



Introduction to Anatomy

1st year Medical Students

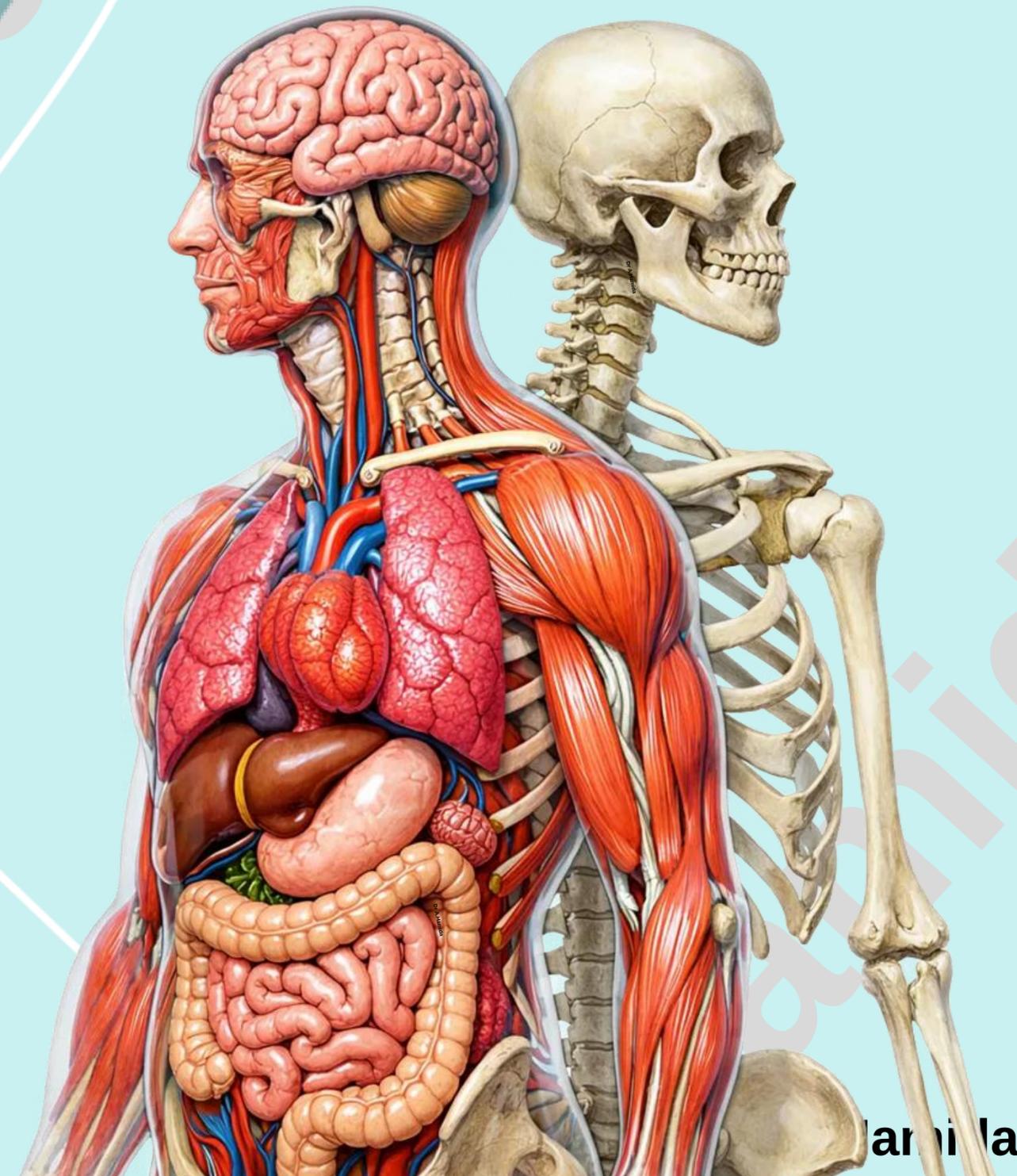
**2025-2026
Second Semester**

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Hamida

Course Outline:

1 Introduction and Terminology

2 Skeletal System

3 Cardiovascular System

4 Lymphatic System

5 Nervous System

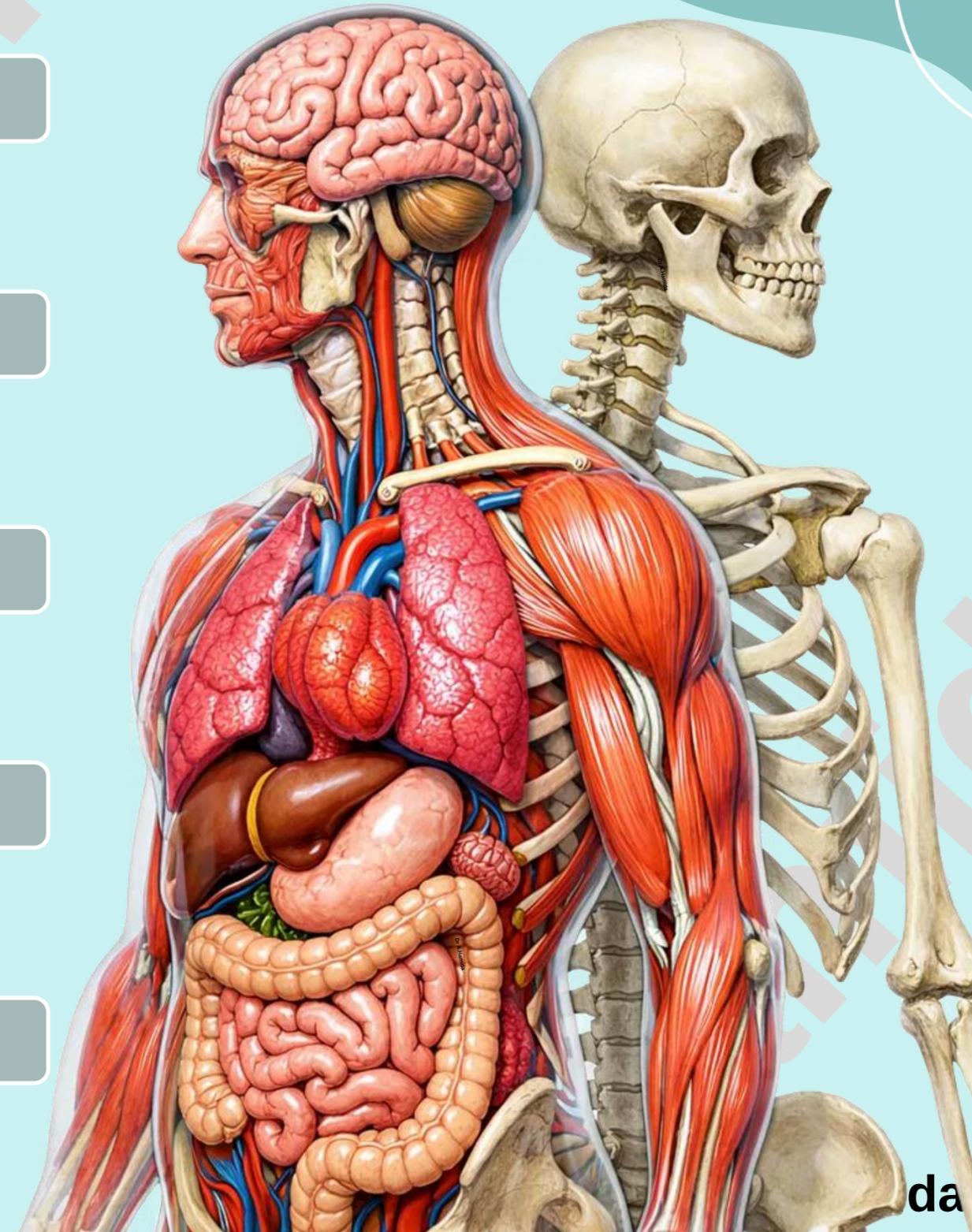
6 Muscular System

7 Respiratory System

8 Digestive System

9 Urinary System

10 Endocrine System



2

Skeletal System

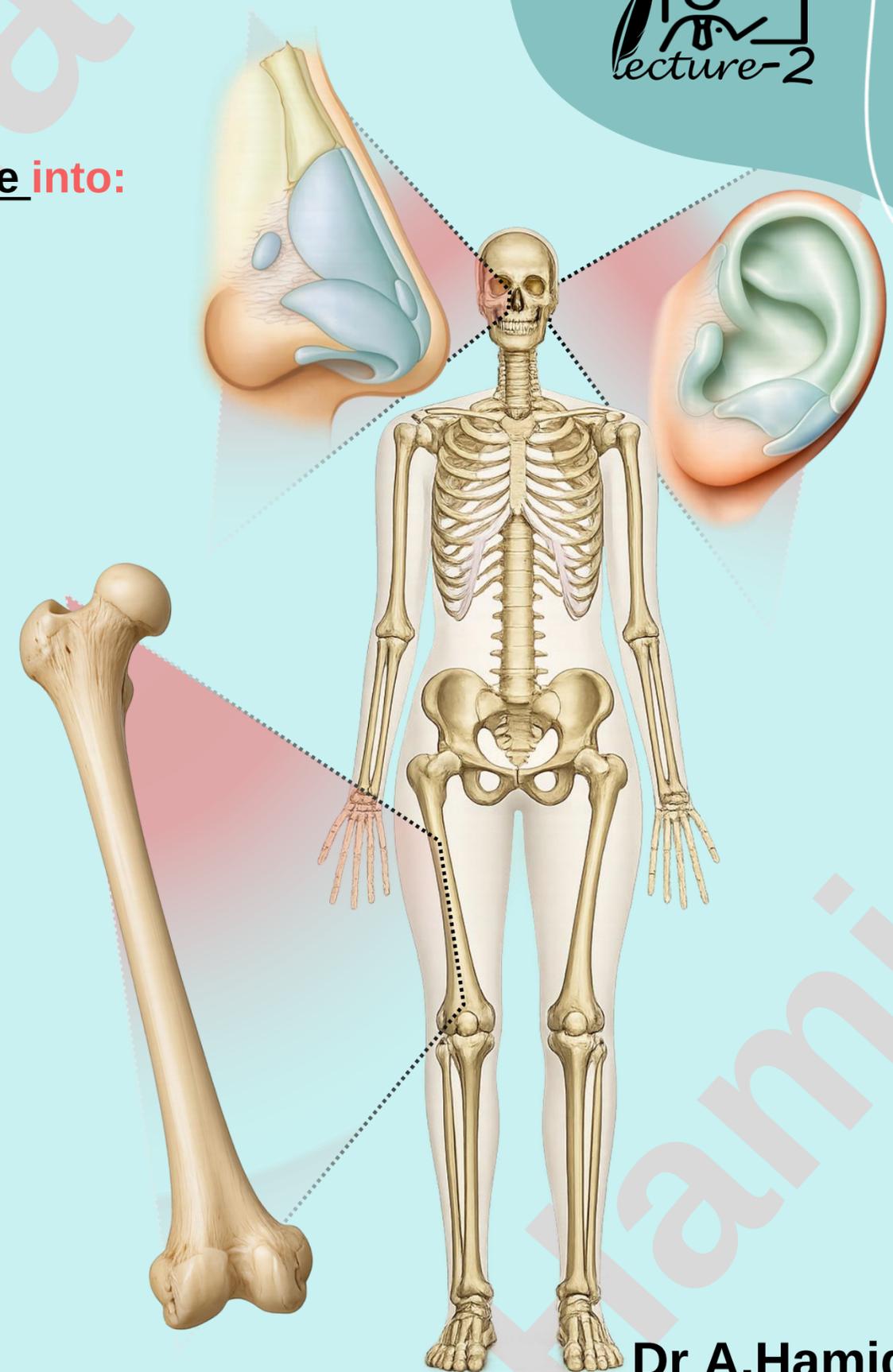
➤ The skeletal system is classified based on the type of skeletal tissue into:

1. Cartilages:

- A resilient, semi-rigid form of connective tissue that forms parts of the skeleton where greater flexibility is required.
- The bones of a newborn are soft and flexible because they are mostly composed of cartilage

2. Bones:

- A calcified, living, hard form of connective tissue that forms most of the adult skeleton.



2

Skeletal System

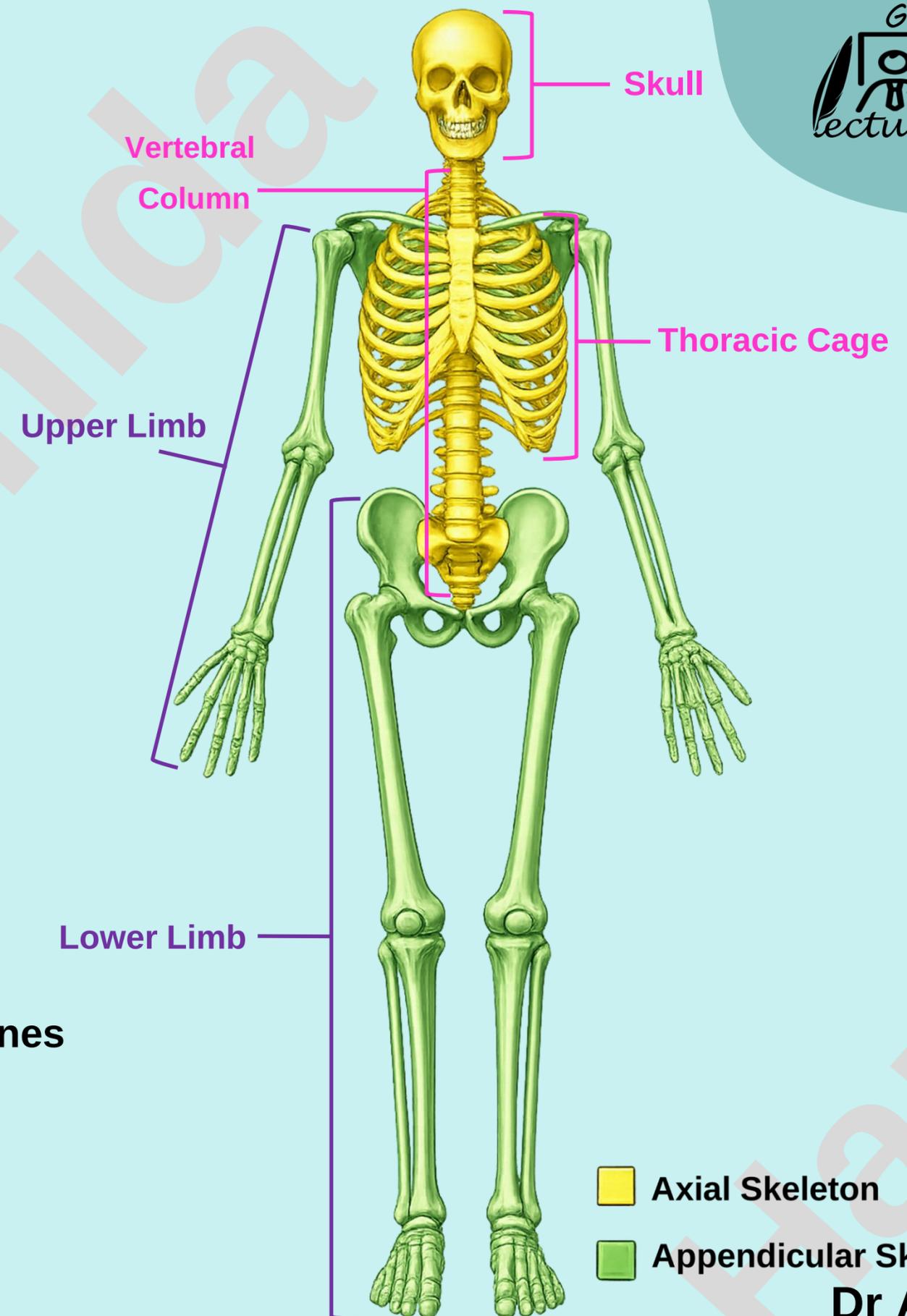
- The human skeletal system consists of **206 bones**
- The skeletal system is classified functionally into:

1. Axial Skeleton :

- Consists of the bones and cartilages that lie close to the central axis of the body.
- It includes the bones of the
 1. Skull
 2. Thoracic Cage
 3. Vertebral Column

2. Appendicular Skeleton :

- It is bilaterally symmetrical and consist of the bones and cartilages of the:
 1. Upper Limbs (or extremities)
 2. Lower Limbs (or extremities)



2

Skeletal System

➤ Joints

- It is a junction between two or more bones.
- Joints is classified structurally into (based upon the type of connecting tissue):

1. Fibrous Joint:

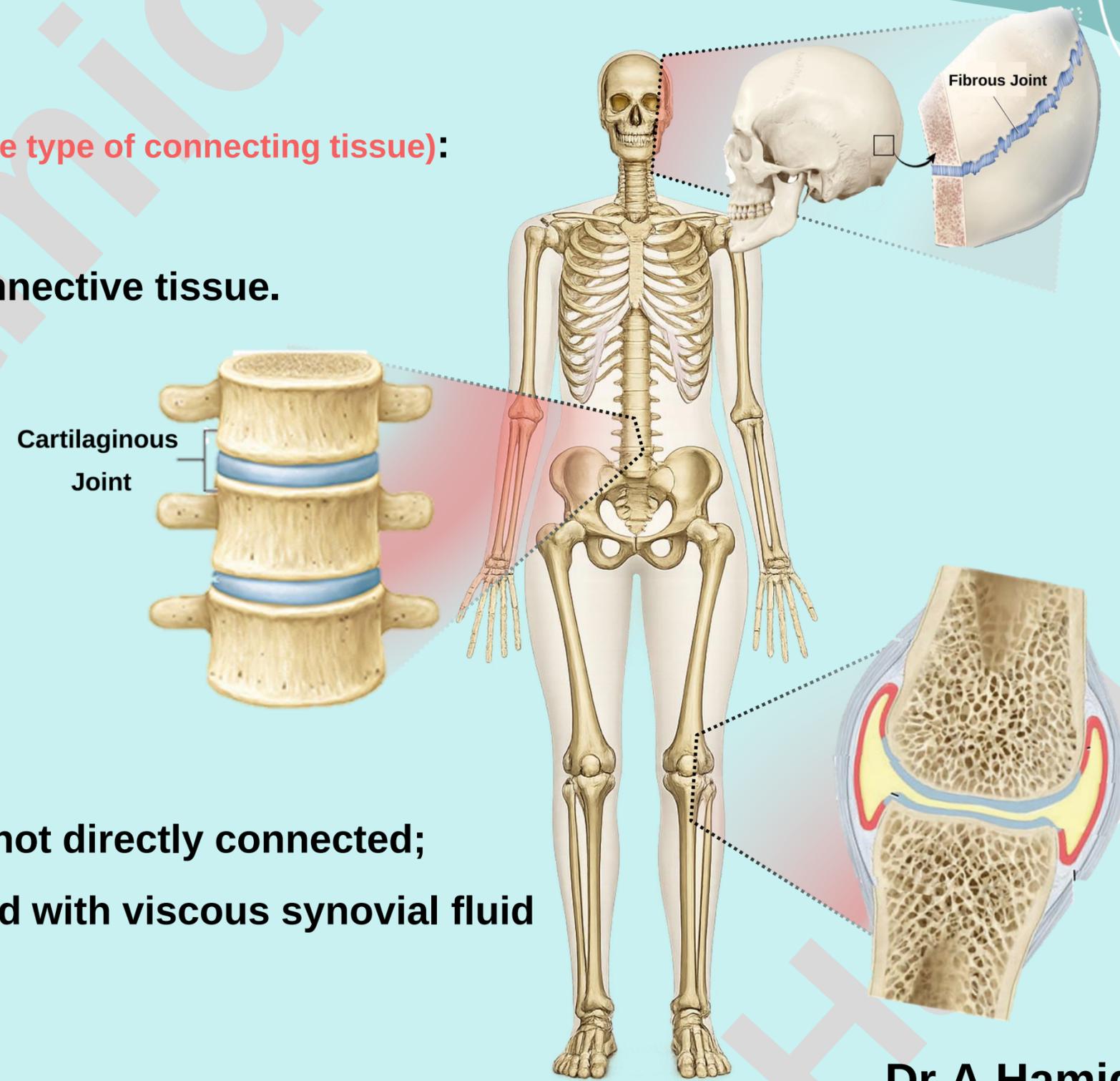
- The bones are held together by fibrous connective tissue.

2. Cartilaginous Joint:

- The bones are held together by cartilage.

3. Synovial Joint:

- The articulating surfaces of the bones are not directly connected; instead, they are separated by a cavity filled with viscous synovial fluid that acts as a lubricant.



2

Skeletal System

System Outline:

2.1

Axial Skeleton

2.2

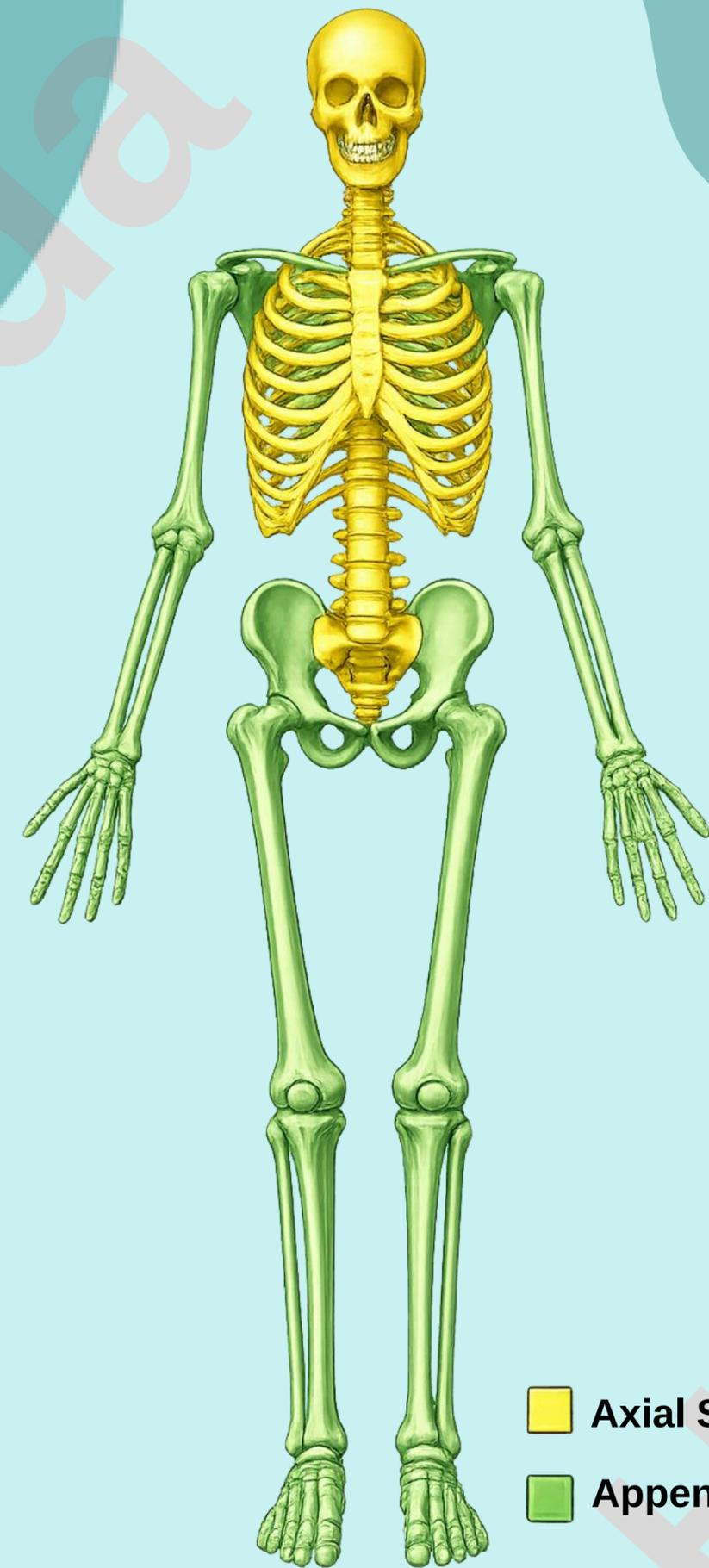
Appendicular Skeleton

2.3

Joints

Skeletal system

1. Axial Skeleton-1



■ Axial Skeleton

■ Appendicular Skeleton

2

Skeletal System

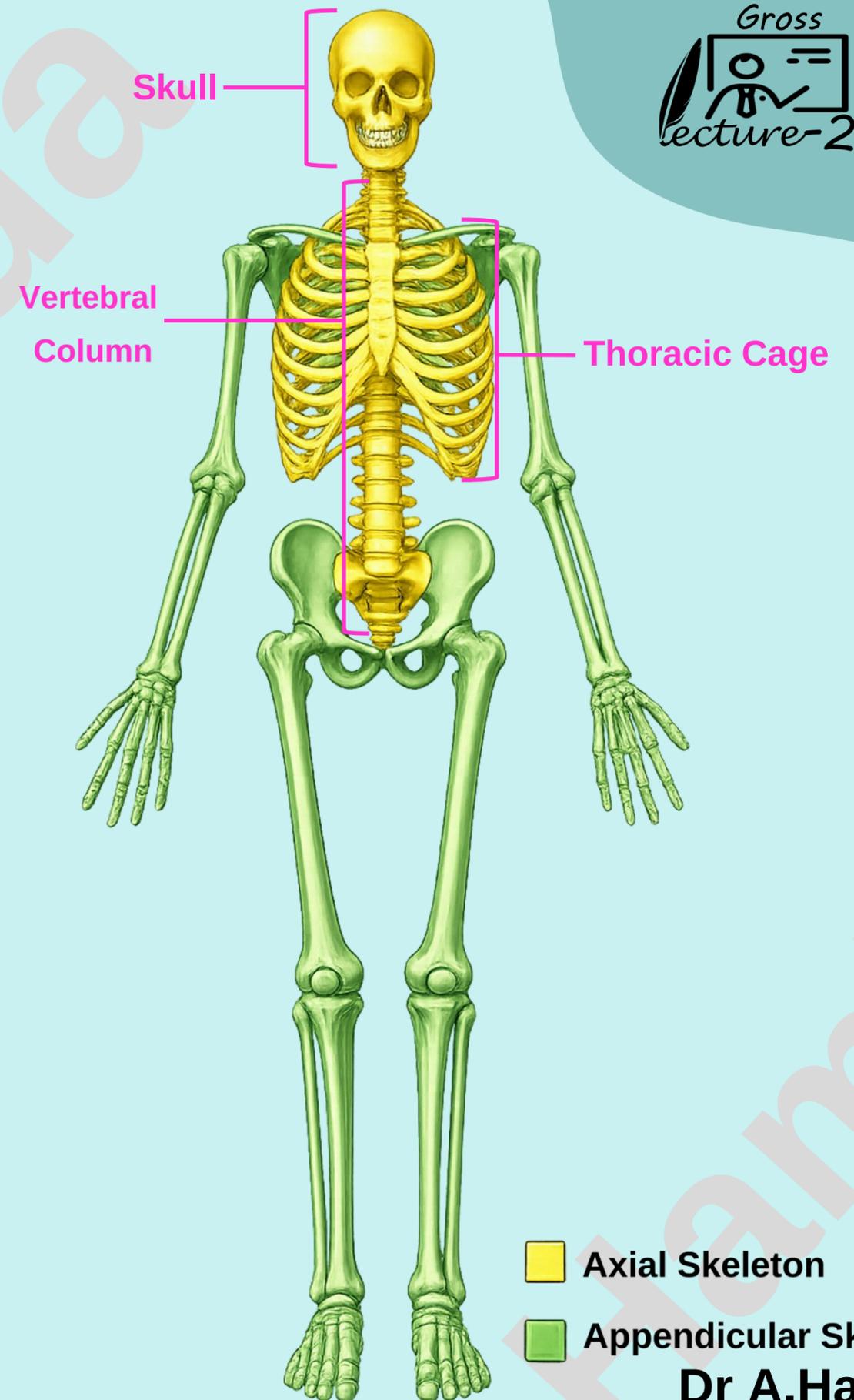
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 1. Upper Limb
 2. Lower Limb



2.1 Skeletal System–Axial Skeleton

Lecture Outline:

2.1.1

Skull

2.1.2

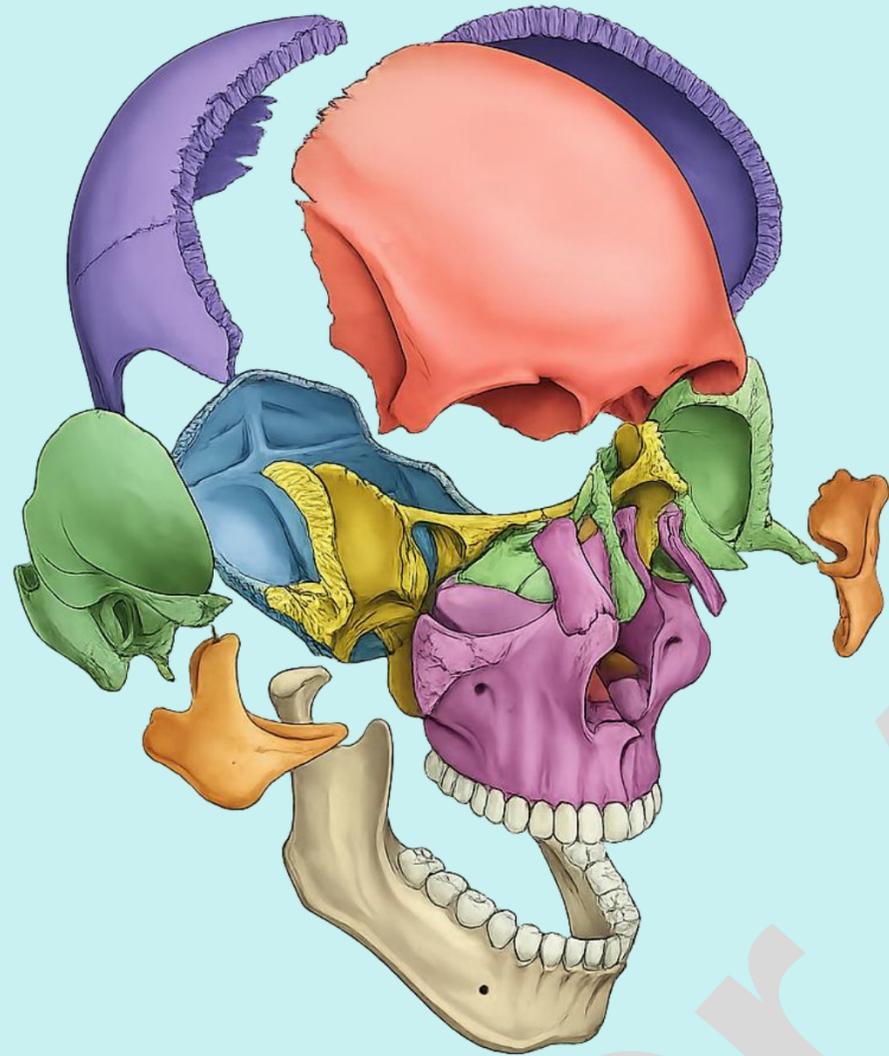
Vertebral Column

2.1.3

Thoracic Cage

➤ It consists of 22 bones

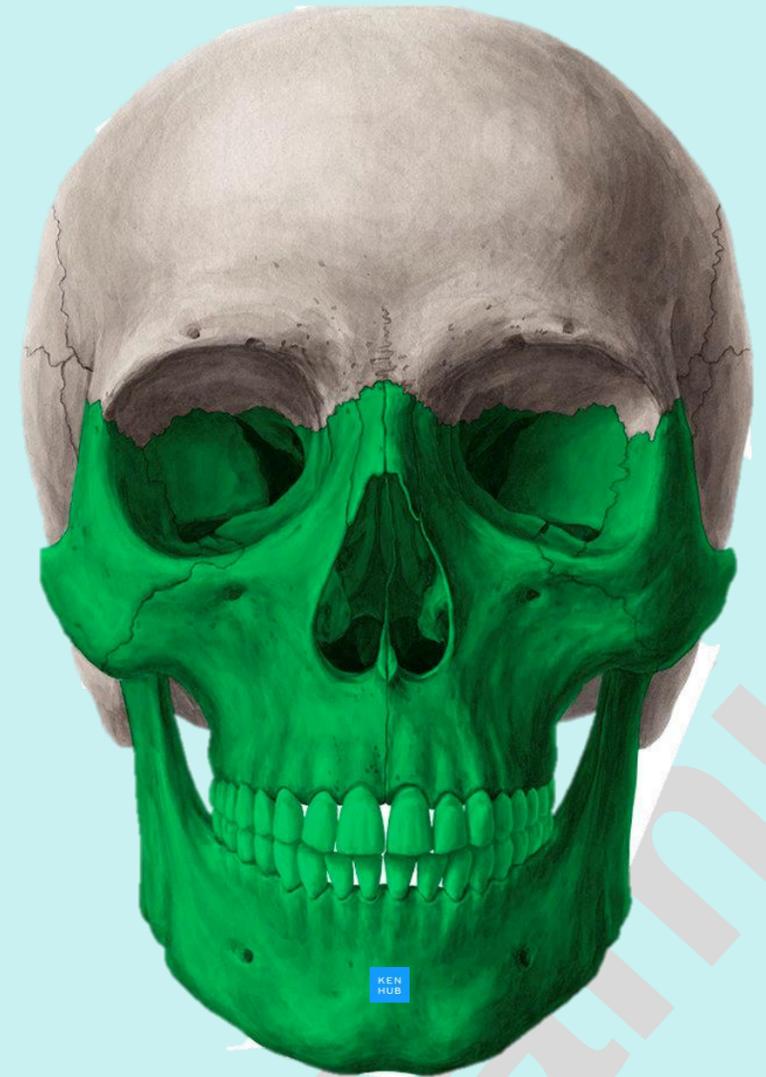
➤ The bones of the skull can be divided into:



1. Cranial bones



2. Facial bones

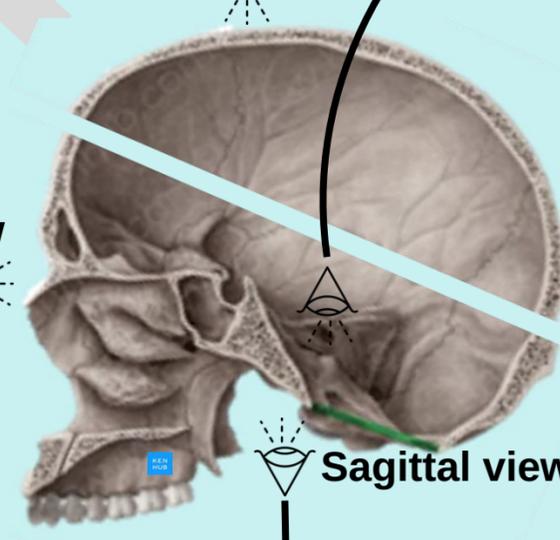




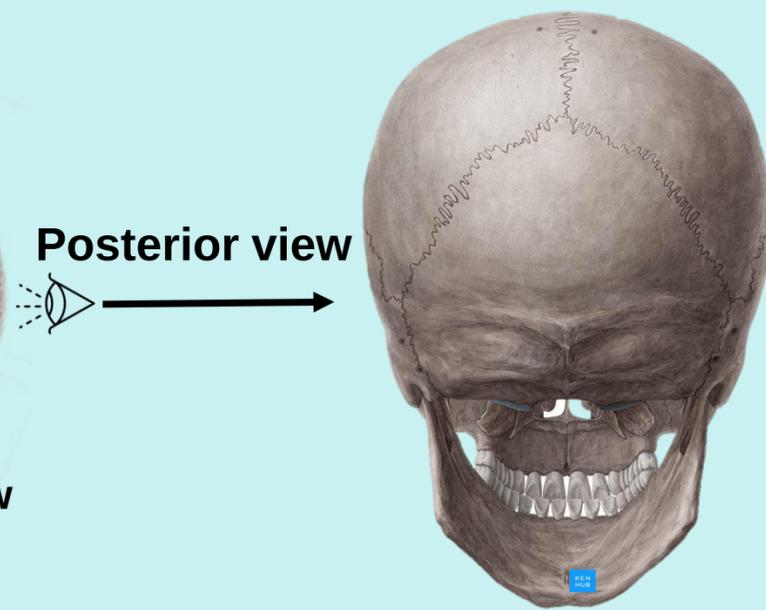
Lateral view



Anterior view

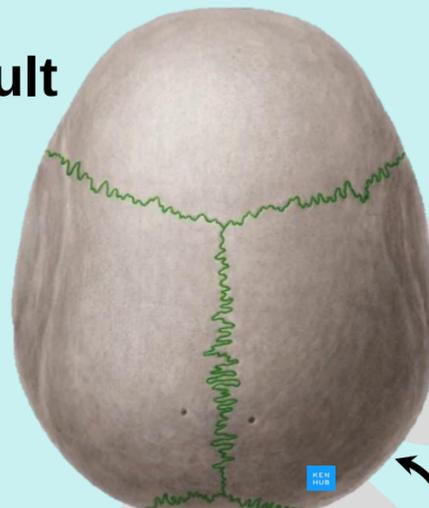


Sagittal view



Posterior view

Vault



Superior view



Interior view

Cranial Floor

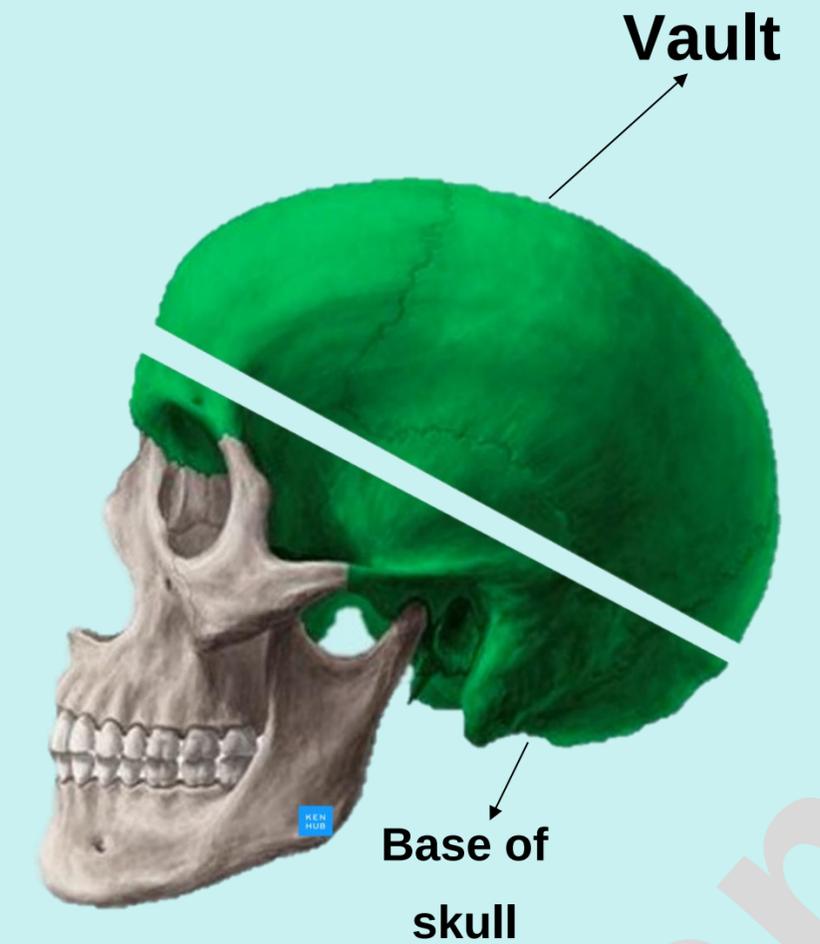
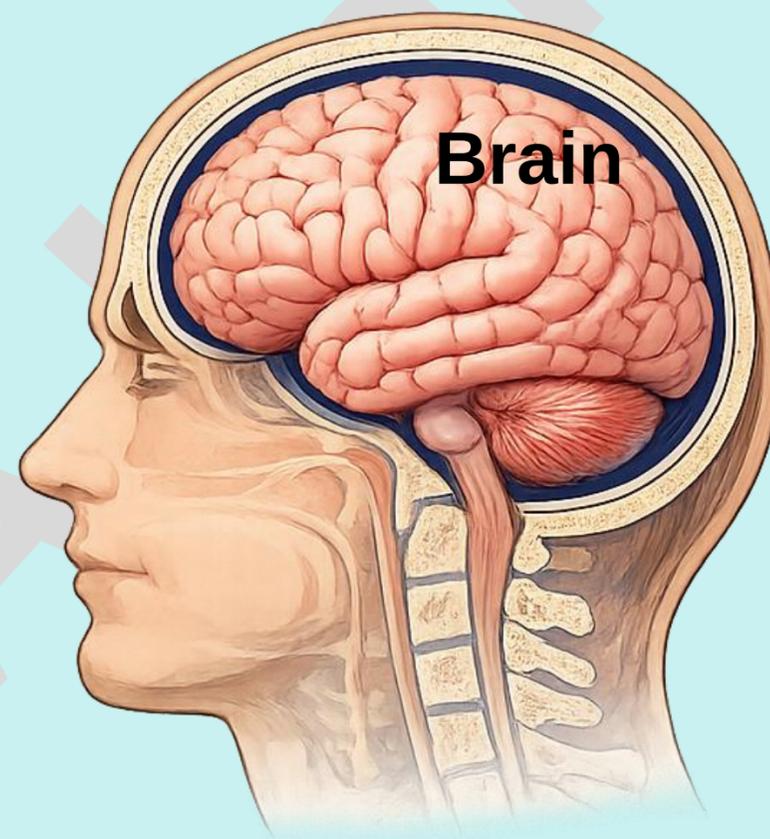
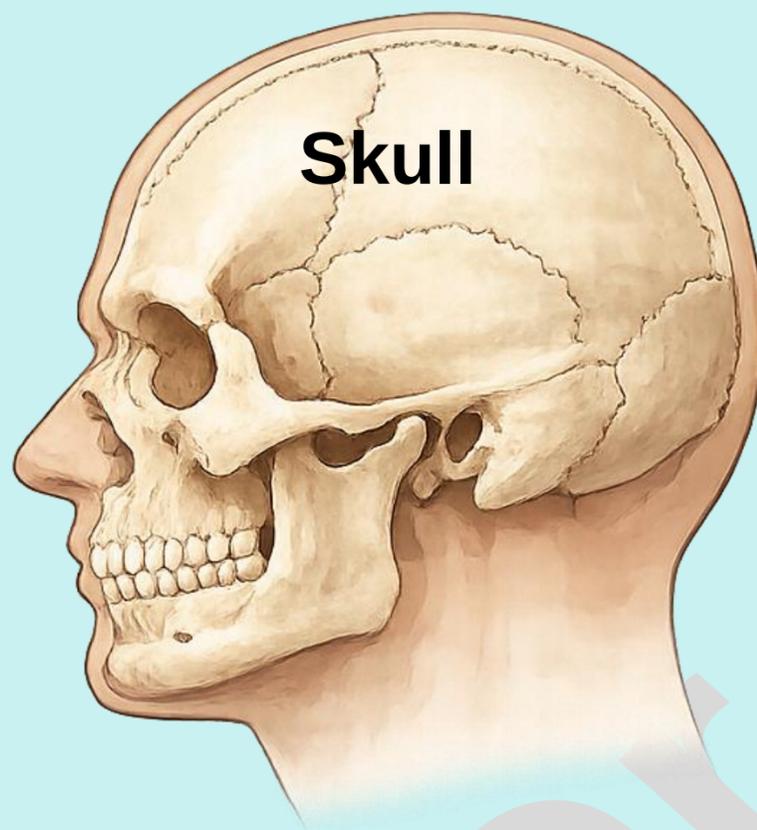


Inferior view

Base of skull

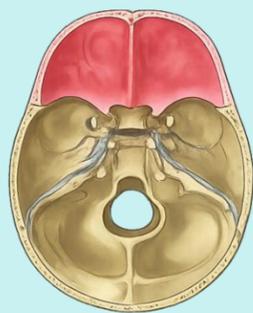
Skull Cranial Cavity

- **The cranial cavity is the main cavity of the skull.**
 - The roof is formed by skull cap (vault of the skull).
 - The floor is formed by the superior surface of the base of the skull.

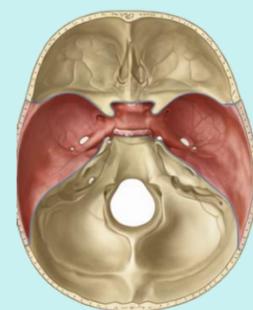
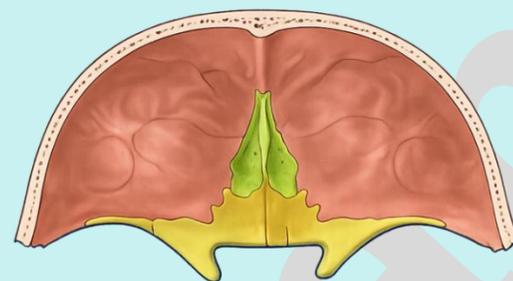


➤ The cranial cavity is the main cavity of the skull.

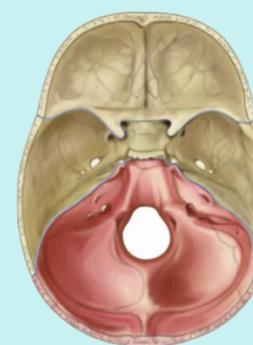
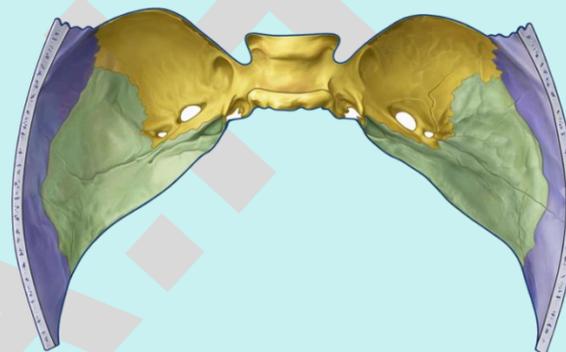
- The floor is divided into three descending levels, known as the anterior, middle, and posterior cranial fossae.



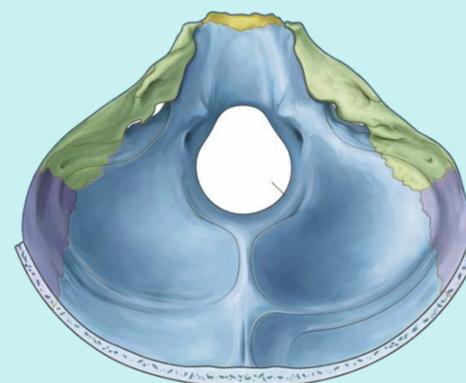
Anterior cranial fossa



Middle cranial fossa



Posterior cranial fossa



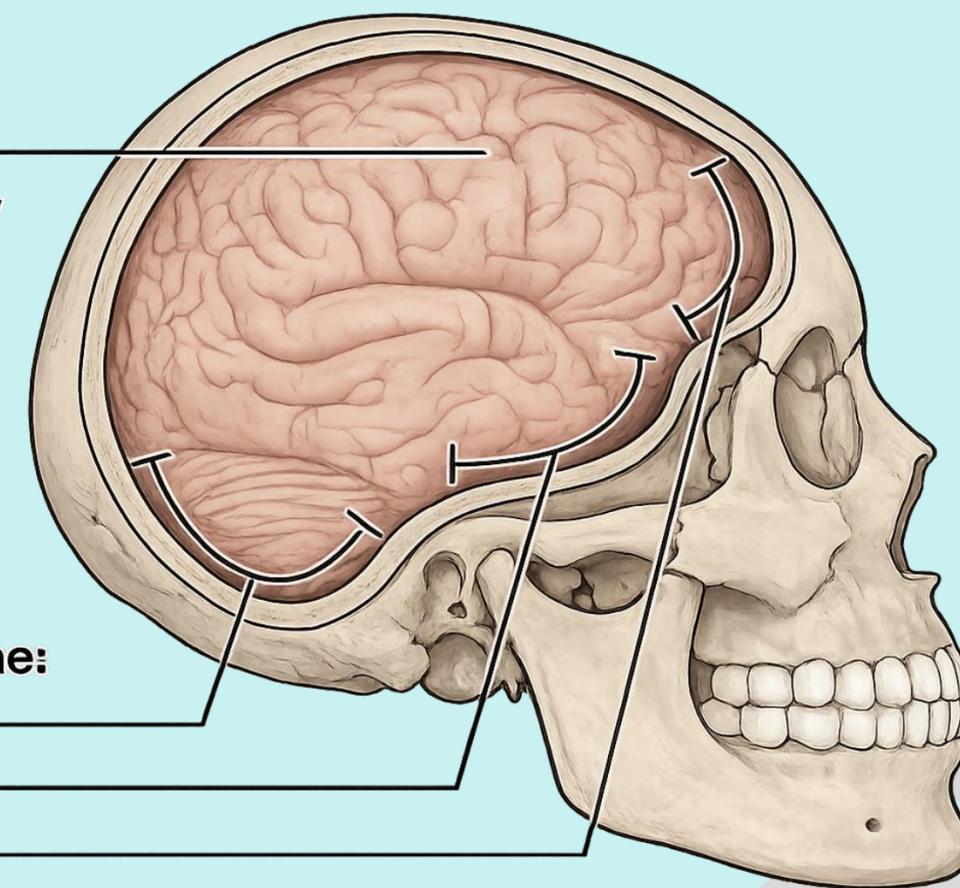
Brain within
cranial cavity

Cranial fossae:

Posterior

Middle

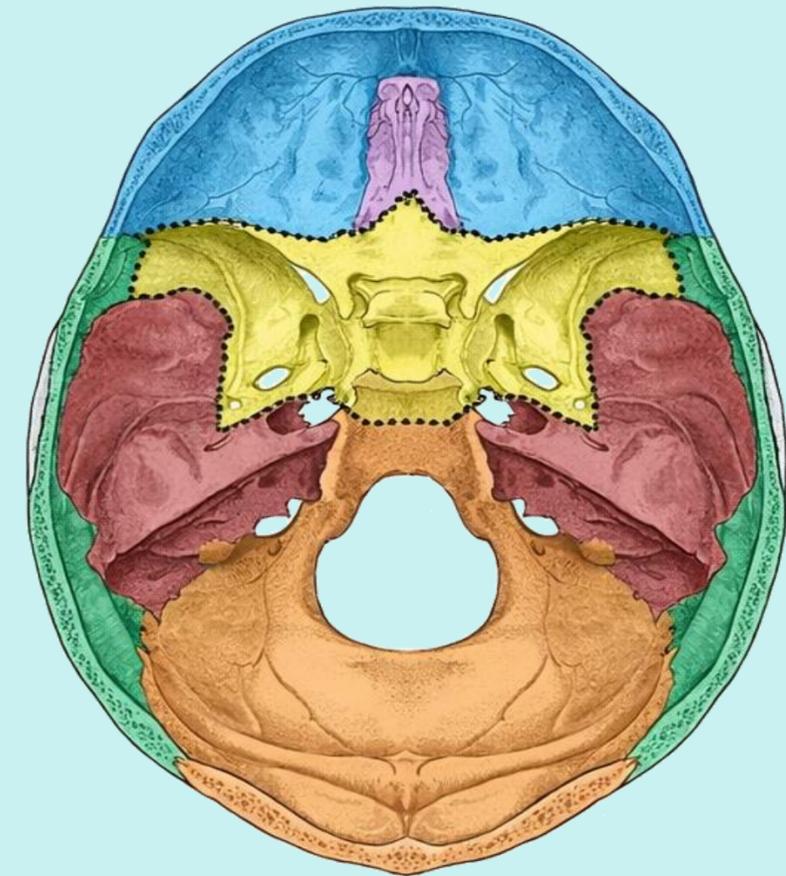
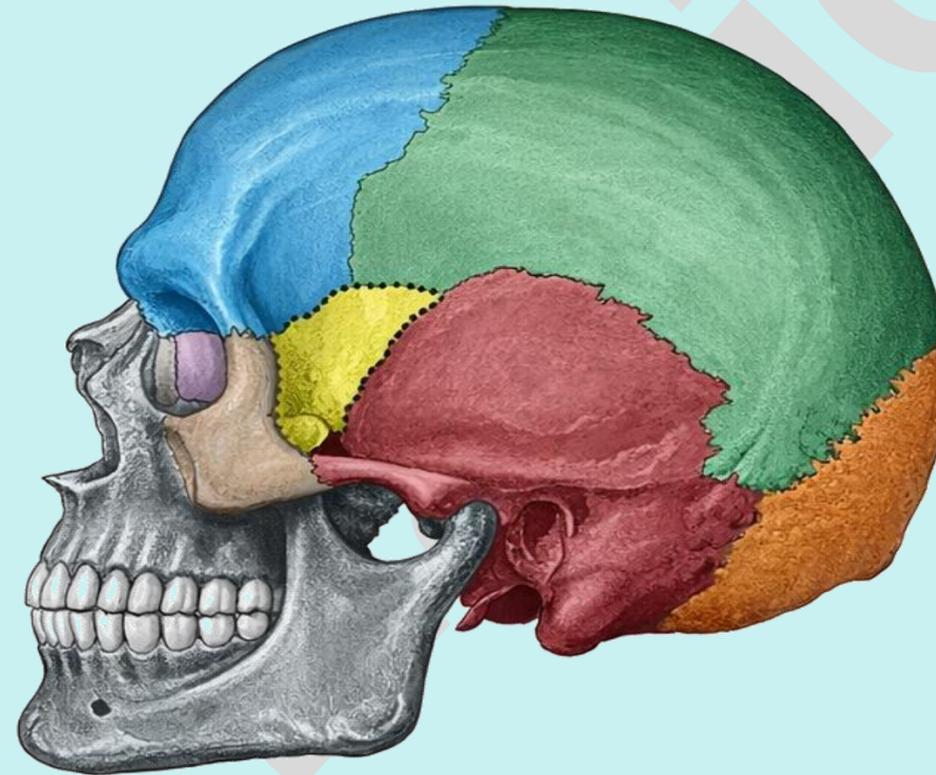
Anterior



Lateral view

➤ Cranial bones consist of 8 bones:

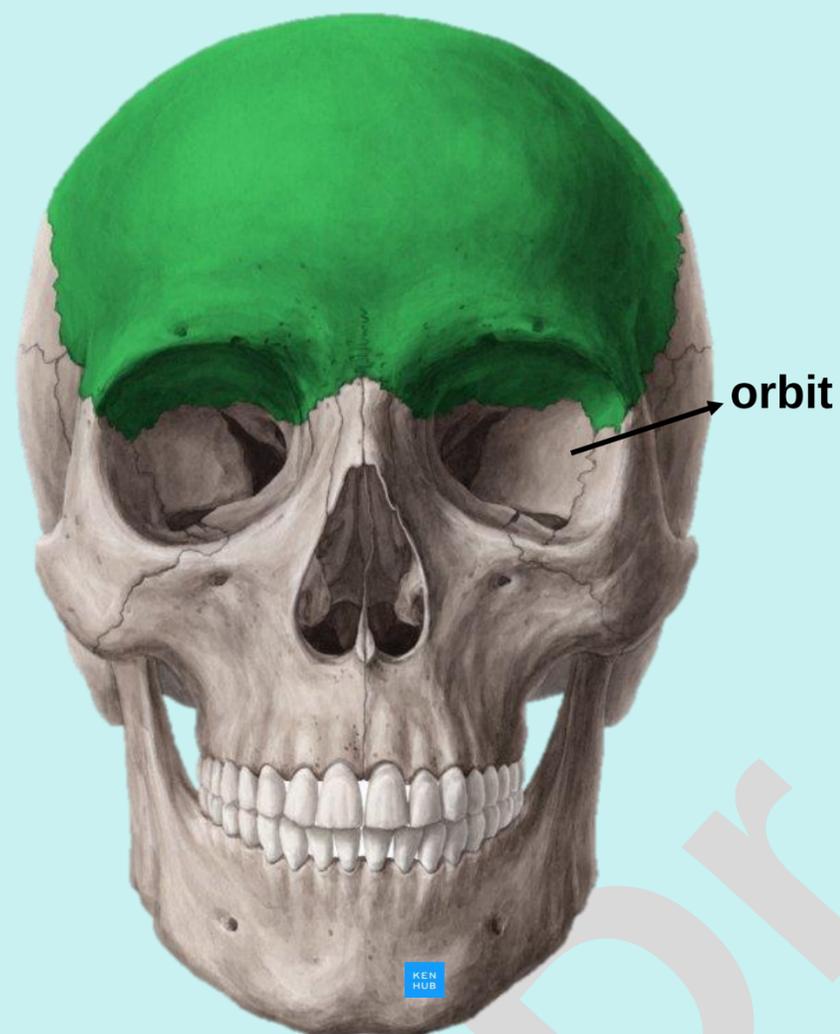
1. **Frontal Bone** (single)
2. **Parietal Bone** (paired)
3. **Occipital Bone** (single)
4. **Temporal Bone** (paired)
5. **Sphenoid Bone** (single)
6. **Ethmoid Bone** (single)



- | | |
|---|-----------|
|  | Frontal |
|  | Ethmoid |
|  | Sphenoid |
|  | Temporal |
|  | Parietal |
|  | Occipital |

1. Frontal Bone (single)

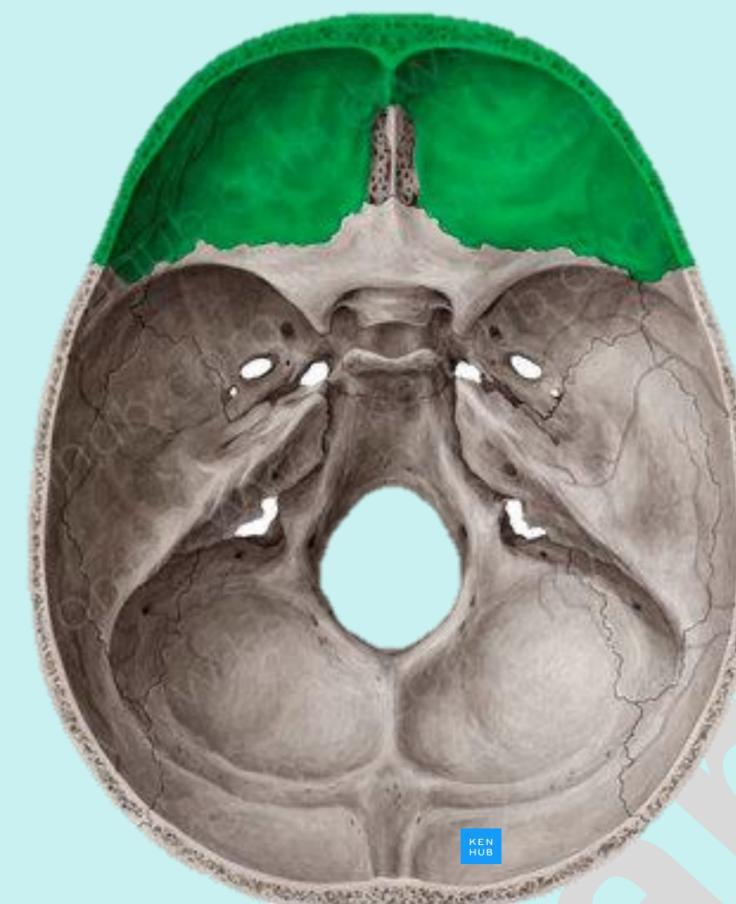
- Forms the forehead, the roofs of the orbits (eye sockets), and most of the anterior part of the cranial floor.



Anterior view



Lateral view



Interior view

2. Parietal Bone (paired)

- Forms the greater portion of the sides and roof of the cranial cavity.



Lateral view



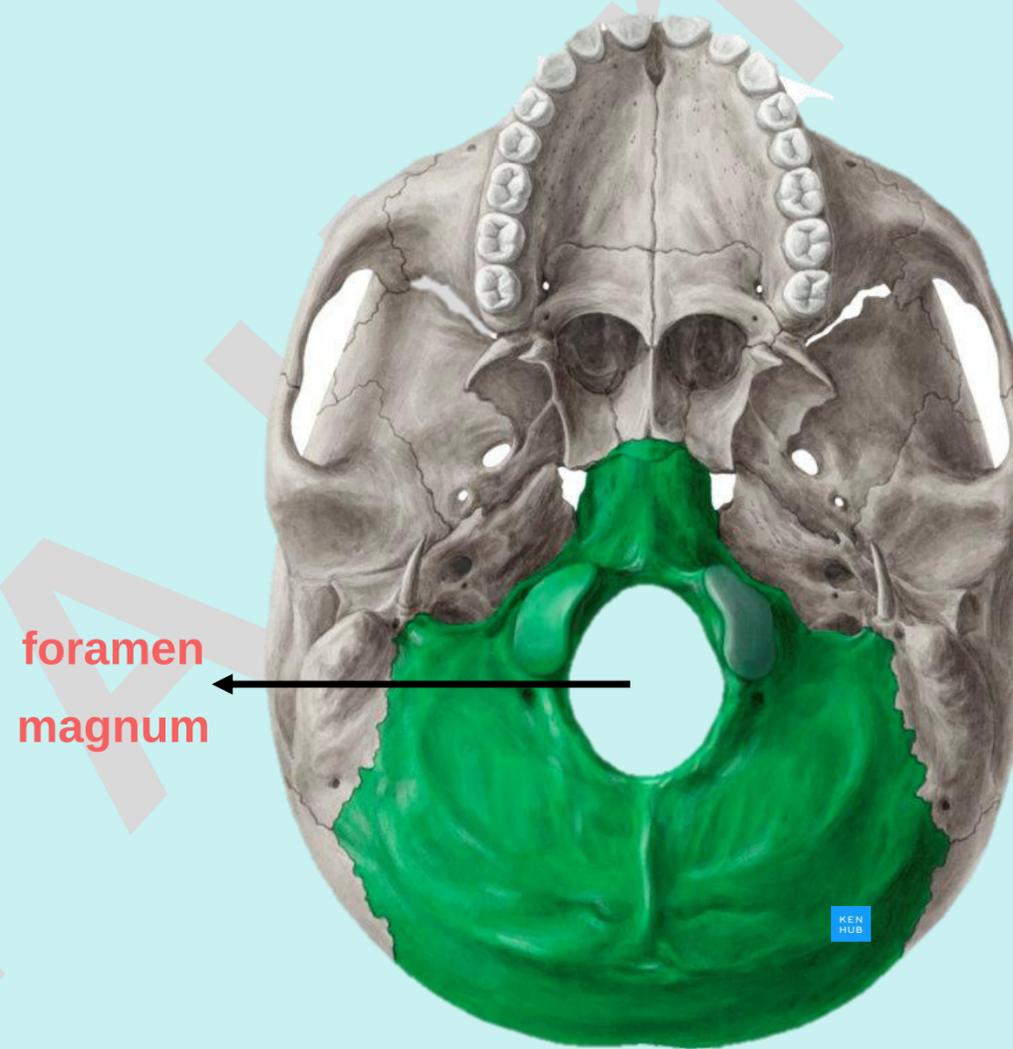
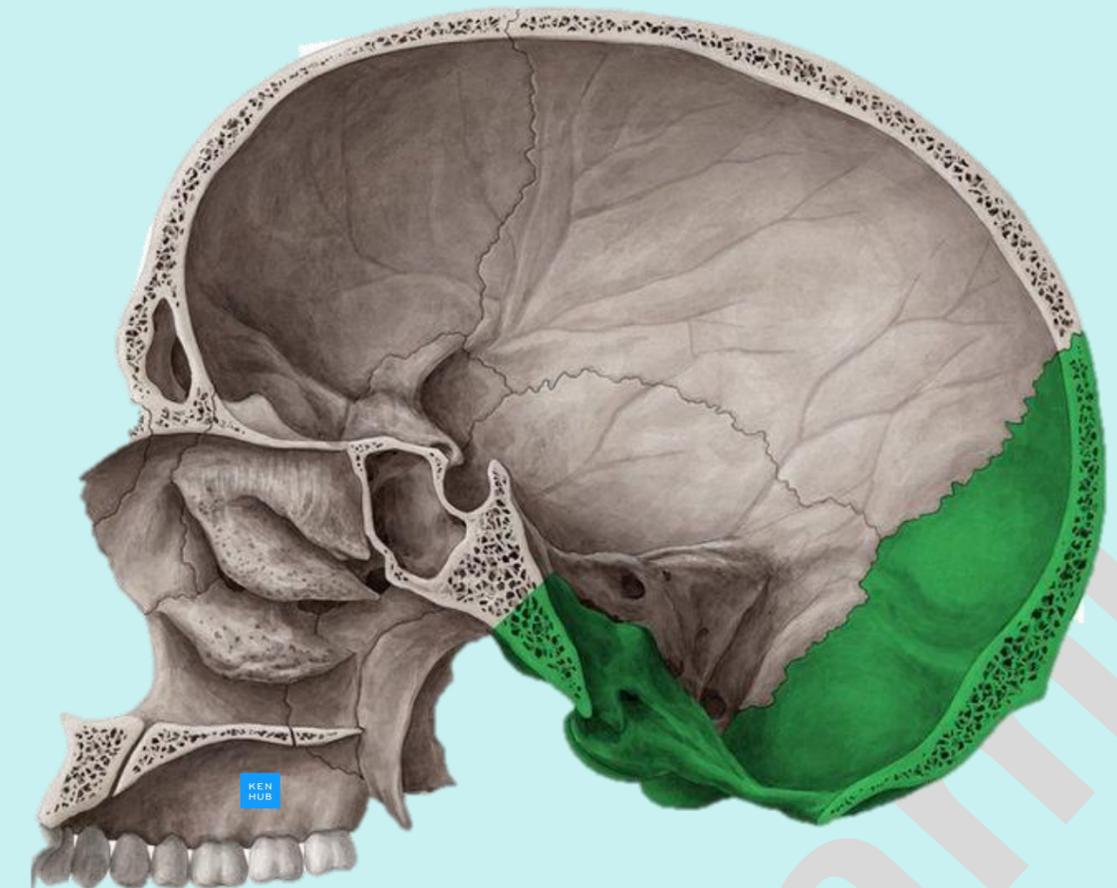
Top view

3. Occipital Bone (single)

- Forms the posterior part of the cranium and most of the posterior part of the base and cranial floor.
- It is characterized by the presence of a large foramen known as foramen magnum.



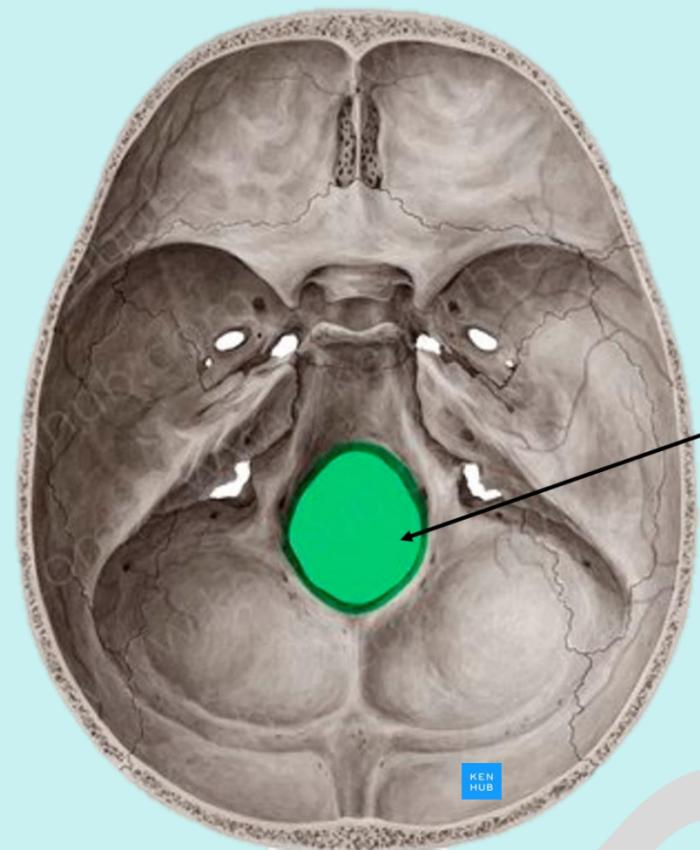
Posterior view

foramen
magnumInferior view
(Base of skull)

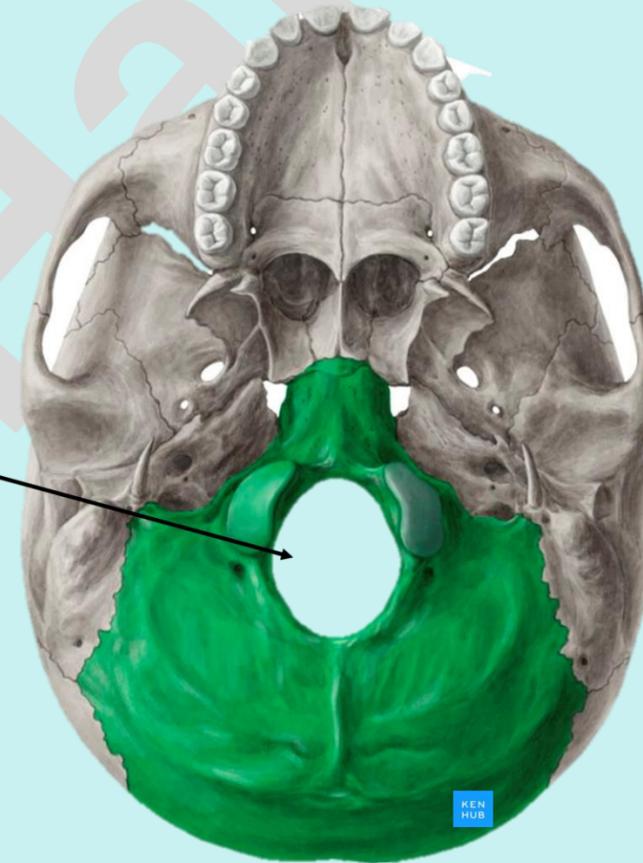
Sagittal view

➤ Foramen Magnum

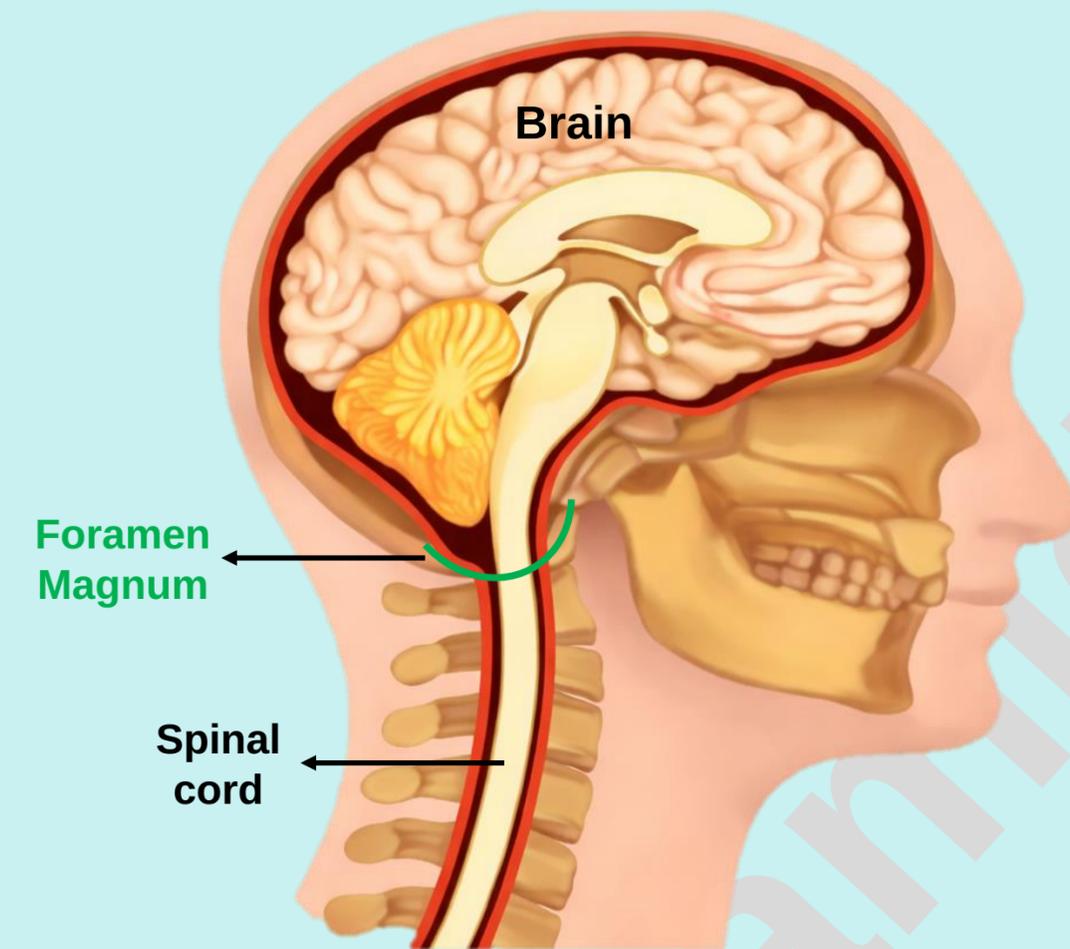
- A large oval opening in the occipital bone at the base of the skull.
- Provides a passage for the spinal cord as a continuation of the brain



Interior view
(Cranial floor)



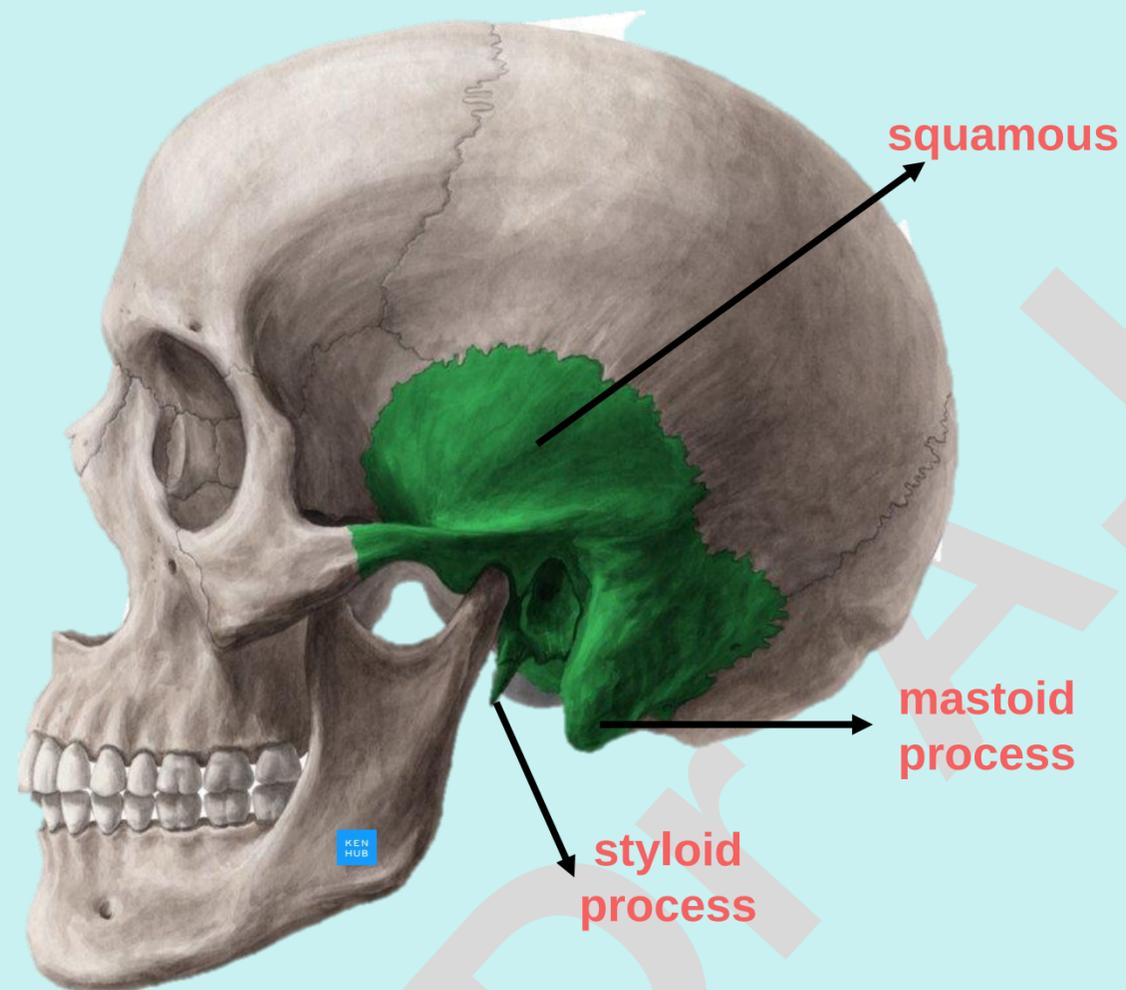
Inferior view
(Base of skull)



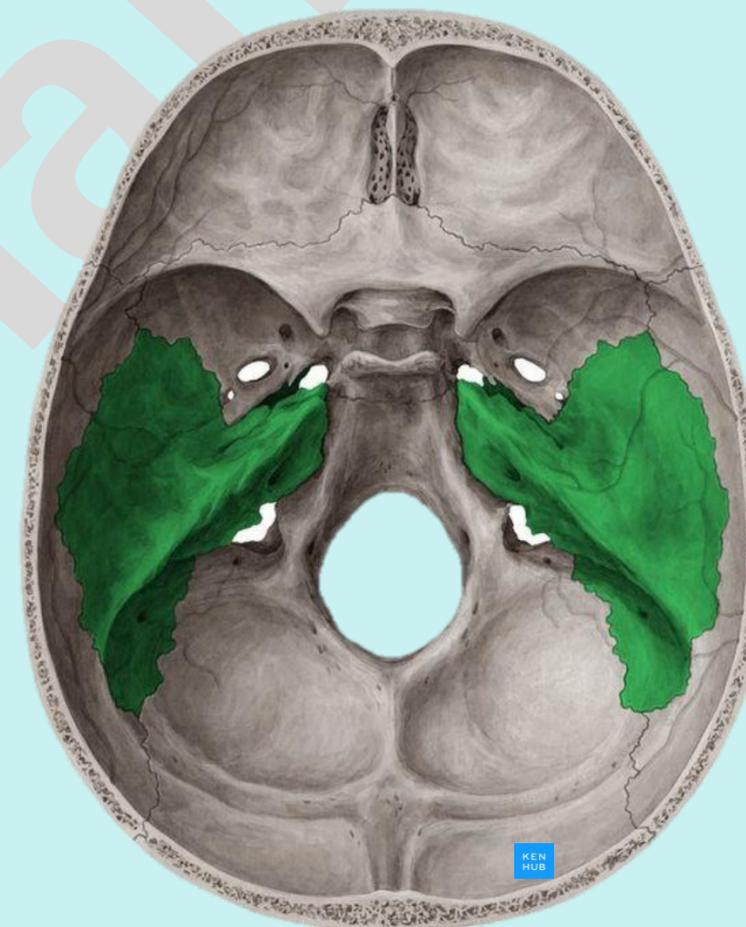
Sagittal view

4. Temporal Bone (paired)

- Forms the inferior lateral aspects of the cranium and middle part of the cranial floor and base.
- There are two projections on the inferior surface of the temporal bone: the styloid process and the mastoid process



Lateral view



Cranial floor

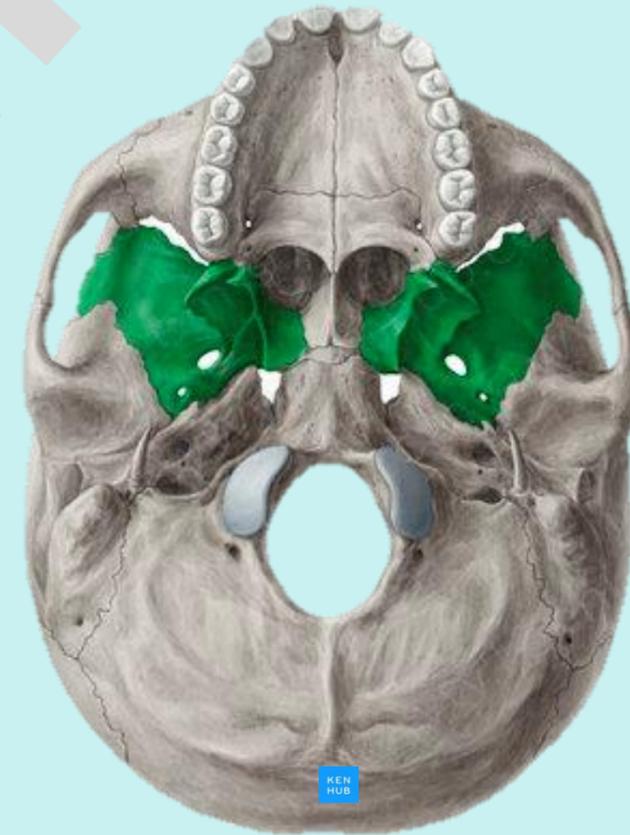
Inferior view
(Base of skull)

5. Sphenoid Bone (single)

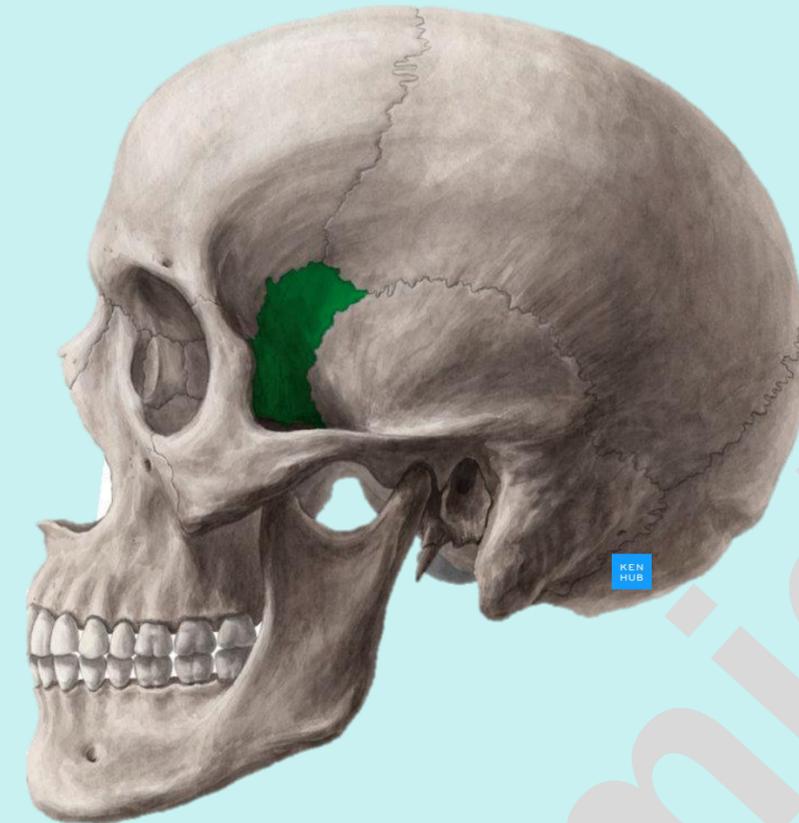
- Lies at the middle part of the base of the skull.
- Considered the keystone of the cranial floor because it articulates with all the other cranial bones, holding them together.



Cranial floor



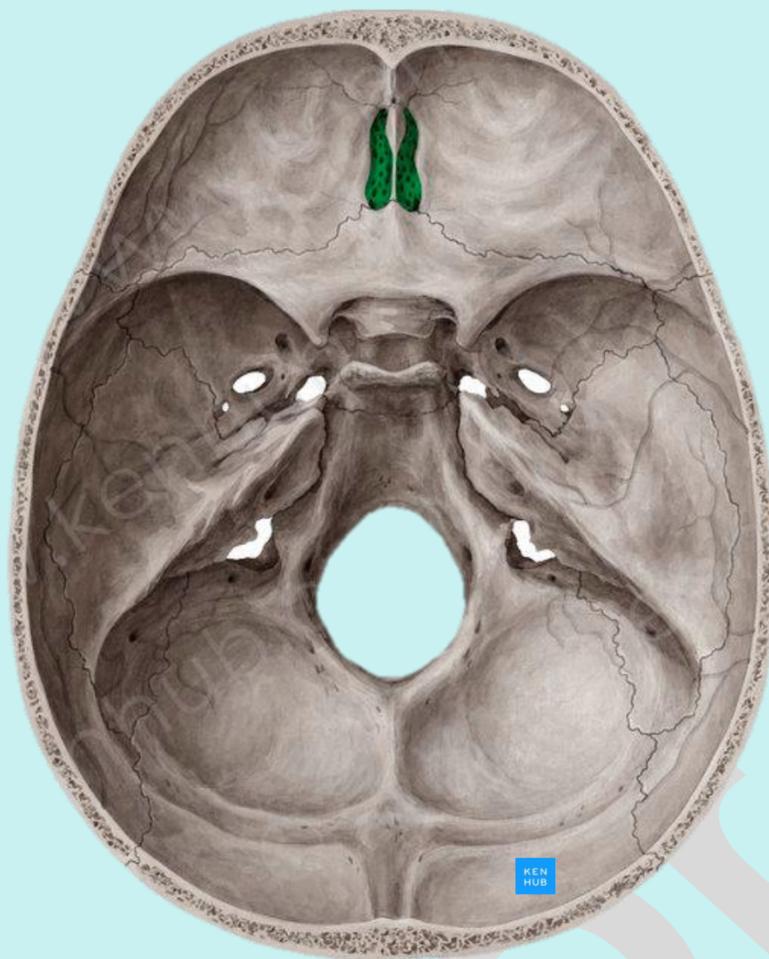
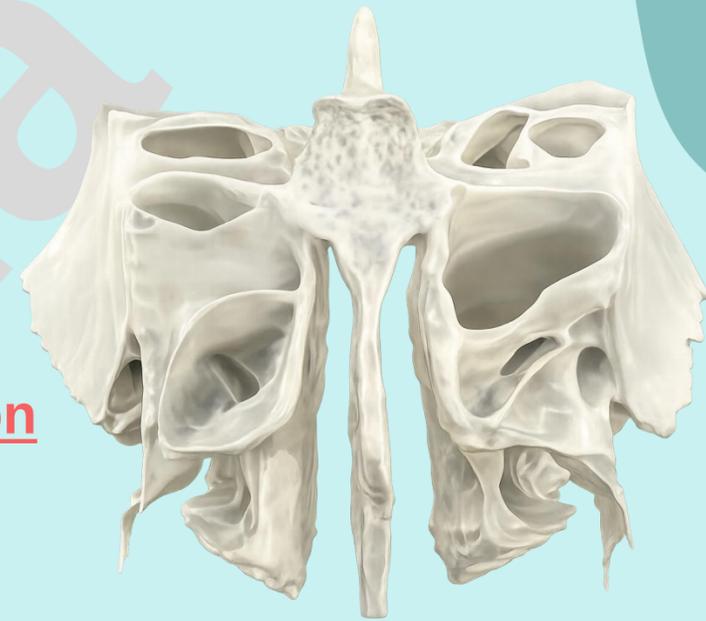
Inferior view
(Base of skull)



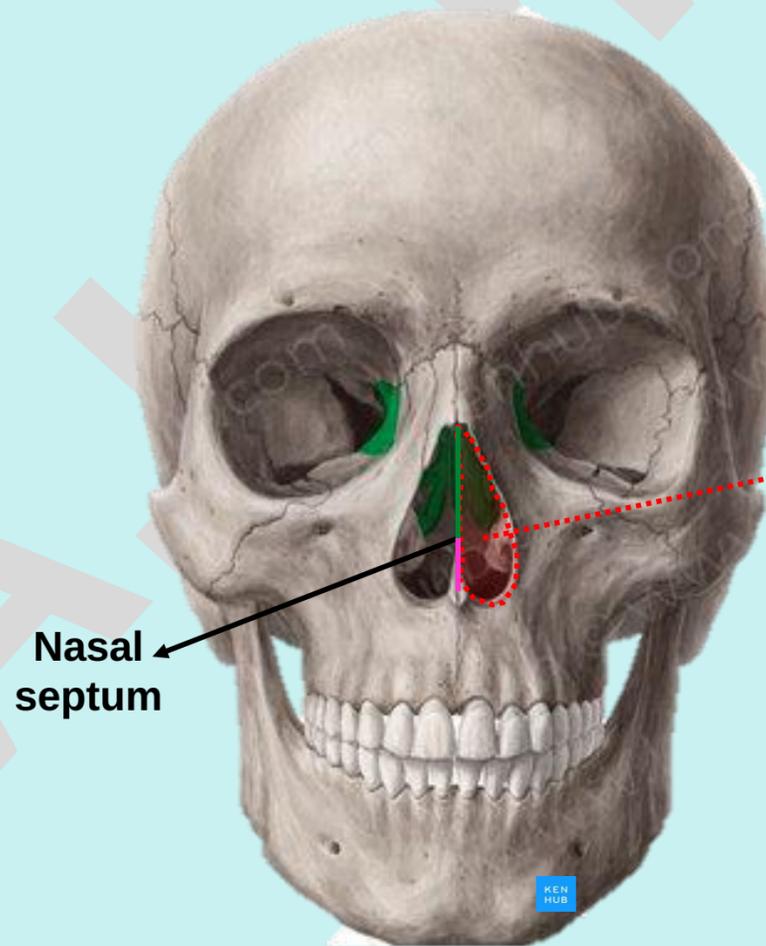
Lateral view

6. Ethmoid Bone (single)

- Located between two orbital cavities.
- Forms part of the anterior portion of the cranial floor, superior portion of the nasal septum and superior sidewalls of the nasal cavity.

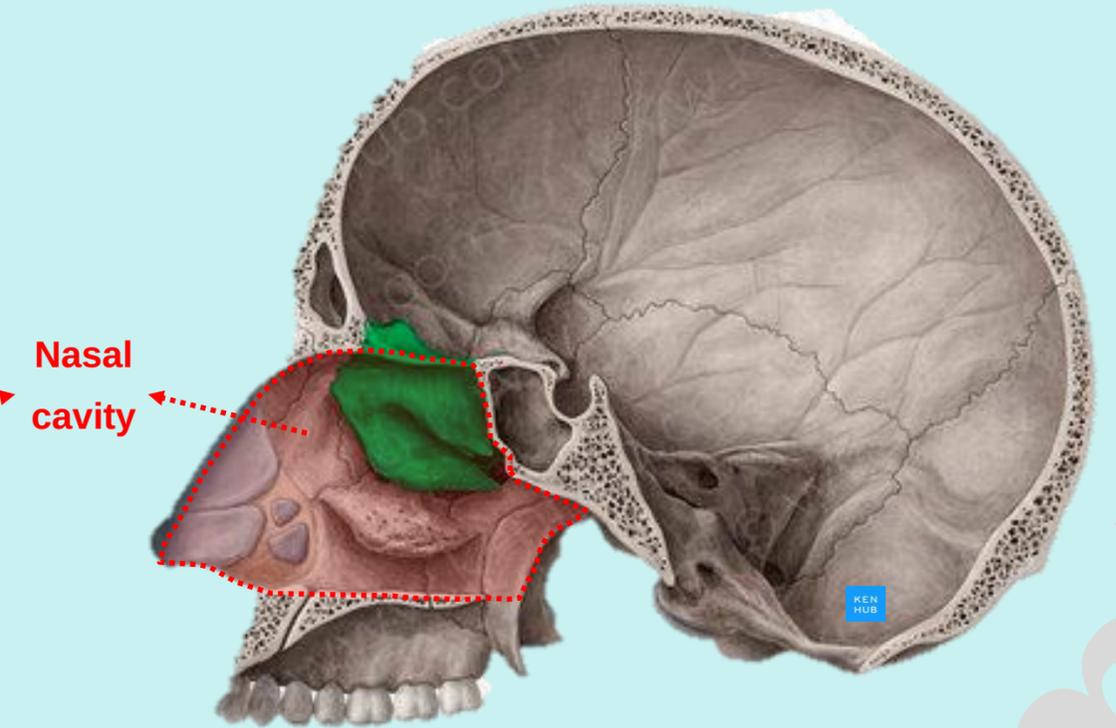


Cranial floor



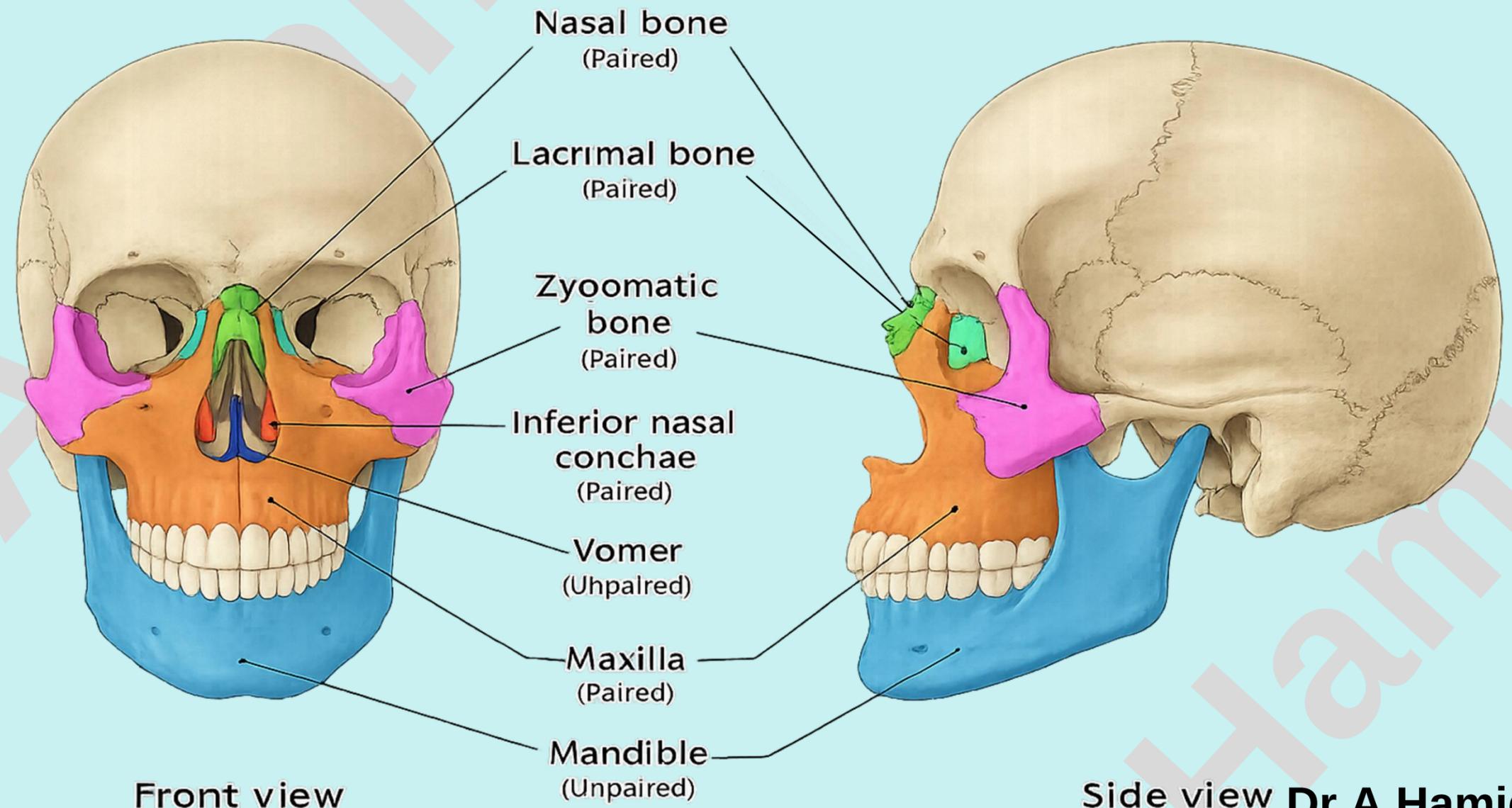
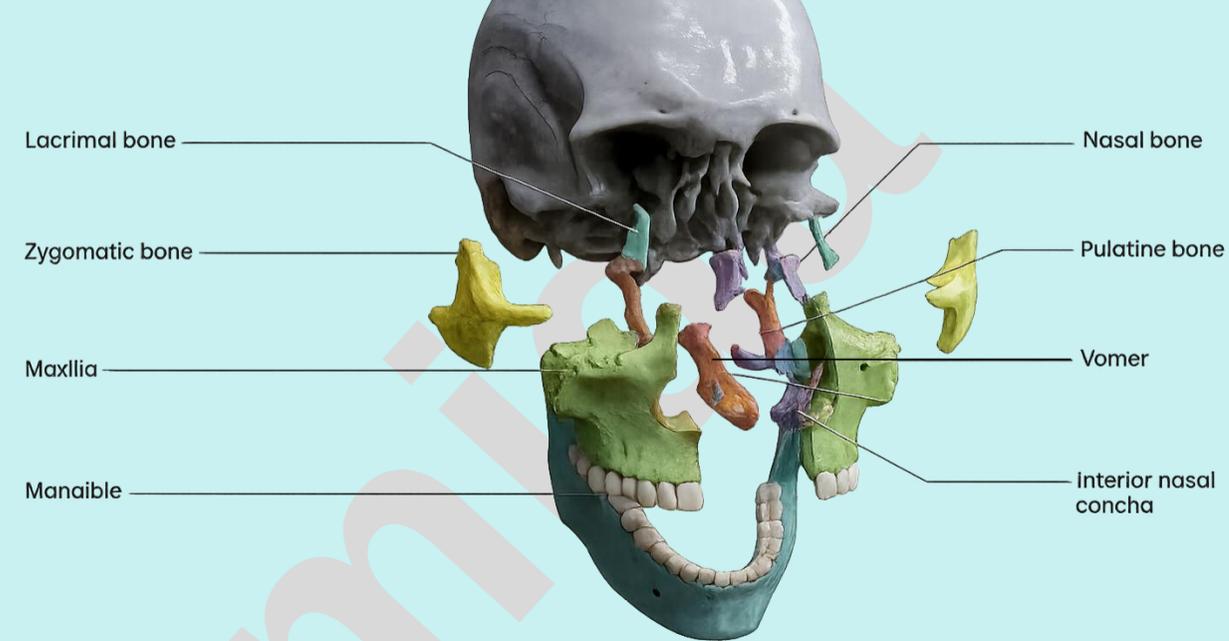
Nasal septum

Anterior view



Nasal cavity

Sagittal view

➤ **Consists of 14 bones**1. **Zygomatic Bones (paired)**2. **Maxillae (paired)**3. **Nasal Bones (paired)**4. **Lacrimal Bones (paired)**5. **Vomer (single)**6. **Palatine Bones (paired)**7. **Inferior conchae (paired)**8. **Mandible (single)**

1. Zygomatic Bones (paired)

- The two zygomatic bones, commonly called cheekbones, form the prominences of the cheeks.



Anterior view



Lateral view

2. Maxillae (paired)

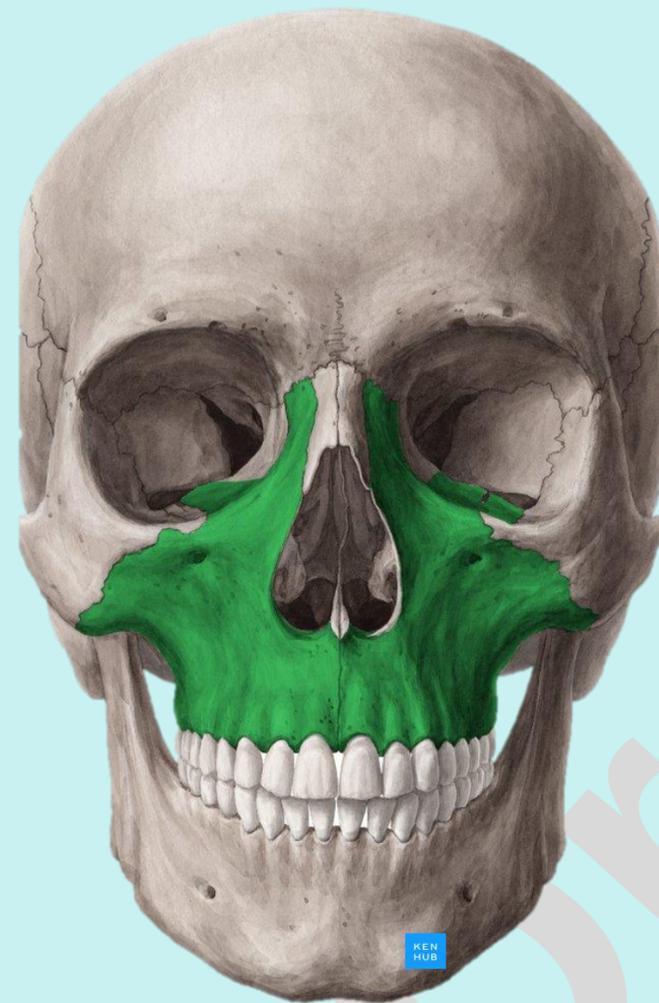
- The paired maxillae unite to form the upper jawbone.
- Form most of the hard palate.



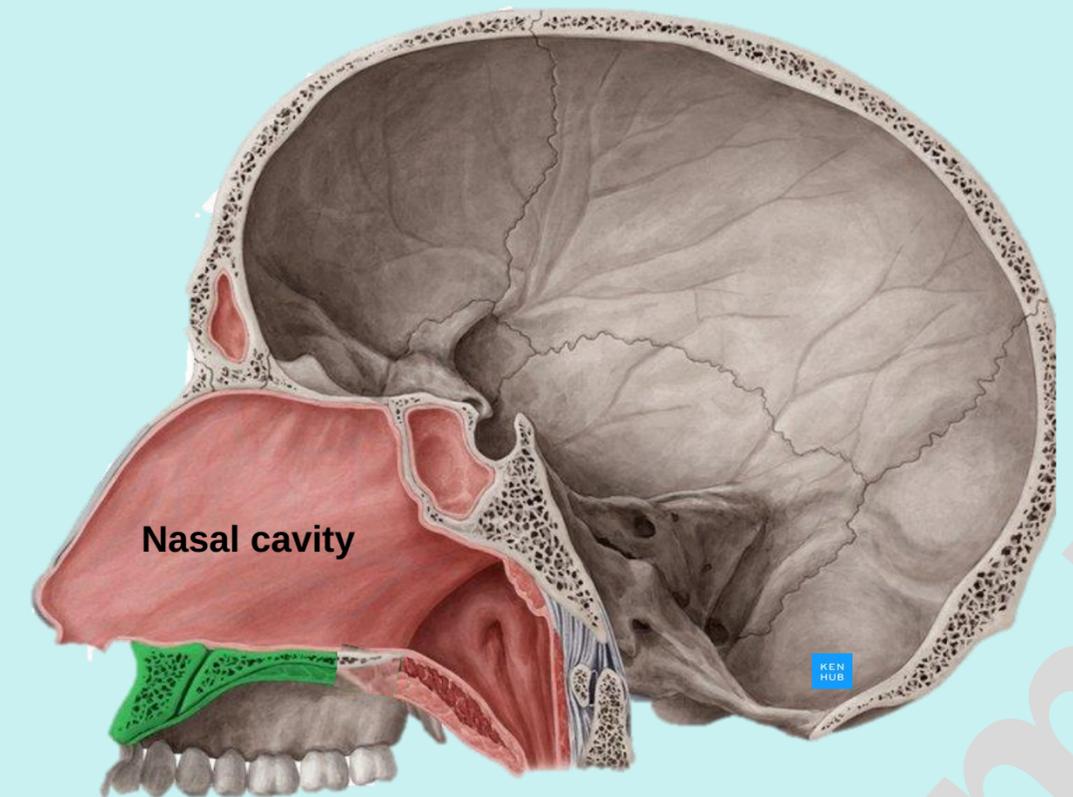
Anterior view



Posterior view



Anterior view

Inferior view
(Base of skull)

Sagittal view

3. Nasal Bones (paired)

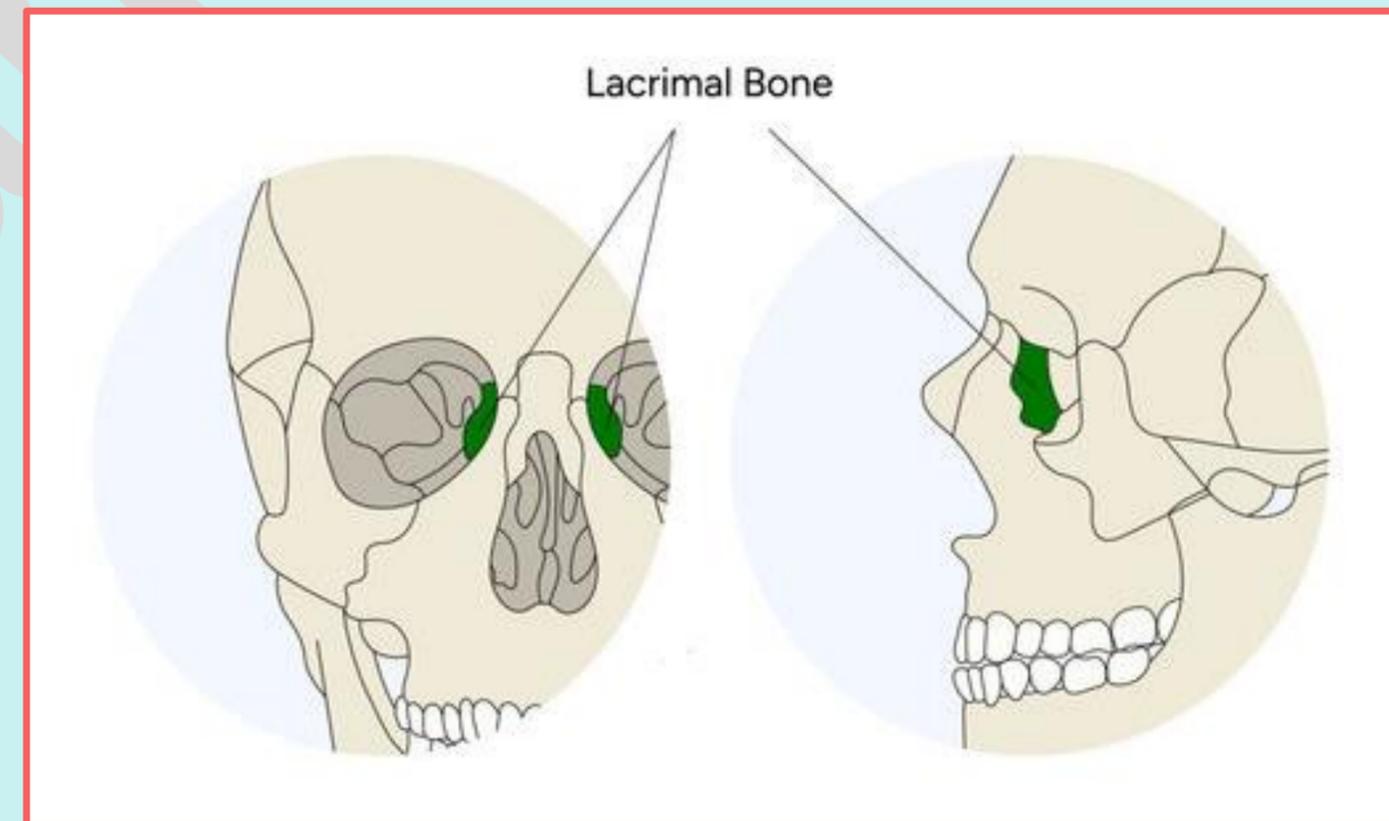
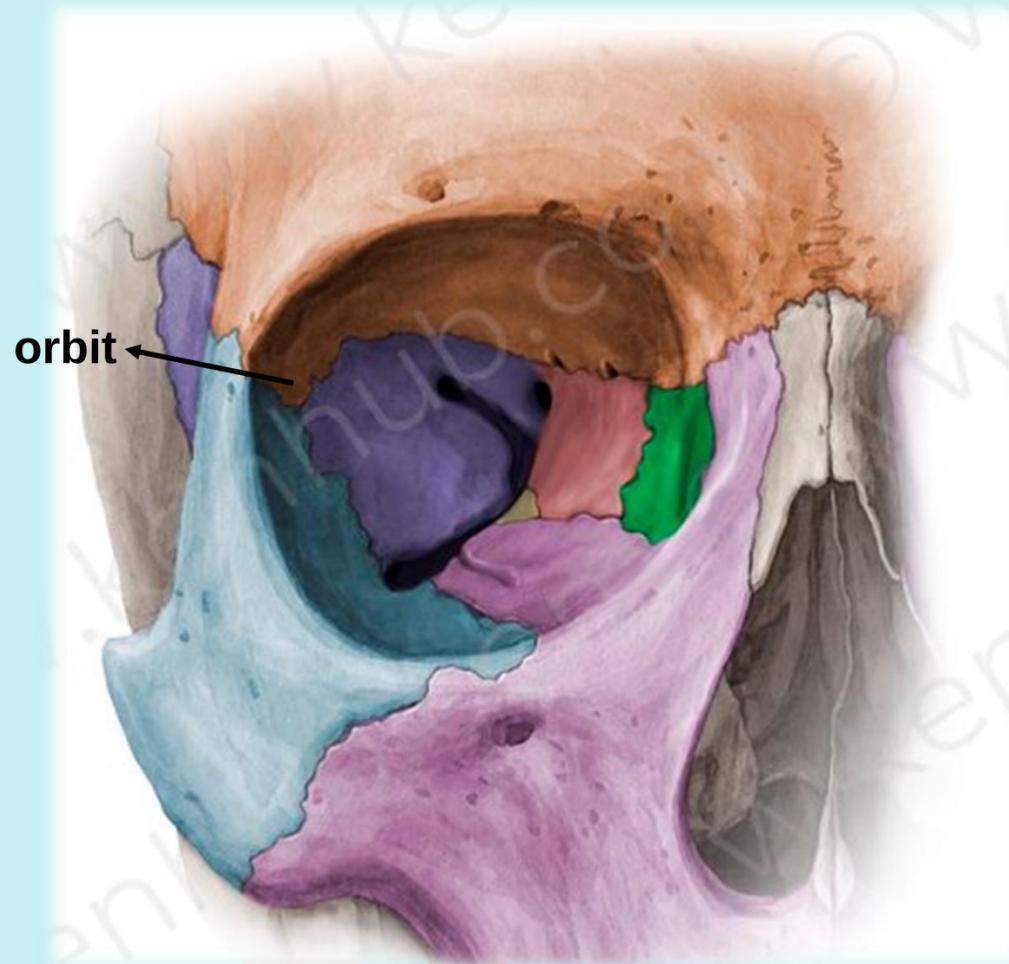
- Form the bridge of the nose



Anterior view

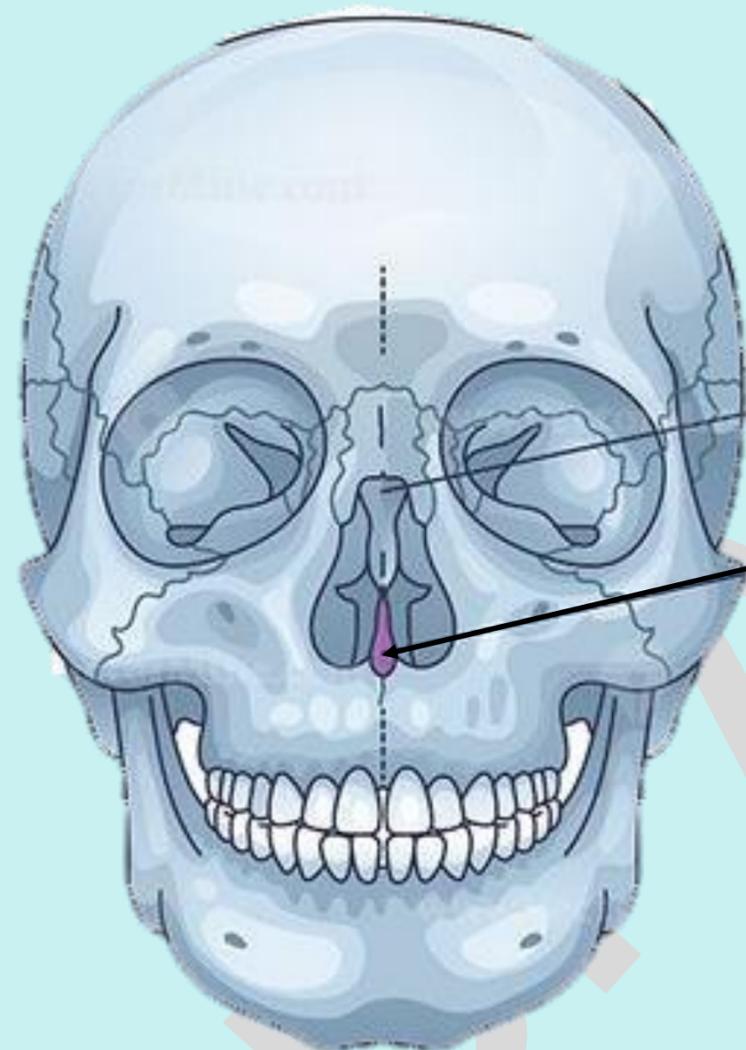
4. Lacrimal Bones (paired)

- Form a part of the medial wall of each orbit

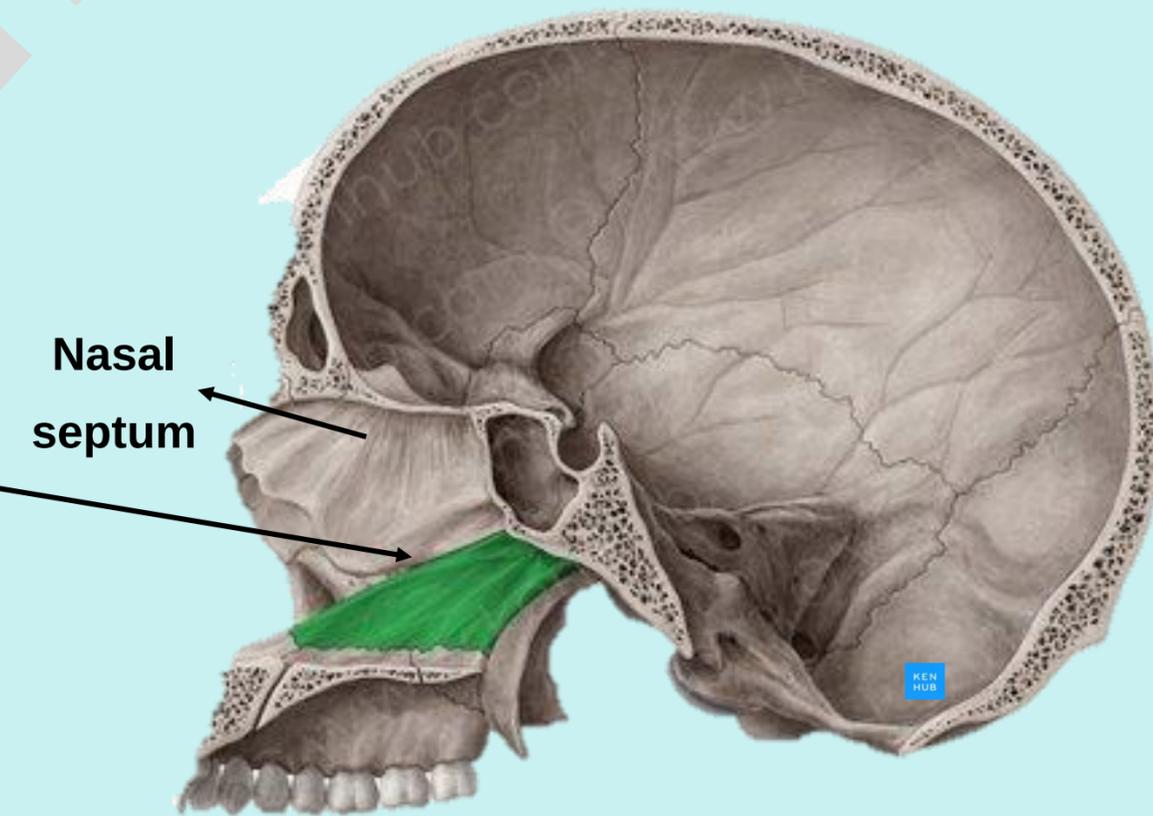


5. Vomer (single)

- Forms the inferior portion of the bony nasal septum (the partition that divides the nasal cavity into right and left sides)



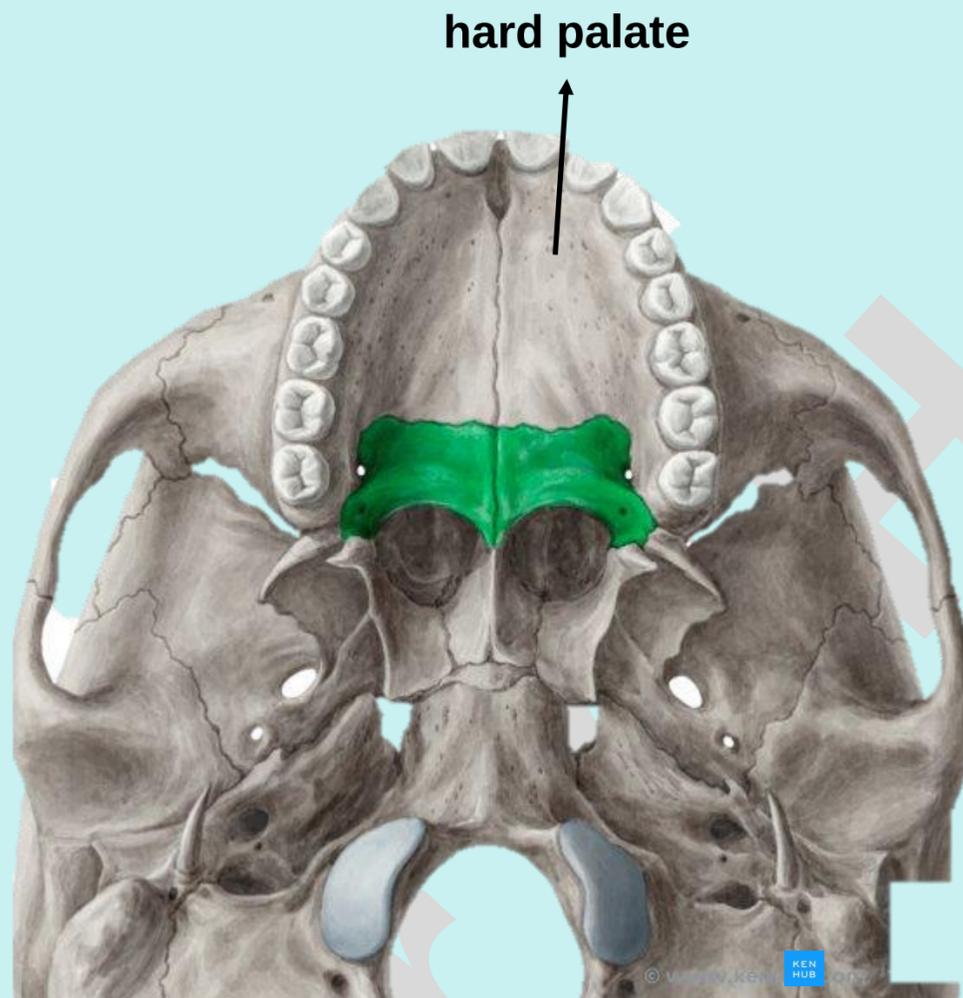
Anterior view



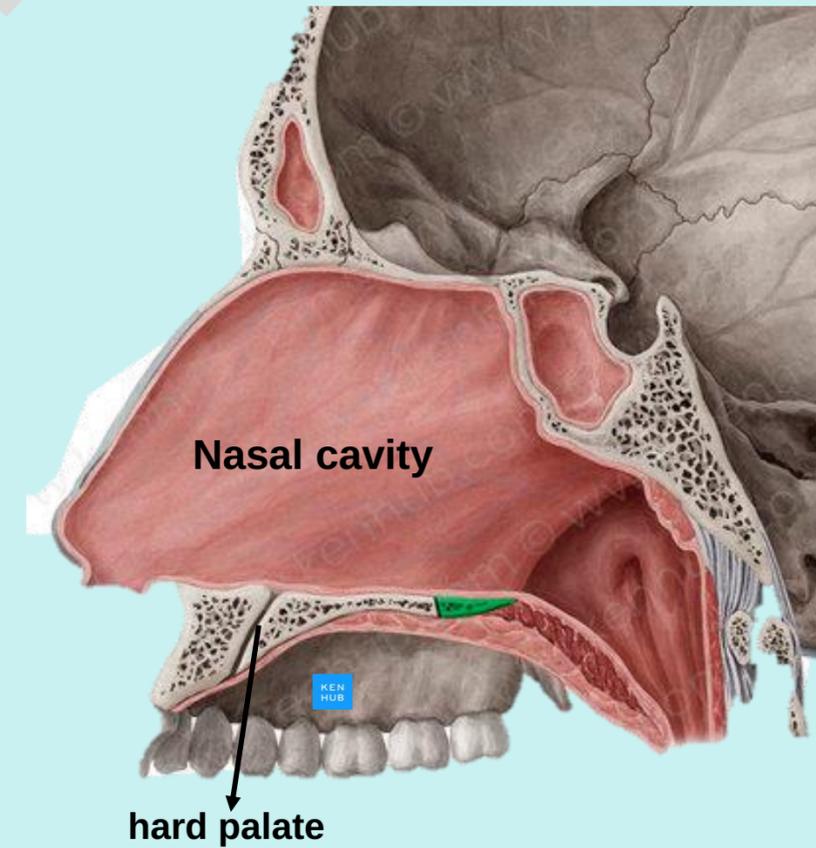
Sagittal view

6. Palatine Bones (paired)

- Form the posterior portion of the hard palate.



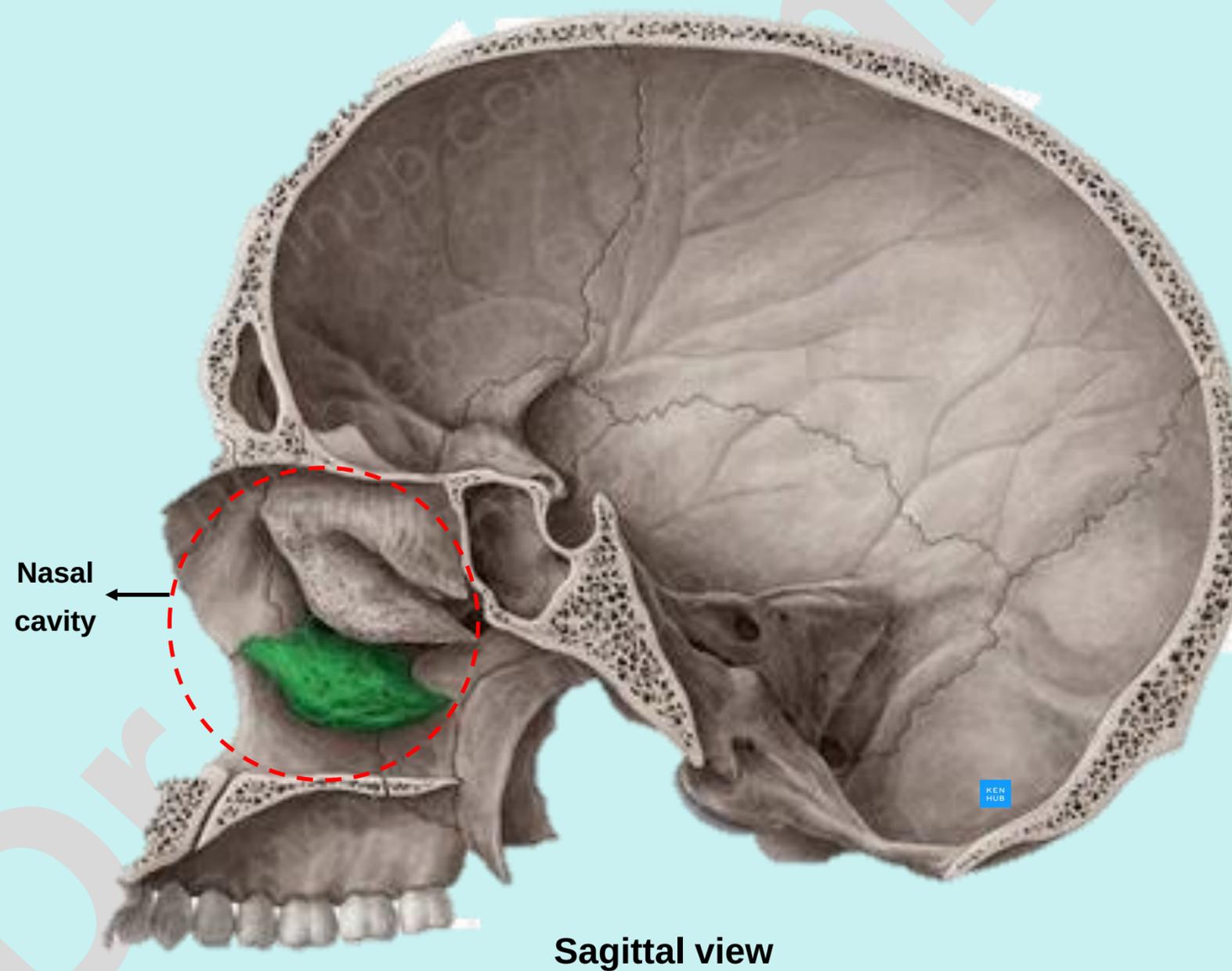
Inferior view
(Base of skull)



Sagittal view

7. Inferior conchae (paired)

- Form a part of the inferior lateral wall of the nasal cavity and project into the nasal cavity.



8. Mandible (single)

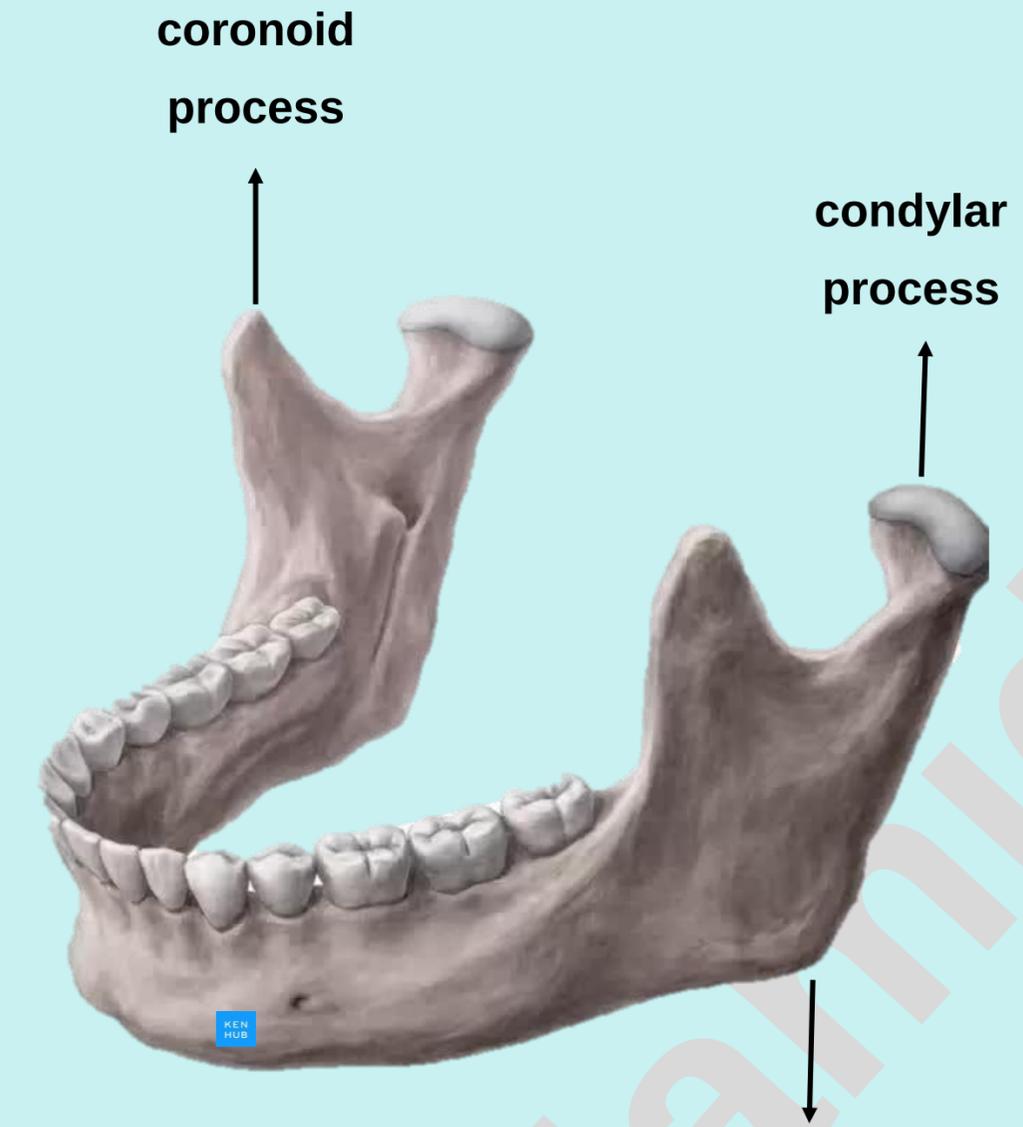
- Forms the lower jawbone.
- It is the largest, strongest facial bone.



Anterior view

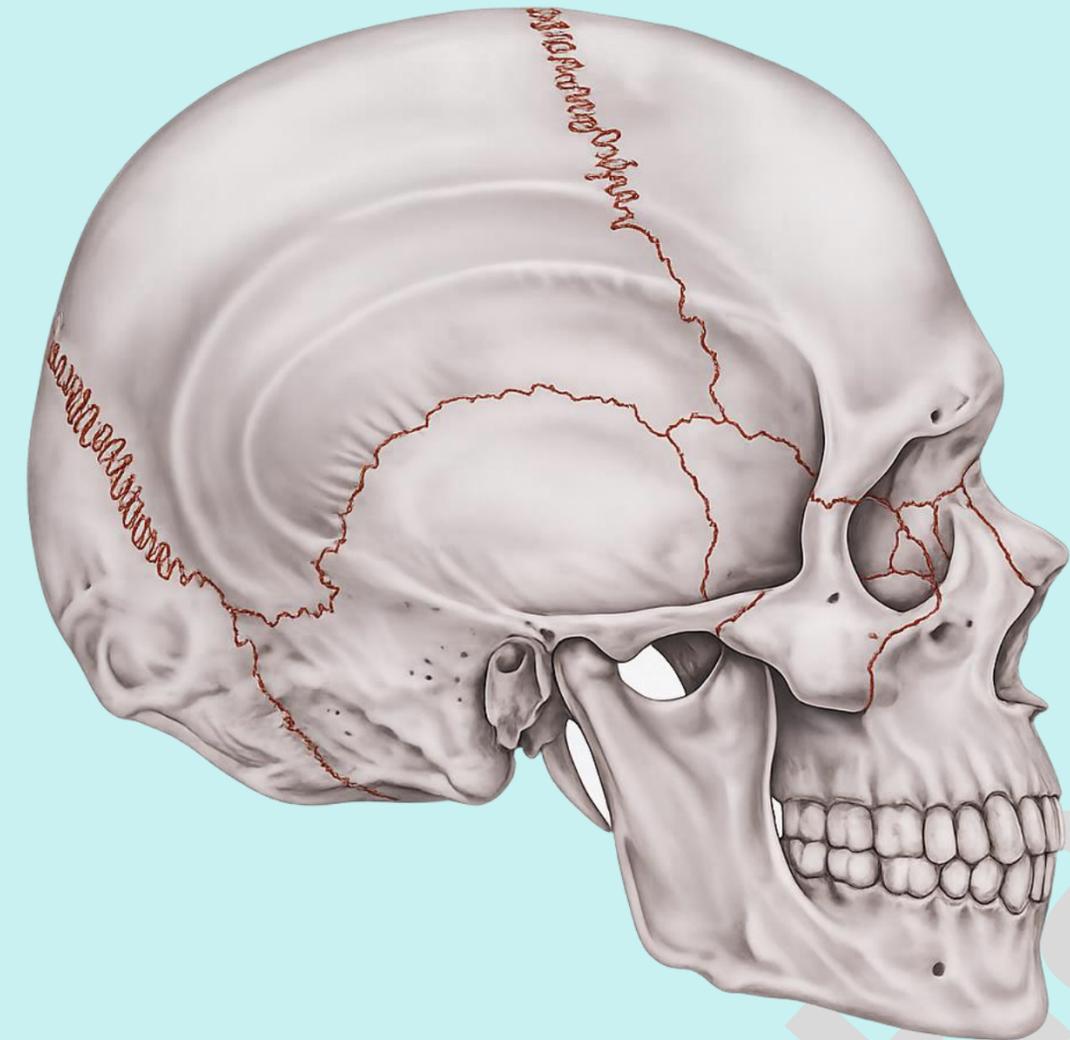
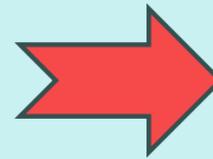
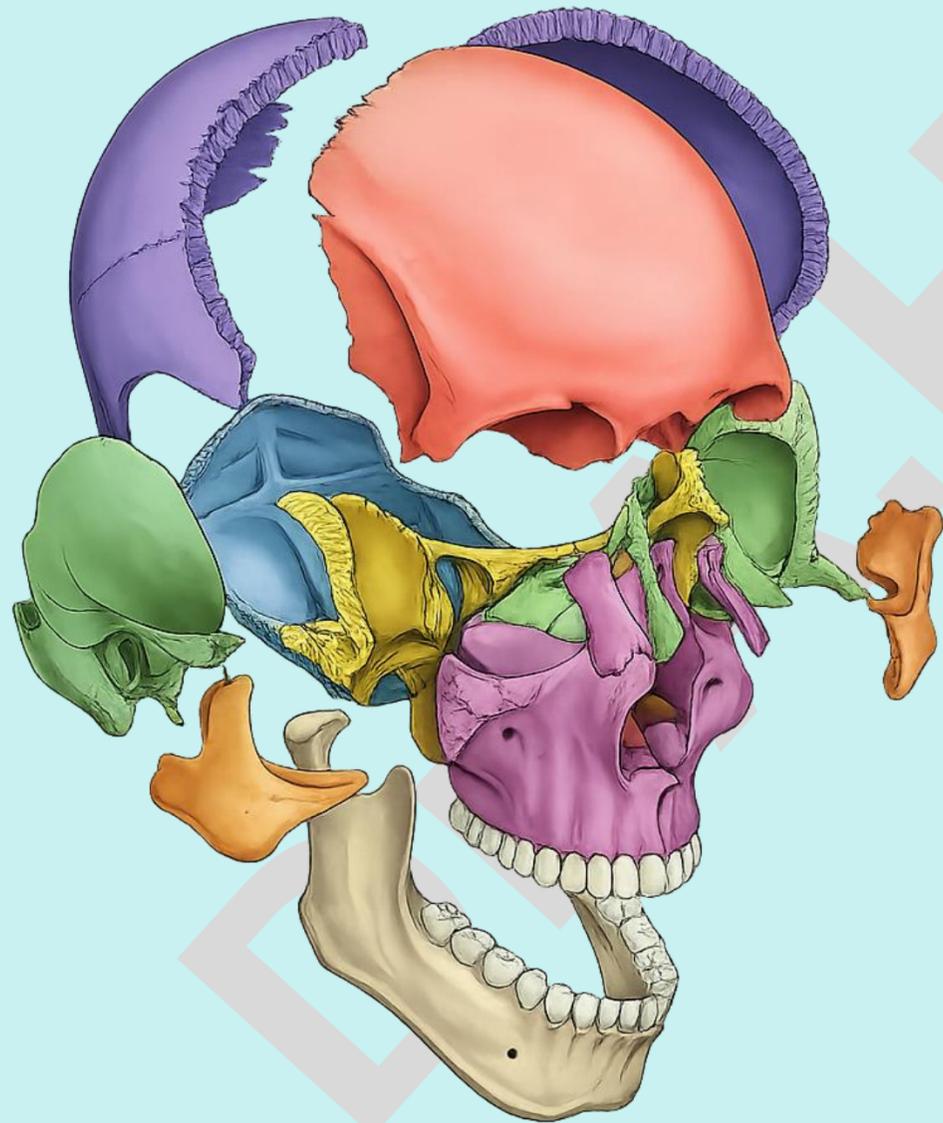


Lateral view

angle of the
mandible

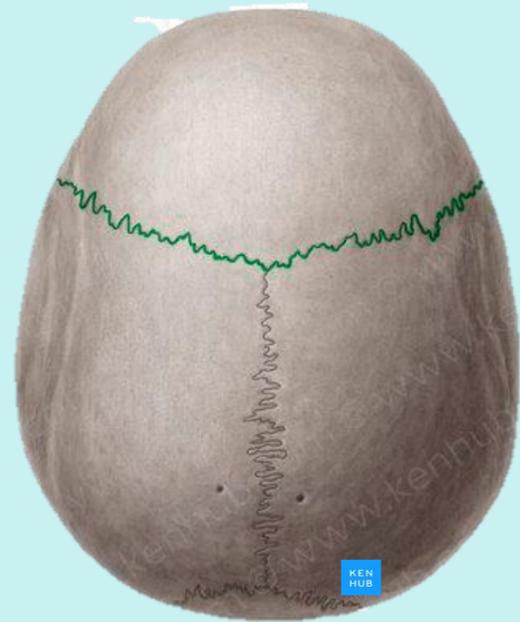
Skull Sutures

- **Skull bones are joined by immobile fibrous joints called sutures.**
(except for the mandible, which articulates with the cranium via a synovial joint)
- **Sutures are not straight, it follow irregular, tightly twisting paths.**
(These twisting lines serve to tightly interlock the adjacent bones, thus adding strength to the skull for brain protection)

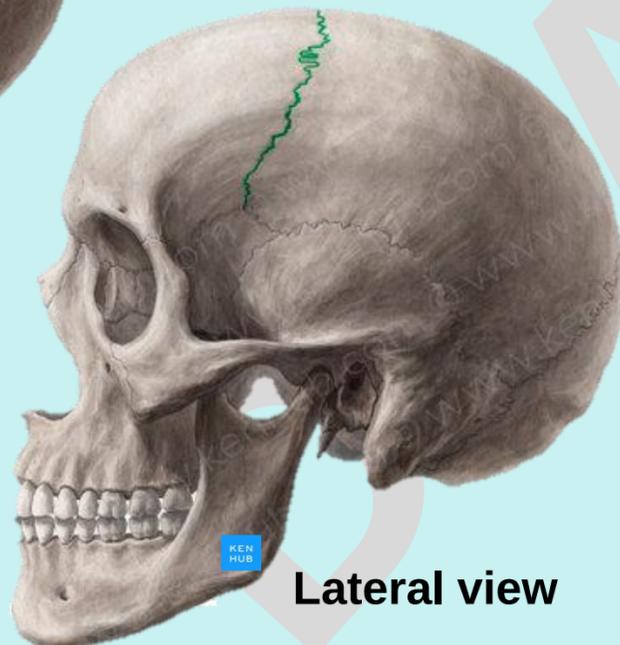


➤ Major Skull Sutures**1. Coronal Suture:**

Unites the frontal bone and both parietal bones.



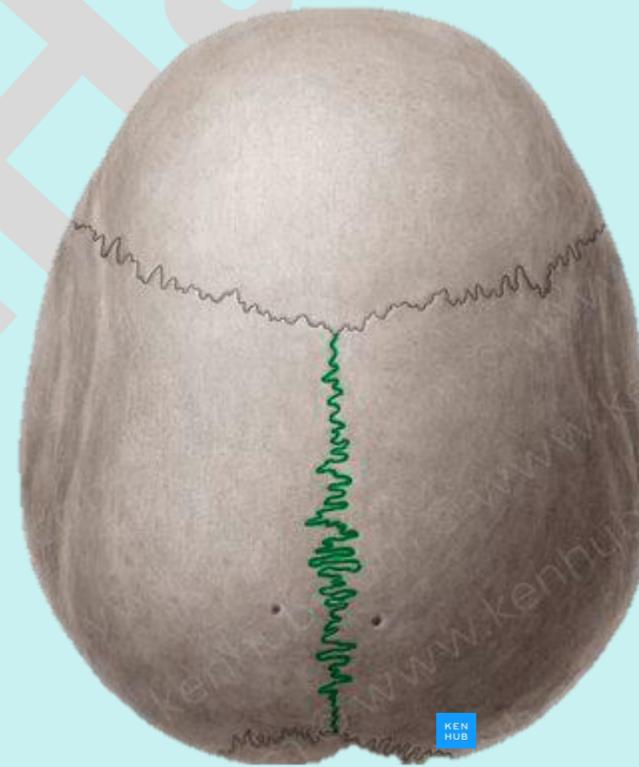
Superior view
(Vault)



Lateral view

2. Sagittal Suture:

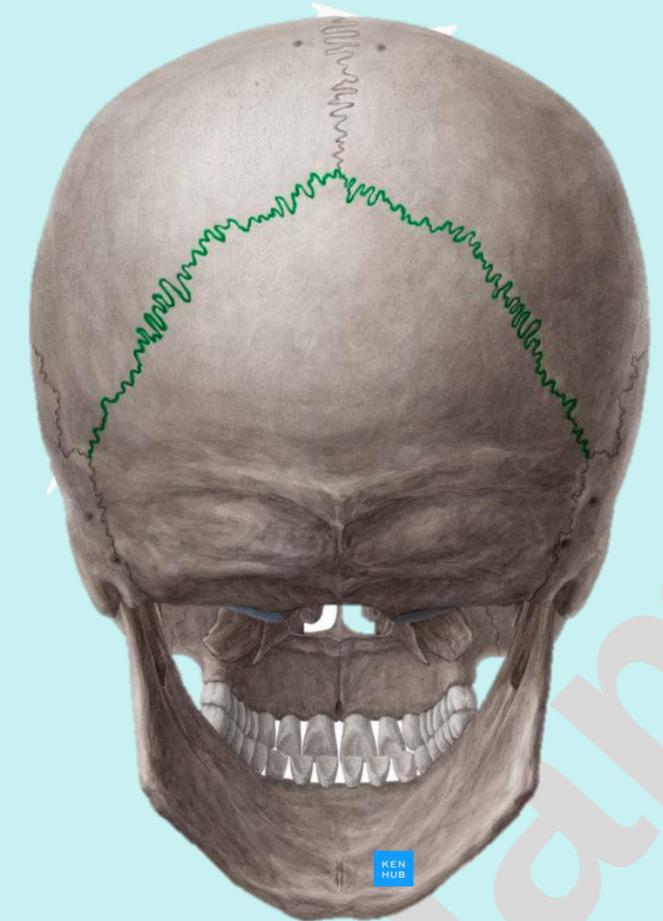
Unites the two parietal bones along the superior midline of the skull.



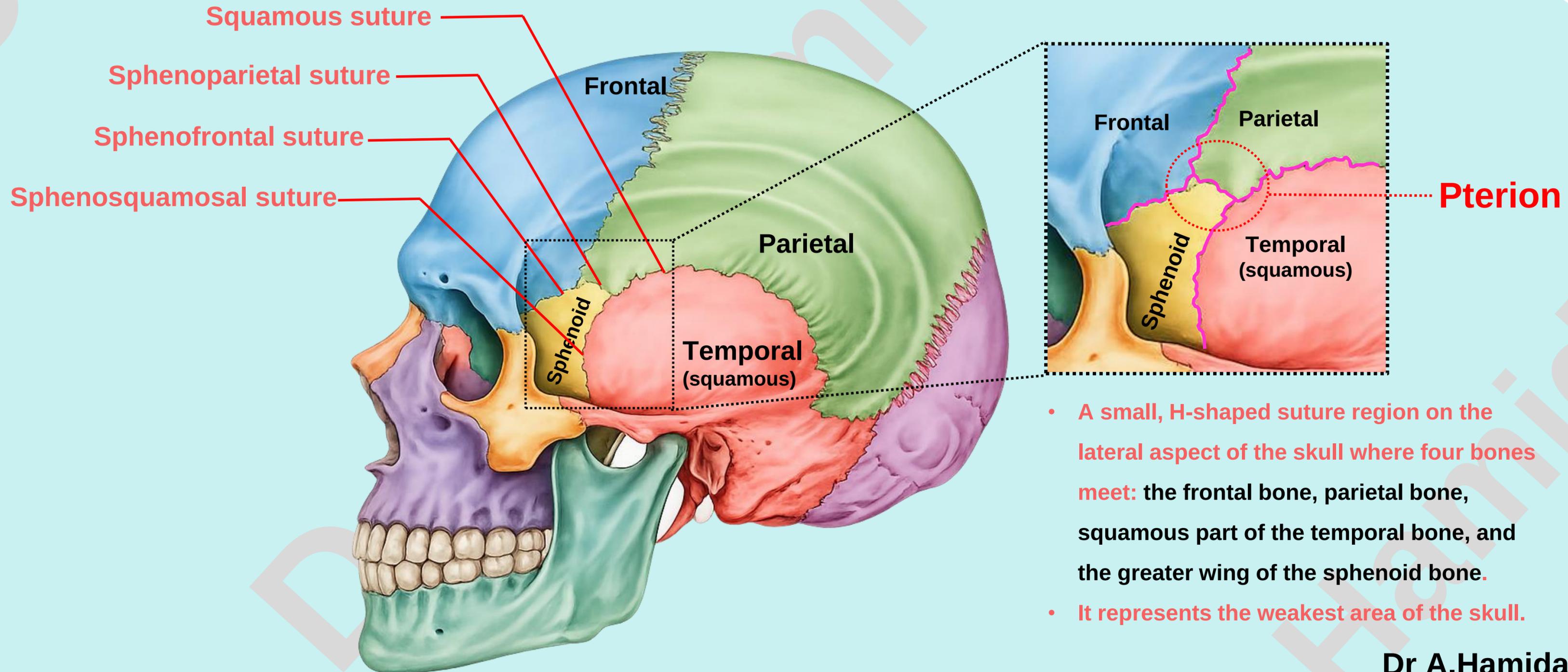
Superior view
(Vault)

3. Lambdoid Suture:

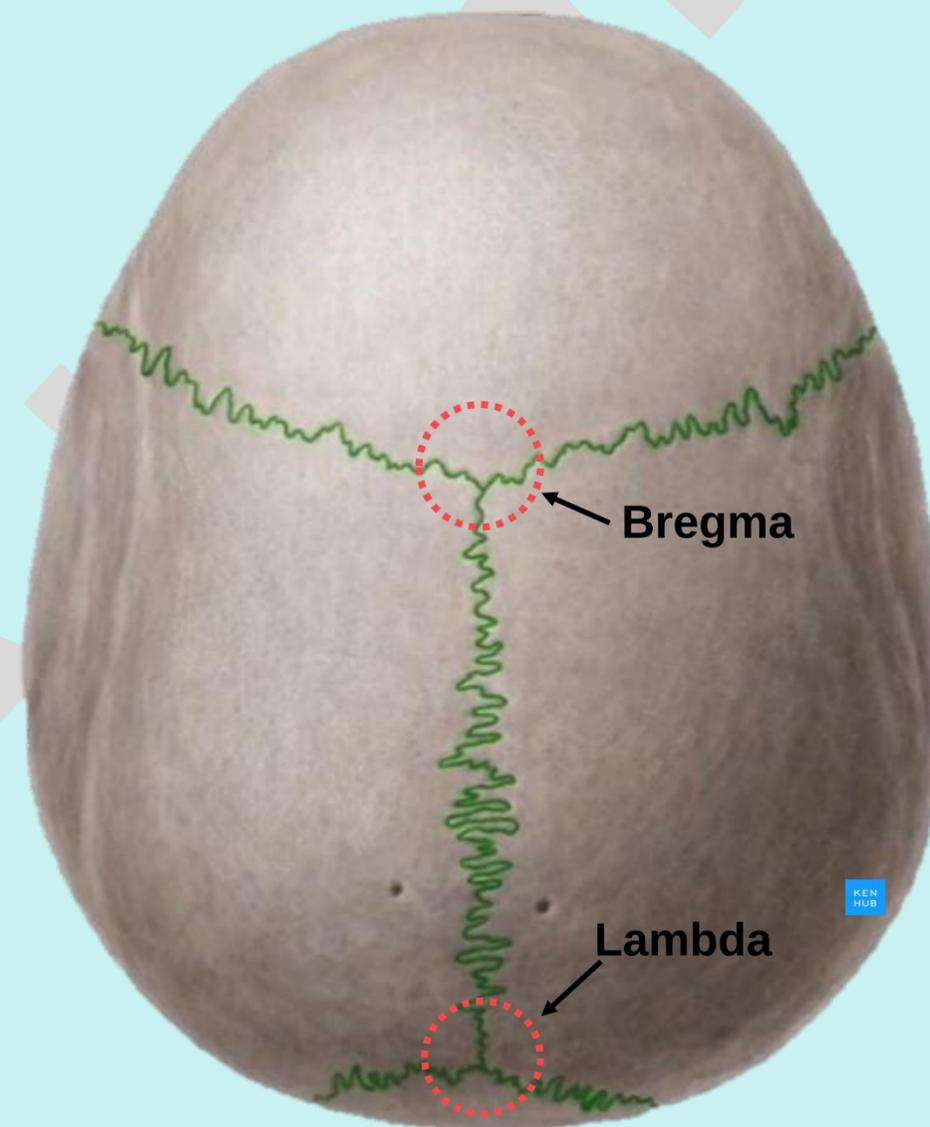
Unites the two parietal bones to the occipital bone.



Posterior view

➤ Major Skull Sutures

- The junction of the sagittal and coronal sutures is the Bregma.
- The junction of the sagittal and lambdoid sutures is the Lambda



Superior view
(Vault)

Skull Fontanels

- Soft spots in the skull of an infant, covered with tough, fibrous membrane where ossification is incomplete
- As bone formation continues after birth, the fontanels are replaced with bone by ossification and become sutures.

1. Anterior Fontanel:

- The largest fontanel, roughly diamond-shaped.
- Located at the junction of the two parietal bones and the frontal bone.
- Closes between 18 to 24 months after birth.

2. Posterior Fontanel

- Smaller than the anterior fontanel, triangular in shape.
- Located at the junction of the two parietal bones and the occipital bone.
- Closes around 2 months after birth.

• Function

1. Allow room for the baby's brain to grow.
2. Enable compression of the head during delivery.

