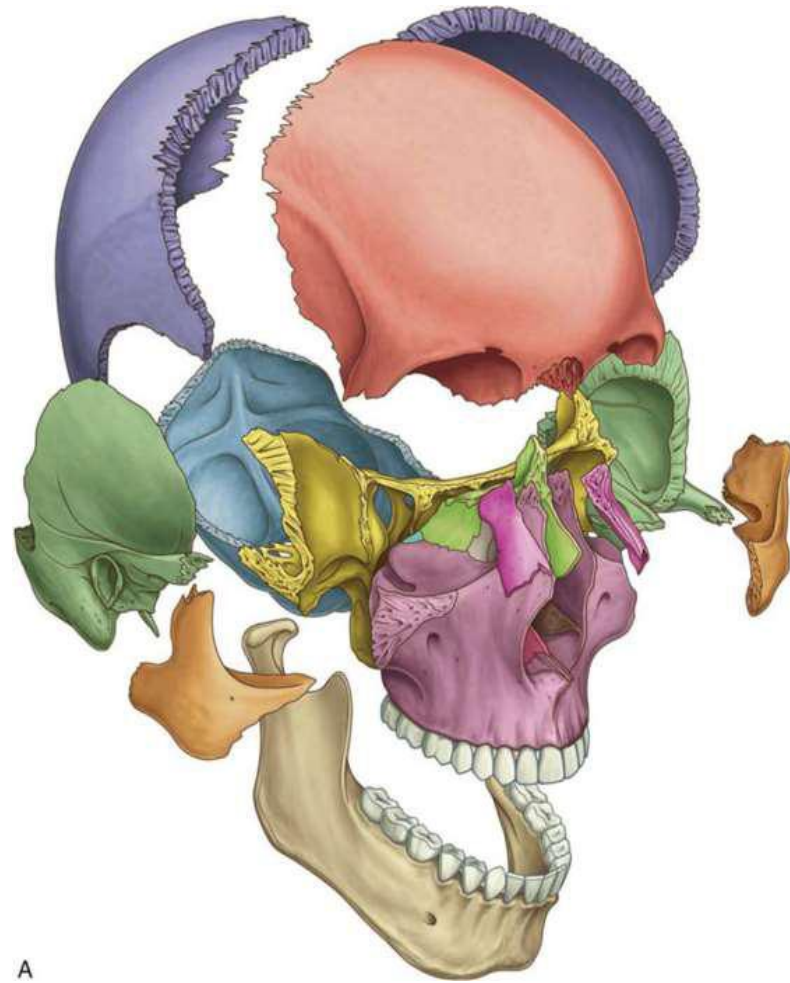


Bones of Skull



Dr Nawal

Al-Shannan

A

Views of the skull

➤ **Each aspect of skull is called Norma**

: study from above is called Norma verticalis

➤ Below : Norma - basalis

➤ Behind : Norma - occipitalis

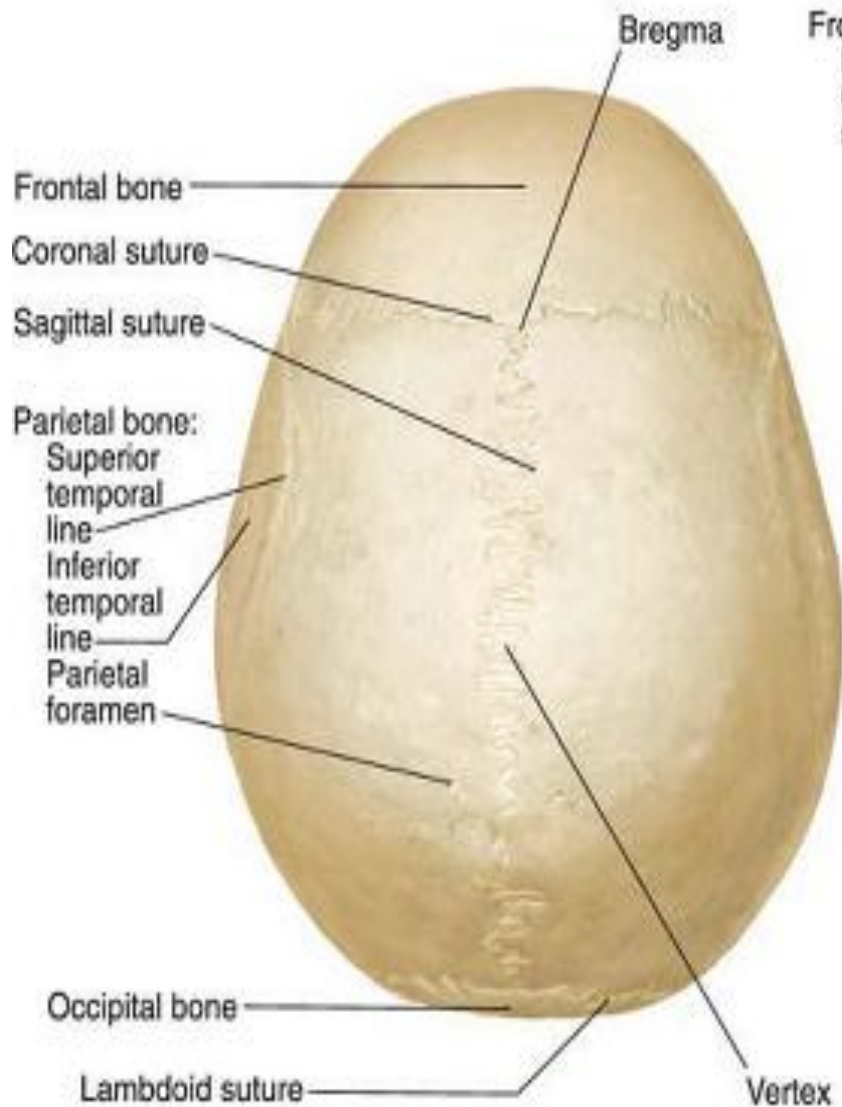
➤ Front : Norma - frontalis

➤ Side to side: Norma - lateralis

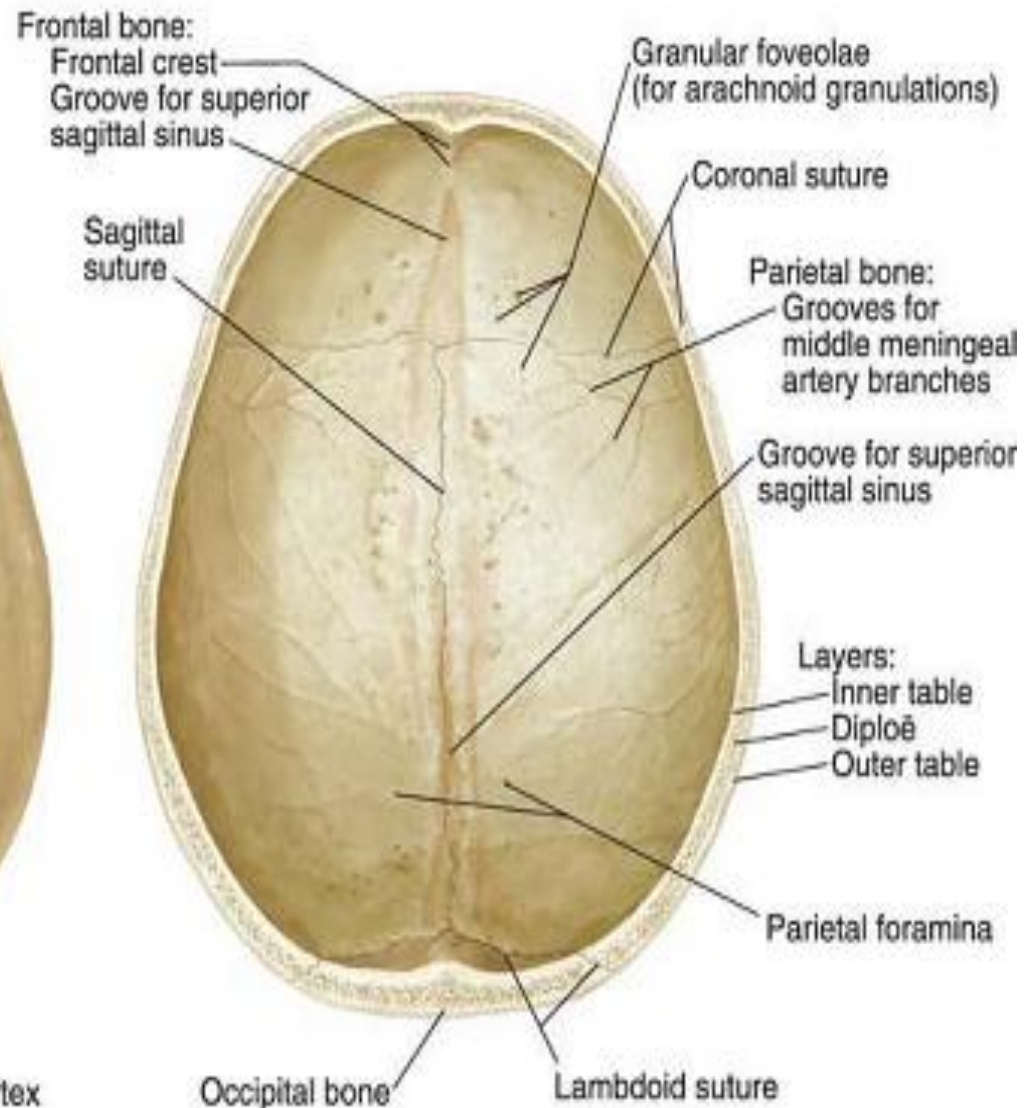
Norma verticalis = Vault = arched roof = dome

- **Bones:**
- Frontal
- Parietal
- Small part of occipital
- **Vertex** : the highest point of the sagittal suture
- **Parietal foramen** – 3.5 cm in front of lambda
- **Bregma**: cranial point between coronal and sagittal suture
- **Lambda**: cranial point at the junction of lambda and sagittal suture
- **Parietal eminence**: maximum convex part of parietal bone

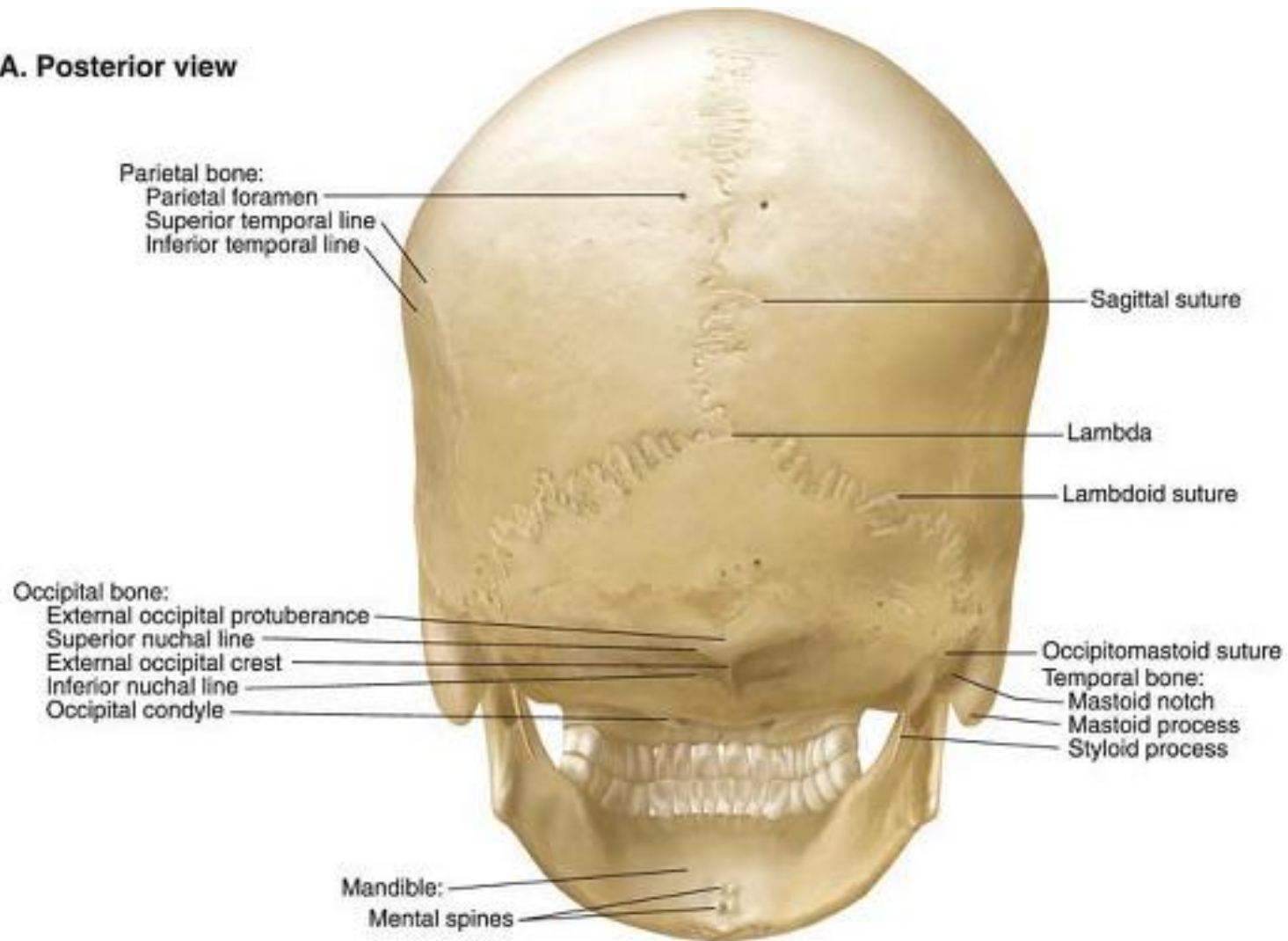
B. Calvaria, superior view



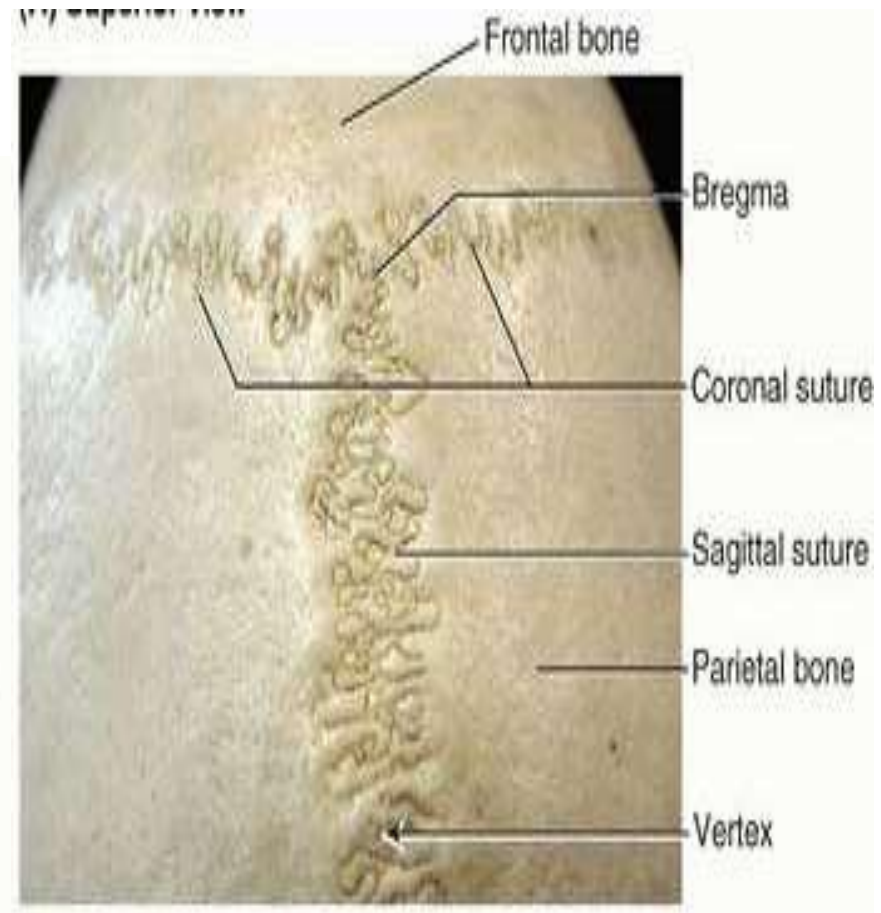
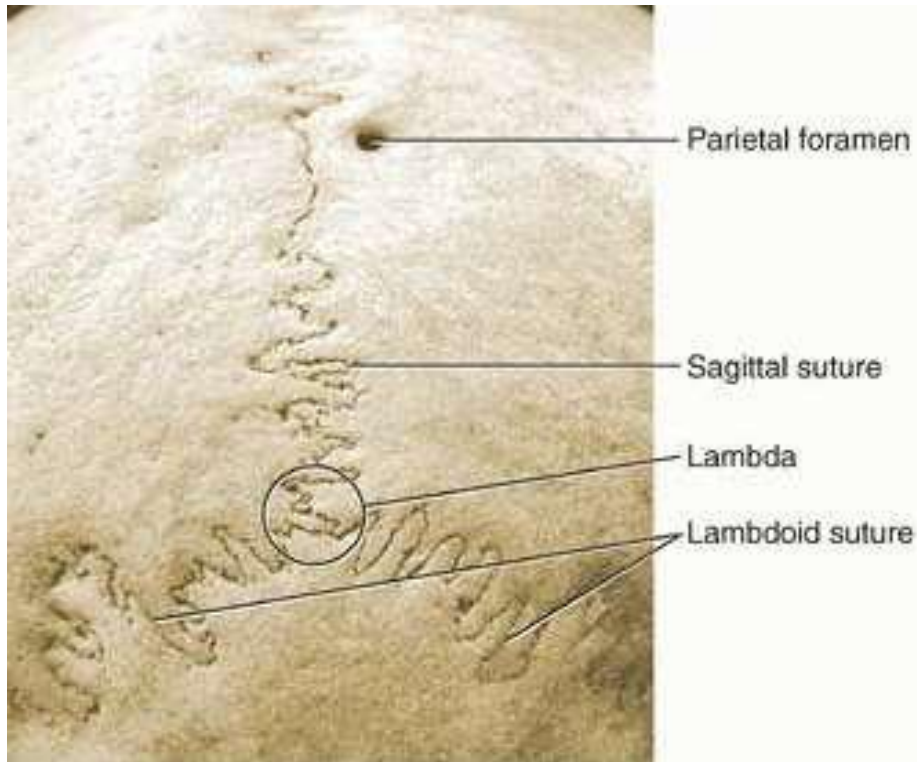
C. Calvaria, internal surface



A. Posterior view

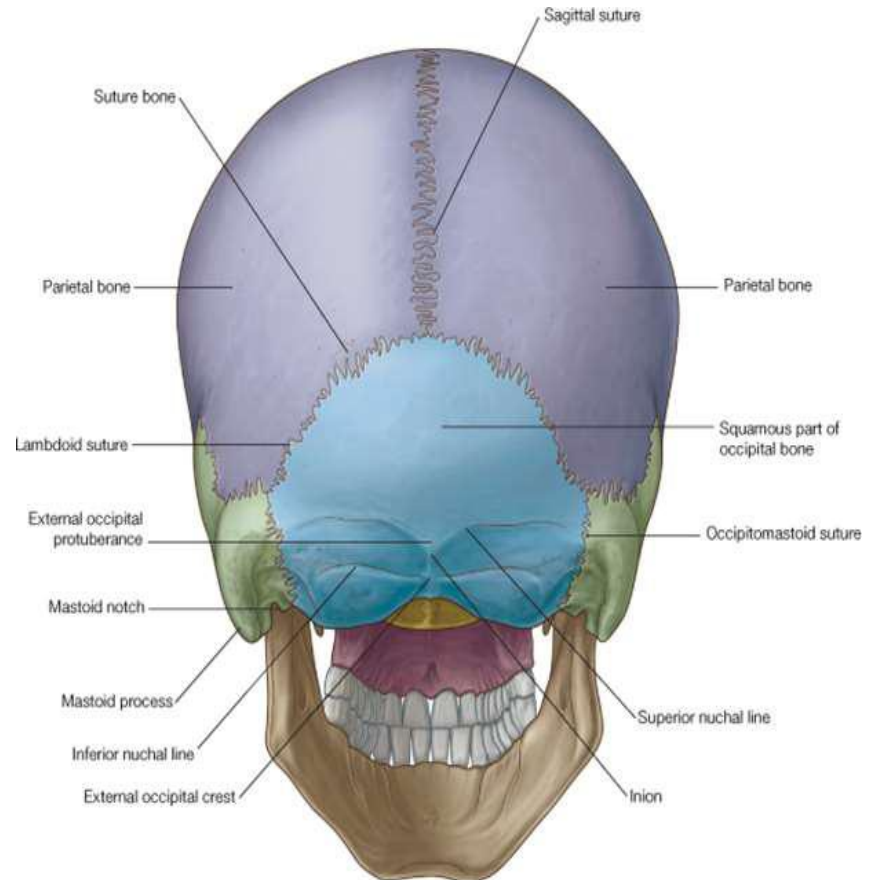


Vault



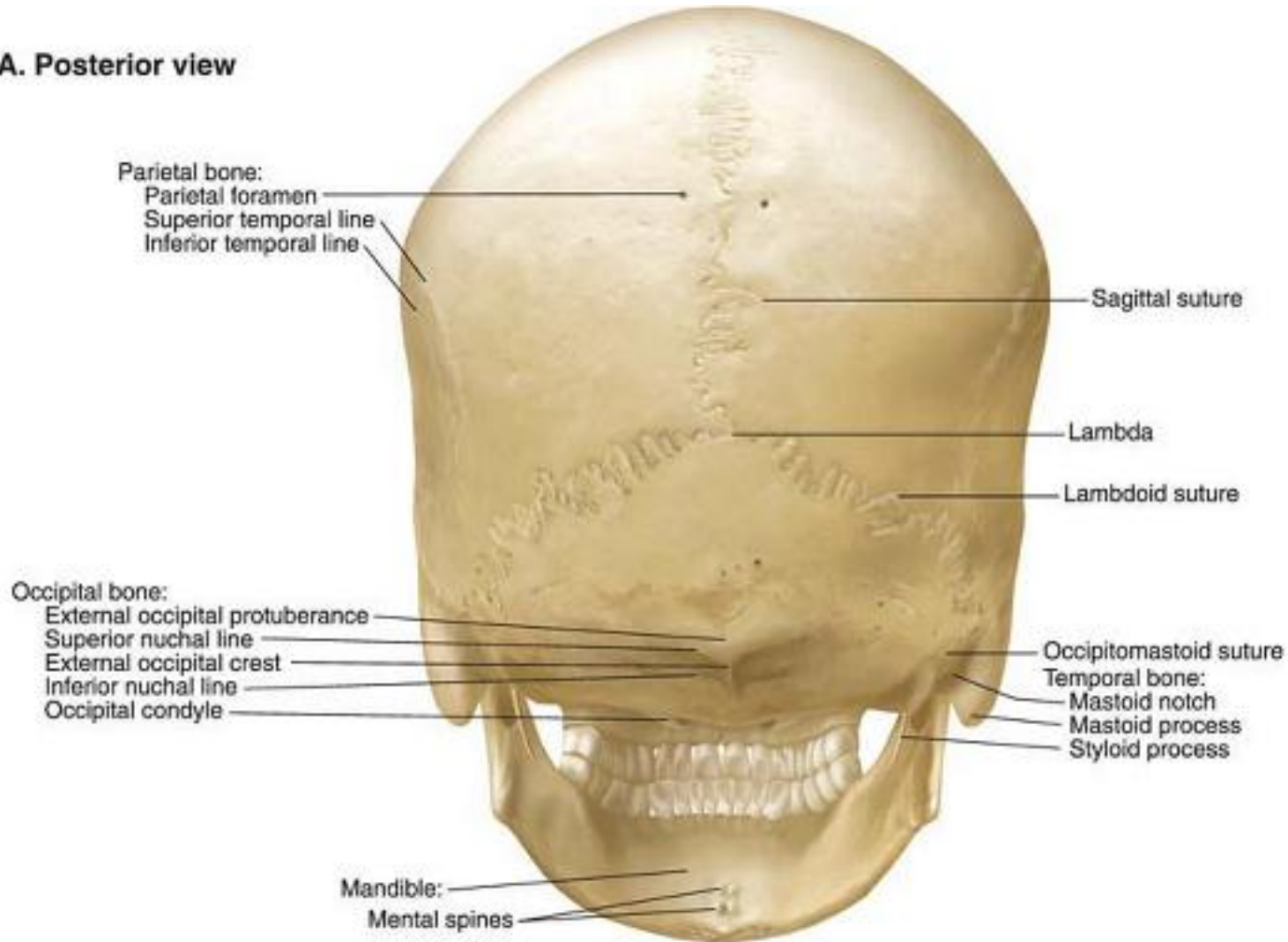
Norma occipitalis: posterior aspect of the skull

- **Bones:**
 - 1. Posterior part of parietal bone
 - 2. mastoid process of temporal bone
 - 3. squamous part of occipital bone
- **Sutures:**
 - 1. lambdoid
 - Parietomastoid
 - occipitomastoid
 - External occipital protuberance
 - Superior and highest nuchal line



Posterior View & Sutures

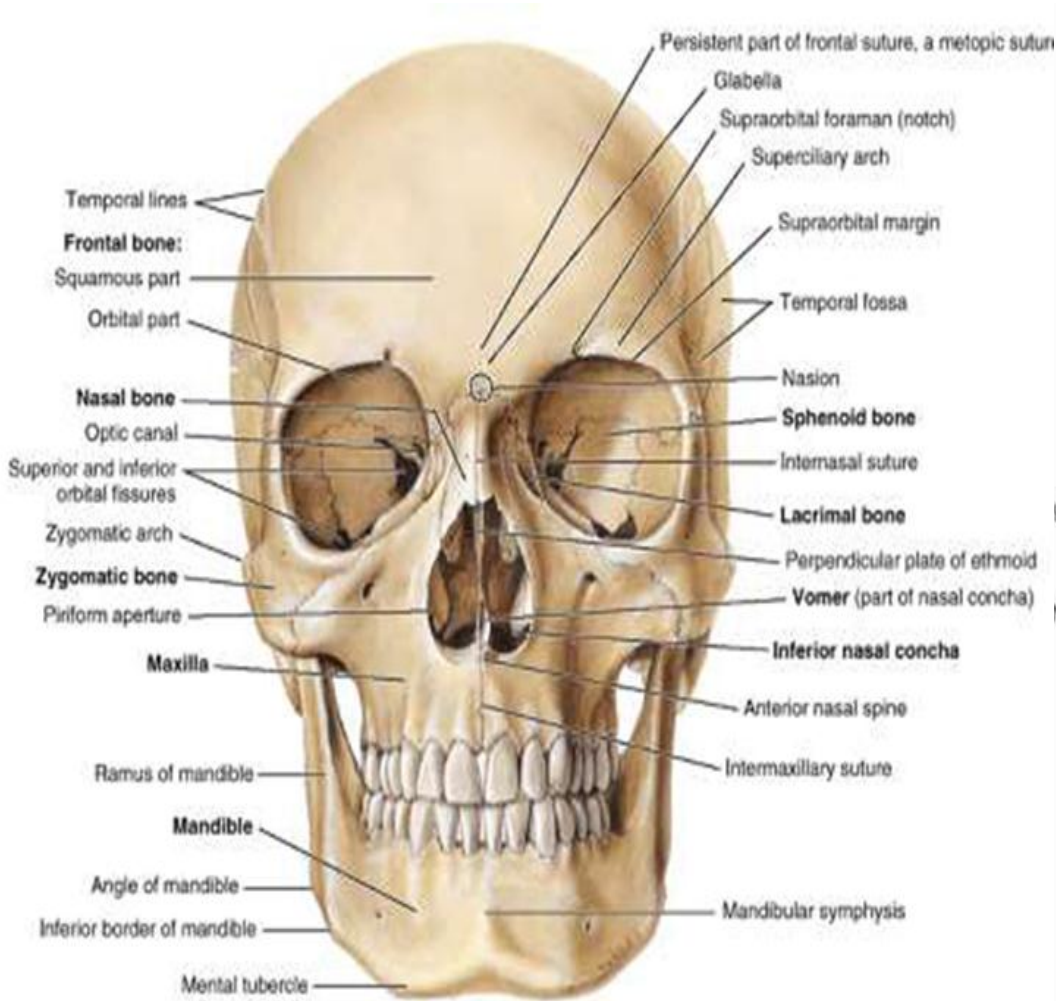
A. Posterior view



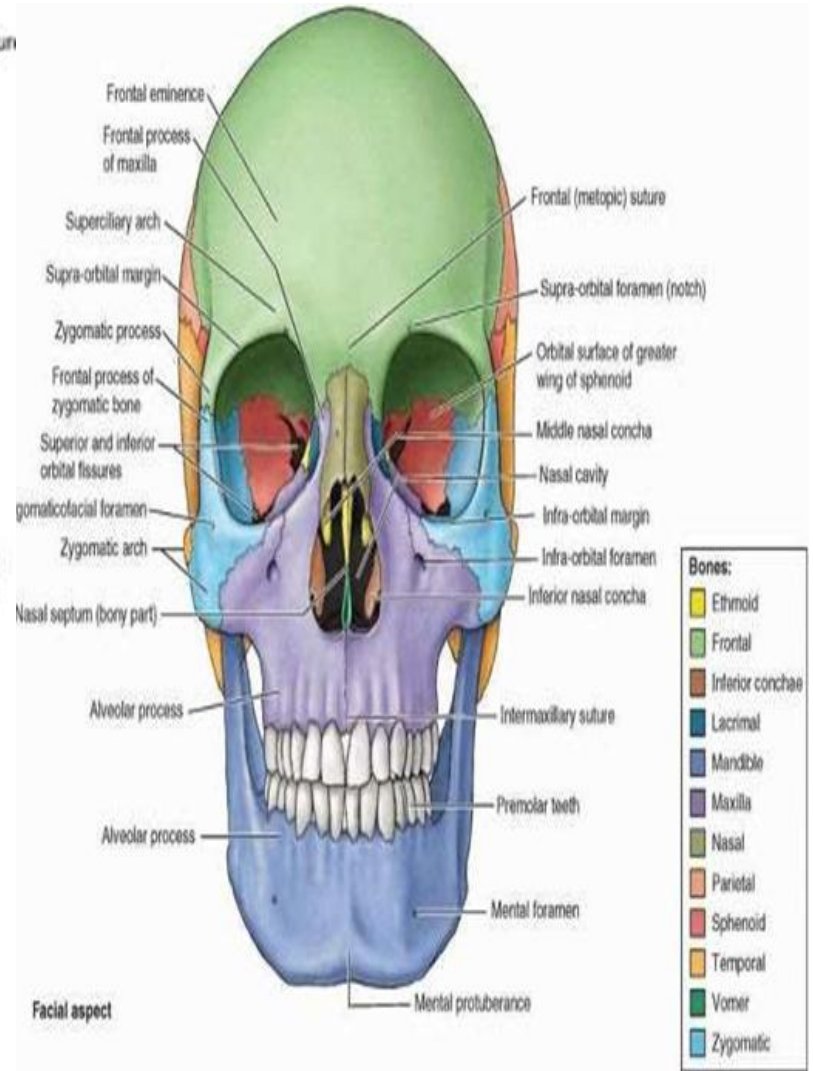
Norma Frontalis

- **Can be divided into upper and lower**
- **Upper part:**
- **Super ciliary arches:** curved elevations above the supraorbital margins
- **Glabella:** median elevation between the two supraciliary arches
- **Nasion:** median point at the root of the nose
- **orbital opening :**
- **supraorbital margin** formed by frontal bone
- **supraorbital notch** or foramen transmit supraorbital vessels and nerves
- **Infra orbital margin** formed by maxilla medially and zygomatic bone
- laterally
- **Medial margin:** formed by frontal bone above and anterior lacrimal crest of the maxilla below
- **Lateral margin;** formed by frontal process of zygomatic bone and zygomatic process of frontal bone
- **Anterior nasal aperture**
- **Nasal bones**

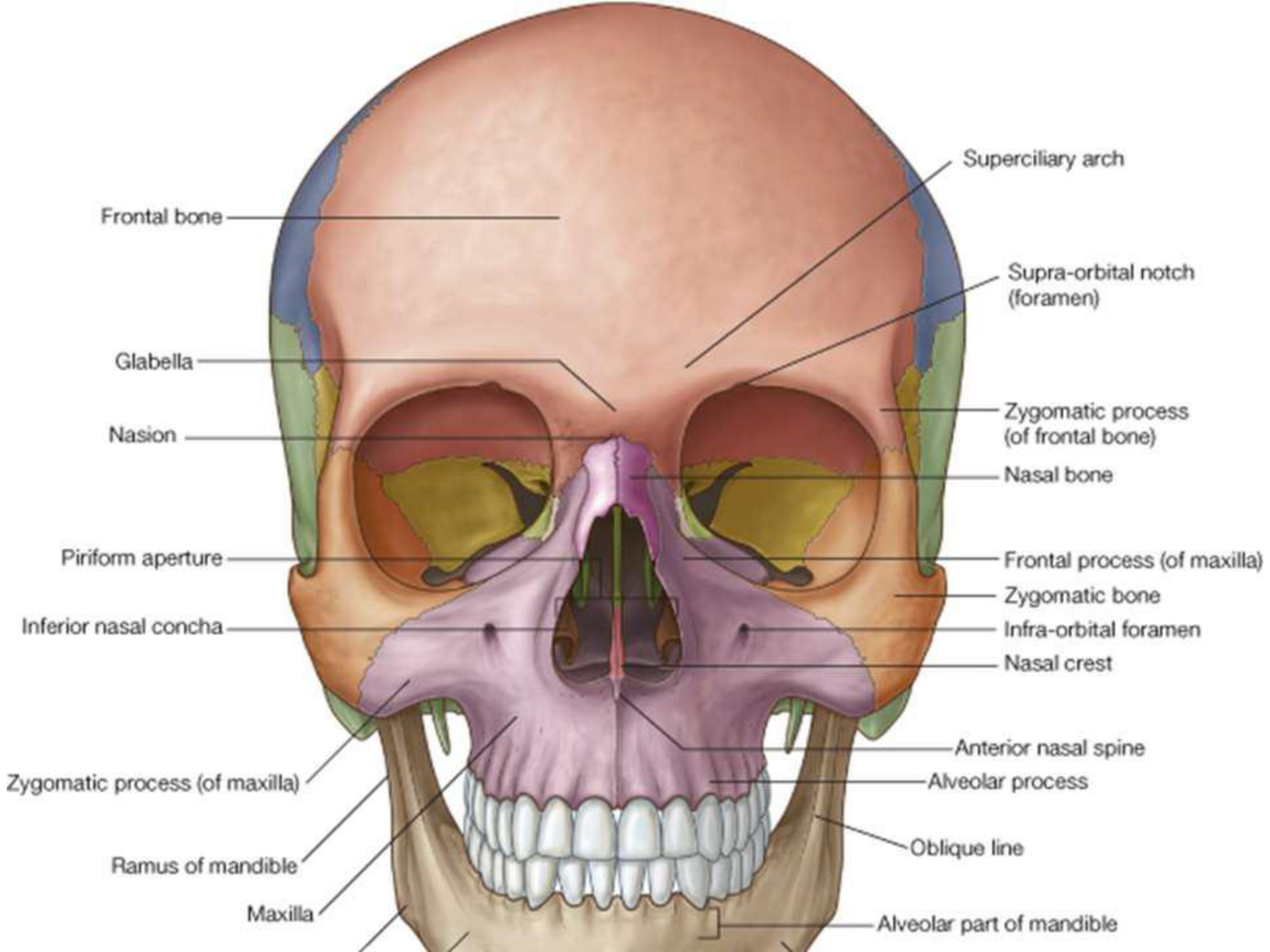
Norma frontalis



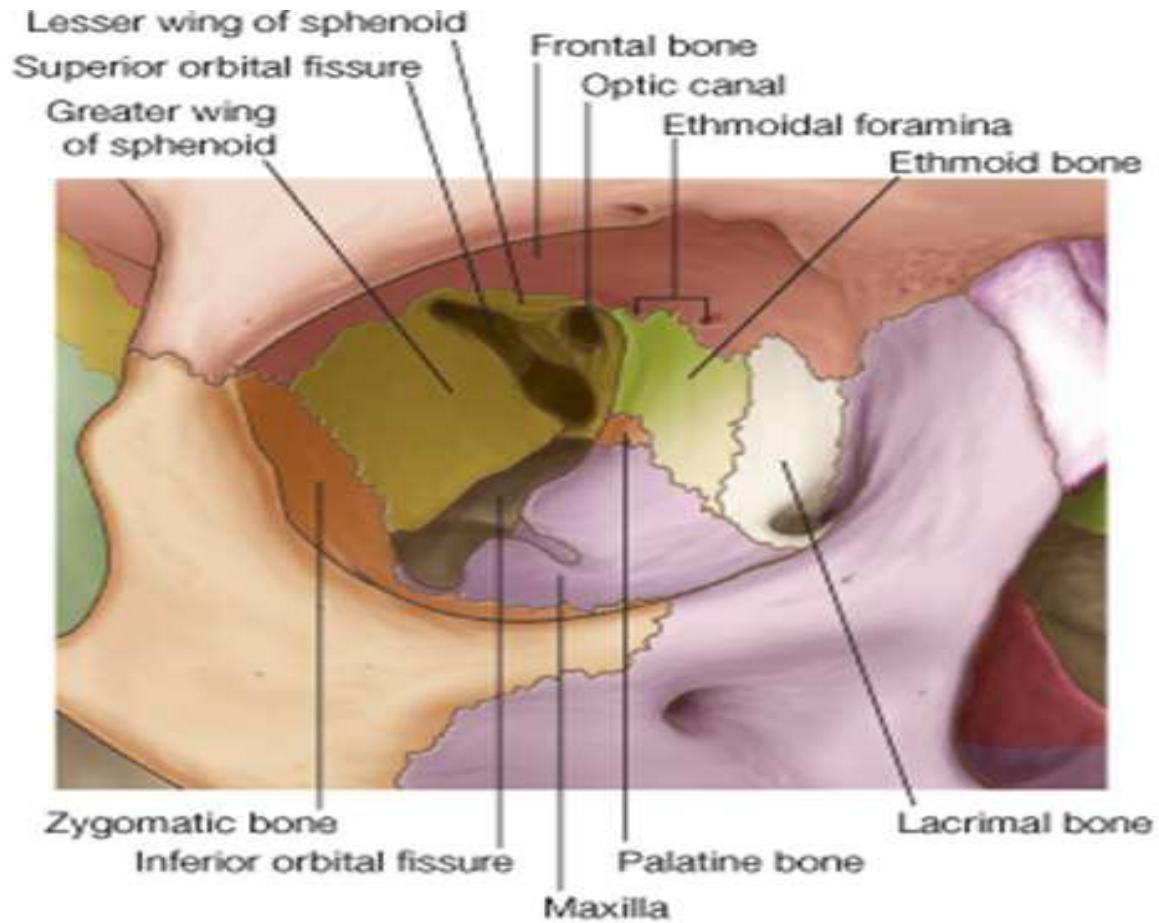
(D) Anterior (frontal) aspect



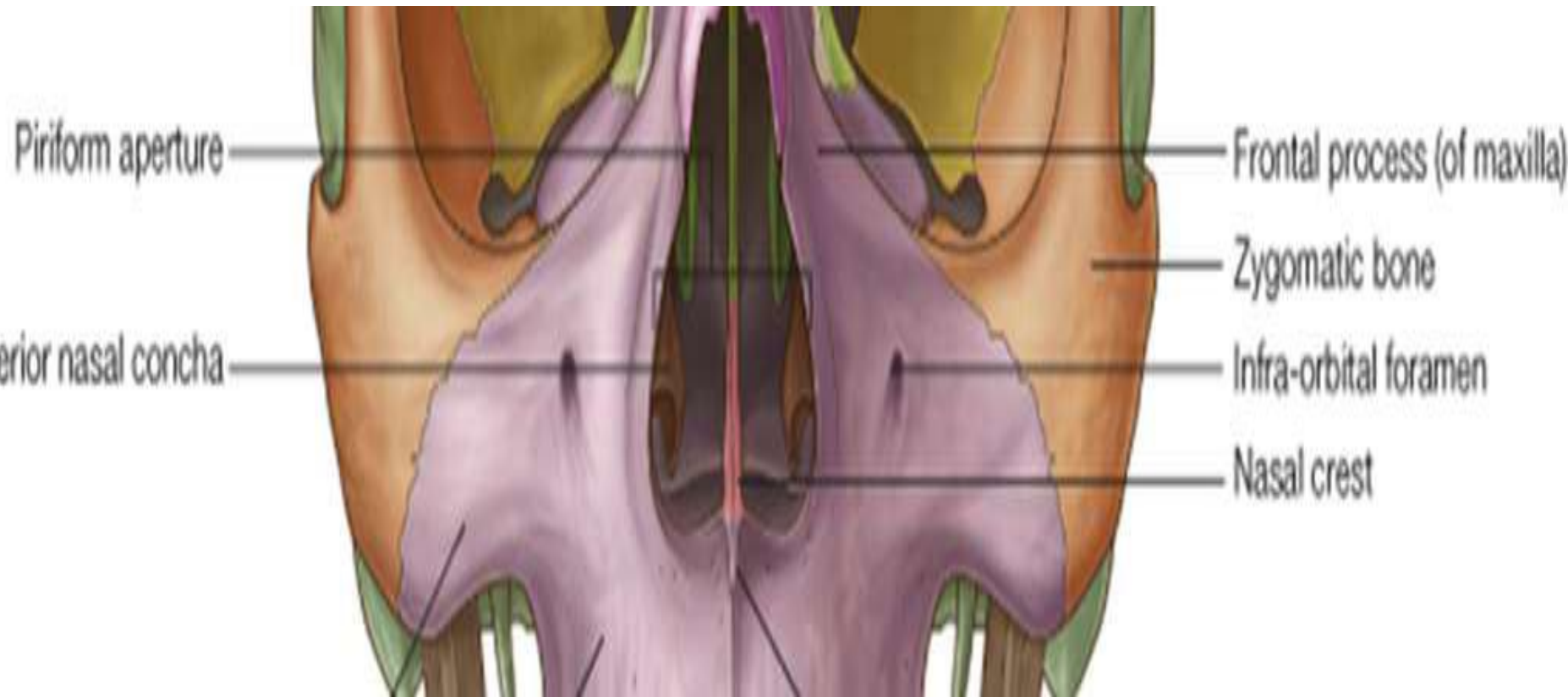
Facial aspect



Upper part / Orbit



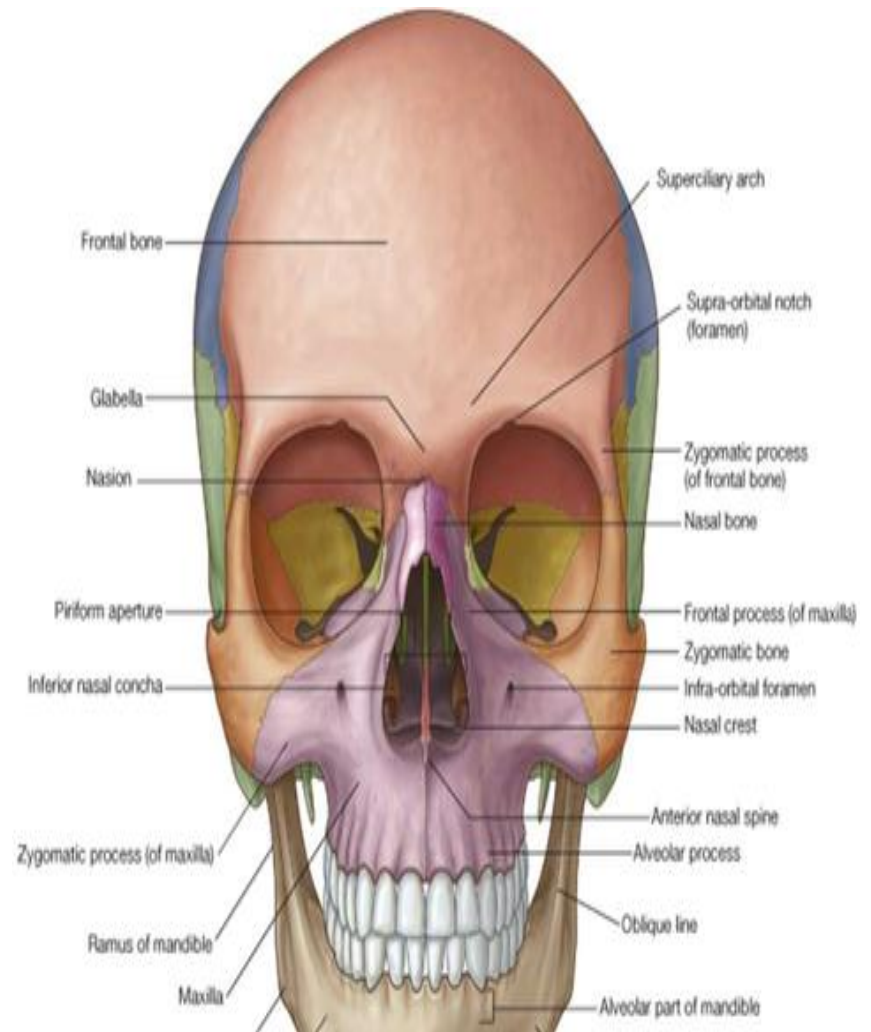
Upper part



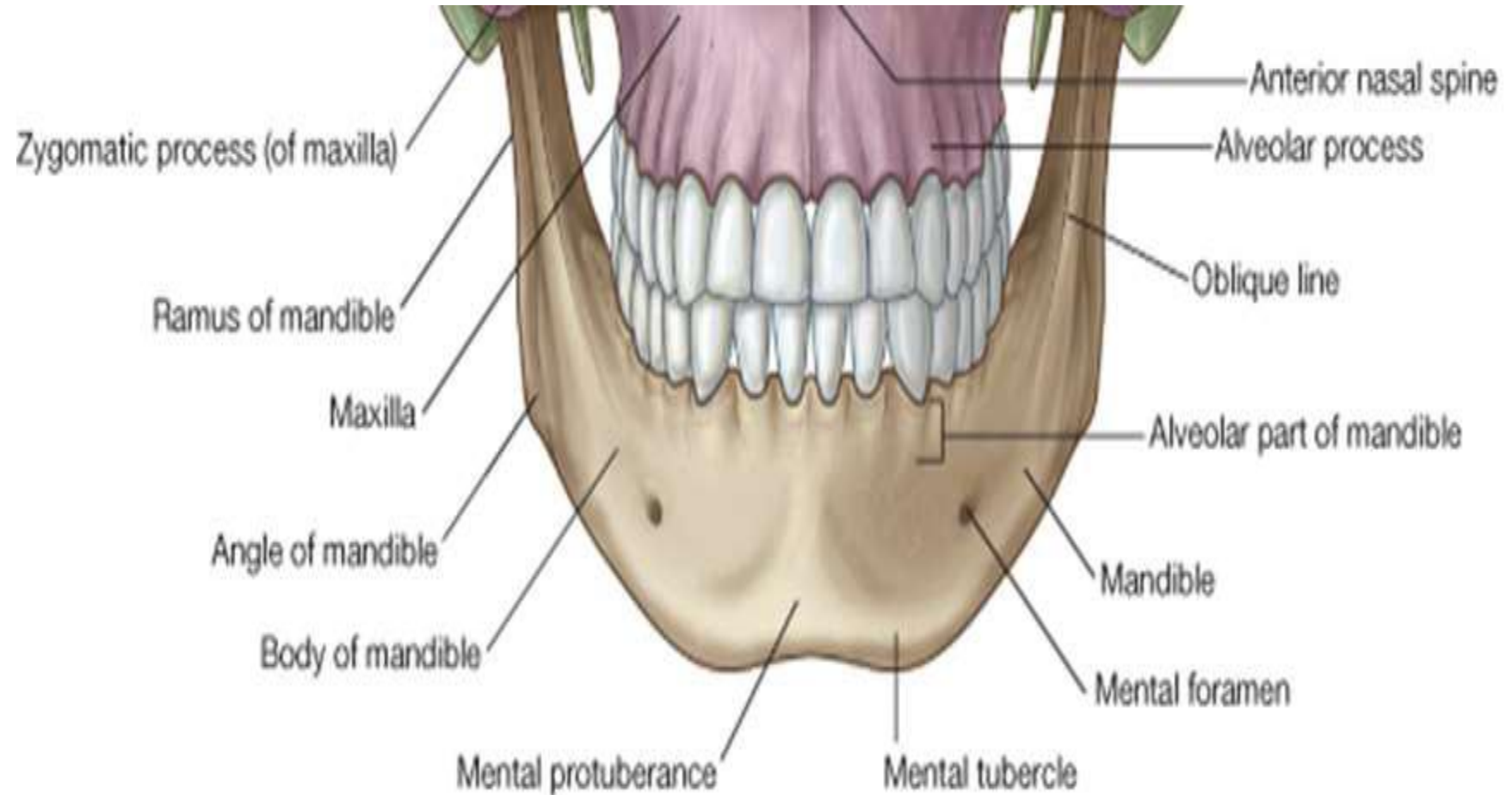
Norma frontalis

lower part of the face:

- **Maxilla** have processes
Frontal process of maxilla
Zygomatic process
Alveolar process
- **Zygomatic bones**
Body ,processes ,arch
Zygomaticofacial foramen
Z-f nerve
- **Mandible :**
mental f -mental n and v

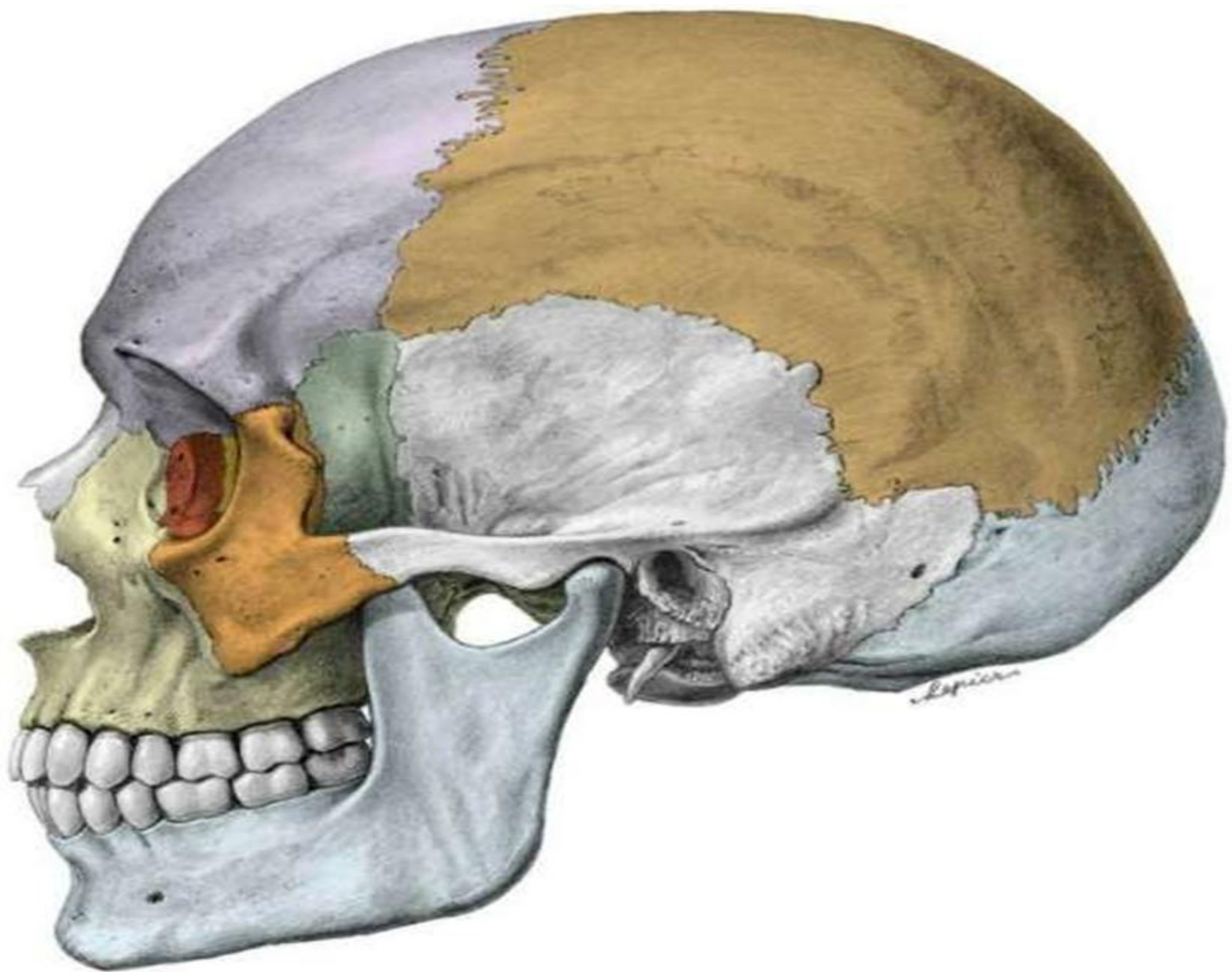


Lower part

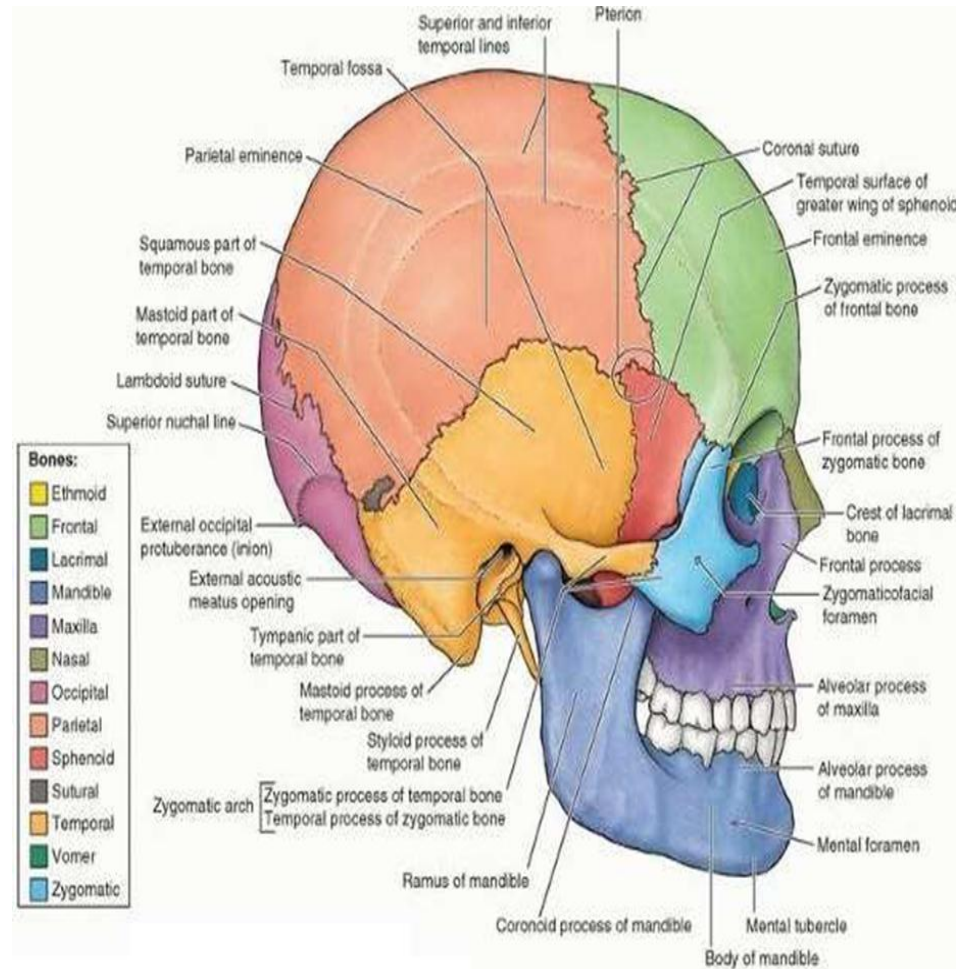
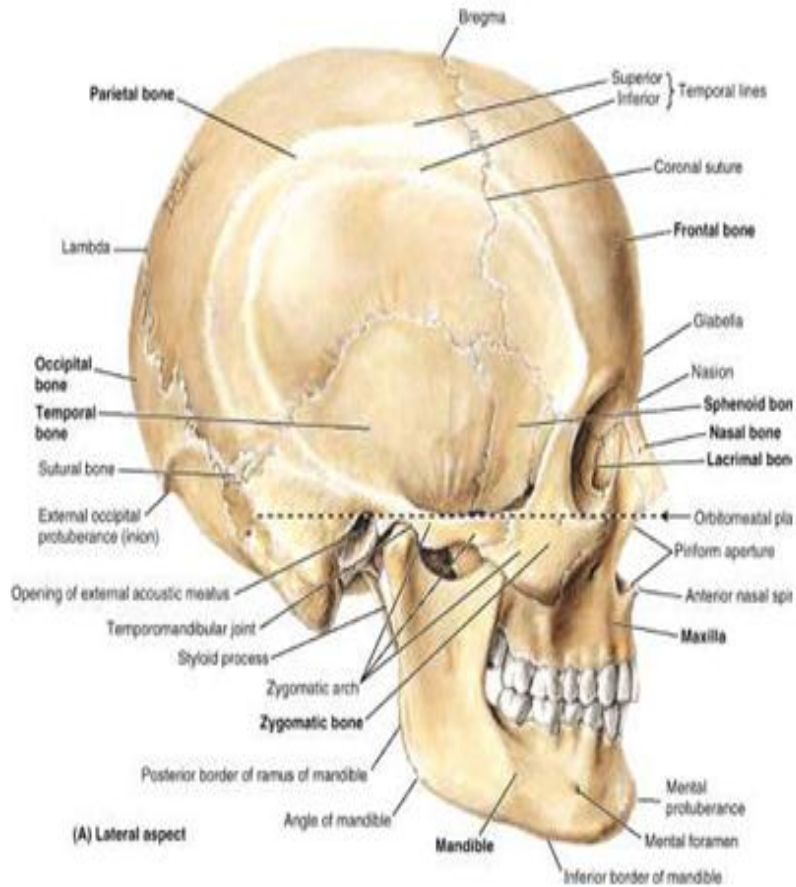


Norma lateralis: lateral view of the skull

- **Bones;**
- **1.temporal bone**
- **2.temporal lines**
- **3Zygomatic arch**
- **4.External auditory meatus**
- **5. Suprameatal triangle / postero superior to meatus / imp in ear surgery**
- **6.Mastoid part of temporal bone**
- **7.Styloid process**
- **8.Temporal and Infra temporal fossa**
- **Infra temporal crest /separate supra from infra temporal fossa**
- **9. Pterygo palatine fossa**
- **Temporal fossa:**
- **Formed by:**
- **Squamous part of temporal bone**
- **Lateral surface of greater wing of sphenoid bone**
- **Lower part of frontal and parietal bone**
- **Orbital process of zygomatic bone**



Norma lateralis



Important landmarks :

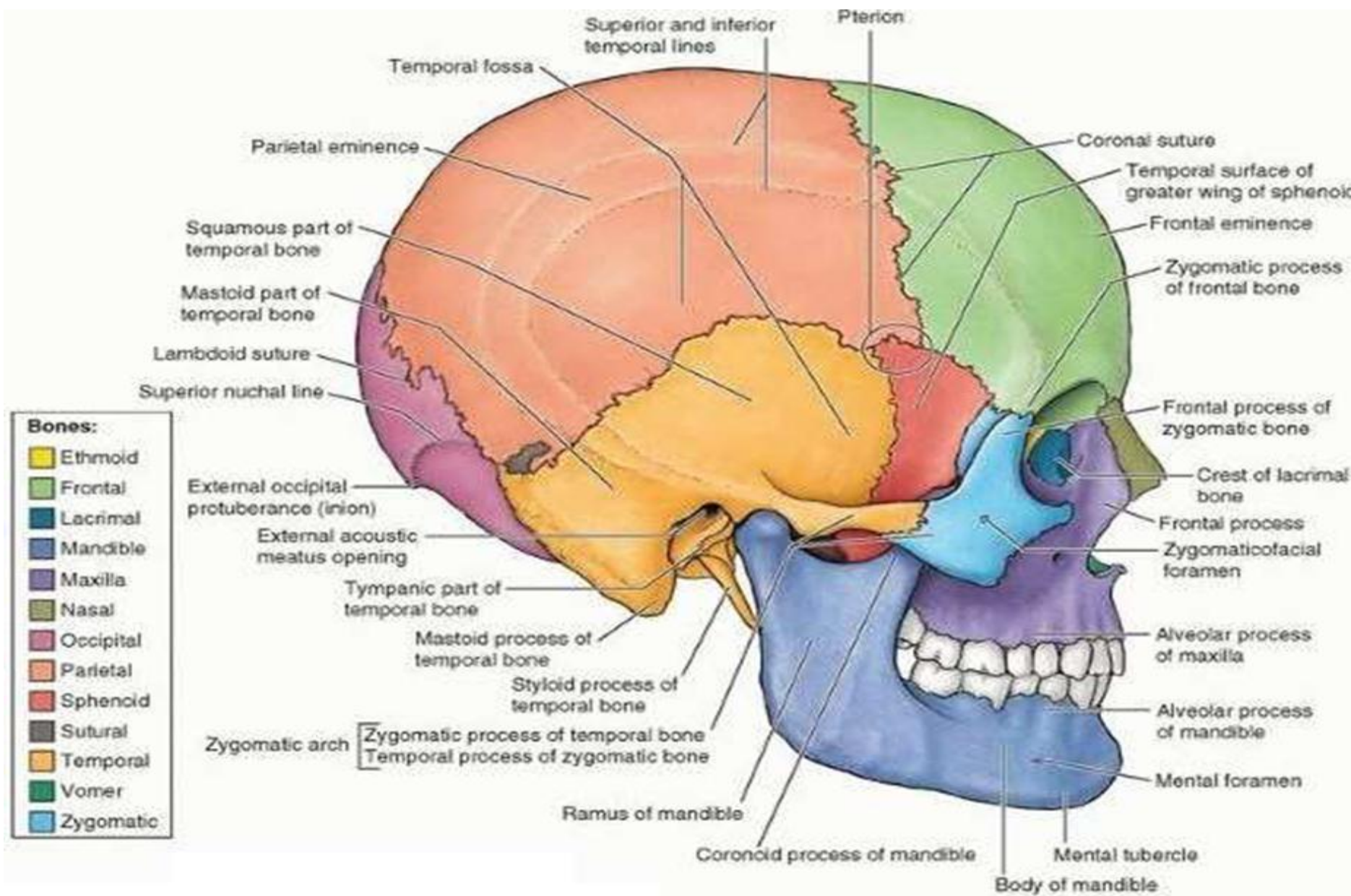
H-shaped suture: (parietal and sphenoid , frontal and squamous of temporal

Pterion: Circular area include:
portions of frontal , parietal , greater wing of sphenoid ,
squamous part of temporal bone

Temporal line: starts at the zygomatic process of frontal bone runs upwards and backwards across parietal bone divides into two curved ridges

Superior temporal line give attachment to temporal fascia

Inferior temporal line marks limit of upper attachment of temporalis muscle.



- Bones:**
- Ethmoid
 - Frontal
 - Lacrimal
 - Mandible
 - Maxilla
 - Nasal
 - Occipital
 - Parietal
 - Sphenoid
 - Sutural
 - Temporal
 - Vomer
 - Zygomatic

Superior and inferior temporal lines

Pterion

Temporal fossa

Parietal eminence

Coronal suture

Temporal surface of greater wing of sphenoid

Frontal eminence

Squamous part of temporal bone

Zygomatic process of frontal bone

Mastoid part of temporal bone

Lambdoid suture

Superior nuchal line

Frontal process of zygomatic bone

Crest of lacrimal bone

External occipital protuberance (inion)

External acoustic meatus opening

Tympanic part of temporal bone

Frontal process of maxilla

Zygomaticofacial foramen

Mastoid process of temporal bone

Styloid process of temporal bone

Alveolar process of maxilla

Alveolar process of mandible

Zygomatic arch [Zygomatic process of temporal bone
Temporal process of zygomatic bone]

Ramus of mandible

Coronoid process of mandible

Mental foramen

Body of mandible

Mental tubercle

Landmarks

➤ **Zygomatic arch:**

Formed by zygomatic process of **temporal bone** and temporal process of **zygomatic bone**

➤ **External auditory meatus**

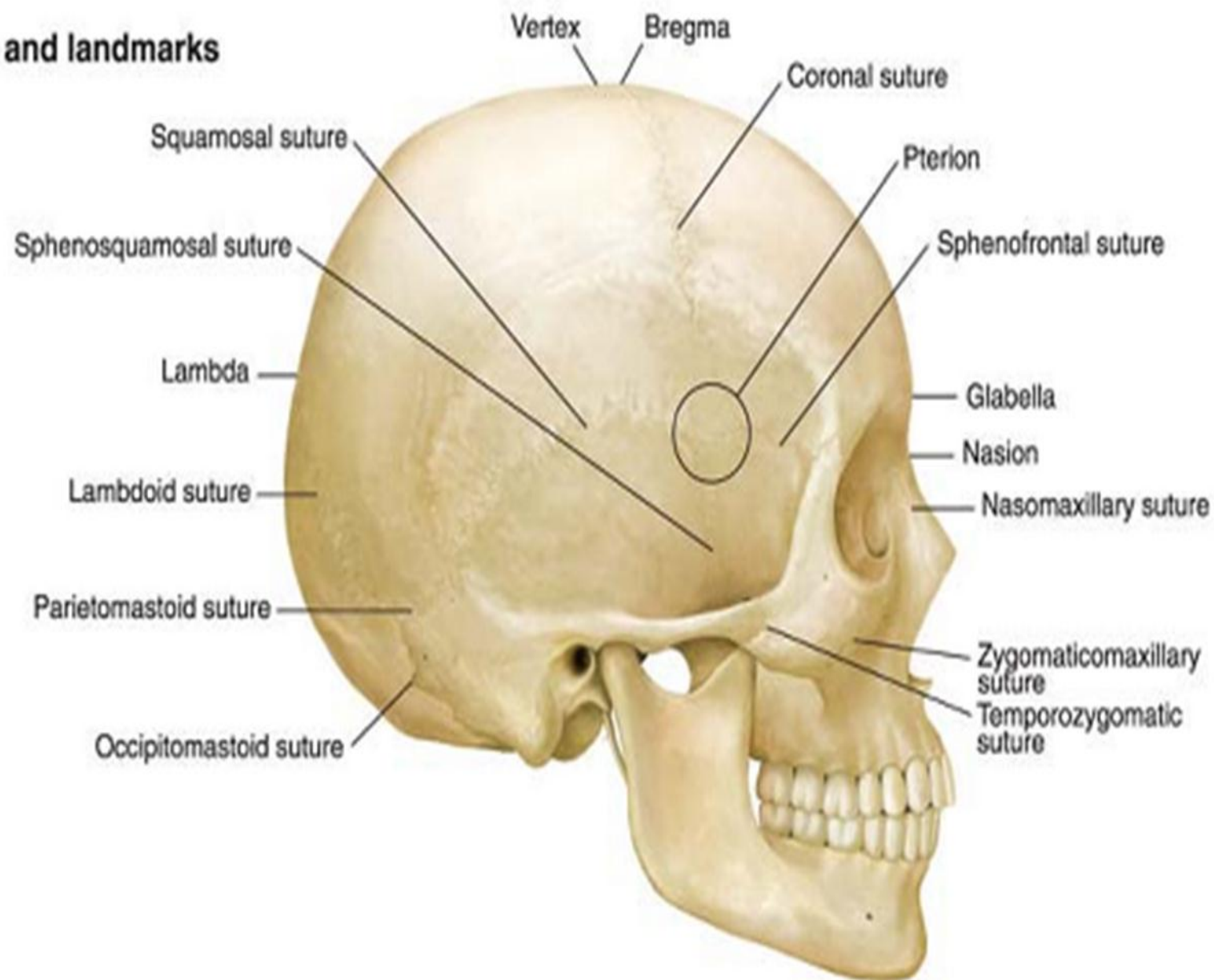
➤ **Mastoid part of temporal bone**

➤ **Styloid process**

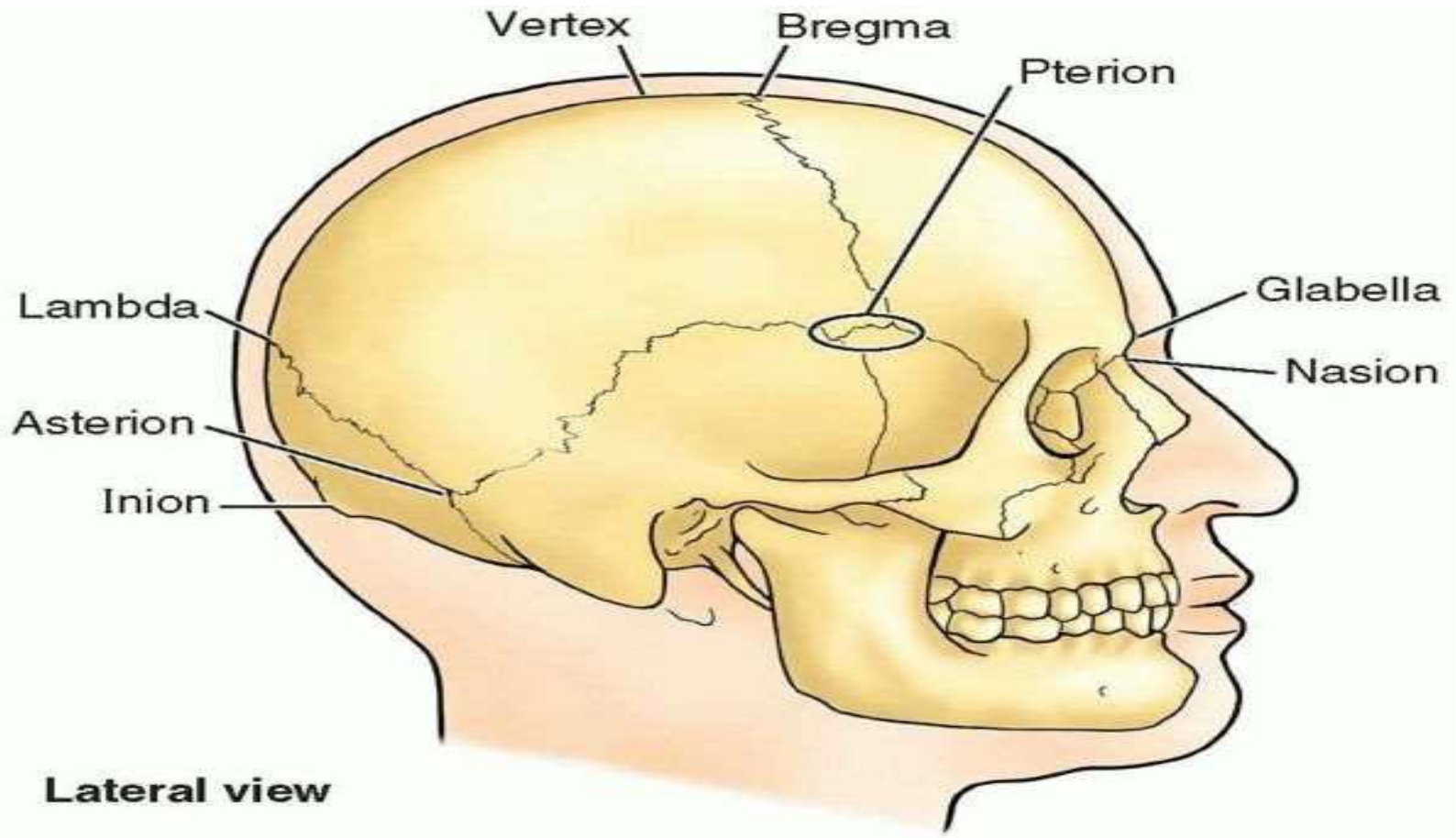
➤ **Inion** = ext occipital protuberance

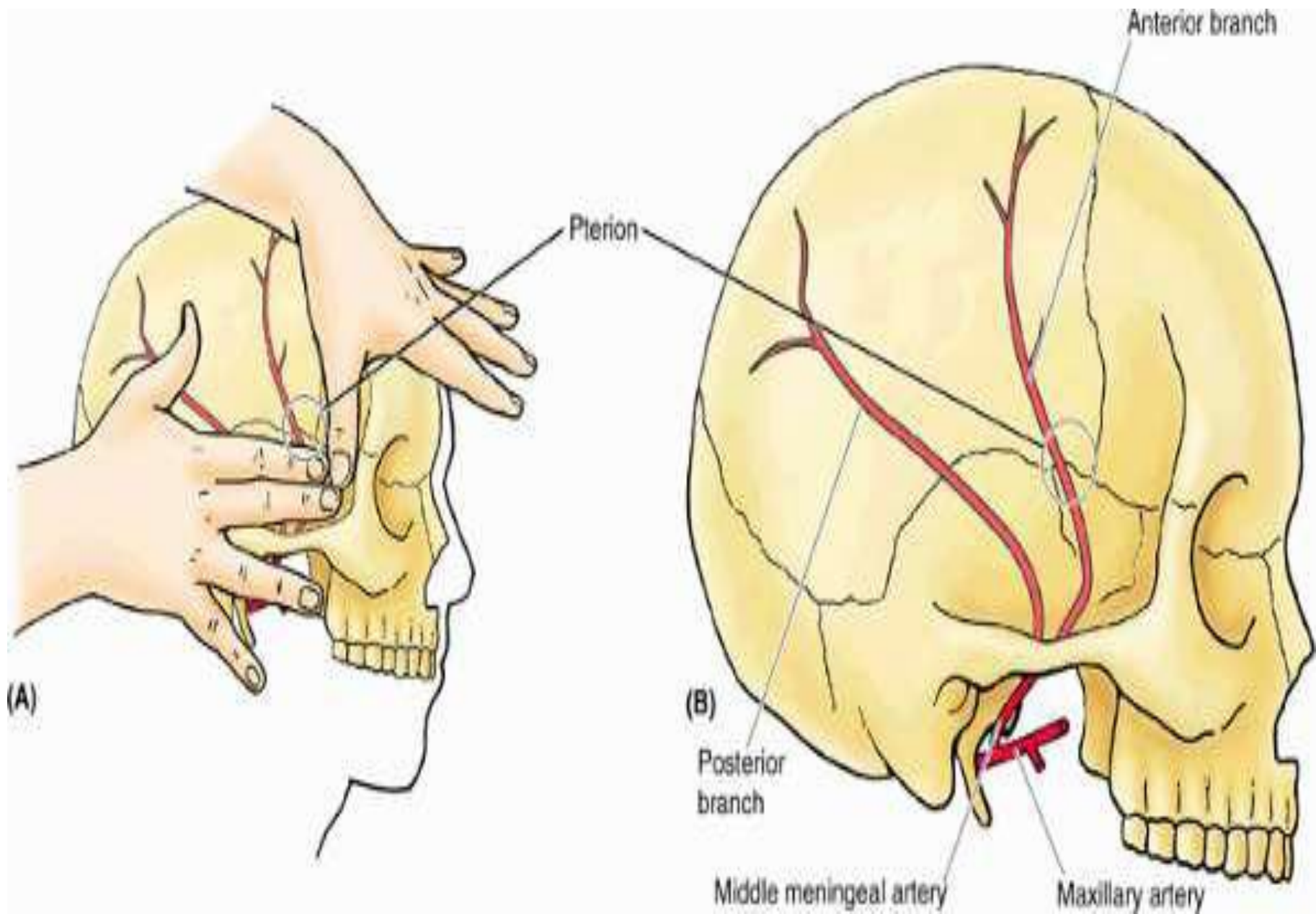
➤ **Asterion** region where parietal , occipital and temporal meet

B. Sutures and landmarks



Pterion





Moulding



Norma Basalis /base / Exterior /

3 parts;

Anterior ,middle ,posterior

Anterior:

alveolar arch---sockets for roots of upper teeth

Hard palate

Anterior 2/3 from palatine process of maxilla

Poster1/3---from horizontal plate of palatine bone

Incisive fossa

Greater palatine foramen / greater palatine nerves and vessels

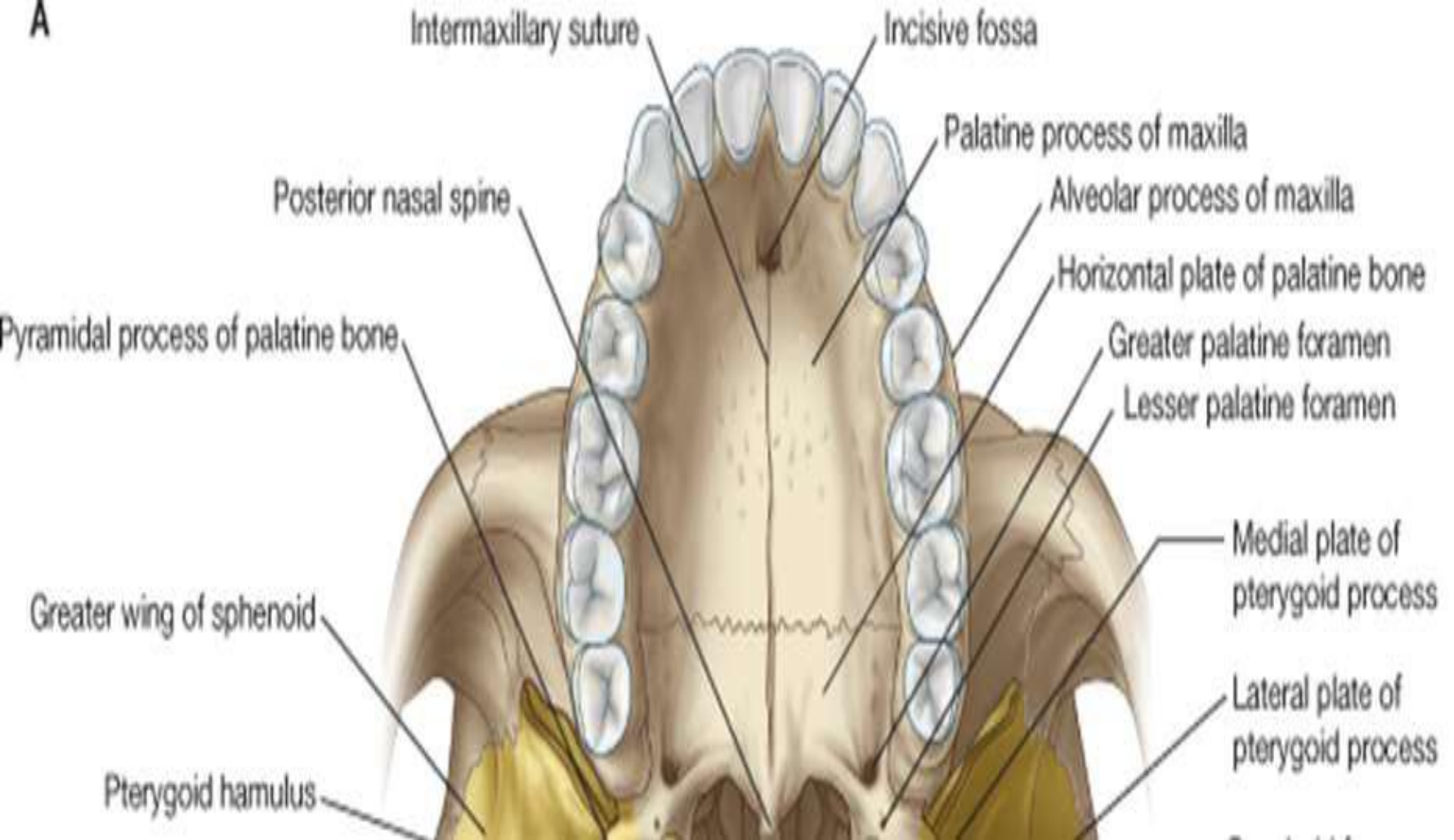
Lesser palatine foramen / lesser palatine nerves and vessels

Posterior nasal spine

Palatine crest

Upper part

A



Middle part

Median area

Posterior border of **vomer** separating the two **posterior nasal apertures**

Inferior border of vomer articulate with bony palate

Palatovaginal canal=pharyngeal canal

Lower surface of body of **sphenoid bone**

Basilar part of occipital bone-

pharyngeal tubercle

Pterygoid process ,

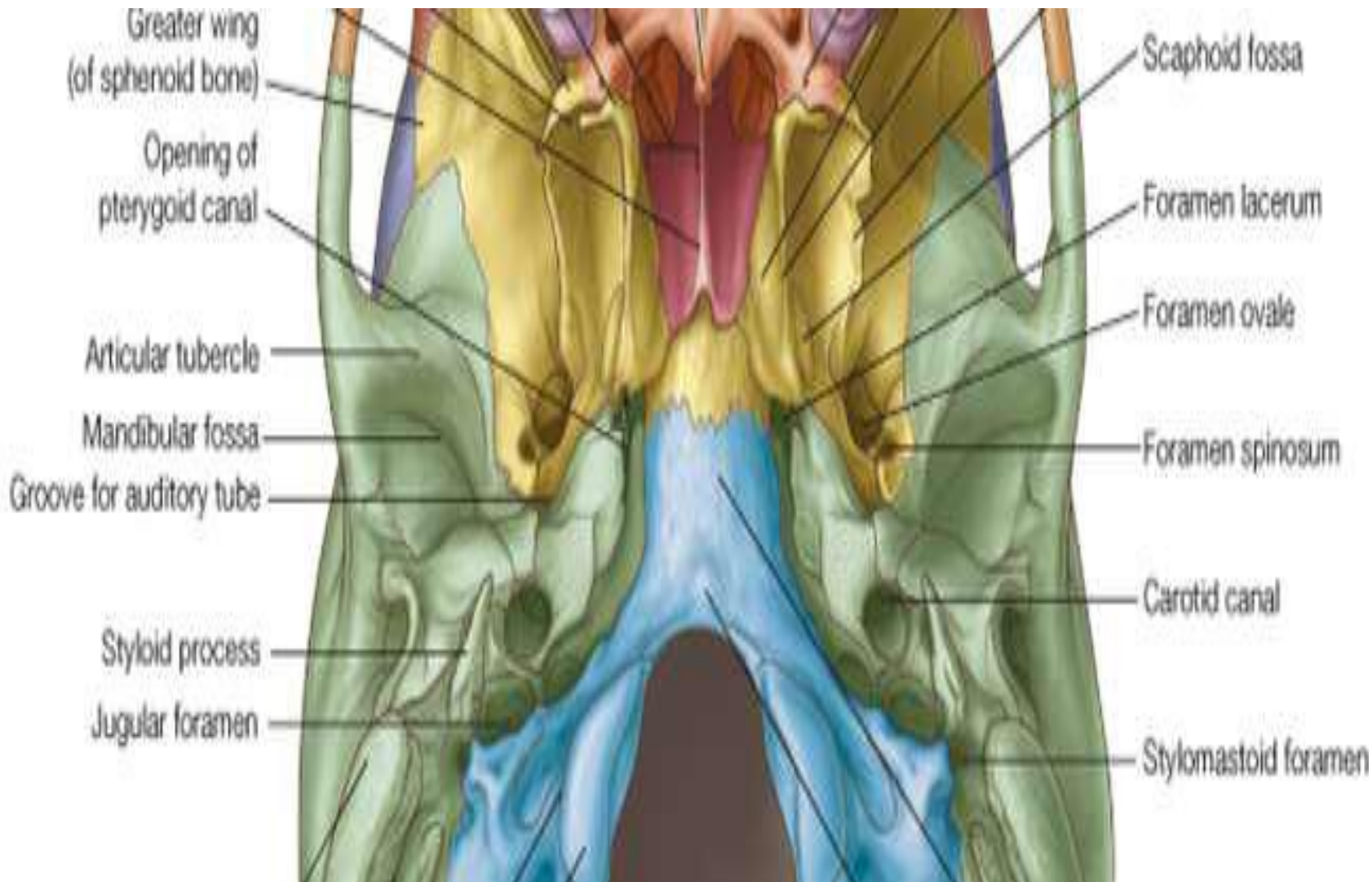
greater wing of sphenoid bone

Inferior orbital fissure

Infratemporal crest

Squamous part of temporal bone

Middle part



Posterior part

➤ **F-magnum**

➤ **Jugular foramen**

transmit a. inferior petrosal n.

b. Glossopharyngeal ,

c. vagus

d. accessory n

e. Superior bulb of internal jugular vein

f. Meningeal branch of ascending pharyngeal artery

➤ **Stylomastoid foramen** transmit a. facial nerve

b. Stylomastoid branch of post auricular art

➤ **Mastoid notch**

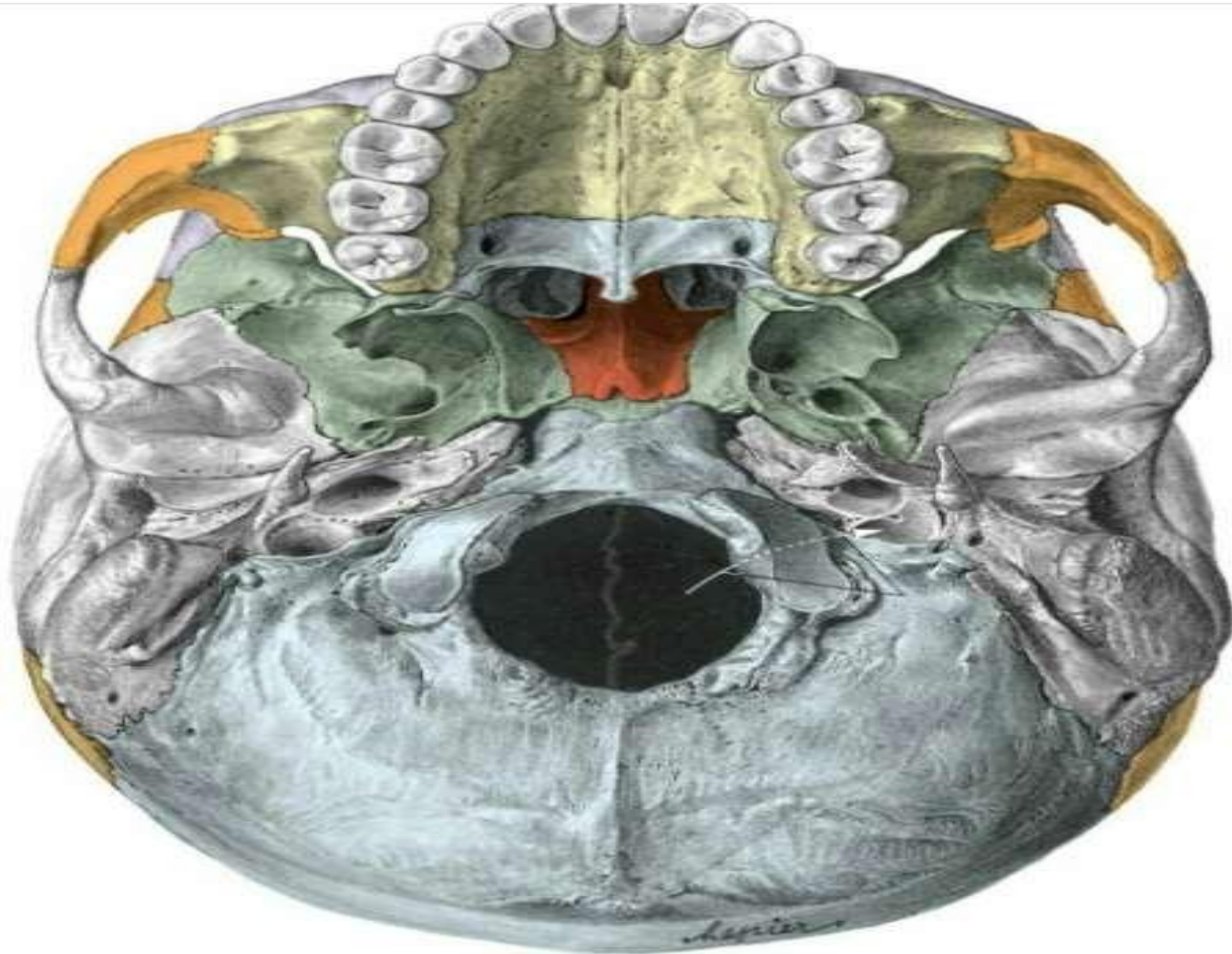
➤ **External occipital protuberance**

➤ **Inferior nuchal line**

➤ **Superior nuchal line**

➤ **Highest nuchal line** 1cm above sup nuchal line

Base of the skull / exterior



Fractures of skull

- Common in adults and children
- **Linear fracture**
- **depressed pond fracture**
- Fractures in the squamous part of occipital bone lead to bleeding

In the back of the neck muscles

