

WRIST JOINT

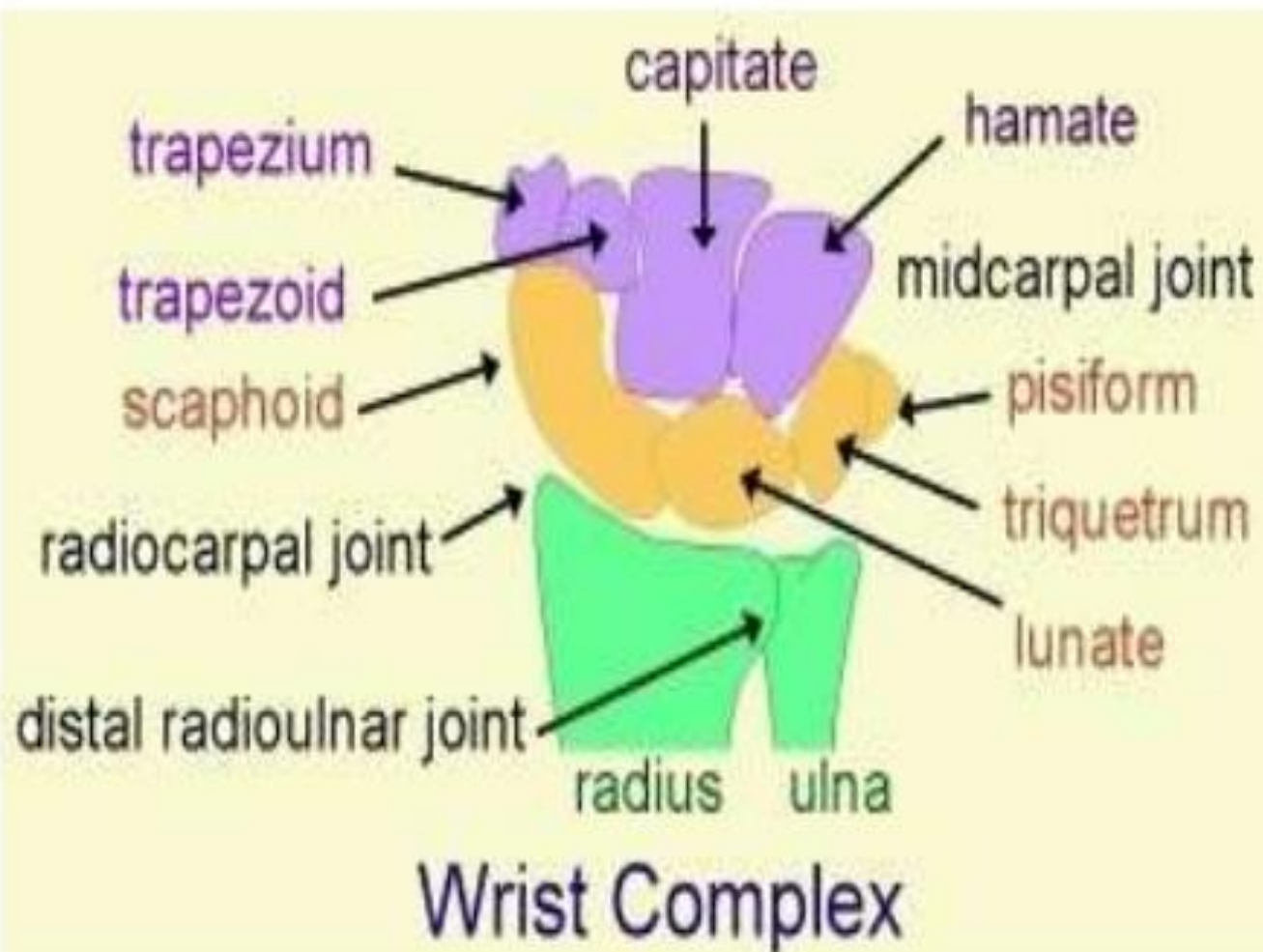
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LECTURER KGMC

Osseous anatomy

- The distal ends of the radius and ulna articulate with the two carpal rows (proximal and distal), and these articulate with the bases of the five metacarpal bones .

Anatomy of wrist & carpal bones



CARPAL BONES



Carpal bones are arranged in two rows
From lateral to medial and when viewed
from anteriorly

- **PROXIMAL ROW**

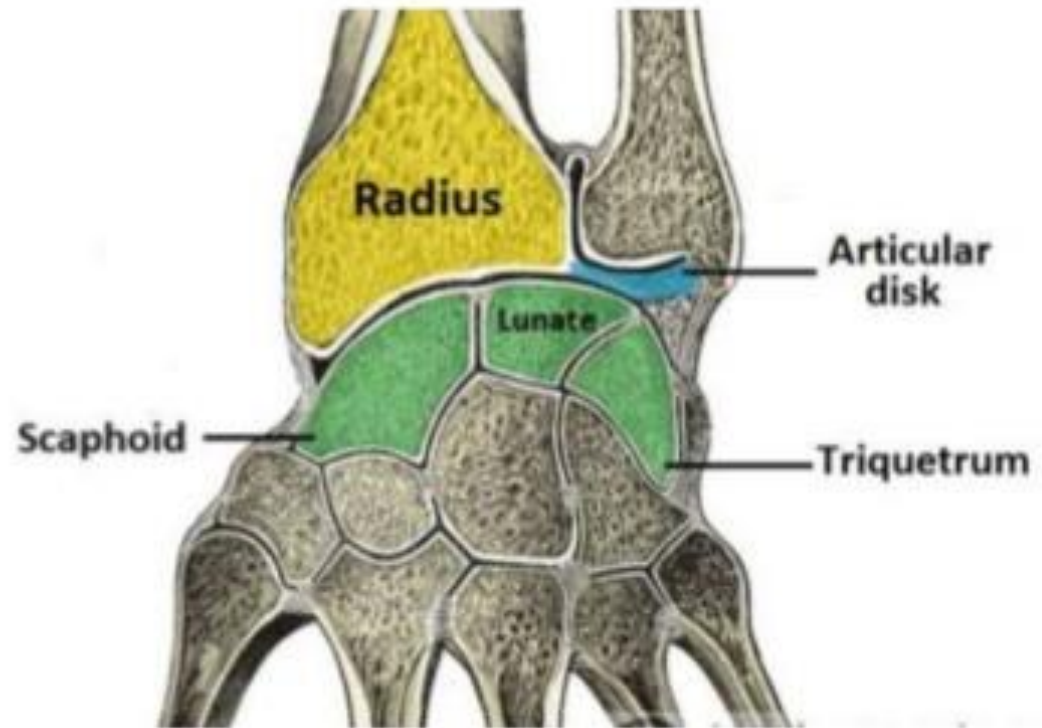
1. the boat-shaped **scaphoid**;
2. the **lunate**, which has a 'crescent shape';
3. the three-sided **triquetrum** bone;
4. the pea-shaped **pisiform**

- **DISTAL ROW**

1. the irregular four-sided **trapezium** bone;
2. the four-sided **trapezoid**;
3. the **capitate**, which has a head;
4. the **hamate**, which has a hook

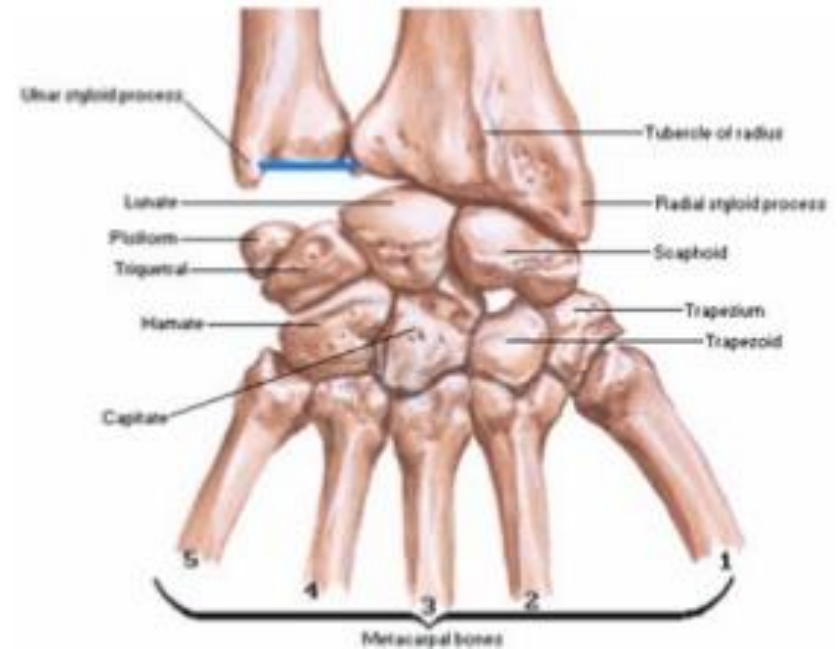
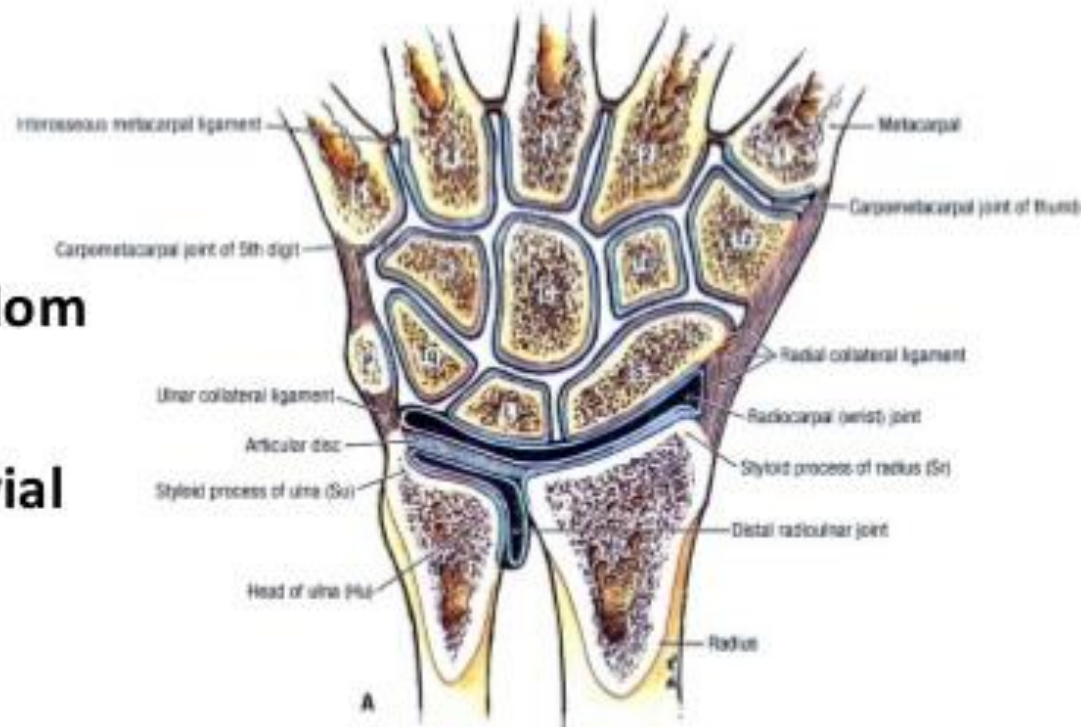
Wrist joint

- **Articulation:**
- Between the distal end of the radius and the articular disc above and the scaphoid, lunate, and triquetral bones below.
- **Type:** Synovial ellipsoid joint

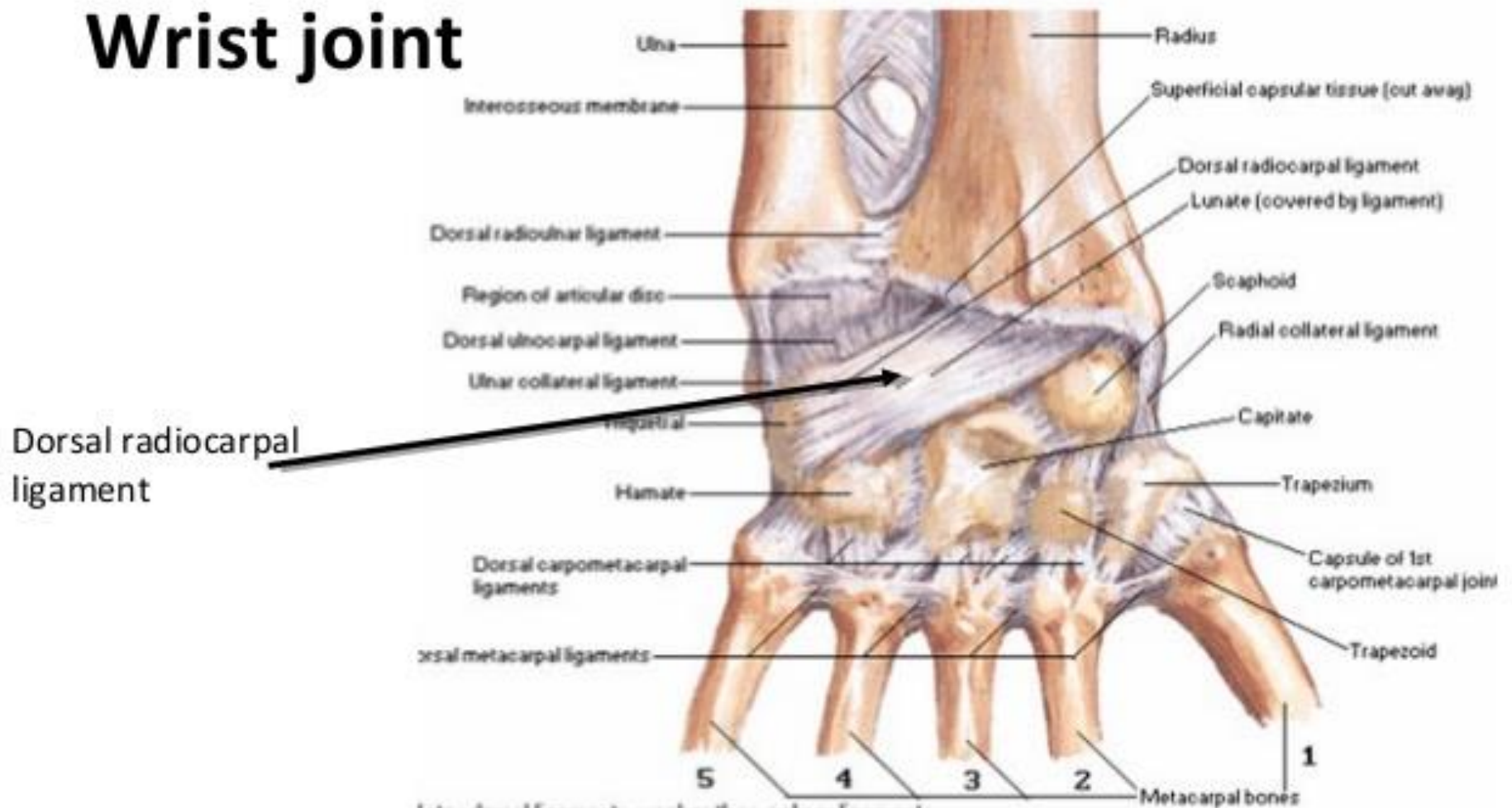


Wrist joint

- Bi-axial/2 degree of freedom
- Ellipsoid joint
- (Condyloid) type of synovial joint
- **Articular surfaces**
- Proximal articular surface (Elliptical socket)-
- Distal articular surface of radius & articular disc of distal radio-ulnar joint
- Distal articular surface: Scaphoid, Lunate & Triquetral.



Wrist joint



➤ Attachment

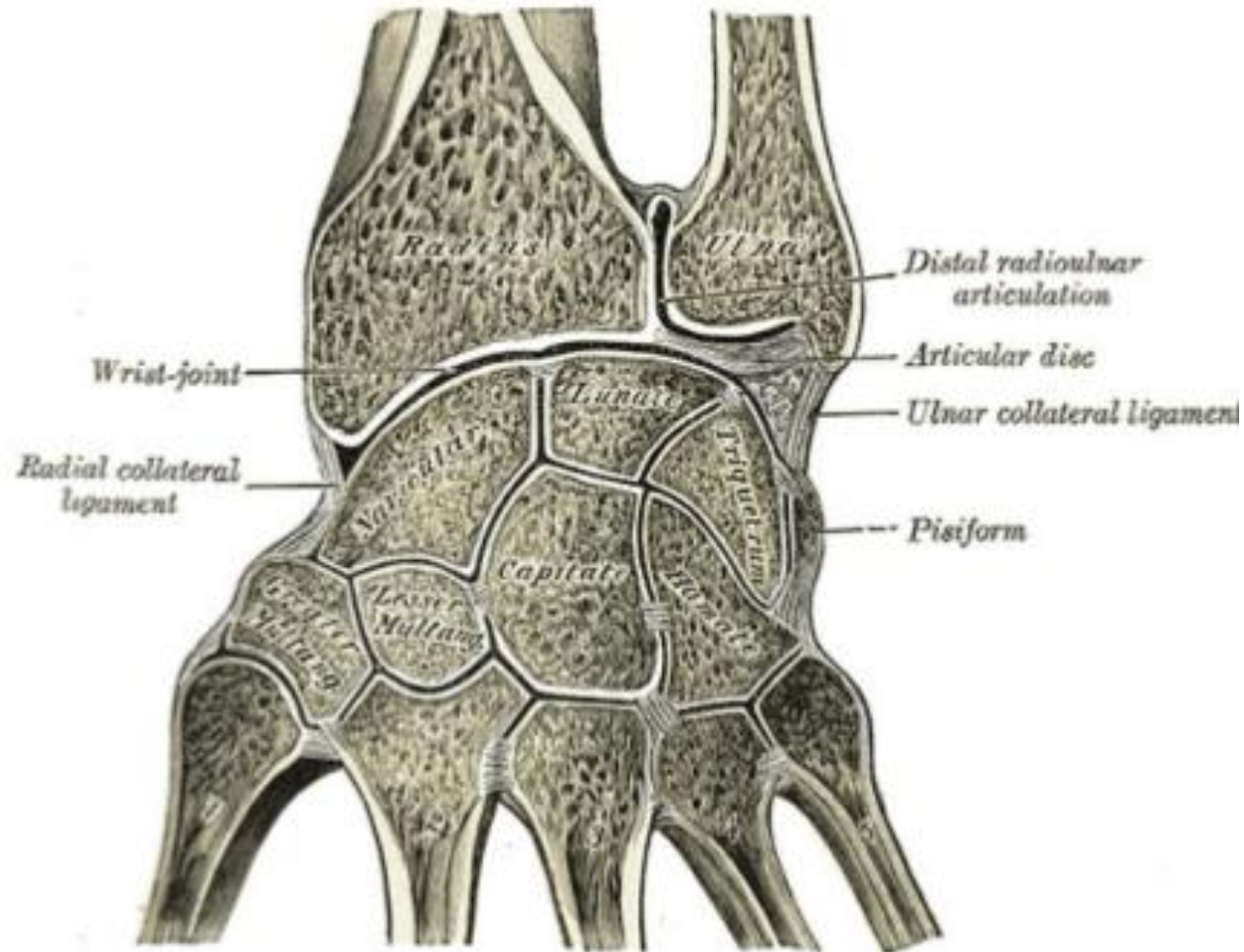
➤ Posterior margin of lower end of radius

➤ dorsal surface of scaphoid, lunate & triquetral bones

Wrist joint

- **Capsule:** The capsule encloses the joint and is attached above to the distal ends of the radius and ulna and below to the proximal row of carpal bones.
- **Synovial membrane:** Lines the capsule and is attached to the margins of the articular surfaces. The joint cavity does not communicate with that of the distal radioulnar joint or with the joint cavities of the intercarpal joints
- **Ligaments:**
- **Anterior and posterior ligaments** strengthen the capsule.
- **The medial ligament** is attached to the styloid process of the ulna and to the triquetral bone.
- **The lateral ligament** is attached to the styloid process of the radius and to the scaphoid bone.
- **Nerve supply:** Anterior interosseous nerve and the deep branch of the radial nerve

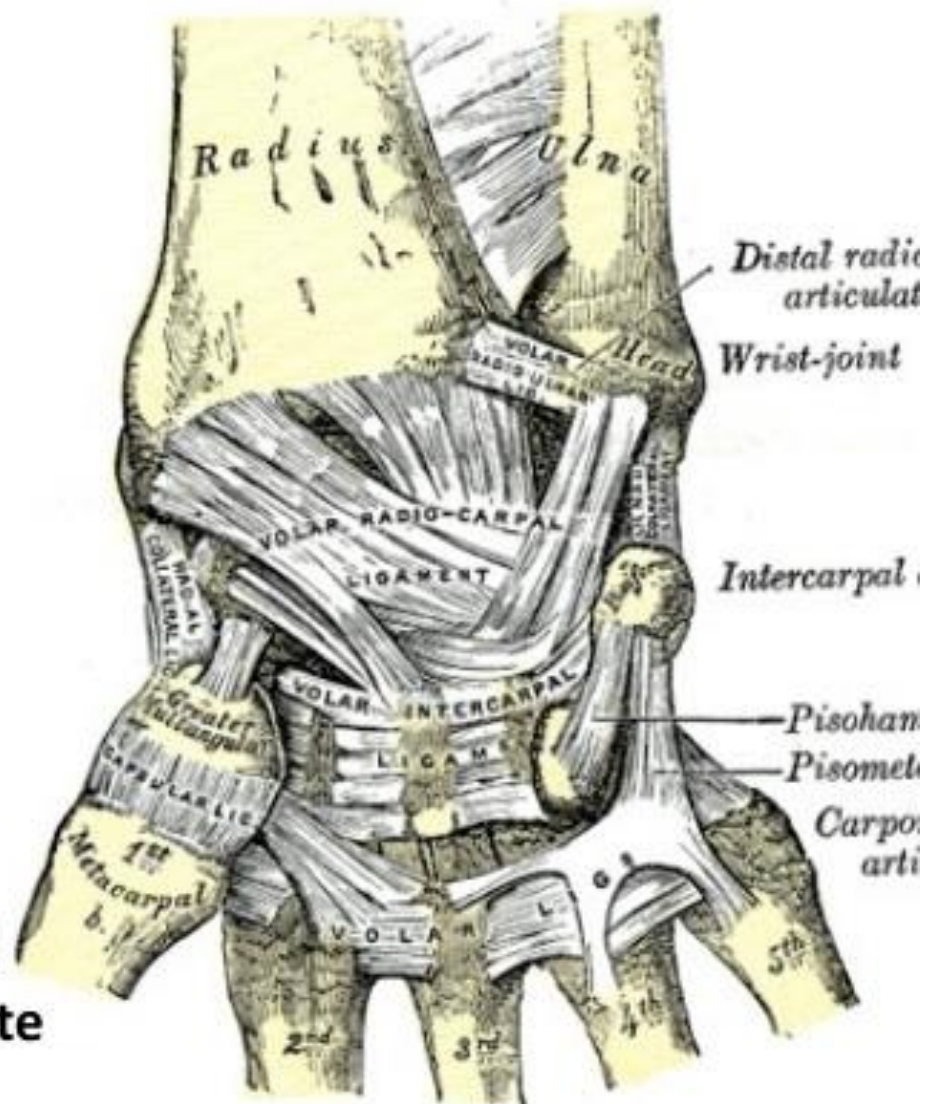
Wrist joint



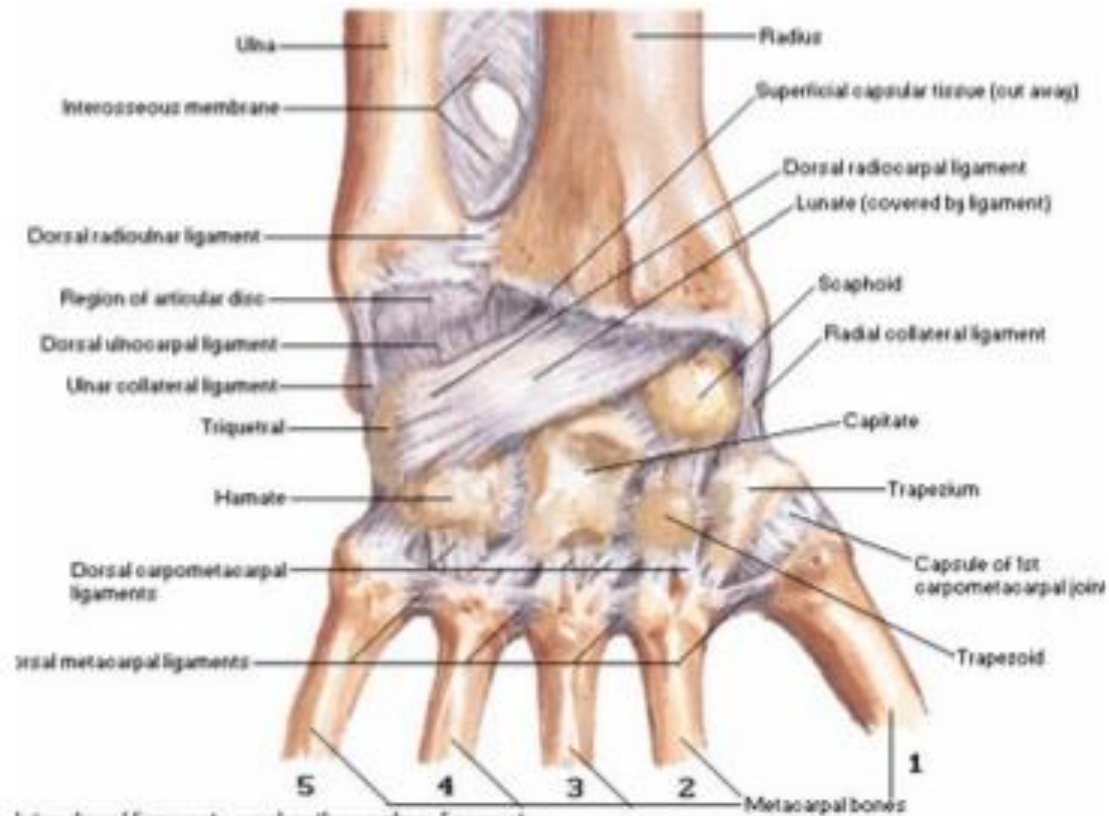
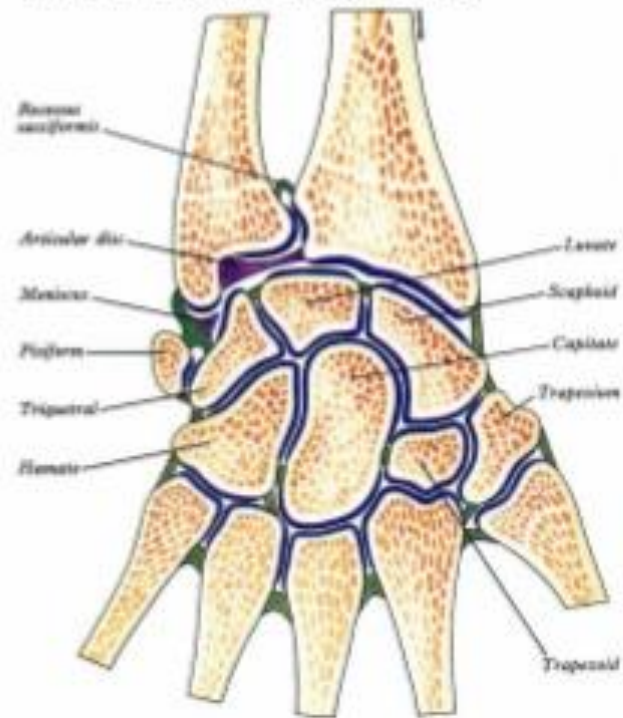
- **Ligaments:** possess capsular ligament with synovial membrane, Radial and Ulnar collateral ligament
- **Capsular ligament:** attach close to the peripheral margin of the proximal and distal articular surfaces including the articular disc

Wrist joint

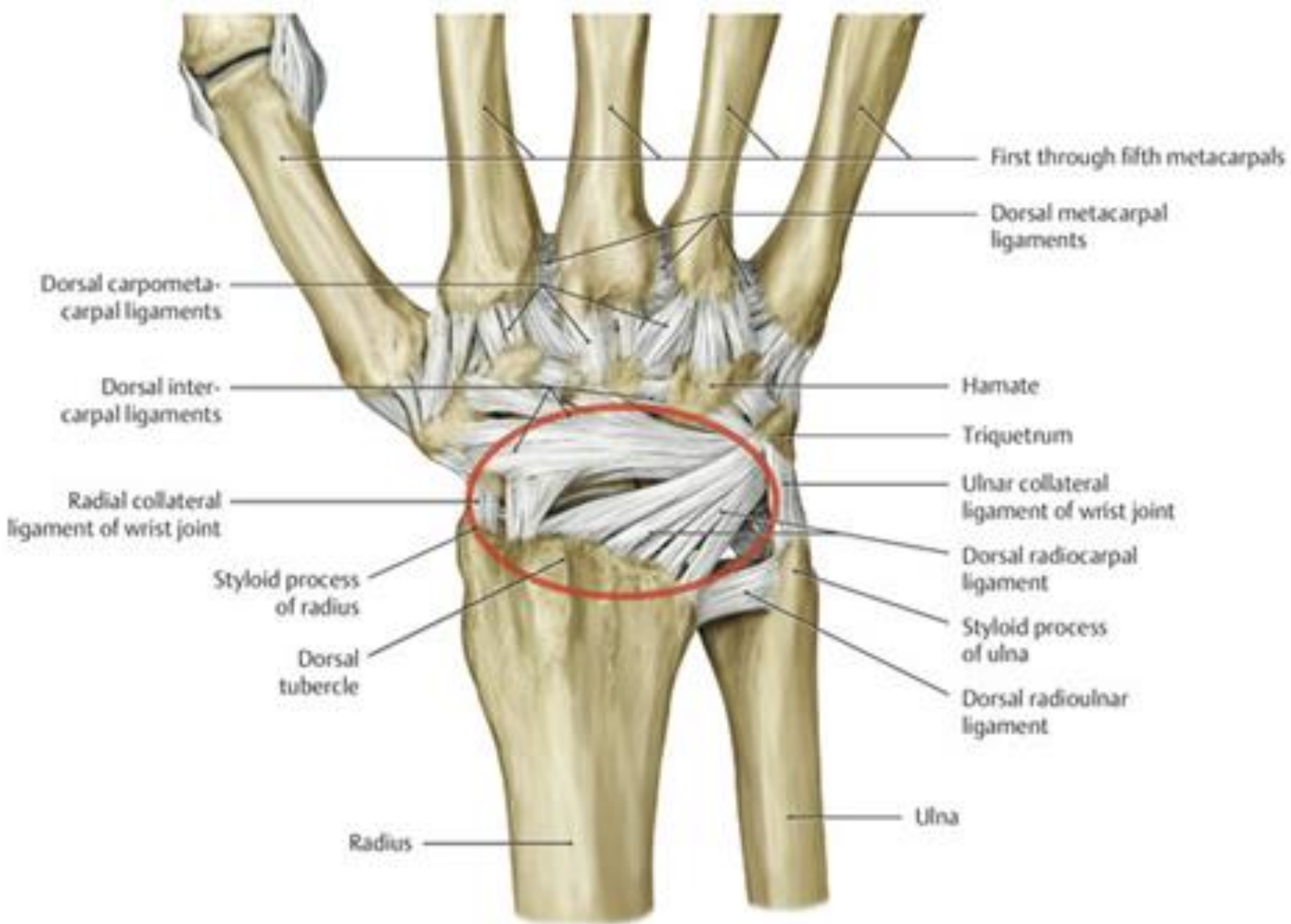
- **Capsule blends**
 - Palmar & dorsal radio-carpal ligaments
- **Palmar radio-carpal ligament**
 - Ant. margin of lower part of radius to ant. Surface of scaphoid, lunate, triquetral & capitate
- **Palmar ulno-carpal ligament**
 - Ant. Margin of articular disc & styloid process of ulna to lunate & triquetral

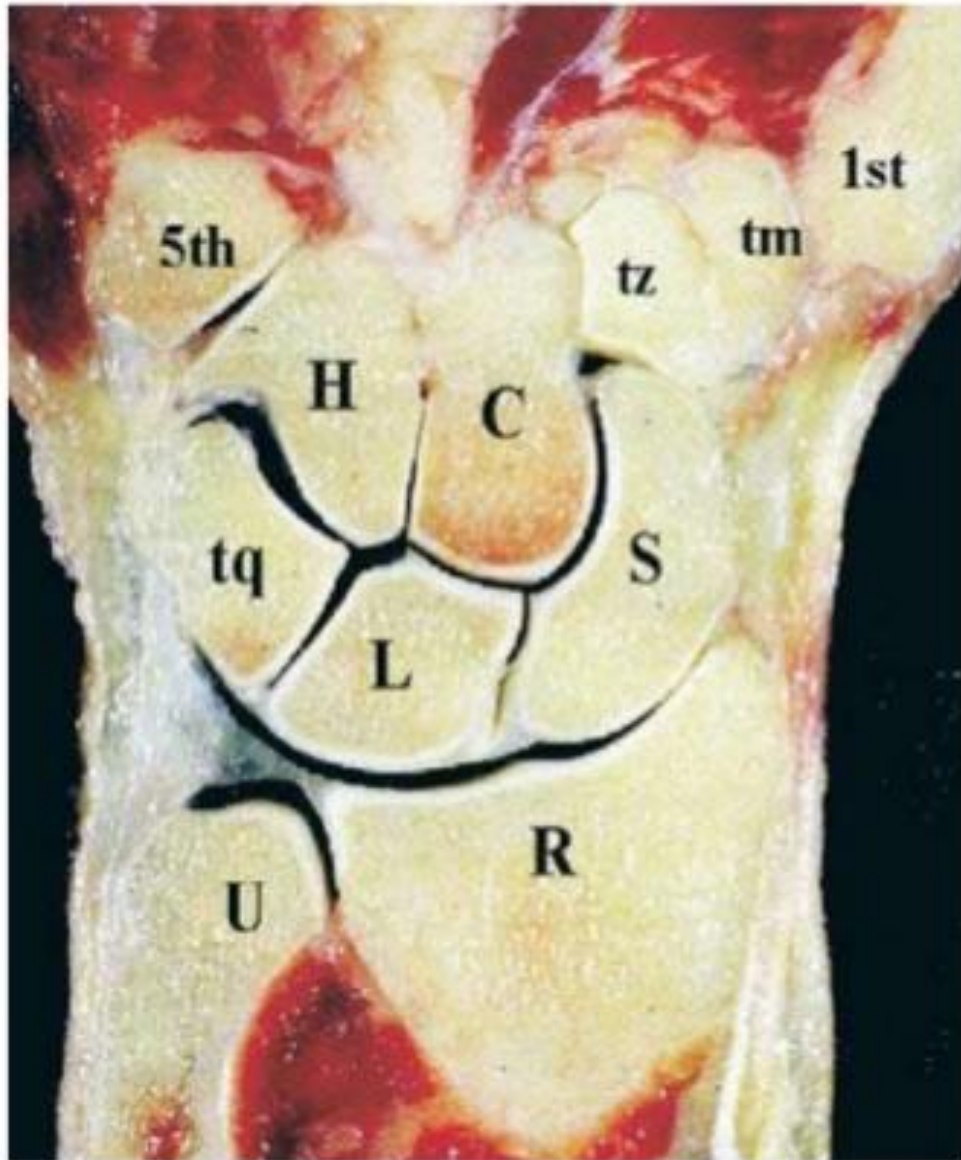


Wrist joint



- **Ulnar collateral ligament**
- **Styloid process of Ulna to triquetral and Pisiform bones**
- **Radial collateral ligament**
- **Styloid process of radius to scaphoid and trapezium**





LIGAMENTS

- There are four ligaments of note in the wrist joint, one for each side of the joint

Palmar radiocarpal – Found on the palmar (anterior) side of the hand. It passes from the radius to both rows of carpal bones. Its function, apart from increasing stability, is to ensure that the hand follows the forearm during supination

- **Dorsal radiocarpal** – Found on the dorsum (posterior) side of the hand. It passes from the radius to both rows of carpal bones. It contributes to the stability of the wrist, but also ensures that the hand follows the forearm during pronation

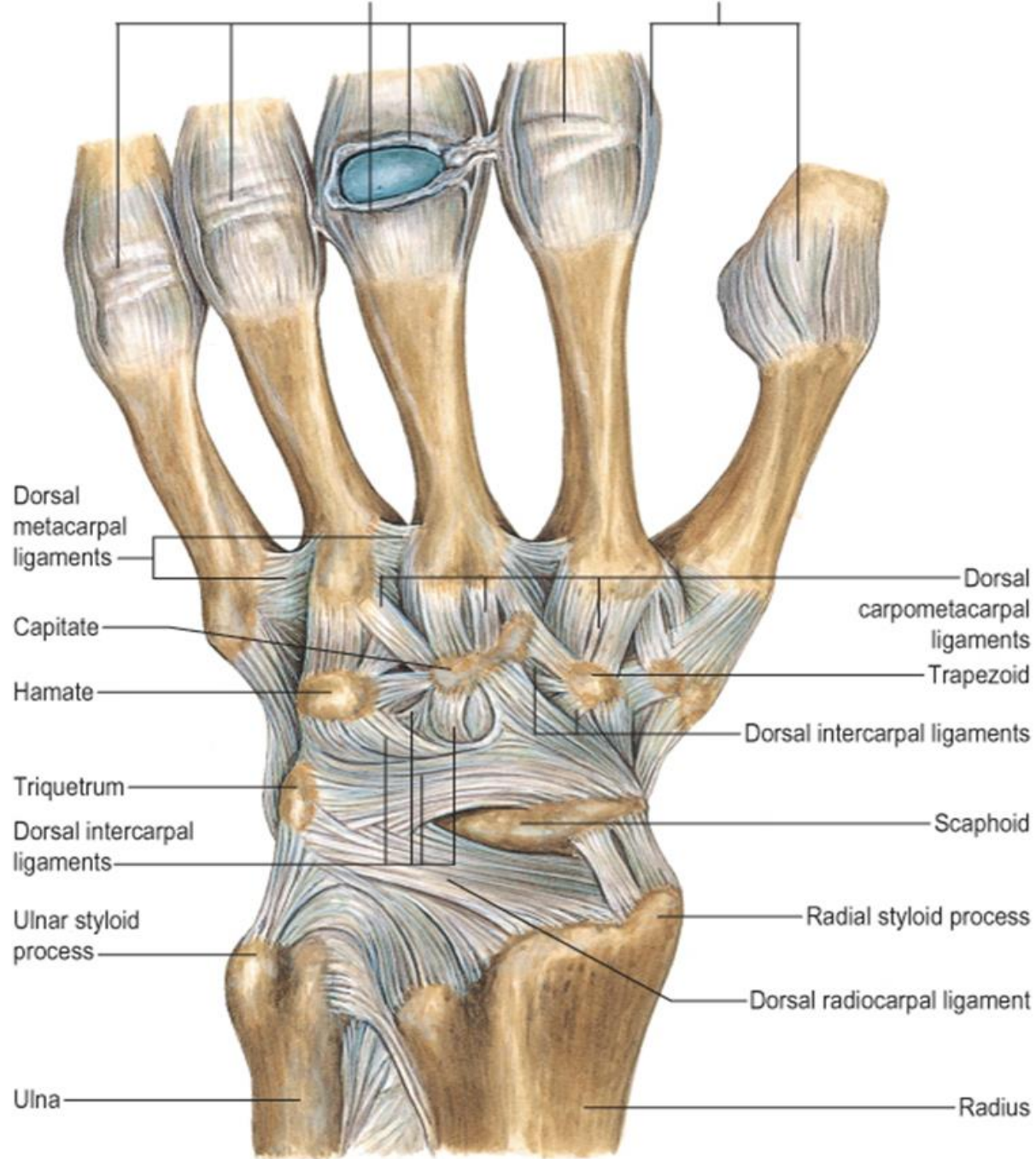
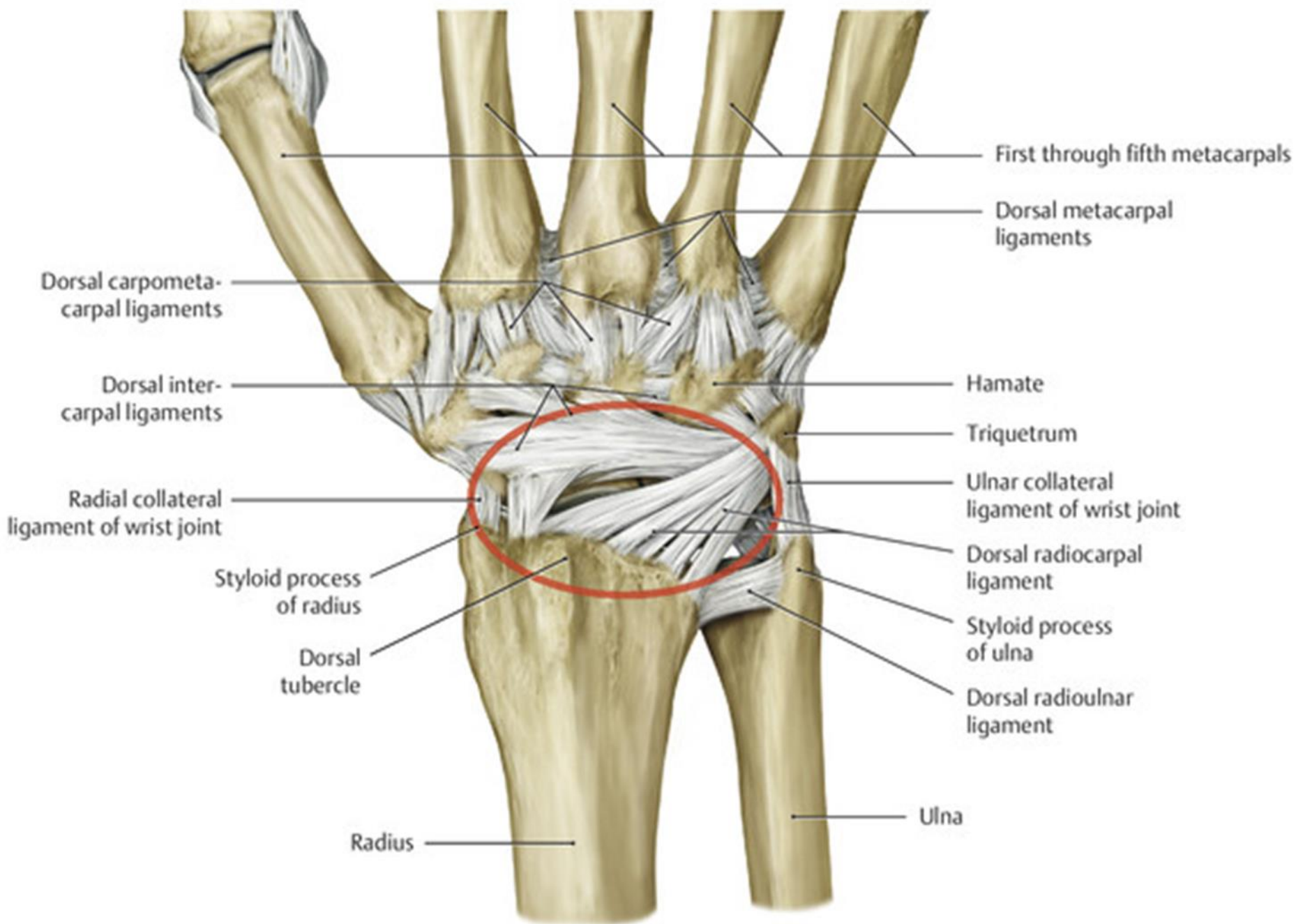


Fig. 50.15 Joints and ligaments of the left hand B. Dorsal aspect.

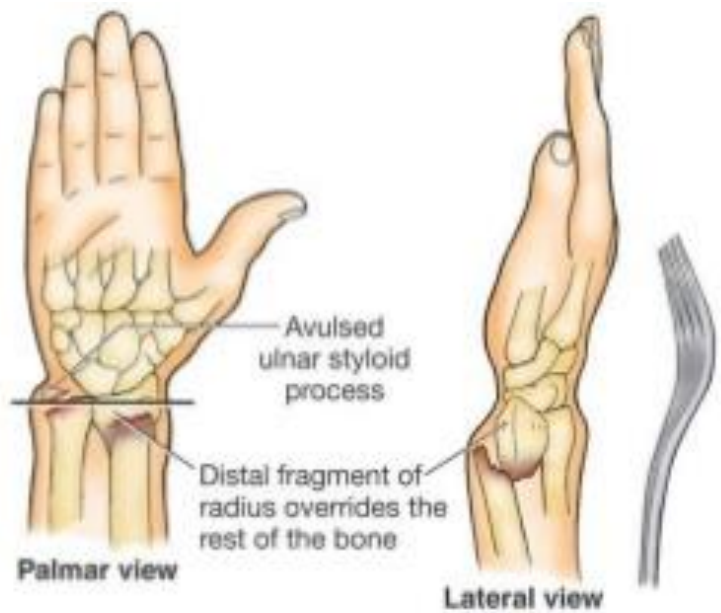
- **Ulnar collateral** – Runs from the ulnar styloid process to the triquetrum and pisiform. It acts to prevent excessive radial (lateral) deviation of the hand.
- **Radial collateral** – Runs from the radial styloid process to the scaphoid and trapezium. It acts to prevent excessive ulnar (medial) deviation of the hand.



Movements

- **Movement of wrist joint: the movements are accompanied by the movements of intercarpal and midcarpal joint**
- **Flexion**
 - **FCU, palmaris longus and FCR with assistance from the flexors of the fingers and thumb**
- **Extension**
 - **Extensor carpi radialis longus, extensor carpi radialis brevis and extensor carpi ulnaris with assistance from the long extensor tendons of finger and thumb**
- **Adduction**
 - **Flexor carpi ulnaris, extensor carpi ulnaris**
- **Abduction**
 - **Flexor carpi radialis, extensor carpi radialis longus and brevis, abductor pollicis longus and extensor pollicis brevis**

Applied anatomy



Colles fracture of distal radius ("dinner fork deformity")

Colle's Fracture (Outward)



Smith's Fracture (Inward)



Colles Fracture

Figure 1: Medial view of left wrist showing the broken radius.

Figure 2: Goulie falling on hand causing pressure on radius.



Colles Fracture of the end of the radius



Smith's Fracture of the end of the radius

Monteggia's fracture



Proximal third of ulna


Anterior dislocation of head of radius

Galeazzi's fracture




Distal third of radius
Subluxation (partial dislocation) of head of ulna (distal ulna)





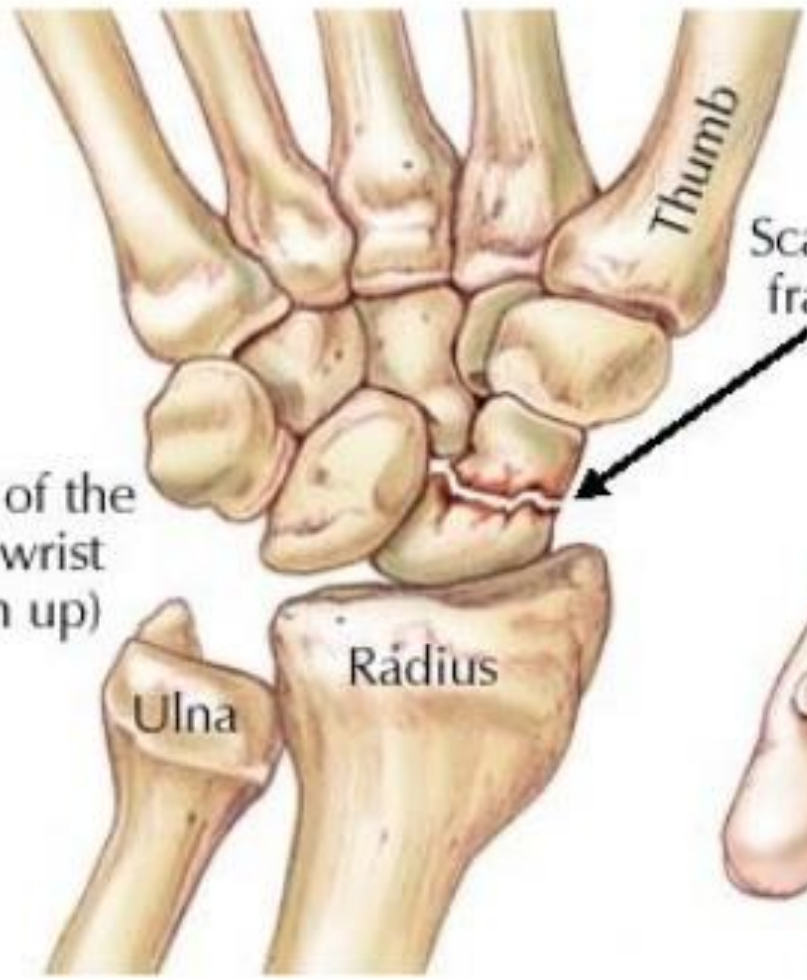
RADIUS
FRACTURE

This anatomical illustration shows a human forearm from the elbow to the wrist. The radius is the bone on the thumb side. A clear break, representing a fracture, is visible in the middle section of the radius. The ulna, the bone on the pinky side, is shown in its normal, unbroken position. The skin and soft tissue are rendered in a realistic, light brown tone.

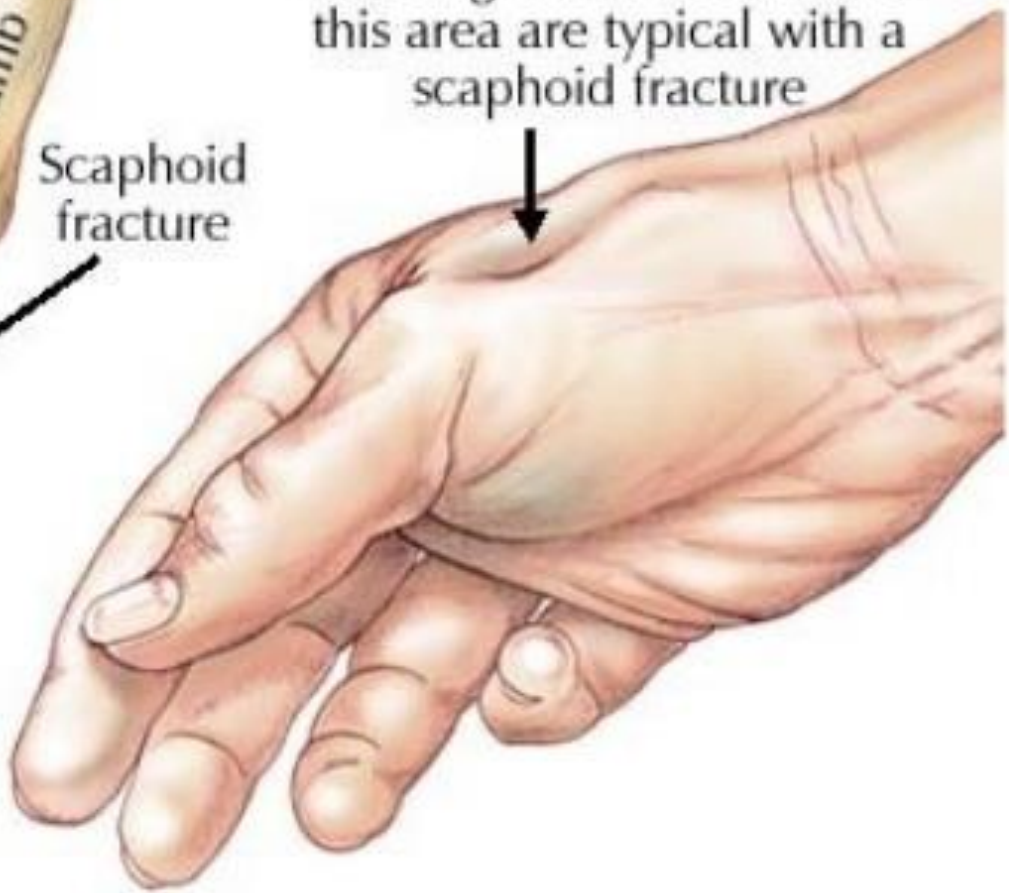


ULNAR
FRACTURE

This anatomical illustration shows a human forearm from the elbow to the wrist. The ulna is the bone on the pinky side. A clear break, representing a fracture, is visible in the middle section of the ulna. The radius, the bone on the thumb side, is shown in its normal, unbroken position. The skin and soft tissue are rendered in a realistic, light brown tone.



Swelling and tenderness in this area are typical with a scaphoid fracture



**Articular
cartilage**

**Cross
section**



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**Arthritic
changes**

THANK YOU

