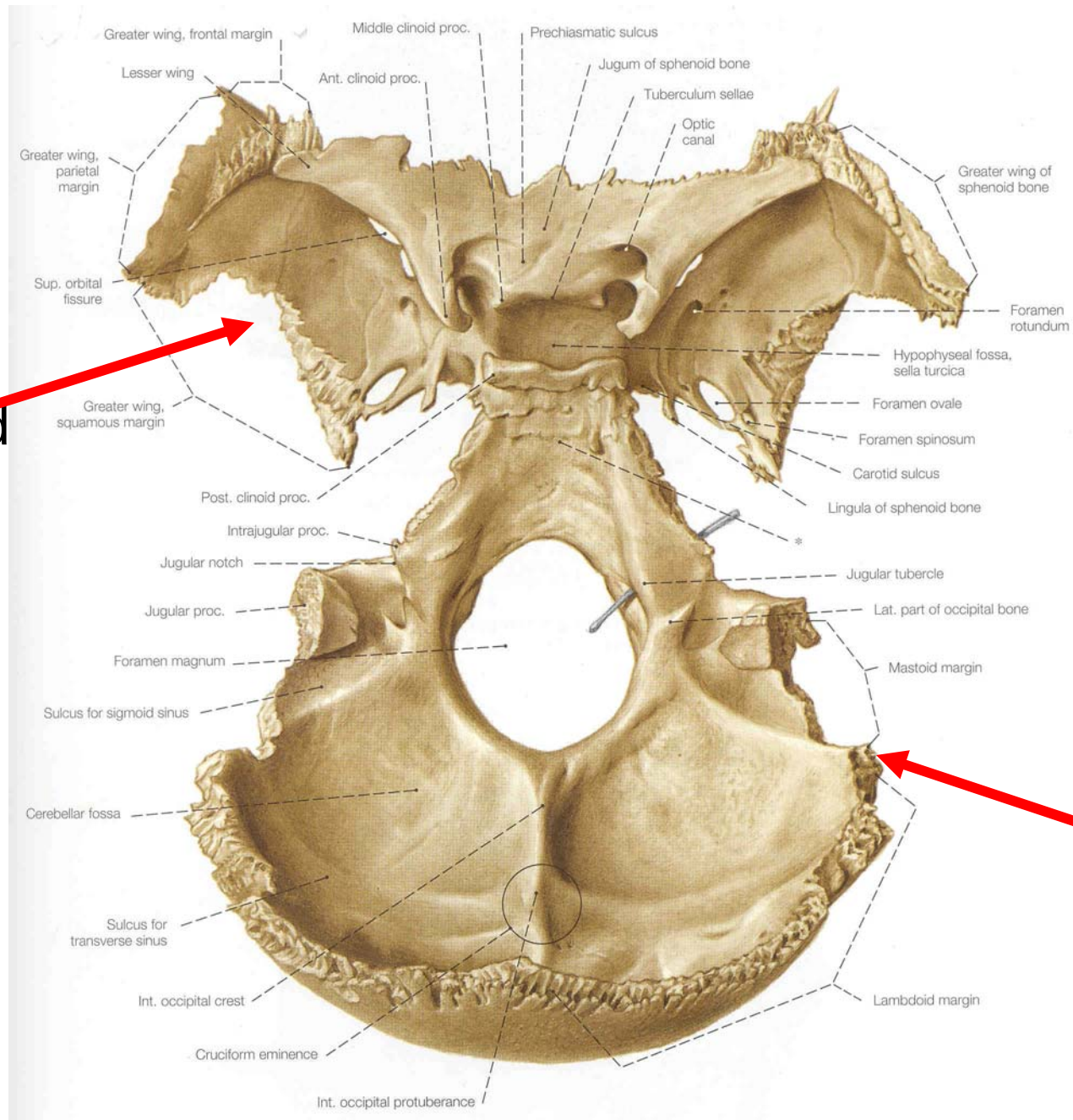




Frontal bone
Parietal bone
Occipital bone
Nasal bone
Ethmoid bone

Sphenoid bone
Temporal bone
Maxilla
Vomer
Palatine bone

Sphenoid

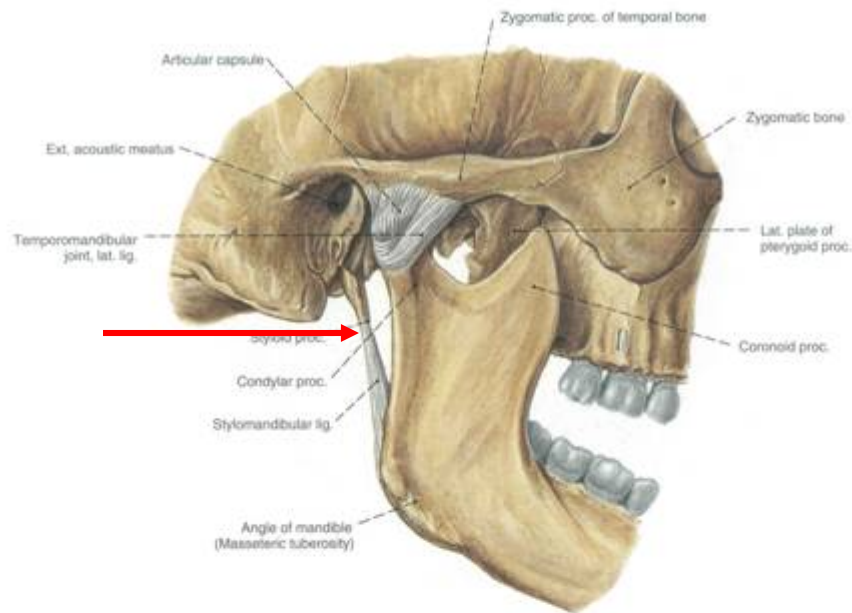


Occipital

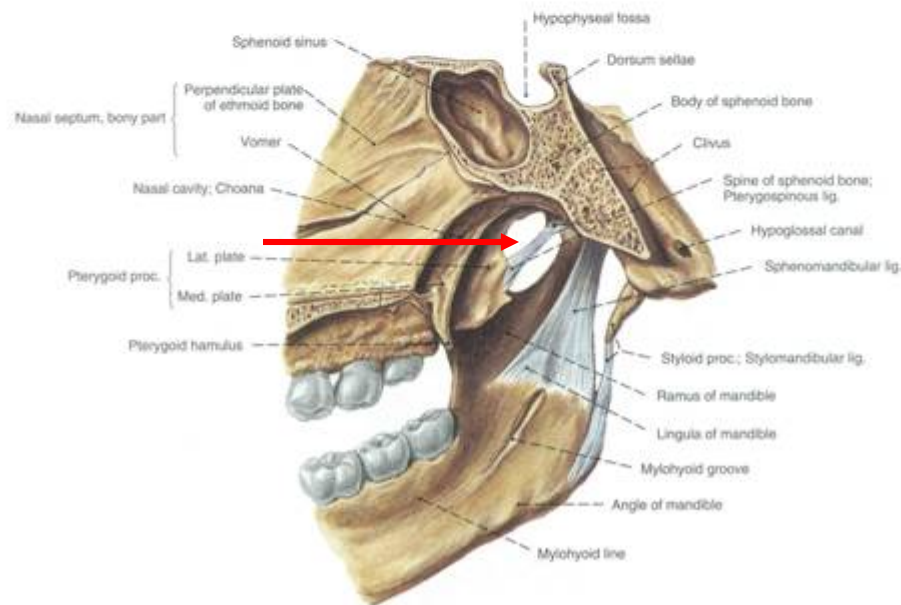
Major Ligaments Near Jaw Joint

Major Ligaments Near Jaw Joint:

Stylomandibular

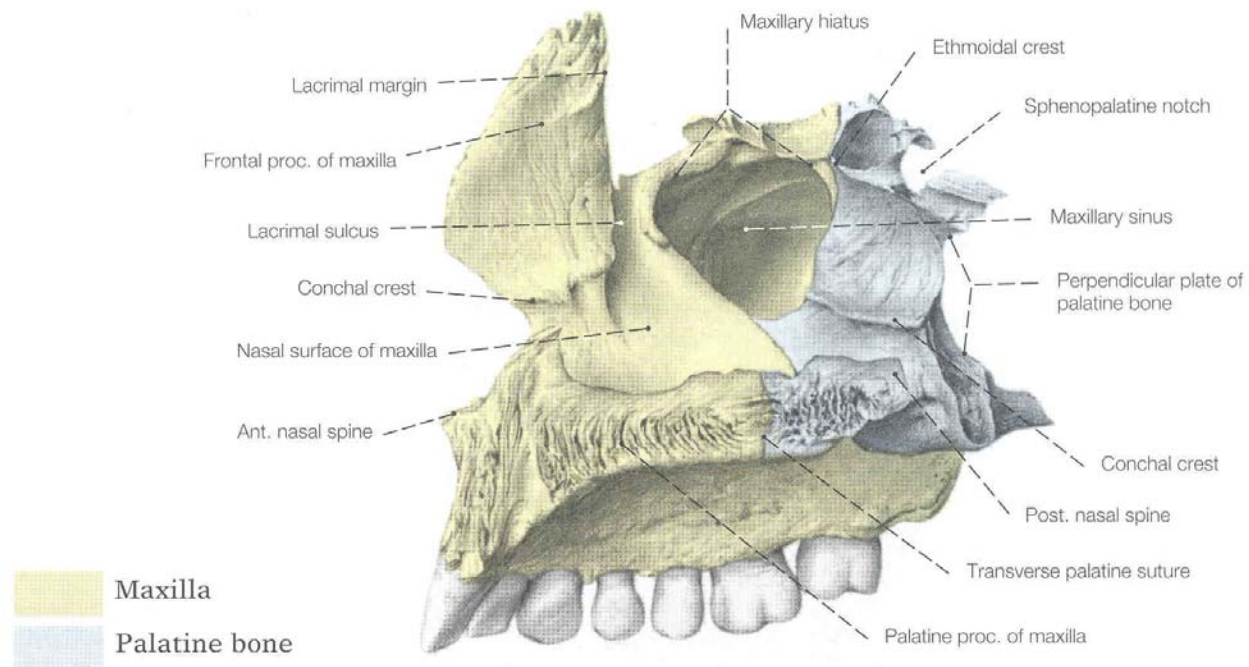


The temporomandibular joint, lateral aspect.



The pterygospinous and sphenomandibular ligaments. A paramedian section, medial aspect.

Sphenomandibular



Bones of the Basicranium

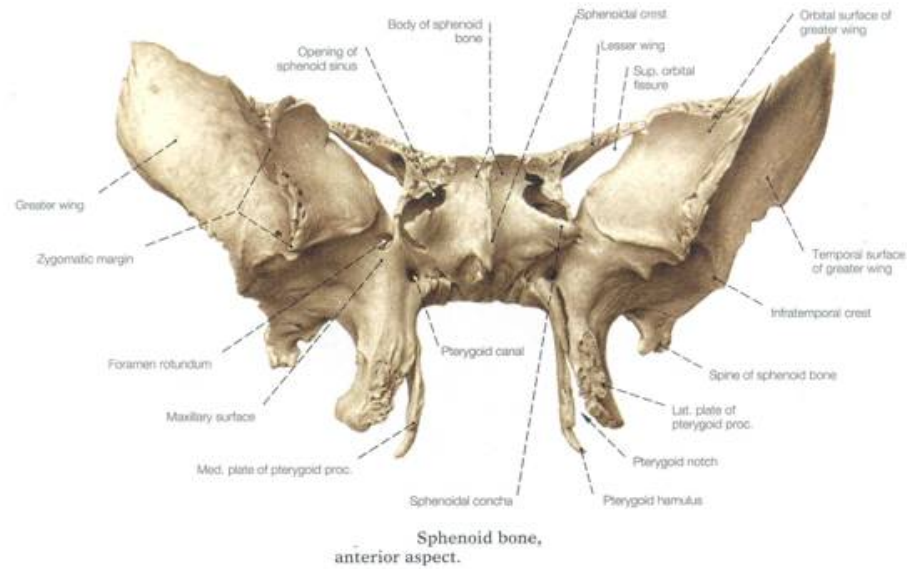
Ethmoid

Sphenoid

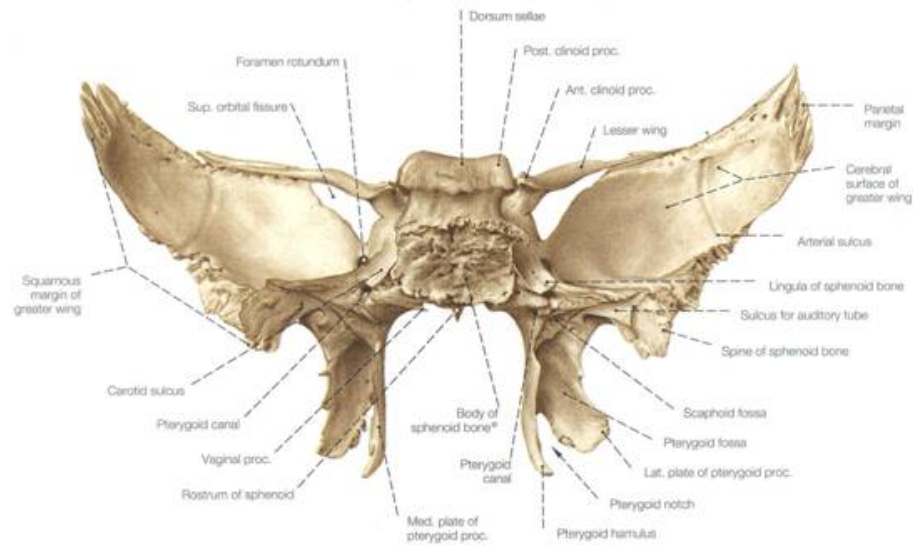
Temporal

Occipital

Sphenoid



Anterior



Posterior

Dermal Roofing Bones

Nasals

Frontal

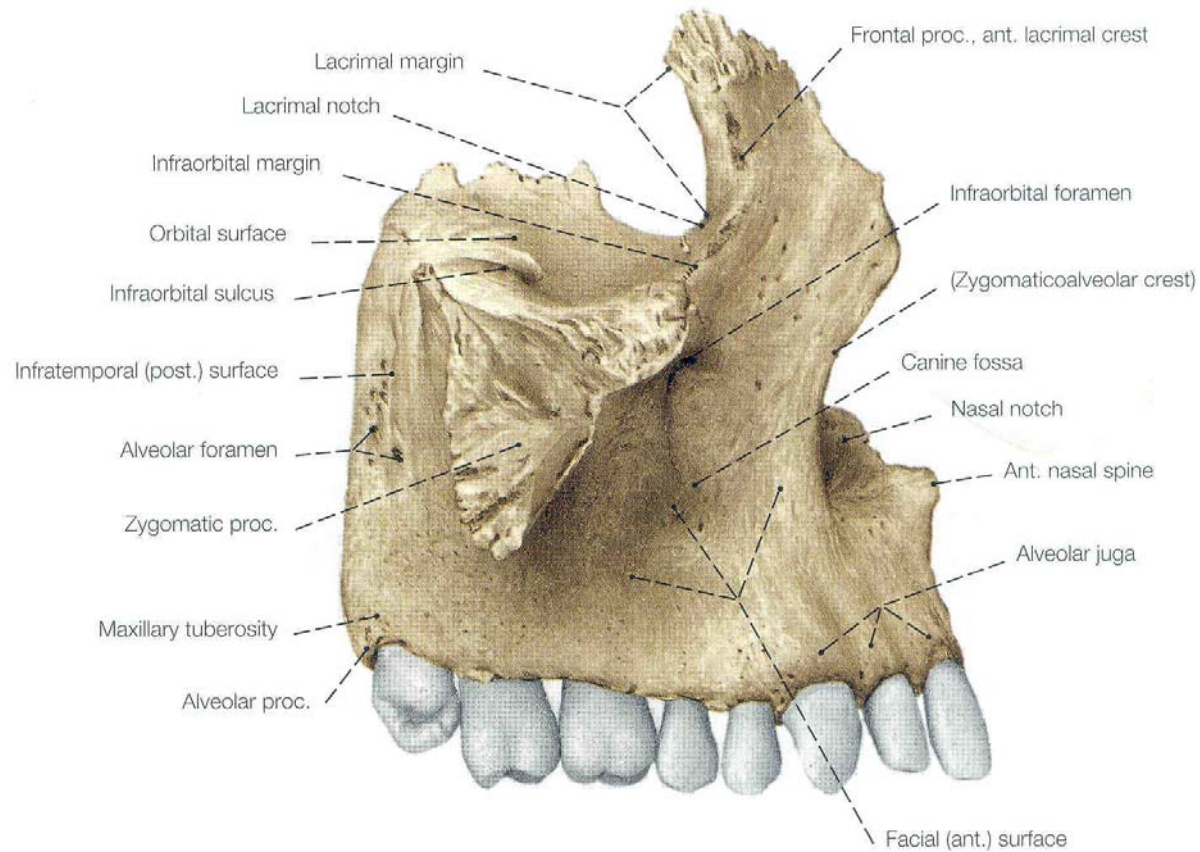
Parietals

Dermal Facial Bones

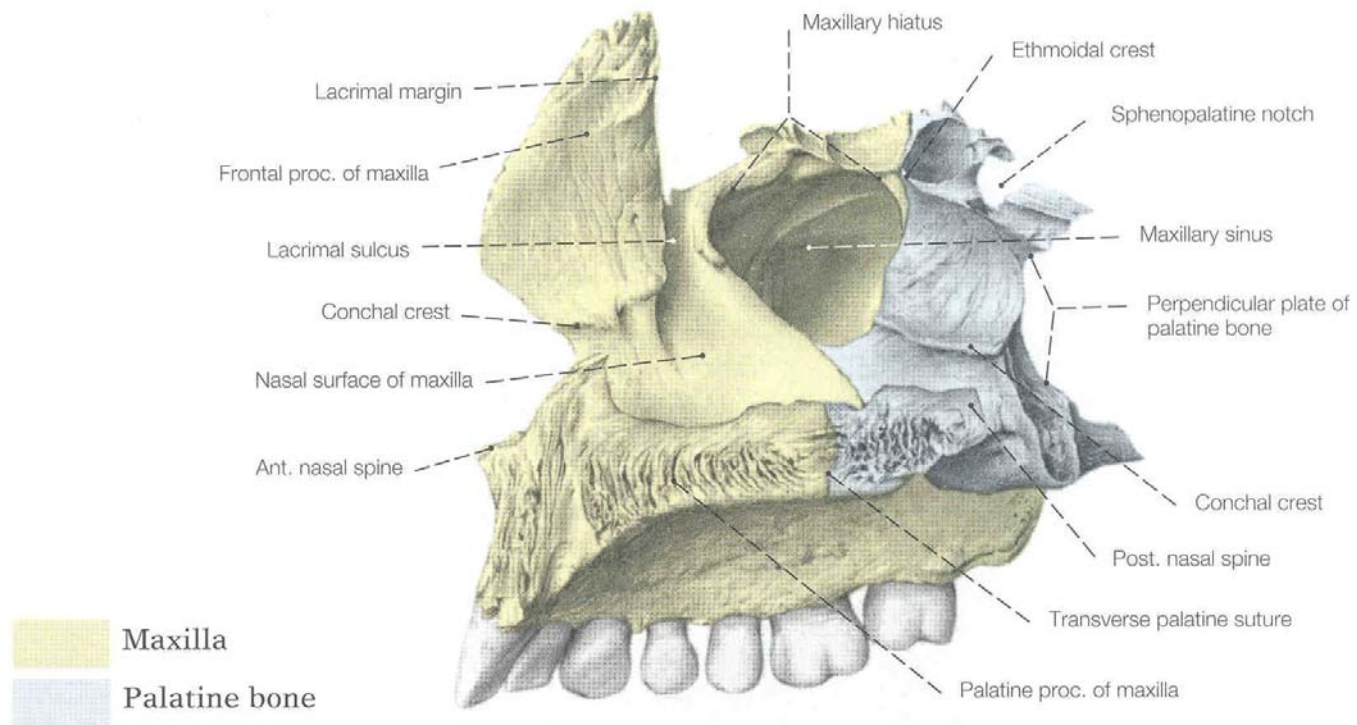
Maxilla

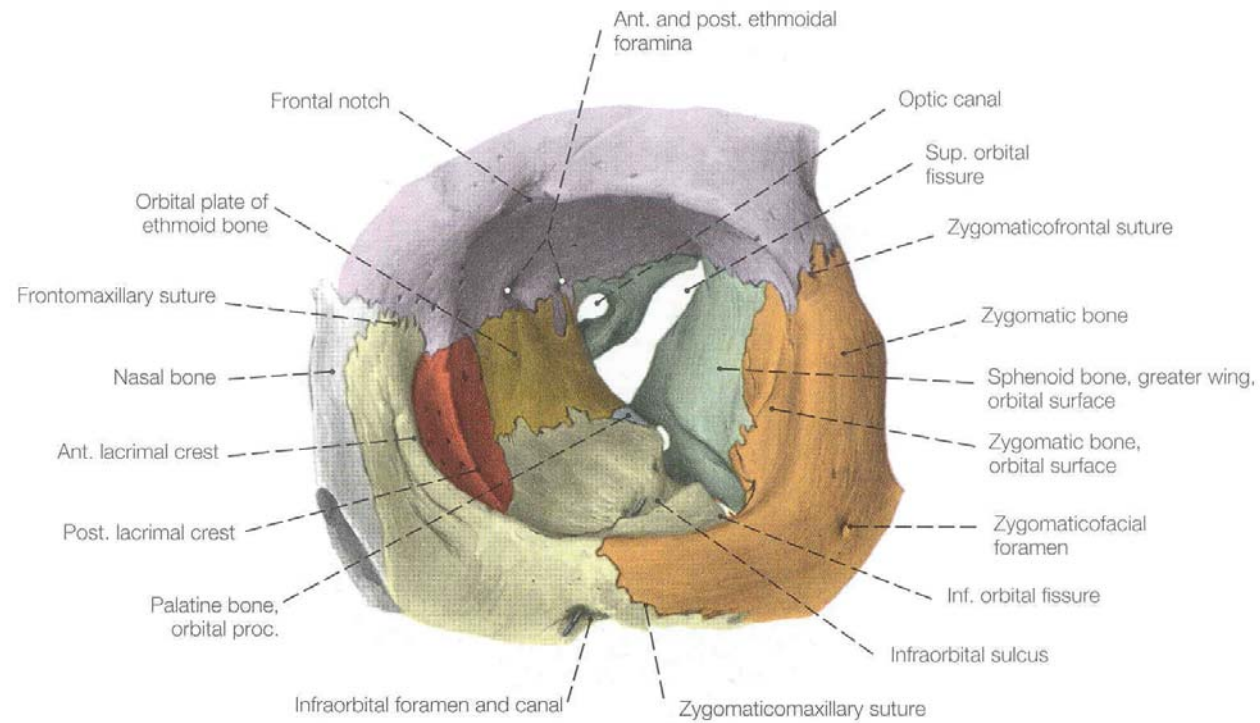
Zygomatic

Lacrimal



Maxilla: Lateral View





The left orbit, anterolateral view (110%). The probe is in the infraorbital canal.

Nasal bone
Frontal bone
Palatine bone
Ethmoid bone

Vomer
Zygomatic bone
Maxilla

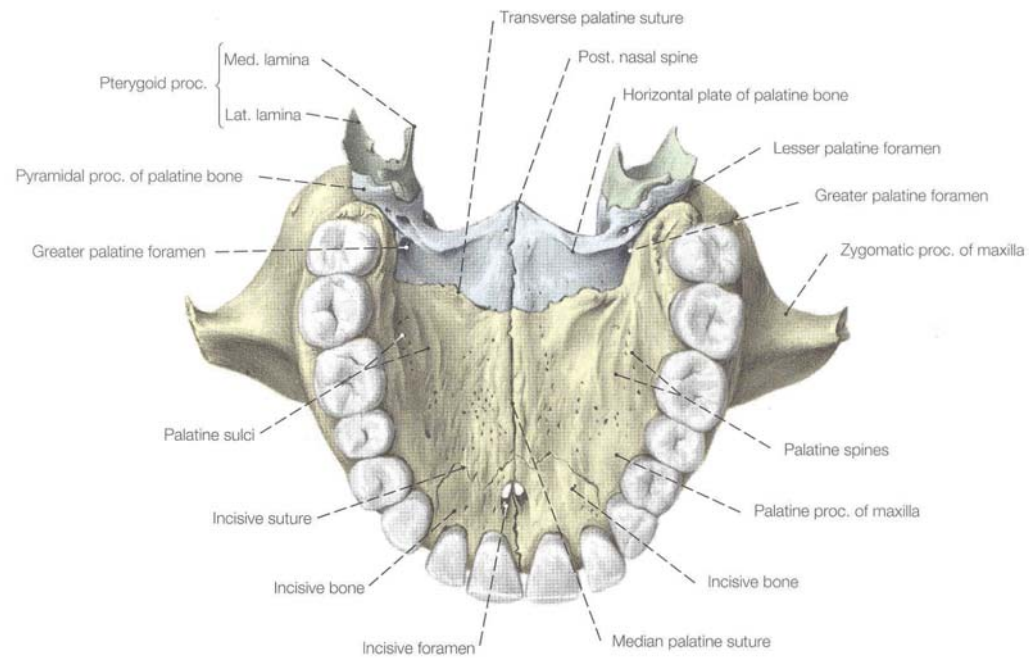
Temporal bone
Inf. nasal concha
Sphenoid bone
Lacrimal bone

Bones of the Orbit

Dermal Palatal Bones

Maxilla
Palatine
Vomer

Maxilla	Sphenoid bone
Palatine bone	Inferior nasal concha



Hard Palate

Bones of Splanchnopleure

Sphenoid Greater Wing
Temporal Styloid Process
Middle Ear Ossicles

Middle Ear Ossicles

Malleus

Incus

Stapes

Malleus



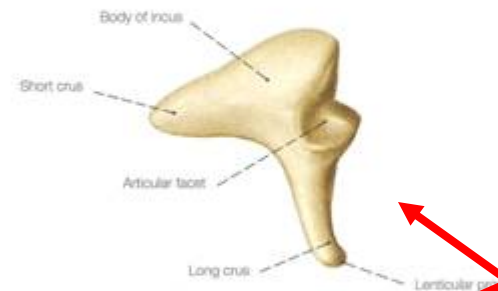
The right malleus, lateral view



The right malleus, anterior view



The right malleus, posterior view



The right incus, lateral view



The right incus, medial view



The right stapes, viewed from above

Incus

Stapes

