Metacarpal Bones

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General Features

- Five miniature long bones forming the skeleton of the **palm**.
- Numbered **I to V** (thumb to little finger).
- Each has:
  - **Base (proximal end)** ? articulates with carpal bones.
  - **Shaft** ? slightly curved, dorsal surface convex.
  - **Head (distal end)** ? rounded, forms knuckles, articulates with phalanges.

Special Notes

- **First metacarpal**
  - Short, stout, more mobile.
  - Base is **saddle-shaped** ? articulates with trapezium (carpometacarpal joint of thumb).
  - Responsible for opposability of thumb.
- **Second metacarpal** ? largest.
- **Third metacarpal** ? has styloid process on its base.
- **Fifth metacarpal** ? base has facet for hamate.

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Clinical Anatomy of Metacarpals

- **Fractures**
    - **Boxer's fracture** ? fracture of neck of 5th metacarpal (from punching injury).
    - **Bennett's fracture** ? fracture dislocation at base of 1st metacarpal (thumb), involves carpometacarpal joint.
    - **Rolando's fracture** ? comminuted intra-articular fracture at base of 1st metacarpal.
- **Knuckle prominence** ? formed by heads of metacarpals, useful in surface anatomy.
- **Congenital anomalies** ? shortening of 4th and 5th metacarpals in **pseudohypoparathyroidism** (Albright's hereditary osteodystrophy).

Ossification of Metacarpals

- Each metacarpal ossifies from **two centers** (shaft and head/base).
- **Primary center**: shaft, appears in **9th week intrauterine life**.
- **Secondary centers**:
    - For **head** in metacarpals II–V.
    - For **base** in metacarpal I (thumb).
- Time of appearance ? around **2 years of age**.
- Fusion with shaft ? between **15–18 years**.
- Thus, metacarpals have **2 centers each** (except 1st, where secondary center is in base).