

Skull: neurocranium**Objectives:**

By the end of this session students are expected to be able to:

1. Recognize various views of skull
2. List the paired and unpaired cranial bones
3. Identify skull bones bounding the cranial cavity
4. Describe the external features of superior and posterior views of skull
5. Recognize major landmarks and foramina of skull base
6. Discuss the boundaries and major landmarks of different cranial fossae
7. Identify major foramina connecting the cranial cavity to exterior
8. List the main content of each of the major foramina
9. Describe the fontanels seen in neonatal skull
10. Identify structures seen in a lateral view of skull X-ray

❖ **Some of the Common clinical problems related to skull**

1. Skull fractures
2. Bulged and depressed fontanels

❖ **Skull facts:**

- It is made up of 22 bones, 8 forming the neurocranium, and 14 forming the face.
- It lodges special senses (eye, ear, olfaction, taste)
- Its **cranial cavity** contain the brain and its surrounding meninges, portions of the cranial nerves, arteries, veins, and venous sinuses
- 12 pairs of **cranial nerves** leave the brain and the cranial cavity to pass through foramina and fissures in the skull
- It has a lot of **foramina** connecting two spaces and transmitting many structures.
- The bones of the skull are united at immovable joints called **sutures**
- Isolated **sutural bones** are often seen along the lambdoid suture
- Skull bones are made up of a layer of spongy bone called the **diploe** coated by **external** and **internal tables** of compact bone.
- The internal table of the cranial cavity is lined by dura matter, the space in between is called **extradural space**.

Lab check list

By the end of this lab students are expected to be able to **IDENTIFY** the following structures:

A) Cranial Bones

- | | | | |
|---------------------------------------------|-------------------|-------------|------------|
| 1. Frontal | 2. Parietal | 3. Temporal | 4. Ethmoid |
| 5. Sphenoid (Body/Greater wing/Lesser wing) | 6. Occipital bone | | |

B) Cranial Sutures

- | | | | |
|------------|-------------|-------------|------------|
| 1. Coronal | 2. Sagittal | 3. Lambdoid | 4. Metopic |
|------------|-------------|-------------|------------|

C) Skull exterior

I. Superior view:

1. Sutures
2. Parietal emissary foramen

II. Posterior view:

1. External occipital protuberance
2. Superior nuchal lines

III. Inferior view of skull

1. Occipital condyles
2. Mastoid process
3. Styloid process
4. Spine of sphenoid
5. Mandibular fossa
6. Foramen magnum
7. Jugular foramen
8. Foramen lacerum
9. Carotid canal (lower opening)
10. Foramen ovale
11. Foramen spinosum
12. Stylomastoid foramen

D) Skull interior (Inside of the brain case)**I. Anterior cranial fossa**

1. Crista galli
2. Cribriform plate of ethmoid
3. Orbital plates of the frontal bone
4. Anterior clinoid process

II. Middle cranial fossa

1. Sella turcica (pituitary gland)
2. Dorsum sellae
3. Optic canal
4. Superior orbital fissure
5. Foramen rotundum
6. Foramen ovale
7. Foramen spinosum
8. Foramen lacerum
9. Groove for middle meningeal artery

III. Posterior cranial fossa

1. Internal occipital protuberance
2. Groove for the transverse sinus
3. Groove for the sigmoid sinus
4. Foramen magnum
5. Hypoglossal canal
6. Jugular foramen
7. Internal acoustic meatus

E) Neonatal skull

- Anterior and Posterior fontanel

F) Important to know:

1. Carotid canal:

It lies totally within the petrous temporal bone. The lower end starts at..... , curve along the bone to opens into the side of the foramen lacerum above the closed inferior opening

2. Tegmen tympani:

It is a thin plate extending forward from the petrous temporal bone, roofing the tympanic cavity. It separates tympanic cavity from the middle cranial fossa (brain).

Comprehension question 1:

A patient was admitted to ER after receiving a blow on his head complaining of headache. A CT scan of skull was done to exclude skull fracture. On inspecting the radiographic film you noticed a small piece of bone near the vertex.

- 1- What possibilities you put in mind?
- 2- How to decide which possibility is more accurate.

Comprehension question 2:

As a 4th year medical student you were requested to assess the status of hydration of an infant by examining his skull.

- 1- Name the structures that can help you in your task
- 2- How they are formed?
- 3- Where can you find them?
- 4- When they are usually closed?
- 5- List 2 more clinical uses of these structures.

Review question:

Match the structure from the statements on the right to their corresponding foramina

Letter	Statement	Foramen
	1- Motor nerve of the tongue	A. Foramen magnum
	2- Nerve supplying the superior oblique	B. Foramen rotundum
	3- Middle meningeal artery	C. Internal acoustic meatus
	4- Sensory supply of maxilla	D. Jugular foramen
	5- Internal carotid artery	E. Optic canal
	6- Large Vein draining the head	F. Superior orbital fissure
	7- Nerve concerned with vision	G. Hypoglossal canal
		H. Foramen ovale
		I. Foramen lacerum
		J. Foramen spinosum
		K. Carotid canal