SNS COLLEGE OF ALLIED HEALTH SCIENCE

Affiliated to The Tamil Nadu Dr. M.G.R Medical University, Chennai

DEPARTMENT OF PHYSICIAN ASSISTANT

COURSE NAME : ANATOMY

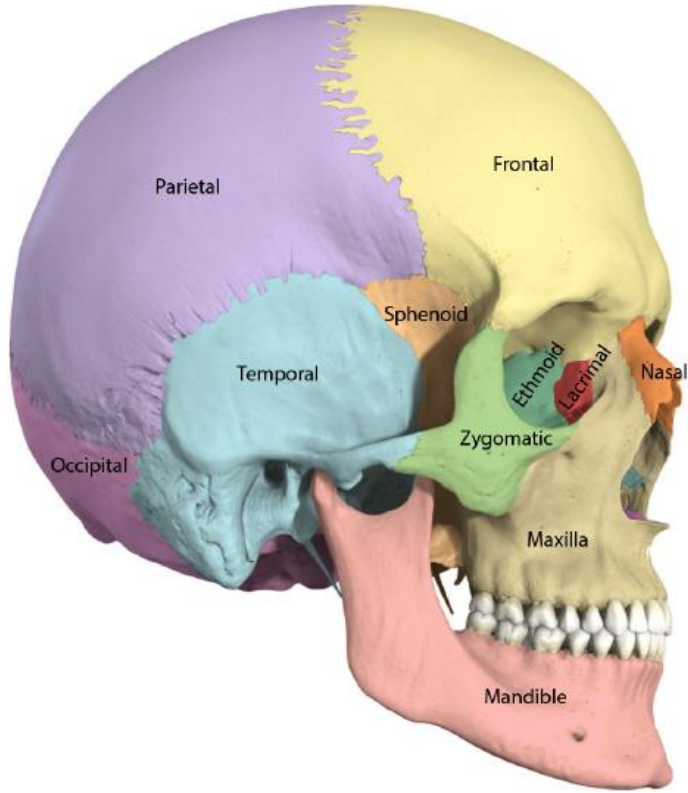
UNIT : SKELETAL SYSTEM

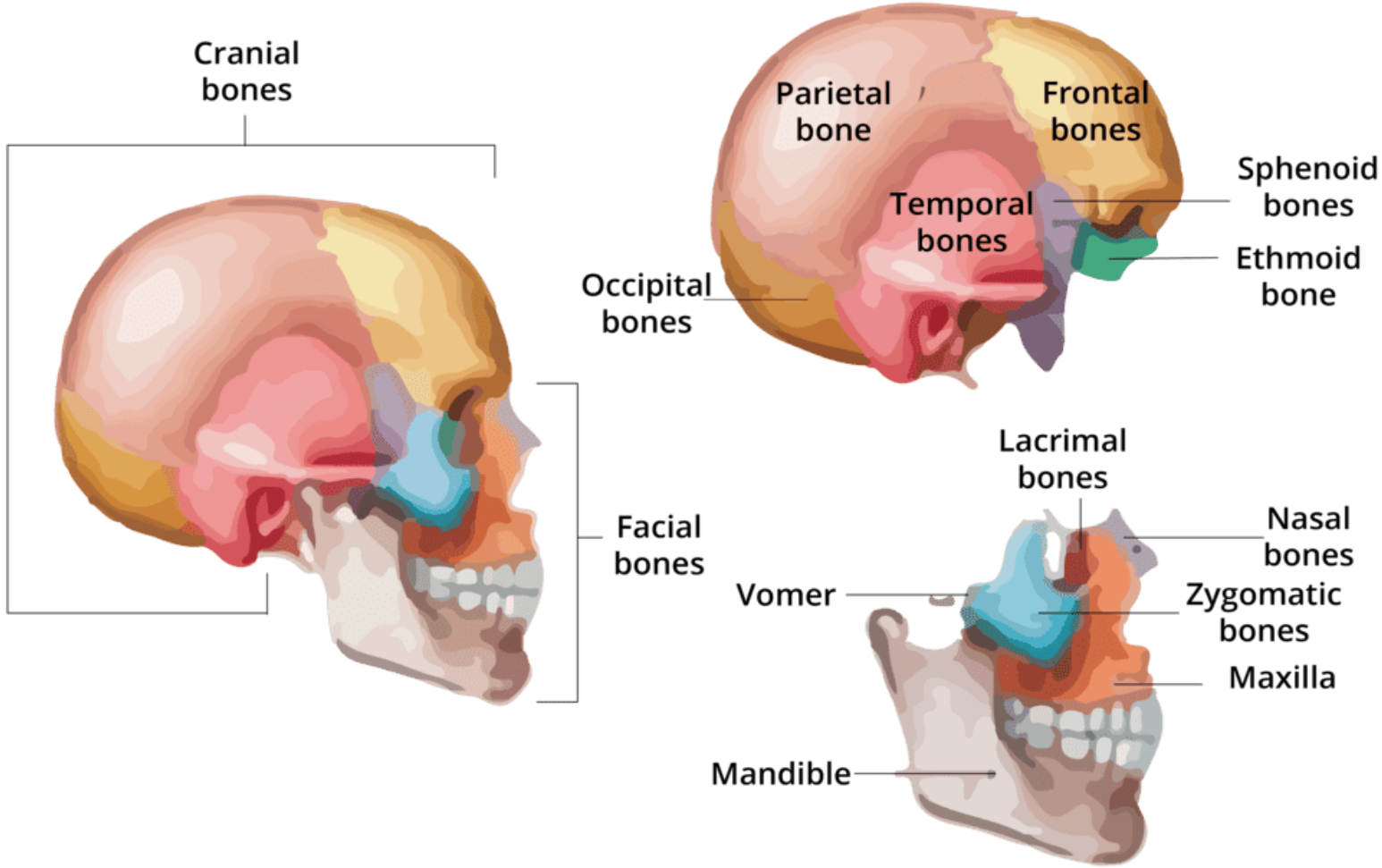
TOPIC : SKULL BONES

FACULTY NAME : Ms. SINEKA M

INTRODUCTION

- The **skull** is a bony structure that supports the face and forms a protective cavity for the brain.
- It is comprised of many bones, which are formed by intramembranous ossification, and joined by **sutures** (fibrous joints).

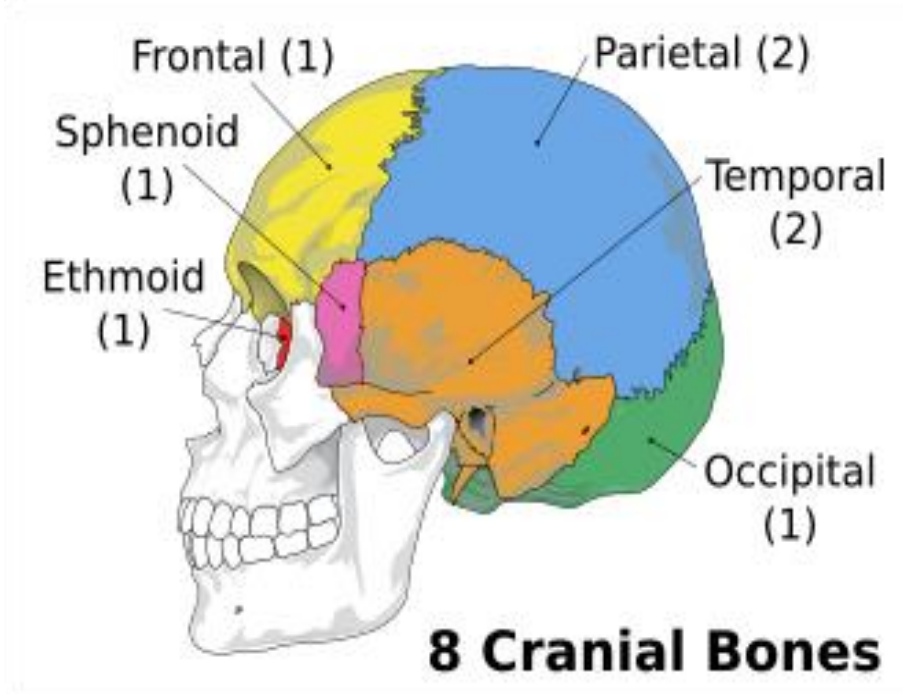



Cranial bones
Facial bones
Parietal bone
Frontal bones
Temporal bones
Sphenoid bones
Occipital bones
Ethmoid bone
Lacrimal bones
Nasal bones
Vomer
Zygomatic bones
Maxilla
Mandible

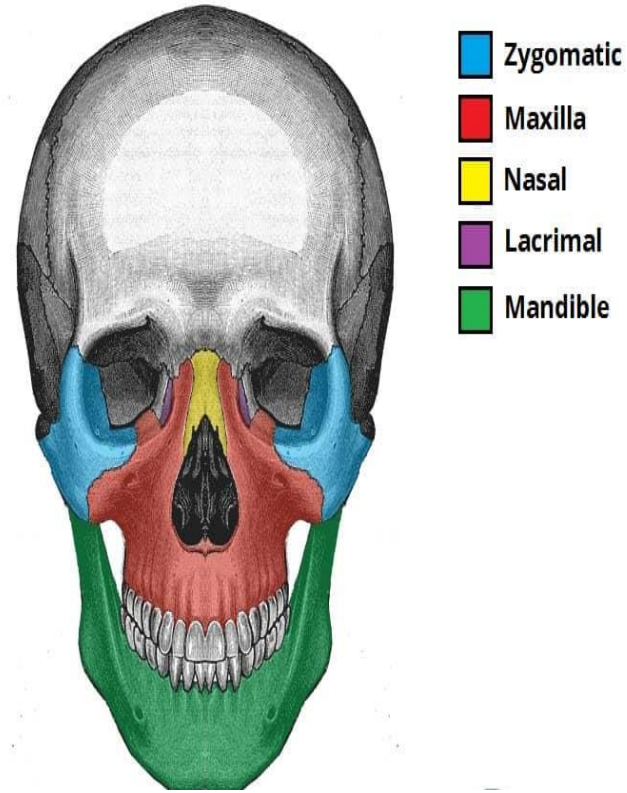
OVERVIEW OF SKULL BONES

They are divided into **two main** groups:

- **Cranial Bones (Neurocranium)**: **8 bones** that enclose and protect the brain.
- It includes Frontal, parietal (2), temporal (2), occipital, sphenoid, and ethmoid.

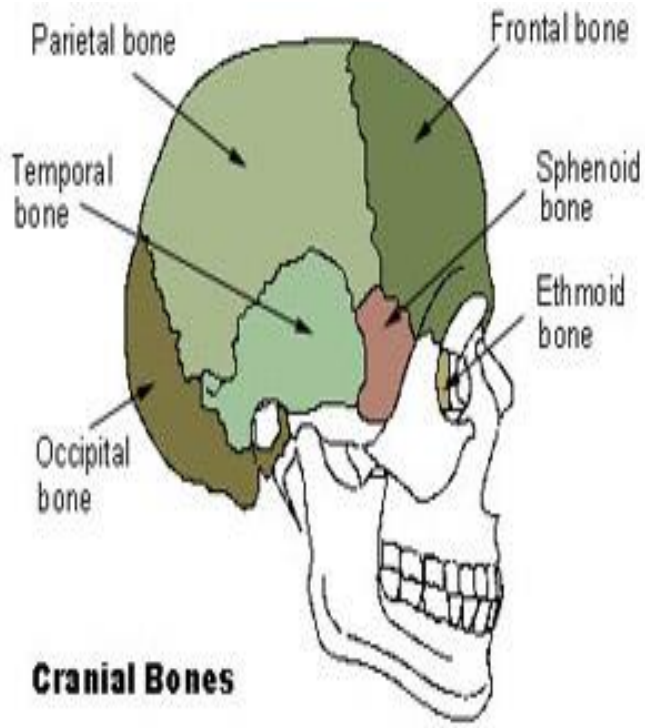


- **Facial Bones (Viscerocranium)**: **14 bones** that form the face, eyes, nose, and mouth.
- It includes Nasal (2), lacrimal (2), zygomatic (2), maxilla (2), palatine (2), inferior nasal concha (2), vomer, and mandible.
- The **mandible (jawbone)** is the only movable bone of the skull; the rest are joined via sutures.

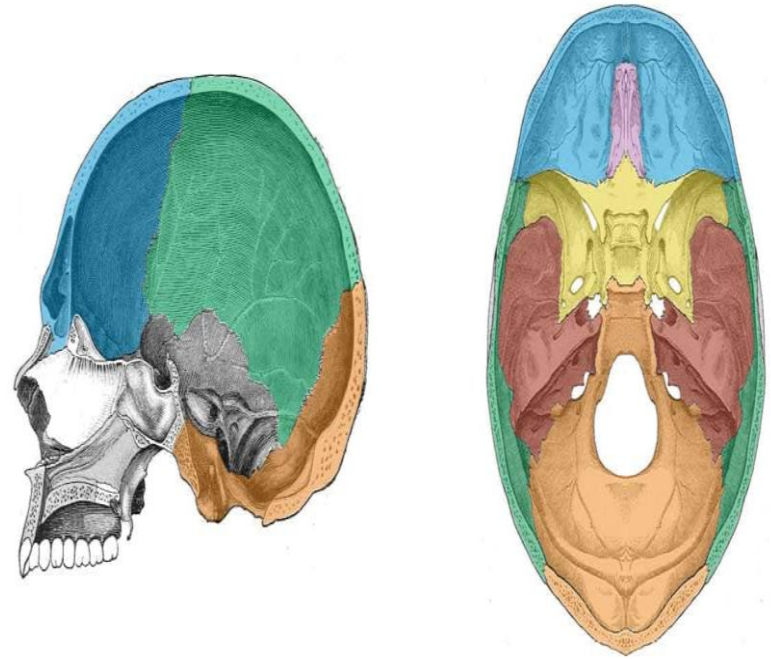


CRANIUM

- The **cranium** (also known as the neurocranium) is formed by the superior aspect of the skull.
- It encloses and protects the brain, meninges, and cerebral vasculature.
- Anatomically, the cranium can be subdivided into a **roof** and a **base**



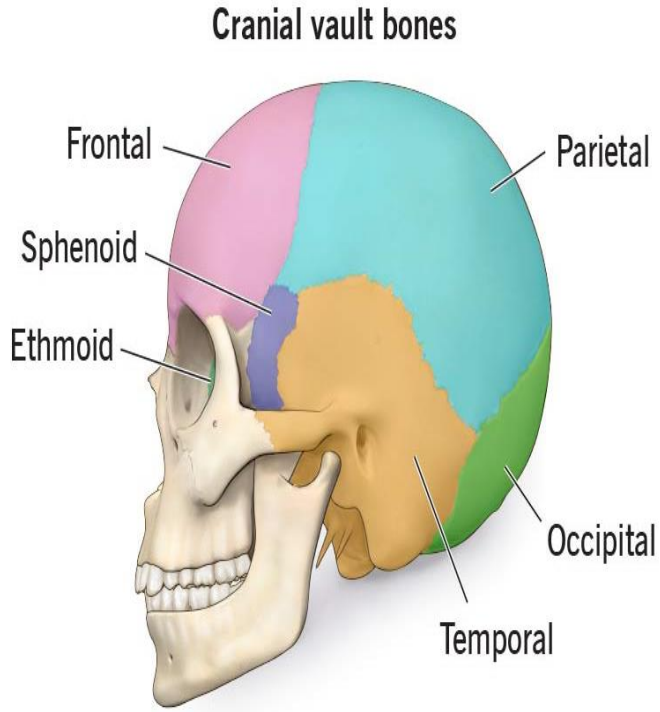
- **Cranial roof** – comprised of the frontal, occipital and two parietal bones. It is also known as the calvaria.
- **Cranial base** – comprised of the frontal, sphenoid, ethmoid, occipital, parietal, and temporal bones.
- These bones articulate with the 1st cervical vertebra (atlas), the facial bones, and the mandible (jaw).



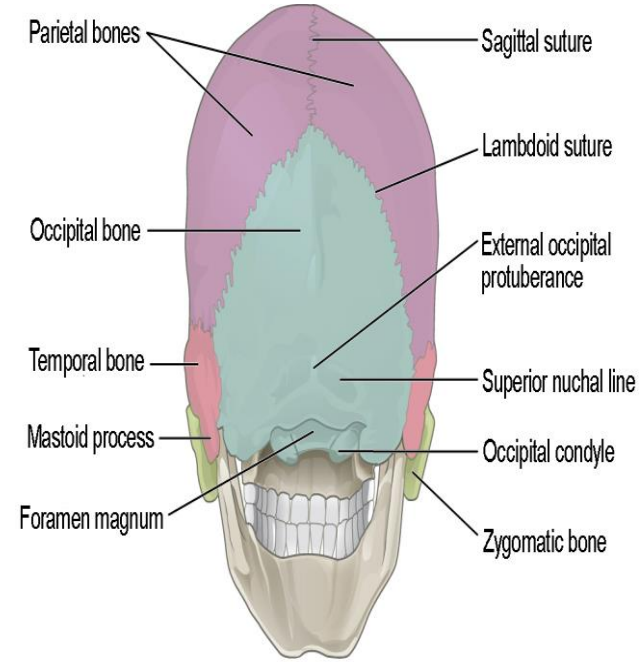
a) Bones of the calvarium b) Bones of the cranial base

CRANIAL BONES

- **Frontal bone** (1): Forms the forehead and the roof of the eye sockets.
- **Parietal bones** (2): Form the top and sides of the skull.
- **Temporal bones** (2): Located on the lower sides of the skull, they house the structures of the inner and middle ear and form the temporomandibular joint with the mandible.



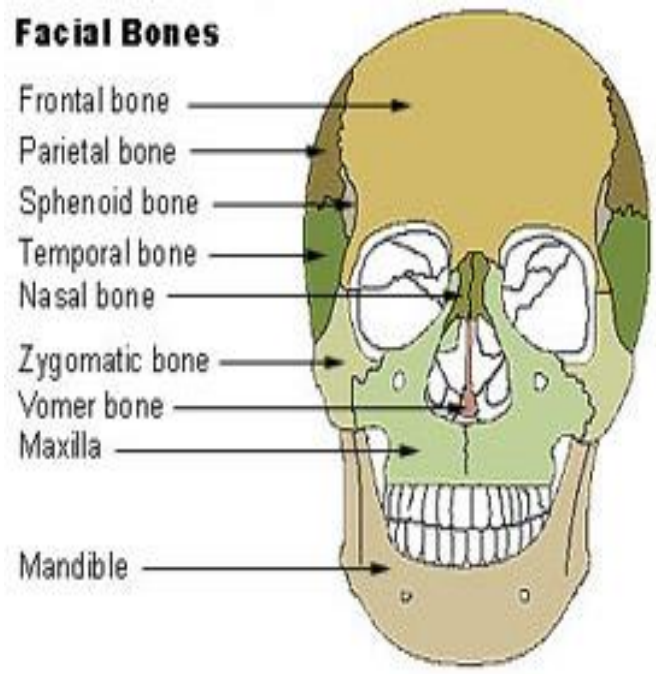
- **Occipital bone** (1): Forms the back and the posterior base of the skull, with a large opening (foramen magnum) for the spinal cord.
- **Sphenoid bone** (1): A complex, butterfly-shaped bone at the base of the skull that joins with almost every other skull bone.
- **Ethmoid bone** (1): A spongy bone located between the eyes, contributing to the nasal cavity and the medial wall of the orbit.



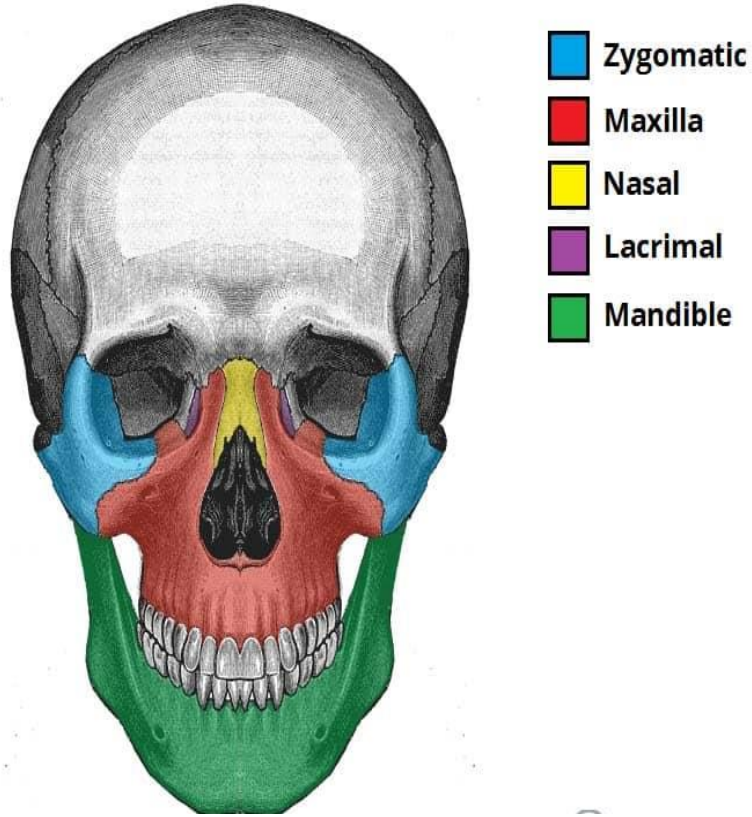
Posterior View

FACIAL BONES

- **Maxillae** (2): The upper jaw bones, which also form part of the hard palate and the floor of the orbits.
- **Mandible** (1): The lower jaw and the only movable bone of the skull. Articulates with the base of the cranium at the temporomandibular joint (TMJ).
- **Zygomatic bones** (2): The cheekbones, which form much of the lateral wall of the orbit.

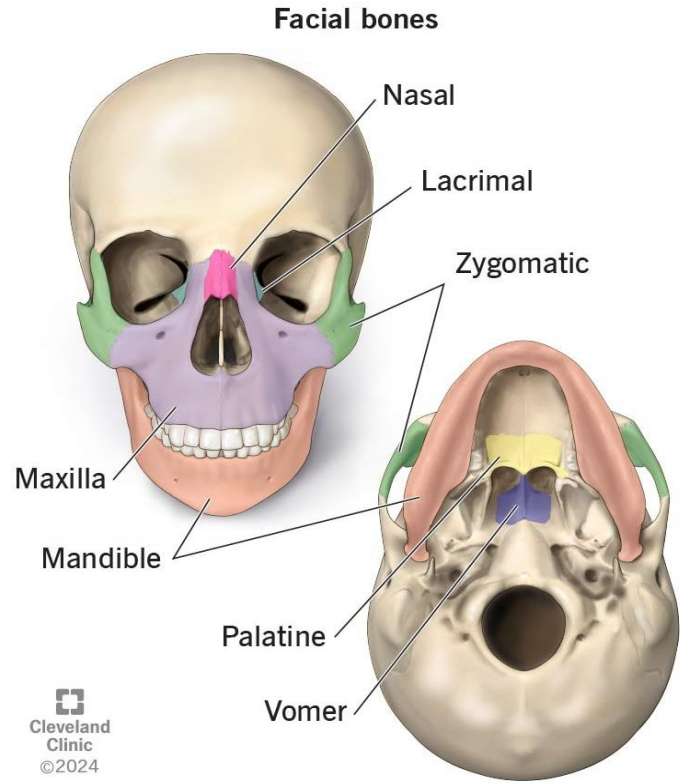


- **Nasal bones** (2): Form the bridge of the nose.
- **Lacrimal bones** (2): Small bones forming part of the medial wall of the orbit, near the tear ducts.
- **Palatine bones** (2): L-shaped bones that form the posterior part of the hard palate and the lateral walls of the nasal cavity.



- **Inferior nasal conchae** (2): Curved bony plates that project into the nasal cavity to swirl and filter air.

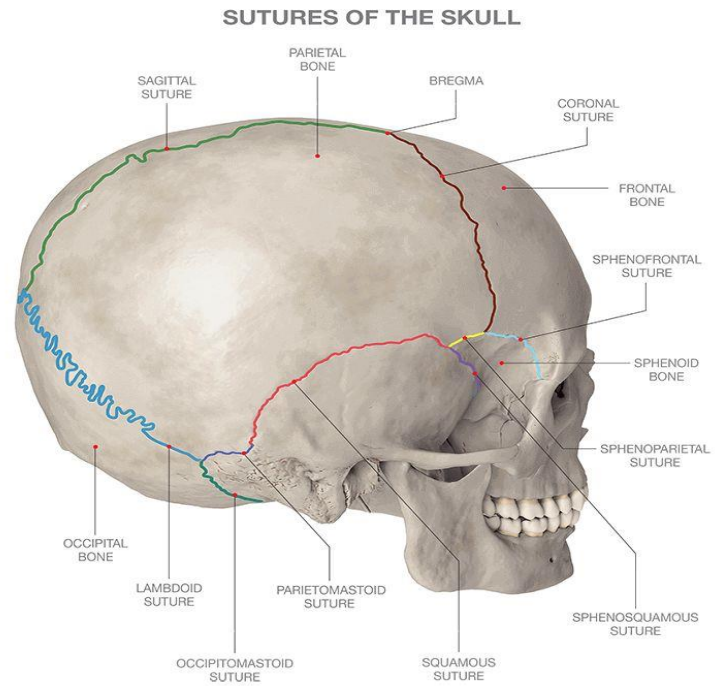
- **Vomer** (1): A single bone that forms the posterior and inferior part of the nasal septum.



JOINTS OF SKULL BONES

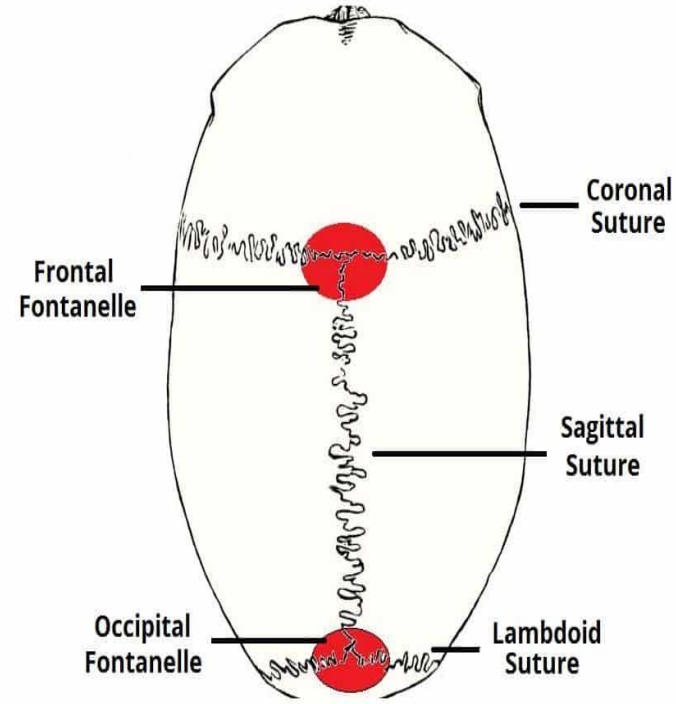
SUTURES OF THE SKULL

- Sutures are a type of **fibrous joint** that are unique to the skull.
- They are immovable and fuse completely around the age of 20.

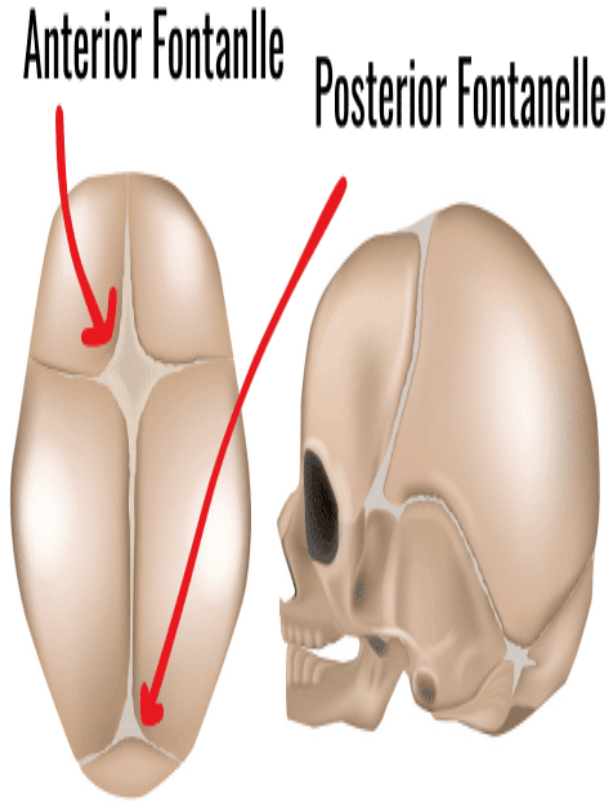


The main sutures in the adult skull are:

- **Coronal suture** – fuses the frontal bone with the two parietal bones.
- **Sagittal suture** – fuses both parietal bones to each other.
- **Lambdoid suture** – fuses the occipital bone to the two parietal bones.

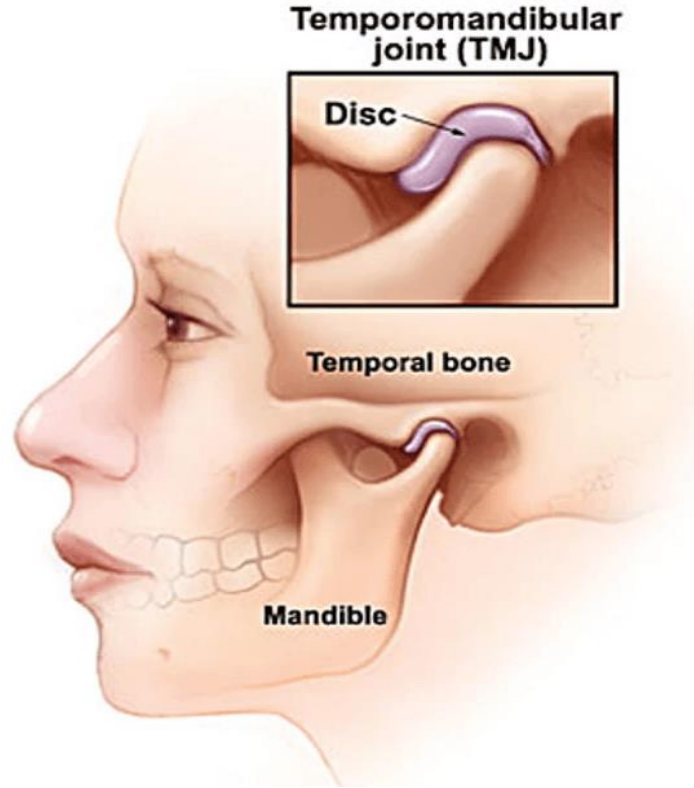


- In neonates, the incompletely fused suture joints give rise to membranous gaps between the bones, known as fontanelles.
- **The two major fontanelles are:**
- **Frontal fontanelle** – located at the junction of the coronal and sagittal sutures
- **Occipital fontanelle** – located at the junction of the sagittal and lambdoid sutures



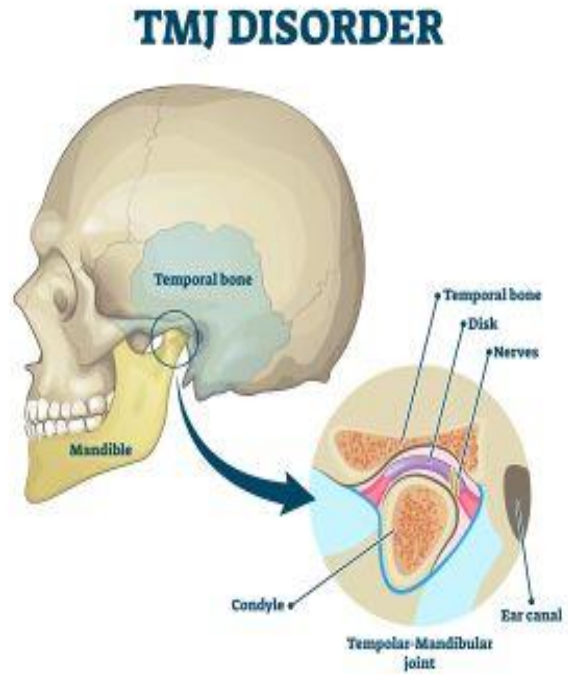
SYNOVIAL JOINT

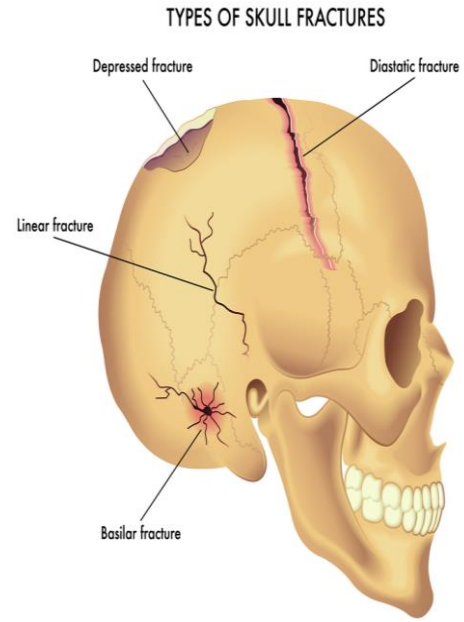
- **Temporomandibular Joint (TMJ):** Articulates the mandibular condyle with the mandibular fossa of the temporal bone.
- Allowing movements such as opening, closing, and side-to-side motion of the jaw.



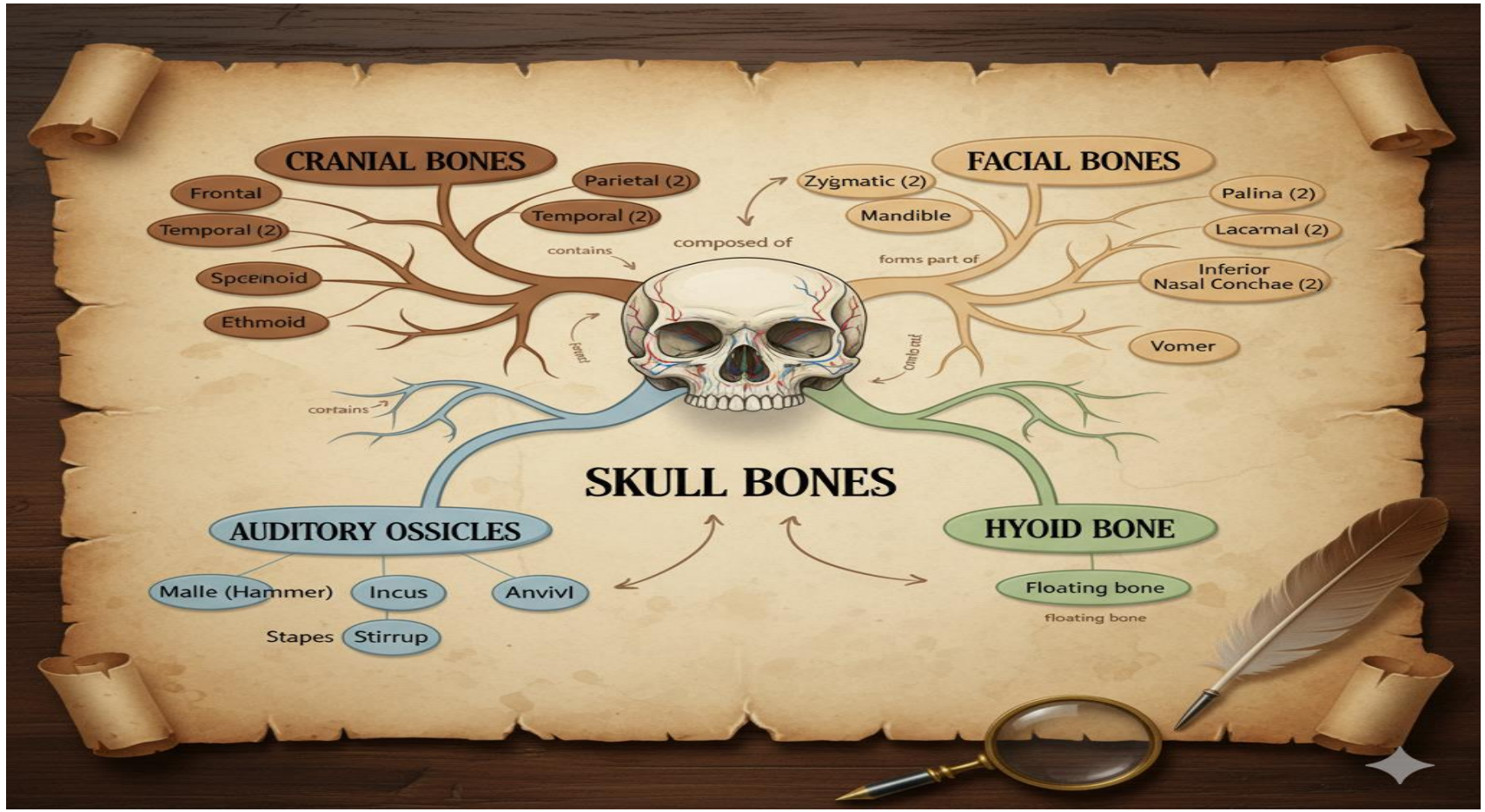
APPLIED ASPECTS

- Skull Fractures
- Nasal fracture
- Maxillary fracture
- Mandibular fracture
- Zygomatic arch fracture
- Temporomandibular Joint (TMJ) Disorder
- Osteomyelitis





SUMMARY


CRANIAL BONES
Frontal
Temporal (2)
Spcenoid
Ethmoid
Parietal (2)
Temporal (2)
contains
composed of
FACIAL BONES
Zygmatic (2)
Mandible
forms part of
Palina (2)
Lacamal (2)
Inferior Nasal Conchae (2)
Vomer
contains
SKULL BONES
AUDITORY OSSICLES
Malle (Hammer)
Incus
Anvivl
Stapes
Stirrup
HYOID BONE
Floating bone
floating bone

References

- https://teachmeanatomy.info/head/osteology/skull/
- https://www.kenhub.com/en/library/anatomy/the-skull-joints
- https://www.healthline.com/health/skull-fracture