أهلا

وسهلا

الأستاذ الدكتور يوسف حسين

أستاذ التشريح وعلم الأجنة - كلية الطب – جامعة الزقازيق – مصر

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دكتوراة من جامعة كولونيا المانيا

اليوتيوب **Prof. Dr. Youssef Hussein Anatomy**

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Development of skull

Prof. Dr. You

Metopic suture

Frontal suture

Frontal bone

Bregma

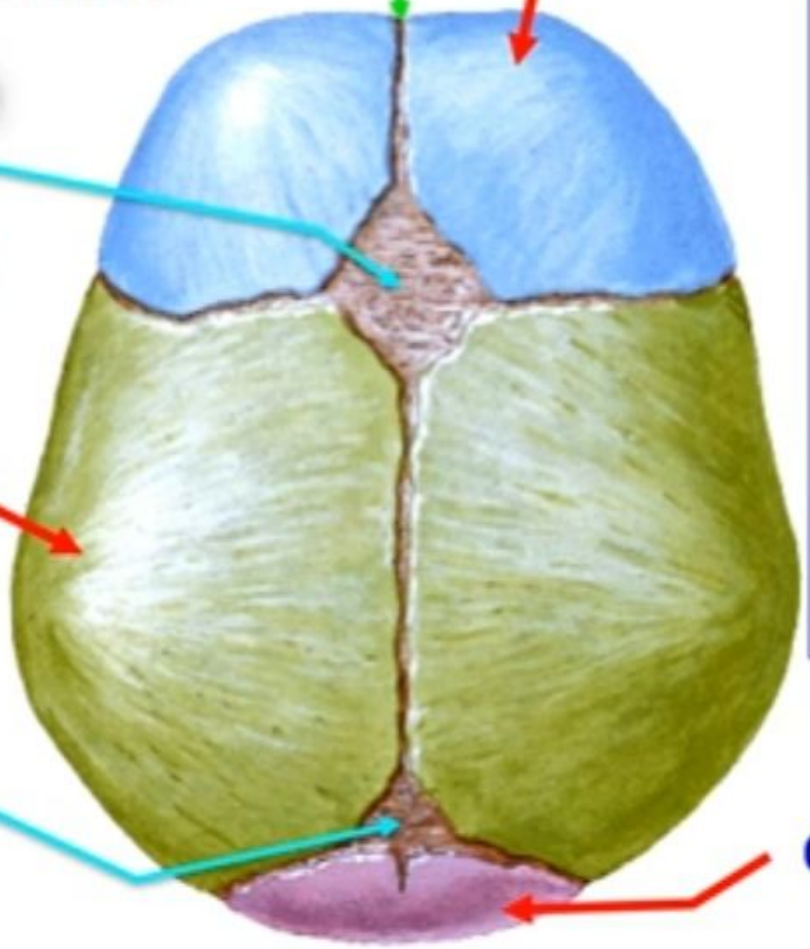
Anterior fontanelle

Parietal bone

Lambda

Posterior fontanelle

Occipital bone



- Vault of skull (Flat bones)
- (Neurocranium)

- It develops from the **mesoderm** around the developing brain.
- These bones included the frontal, parietal, and occipital
- These bones ossified in membranes.

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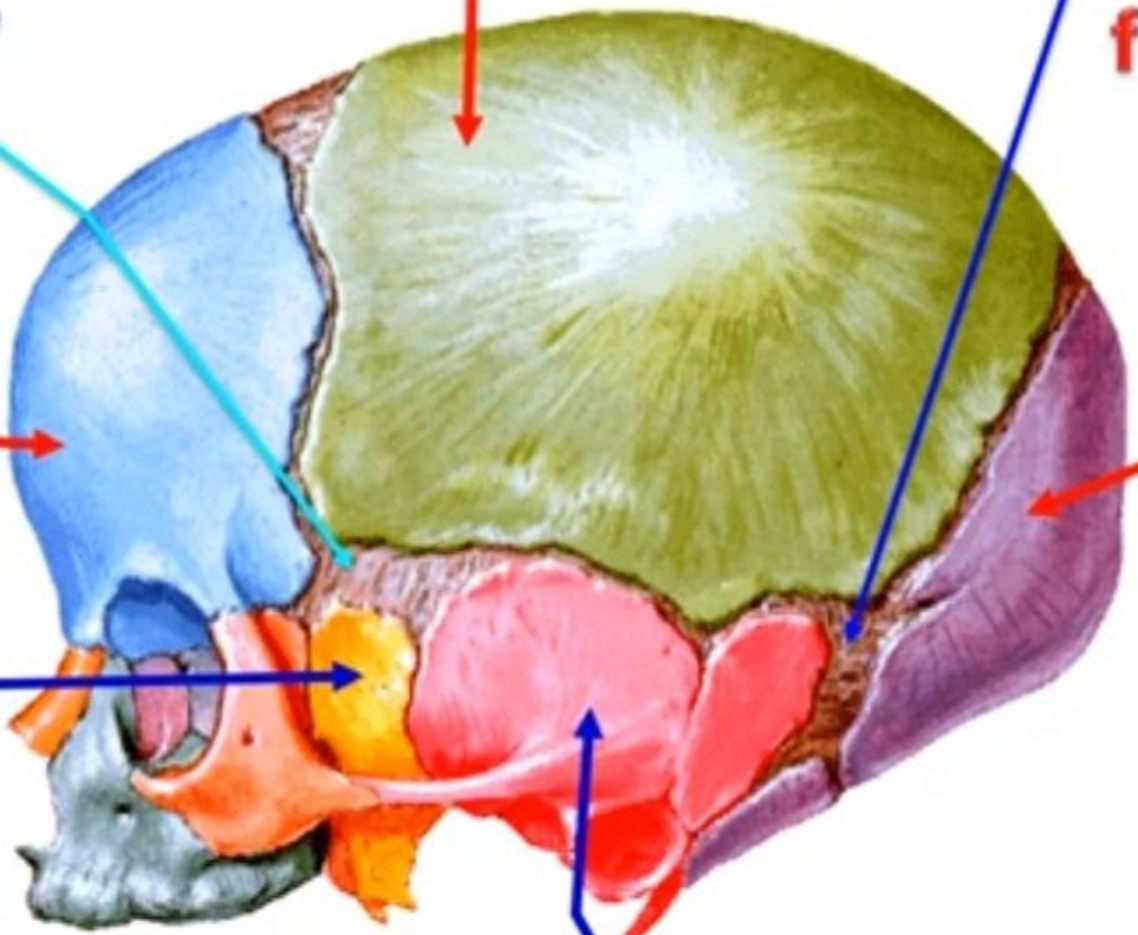

Parietal bone

Mastoid fontanelle

(Asterion)

Sphenoidale fontanelle

(pterion)

Frontal bone

Occipital bone

Greater wing of sphenoid bone

Temporal bone

Skull of new born

** The newborn skull

- The bones of the newborn skulls are separated from each other by sutures.
- At The meeting of more than 2 bones there is membranous parts called the **fontanelle**. They include:

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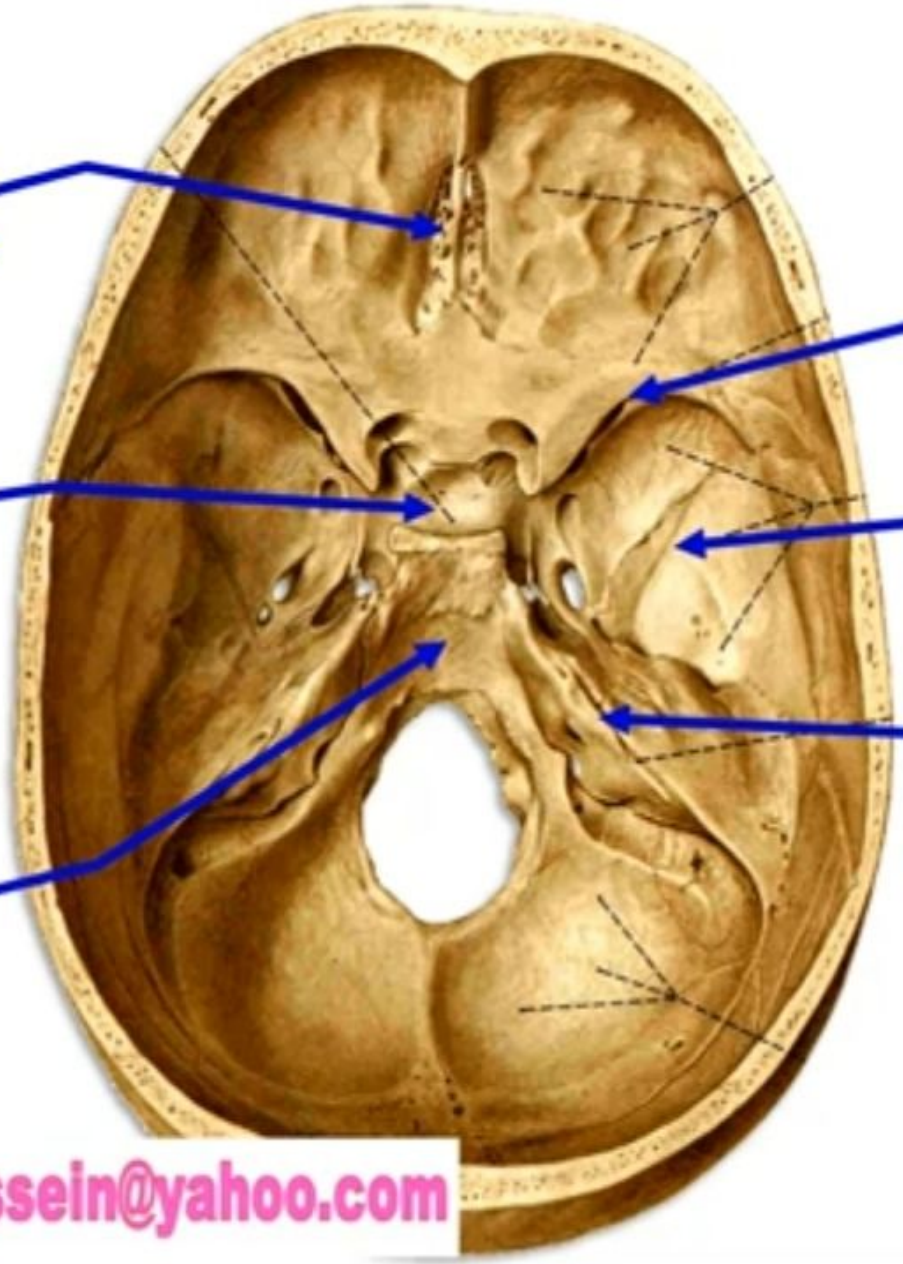
1- Anterior fontanelle: between the frontal and 2 parietal bones. It is closed about 18 months (**Bregma at adult**).

2- Posterior fontanelle: between the occipital and 2 parietal bones. It is closed about 6 months (**Lambda at adult**).

3- Sphenoid fontanelle: between the frontal, sphenoid, temporal and parietal bones. It is closed about 3 months (**pterion at adult**).

4- Mastoid fontanelle: between the occipital, parietal and m temporal bones. It is closed about 3 months (**asterion at adult**).

Norma basalis interna



Cribriform plate of ethmoid bone

Lesser wing of sphenoid

Body of sphenoid

Greater wing of sphenoid

Petrous part of temporal cone

Basilar part of occipital bone

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Base of skull

3 Median mesodermal masses

Trabecula cranii cartilage: form the cribriform plate of ethmoid bone

Hypophyseal cartilage: form the body of sphenoid

Pituitary gland

Parachordal (Basal) cartilage: It forms the basilar part of occipital bone

Notochord

Occipital somites

3 Lateral mesodermal masses

Ala orbitalis: forms lesser wing of sphenoid bone

Ala temporalis: forms greater wing of sphenoid

Periotic capsules: form petrous and mastoid parts of the temporal bone

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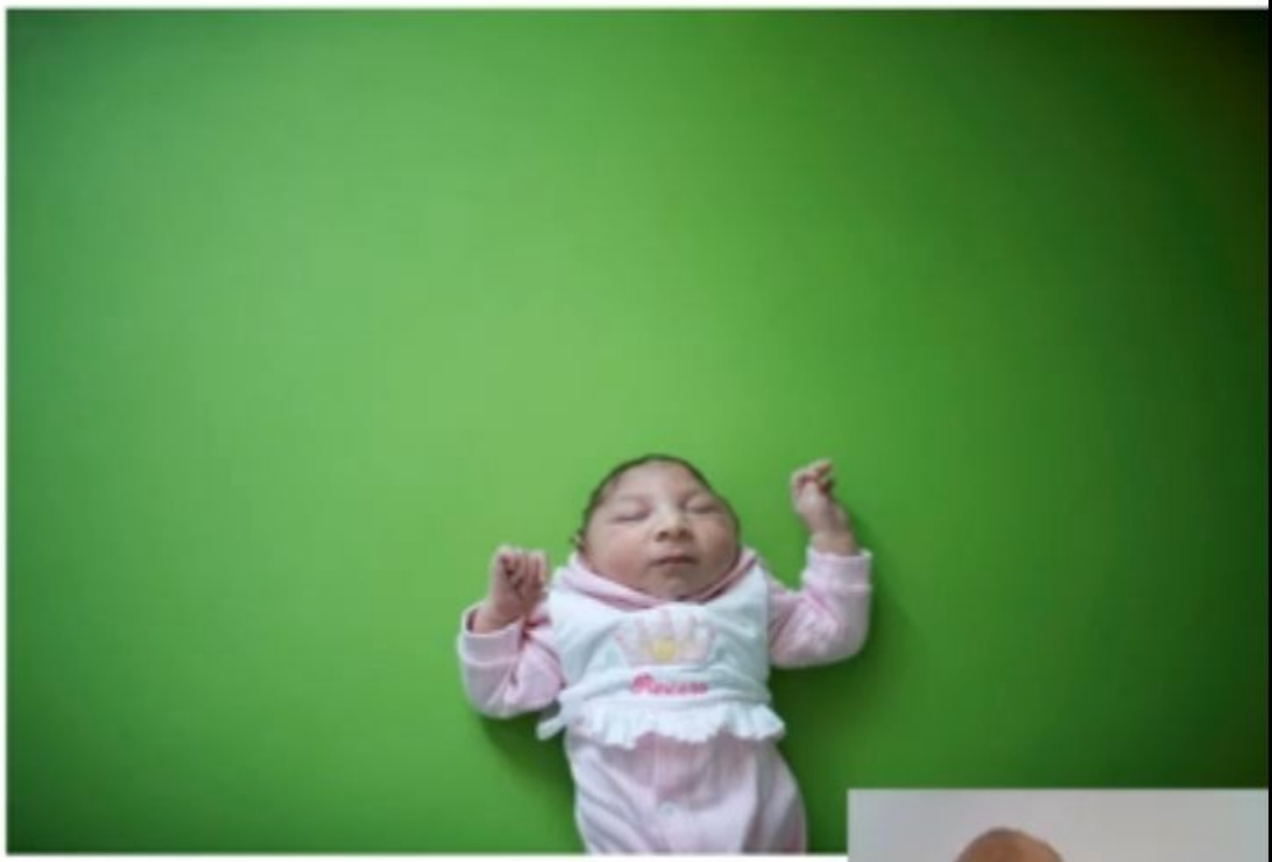
Congenital anomalies of skull

- **Microcephaly**

  small skull and cerebral hemisphere



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- **Hydrocephalus** excessive accumulation of C.S.F in the ventricular system due to closure in the CSF circulation

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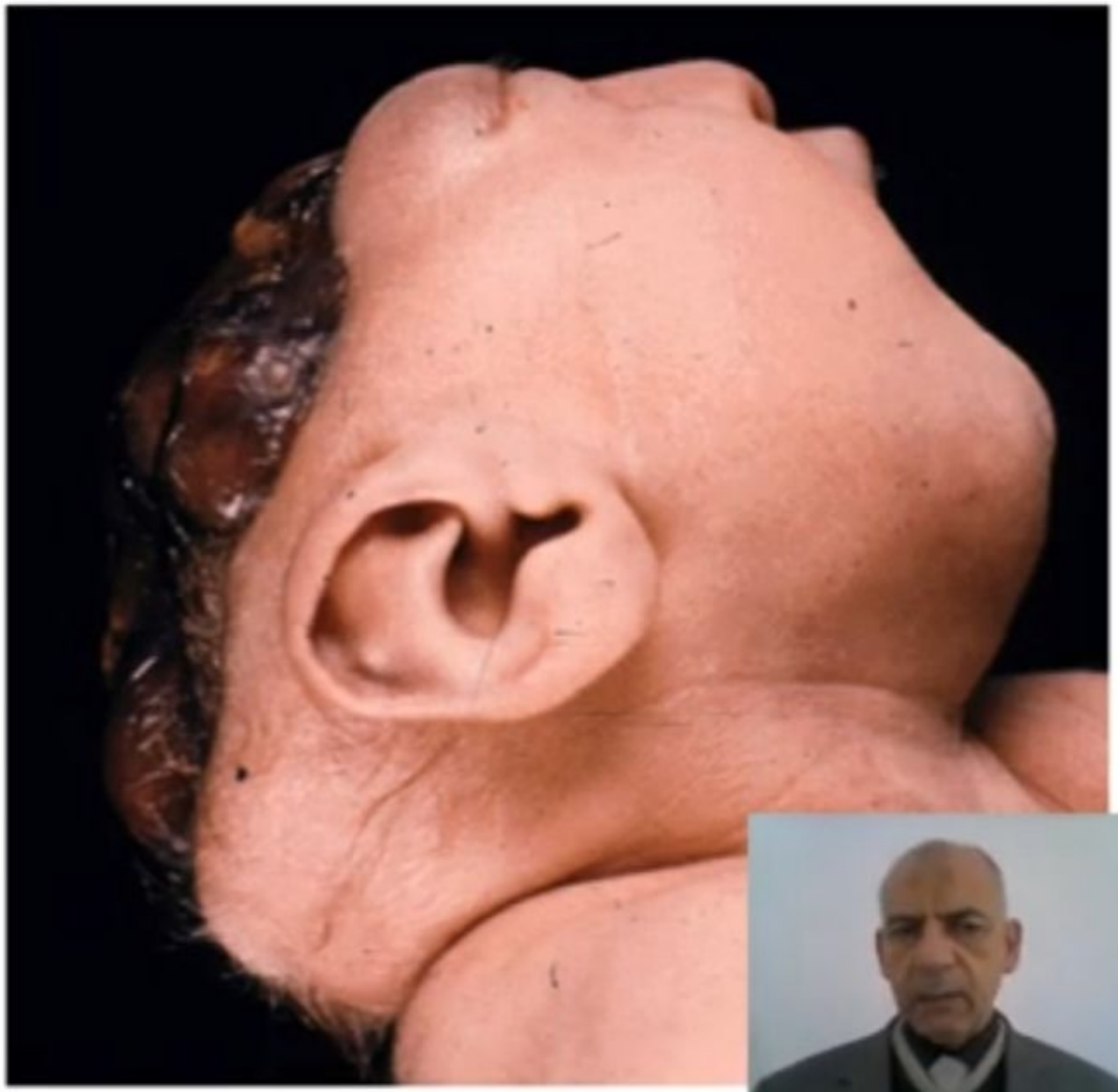
- **Anencephaly**:
  failure of development of greater part of the brain and vault of the skull due to failure of cephalic part of the neural tube to close



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Meningocele

herniation of a part of the meninges

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- **Meningoencephalocele** herniation of a part of the brain and its covering meninges.

- **Meningohydroencephalocele**: herniation of the meninges and part of the brain and its ventricle containing CSF

Meningoencephalocele

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Scaphocephaly: the skull is elongated anteroposterior due to early closure of the **sagittal suture**

Acrocephaly: high skull due to early closure of the coronal suture

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Plagiocephaly:
Asymmetrical shape due to early closure of the coronal and lambdoid sutures

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Development of limbs

• DEVELOPMENT OF THE LIMBS

- They develops as 4 buds (2 cranial and 2 caudal) at 4th week.
- Each limb bud is formed of a **mass of mesoderm**, its **central** part changes into **cartilage** then into **bone** while the **surrounding mesoderm** forms the **muscles**.
- The **upper limb** divides into arm, forearm and hand with 5 fingers.
- The **lower limb** divides into thigh, leg and foot with 5 toes.
- Each limb bud forms **right angle (90 degree) with the trunk** and has a **preaxial** border cranially (**radius, and thumb for the upper limb** and **tibia and big toe for the lower limb**) and a **postaxial** border caudally.

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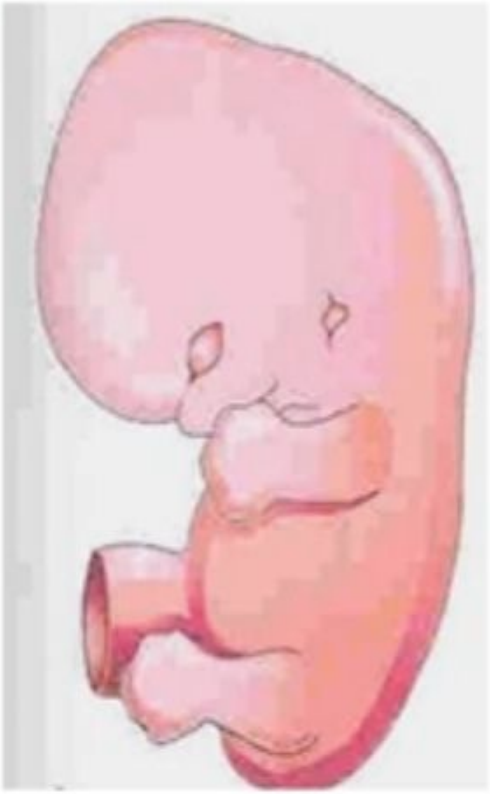

** Rotation of the limbs:-

- **Upper limb** rotates **laterally** so that the preaxial border (radius and thumb) becomes lateral and the flexor surface becomes anterior.
- **Lower limb** rotates **medially** so that the preaxial border (tibia and big toe) becomes medial and the flexor surface becomes posterior.

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Congenital anomalies of limbs

Meromelia: The limbs represented only by foot or hand attached to the trunk

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Amelia: Absence of one or more limbs

Micromelia: short segments of the limb

Lobster hand: A central fissure or cleft divides the hand or foot into 2 parts

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Polydactyl: Extra number of the fingers or toes.

Syndactyl: Abnormal fusion of the fingers.

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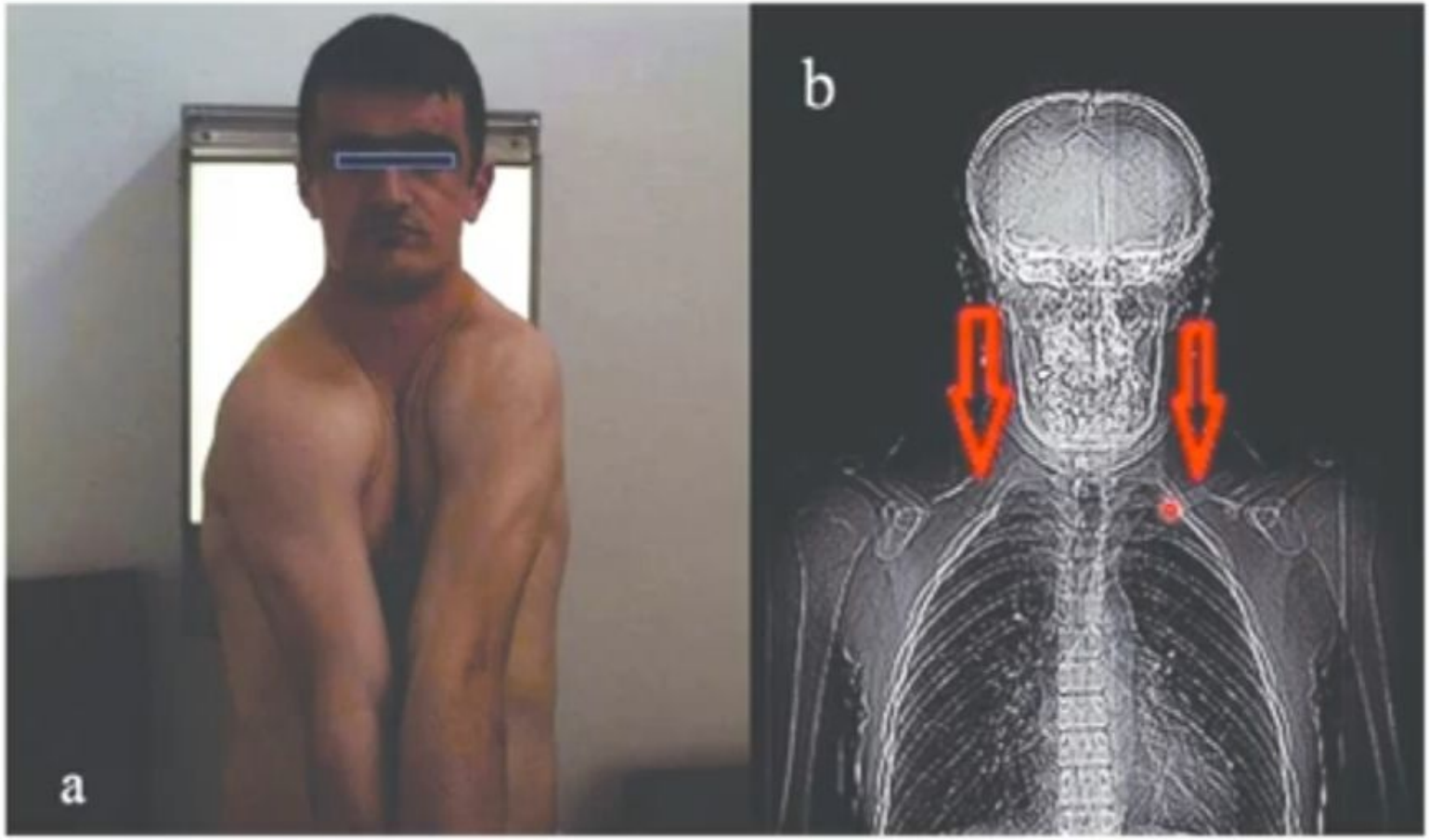

Congenital absence of some bones as clavicle

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Congenital anomalies of foots

❖ Deformities of the foot

- **Flat Foot:** loss of the arch of the foot

- **Pes Cavus:** Arch of the foot is high

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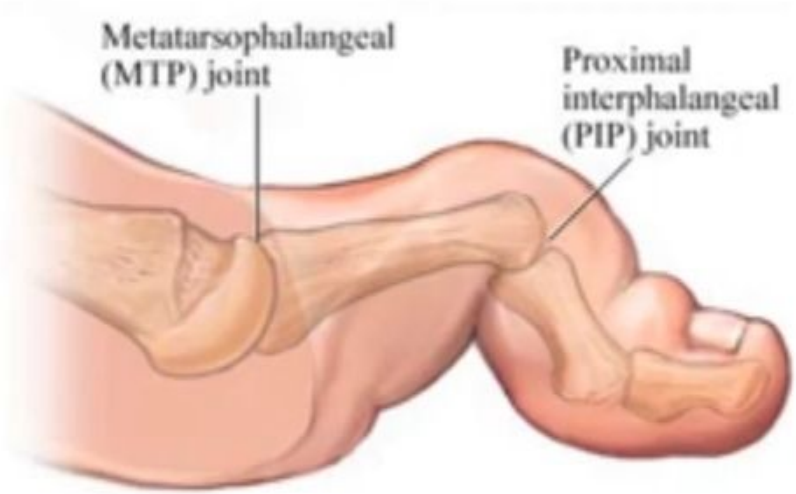
❖ Deformities of the foot



- **Hammer Toe:** extension of metatarsophalangeal joint and flexion of proximal interphalangeal joint.

- **Hallux Valgus:** lateral deviation of the big toe at the metatarsophalangeal joint.

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❖ Deformities of the foot

- **Talipes Equinus,** permanent plantar flexion, walking is done on toes without touching the heel to ground

- **Talipes Calcaneus,** permanent dorsiflexion, the heel rests on the ground and the toes pointed upwards

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Talipes valgus: the sole of the foot inclined **outward** so that walking is done on the **medial** side of the foot

Talipes varus: the sole of the foot inclined **inward** so that walking is done on the **lateral** side of the foot

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