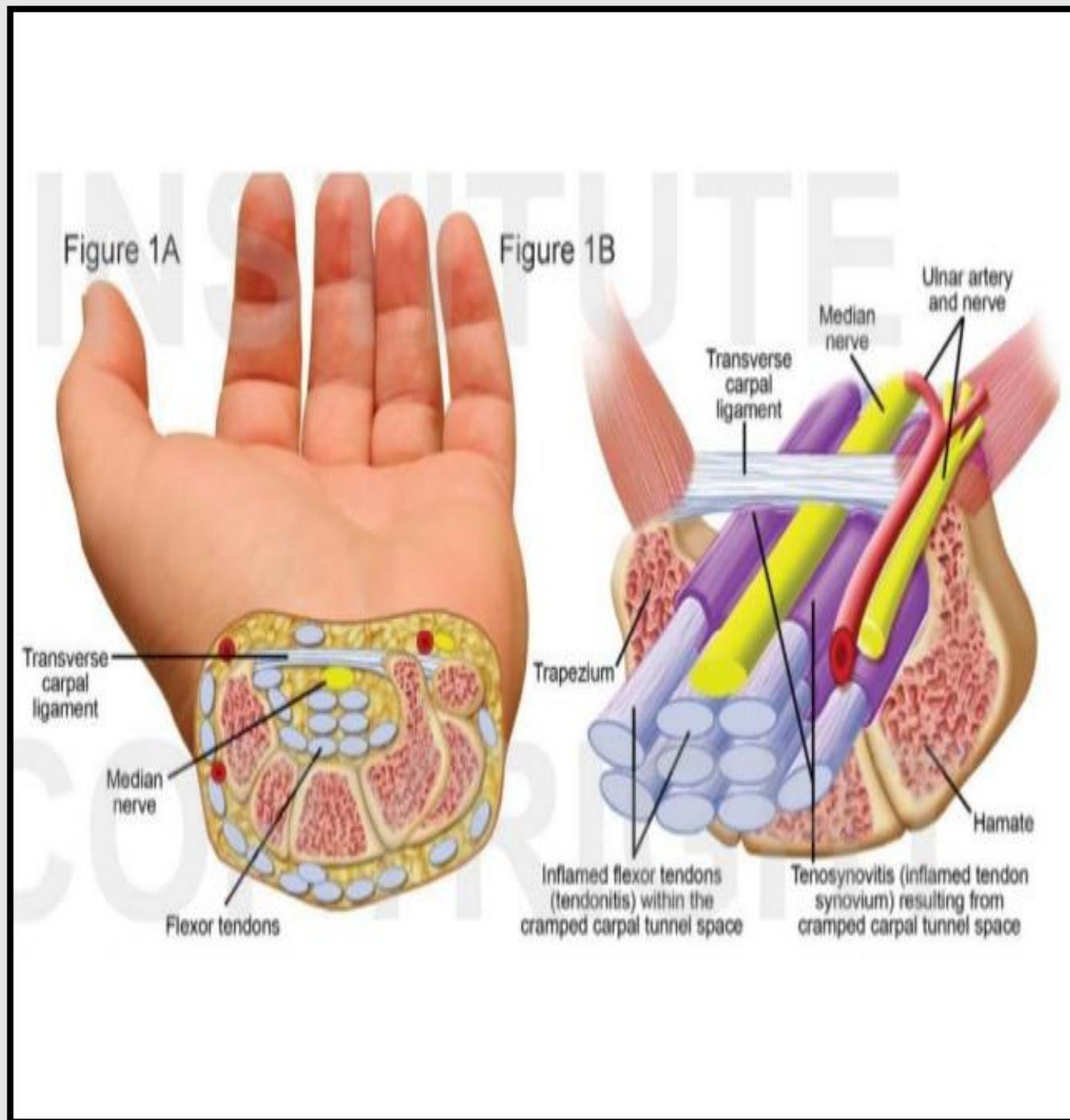


**Wrist (Radiocarpal)
Joint &
Flexor Retinaculum**

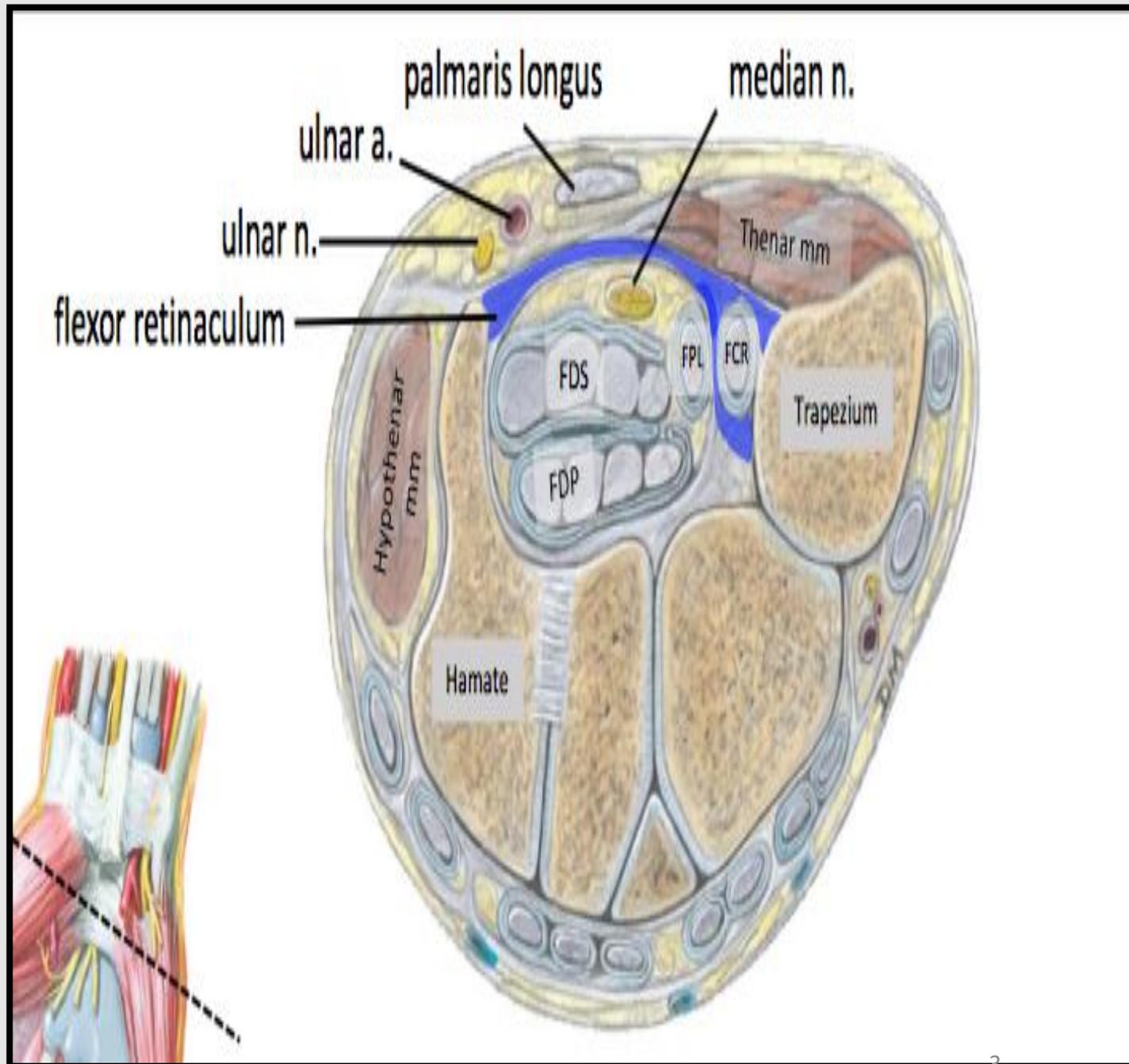
BY DR DALIA M. BIRAM

Flexor Retinaculum [transverse carpal ligament]

- The flexor retinaculum is a thickening of deep fascia across the front of the wrist and converts the concave anterior surface of the carpal bones into an osteo-fascial tunnel
- It holds the long flexor tendons in position at the wrist.
- The carpal tunnel allows passage of the median nerve and the flexor tendons of the thumb and fingers



Attachment:
MEDIALY :to the Pisiform
and the hook of the Hamate
LATERALLY: to the
tubercle of the scaphoid
and the trapezium bones.
The attachment to the
trapezium
➤ consists of superficial
and deep parts and forms a
synovial lined tunnel for
passage of the tendon of
the flexor carpi radialis



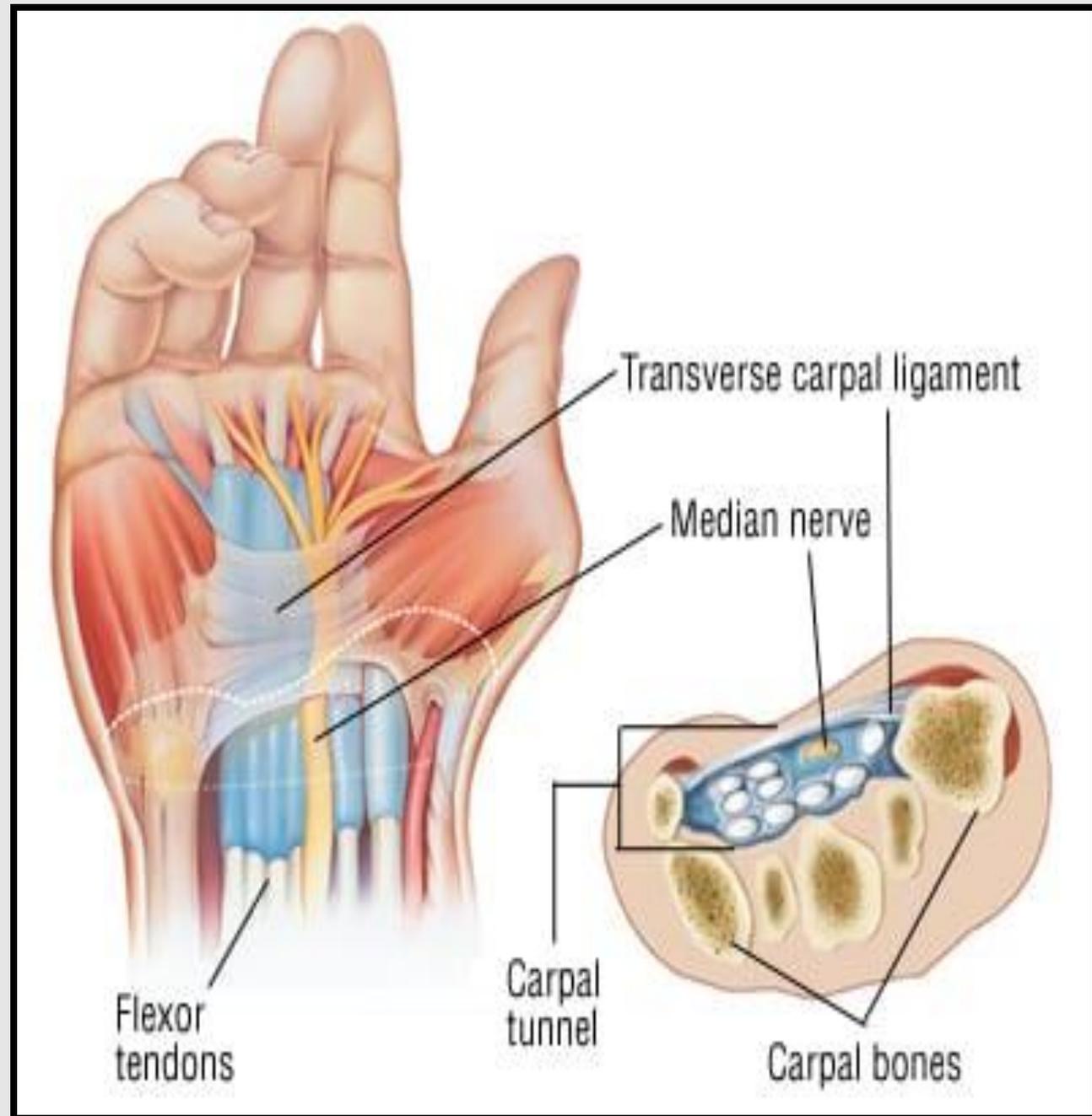
Carpal Tunnel

❖ The carpus is deeply concave on its anterior surface and forms a bony gutter.

❖ The gutter is converted into a tunnel by **the flexor retinaculum**

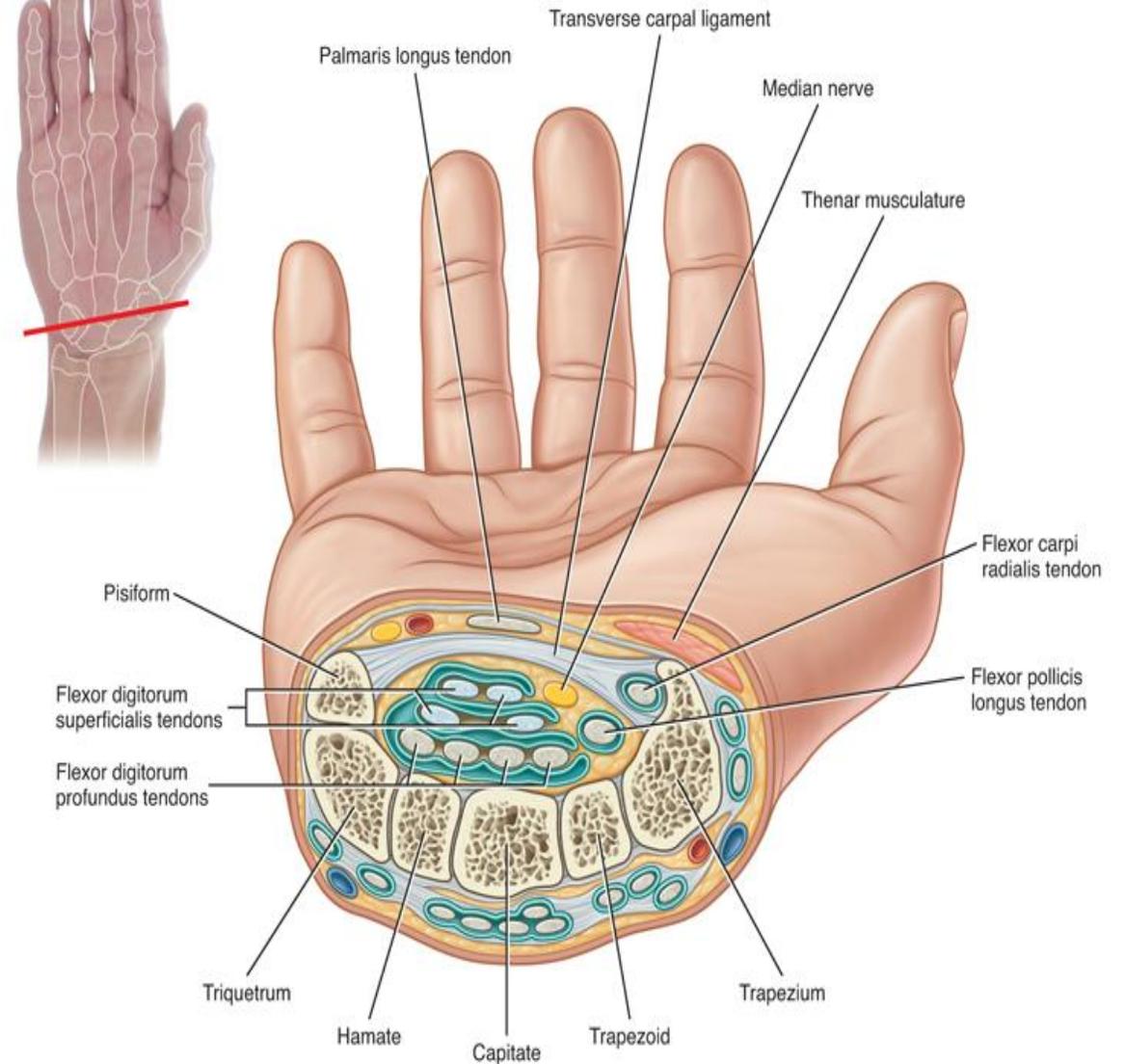
❖ The long flexor tendons to the fingers and thumb pass through the tunnel and are accompanied by the median nerve

❖ The median nerve lies in a restricted space between the tendons of the **flexor digitorum superficialis** and the **flexor carpi radialis** muscles.



❖ The four separate tendons of the flexor digitorum superficialis muscle are arranged in anterior and posterior rows, those to the middle and ring fingers lying in front of those to the index and little fingers.

❖ The tendons of the flexor digitorum profundus muscle are on the same plane and lie behind the superficialis tendons.

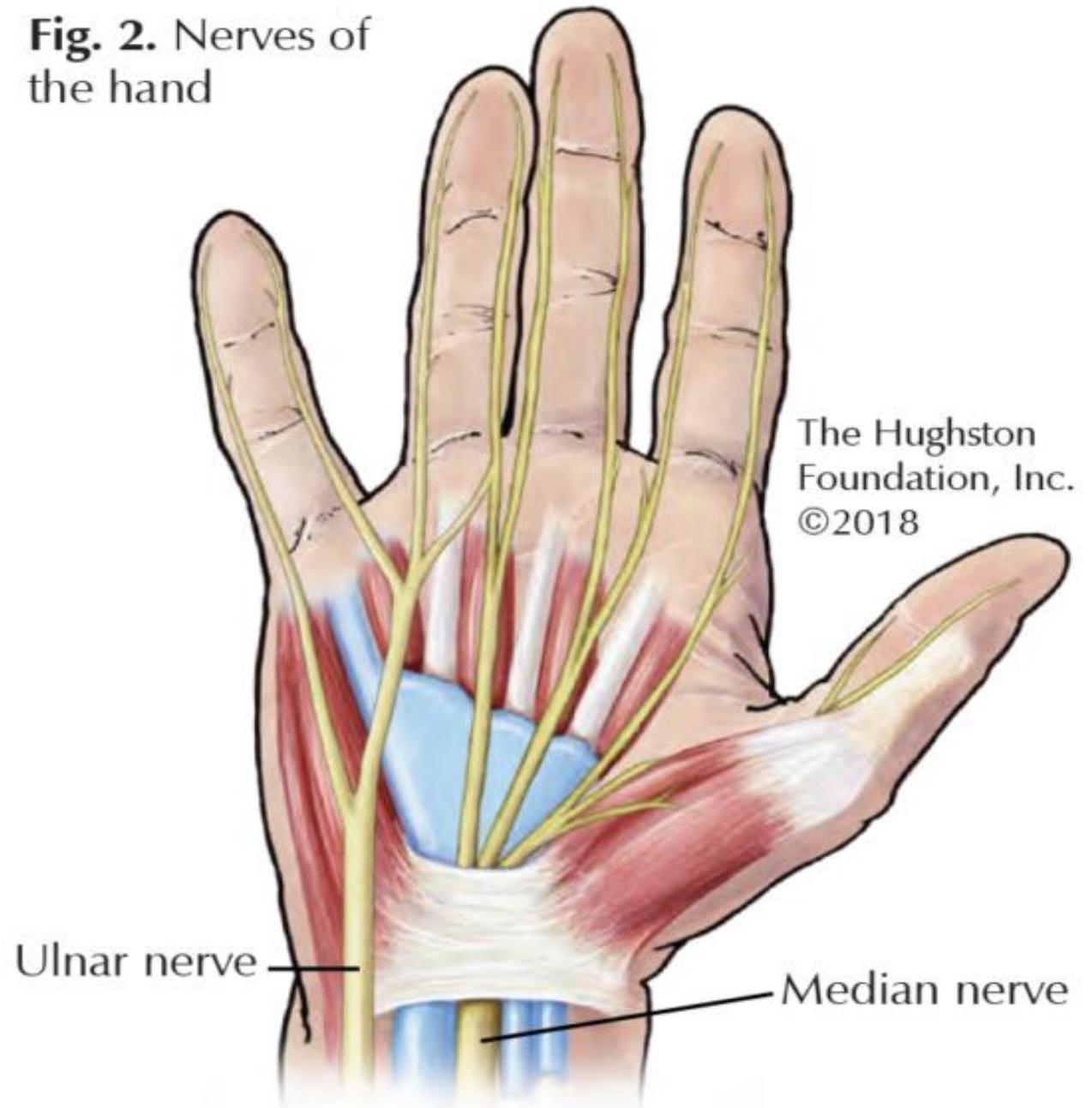


Modified from Drake, R: Gray's atlas of anatomy, ed 2, Philadelphia, 2015, Churchill Livingstone.

- **Structures superficial to flexor retinaculum:**

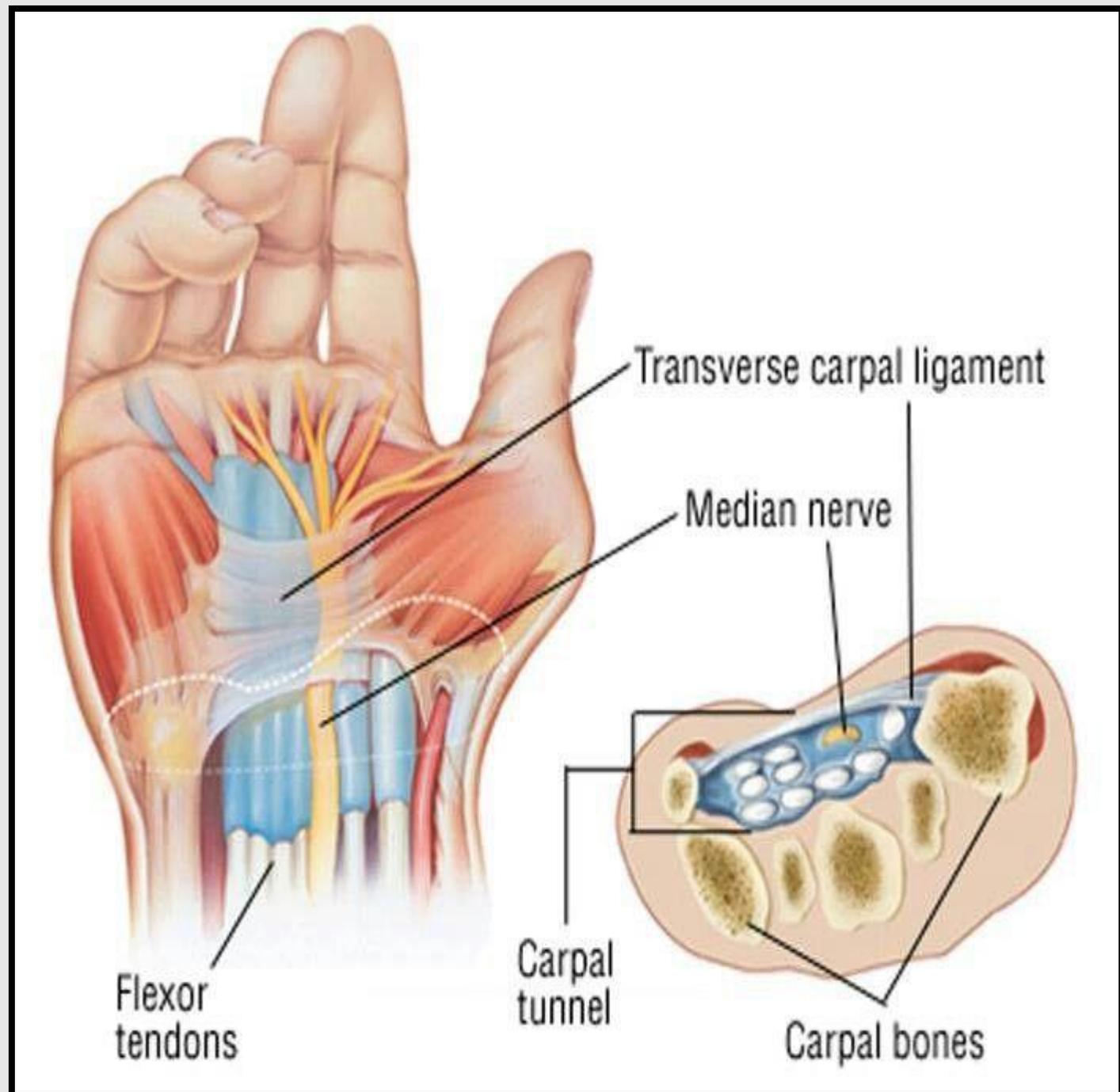
1. **Ulnar nerve.**
2. **Ulnar vessels.**
3. **Palmar Cutaneous branches of ulnar nerve.**
4. **Palmar Cutaneous branch of median nerve.**
5. **Tendon of palmaris longus.**

Fig. 2. Nerves of the hand



• Structures deep to the flexor retinaculum:

1. Median nerve.
2. Flexor digitorum profundus and flexor digitorum superficialis tendons with a Common synovial sheath.
3. Flexor pollicis longus and its synovial sheath.
4. Flexor carpi radialis in a separate tunnel.



Wrist (Radiocarpal) Joint

Type of joint

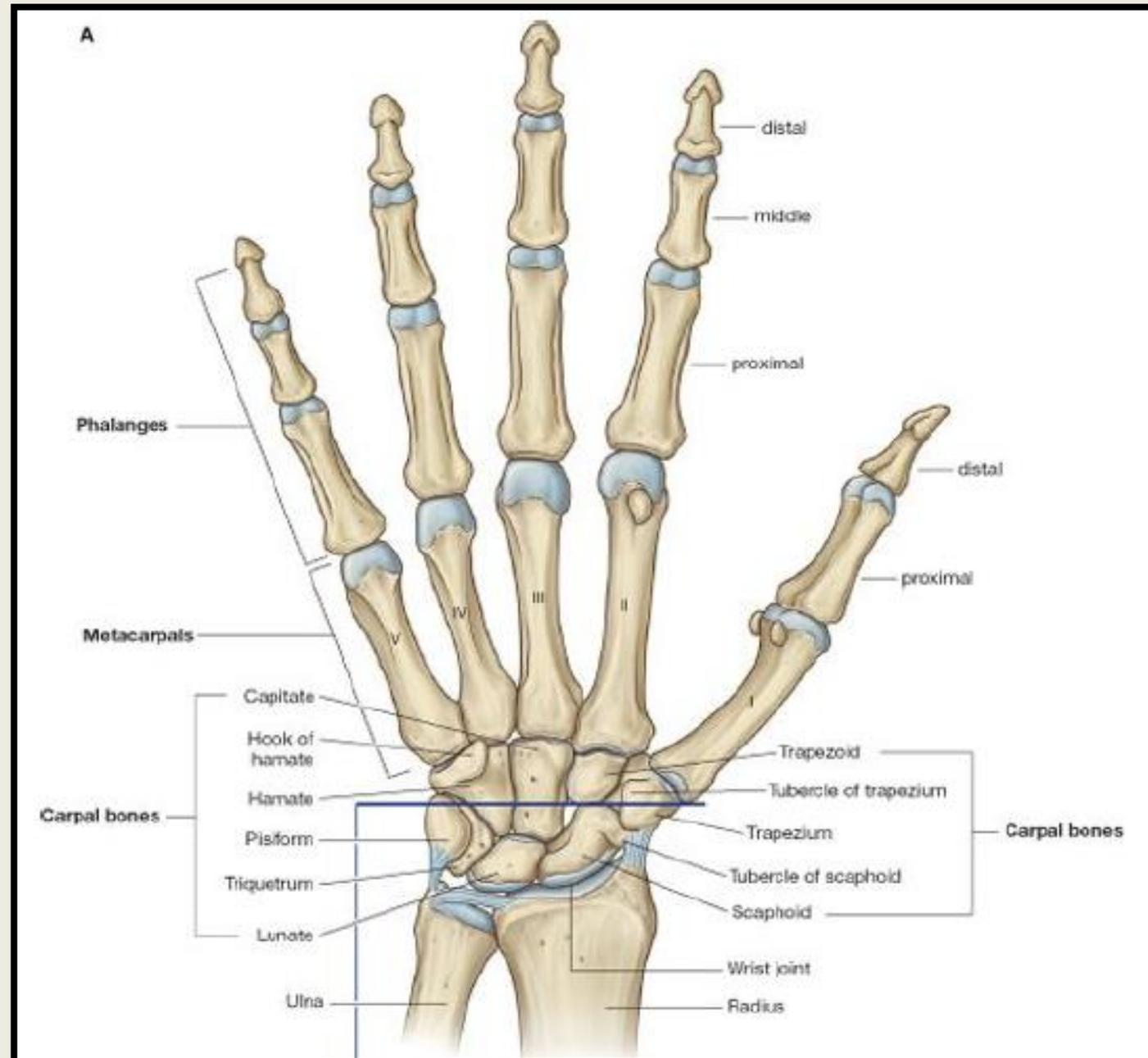
Synovial; Biaxial; Ellipsoid.

Articular surfaces:

-Inferior surface of lower end of radius & the inferior surface of articular disc.

-The articular surface of the proximal row of carpal bone (Scaphoid, Lunate and Triquetral).

- The scaphoid and lunate articulate with the lower end of radius while the triquetral articulates with the articular disc.

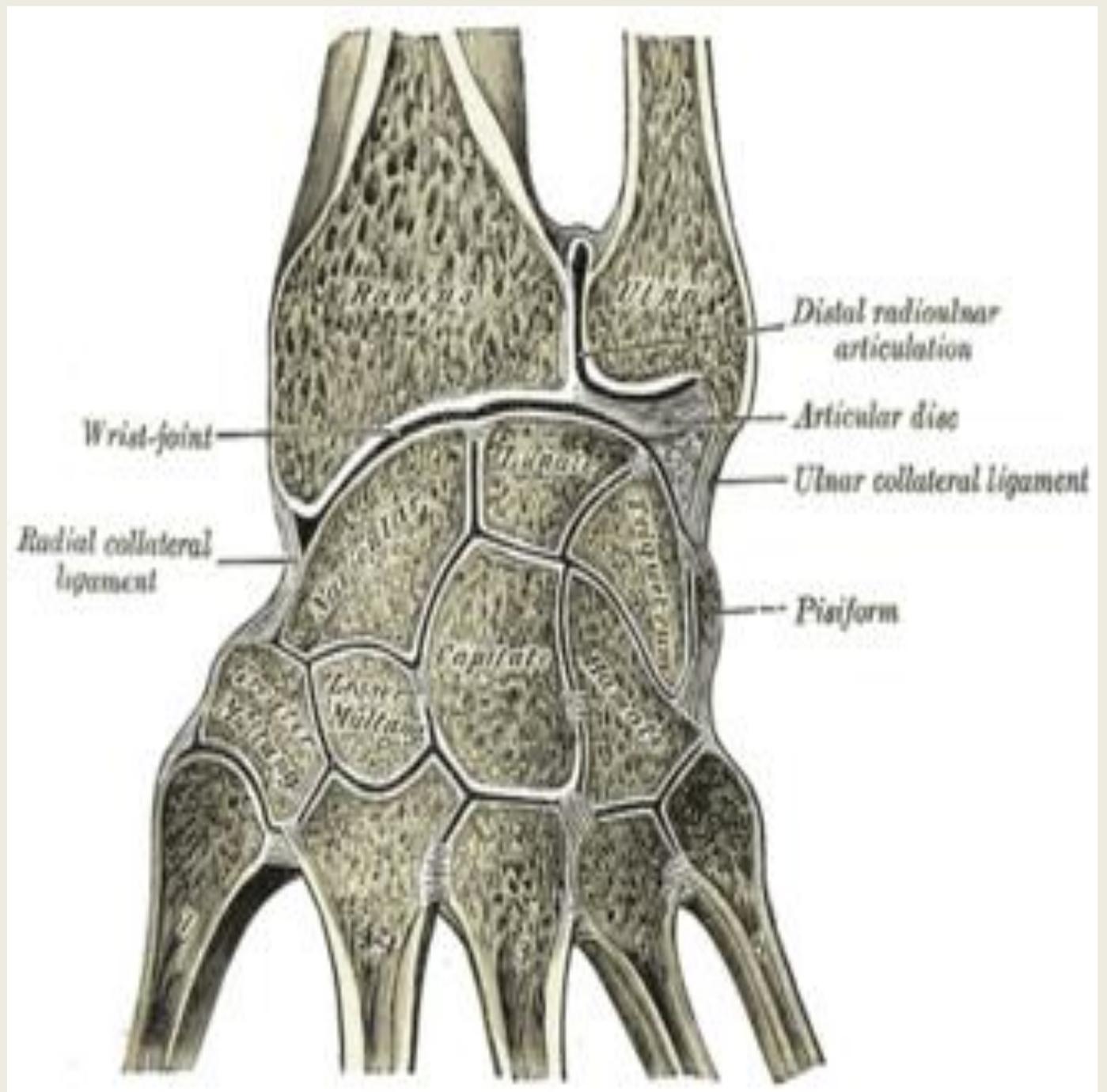


-The articular disc is a triangular cartilage that is attached between the lower end of radius and that of ulna.

-The ulna does not share in the wrist joint, so it is called a radiocarpal articulation.

Capsule: •

The capsule is thin and • attached to the margins of the articular parts of bones



Synovial membrane:

It lines all the structures inside the capsule of the wrist joint **EXCEPT** the articular surfaces. This synovial membrane **is not continuous** with that of the inferior radioulnar joint.

Ligaments related to wrist joint:

- Ulnar collateral (medial) ligament: it extends between the styloid process of ulna and pisiform and triquetral.
- Radial collateral (lateral) ligament: it extends between the styloid process of radius and scaphoid bone.
- Palmar radiocarpal ligament.
- Dorsal radiocarpal ligament.
- Palmar ulnocarpal ligament.

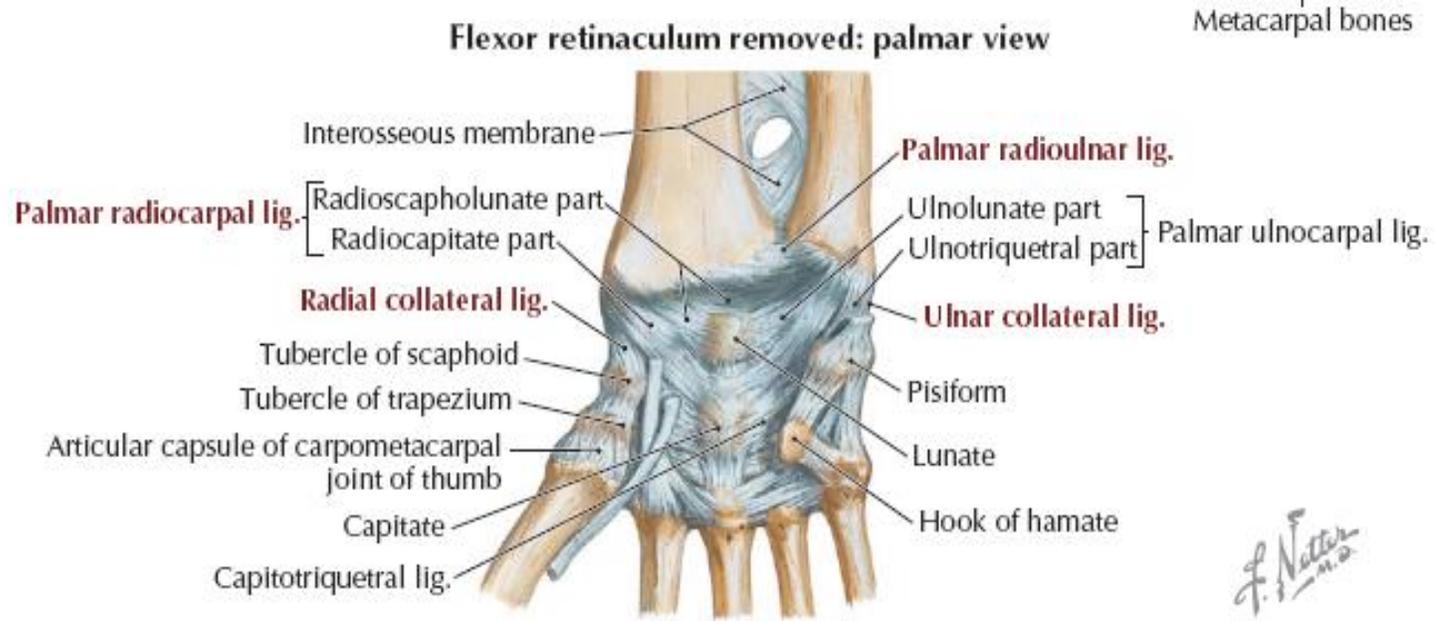
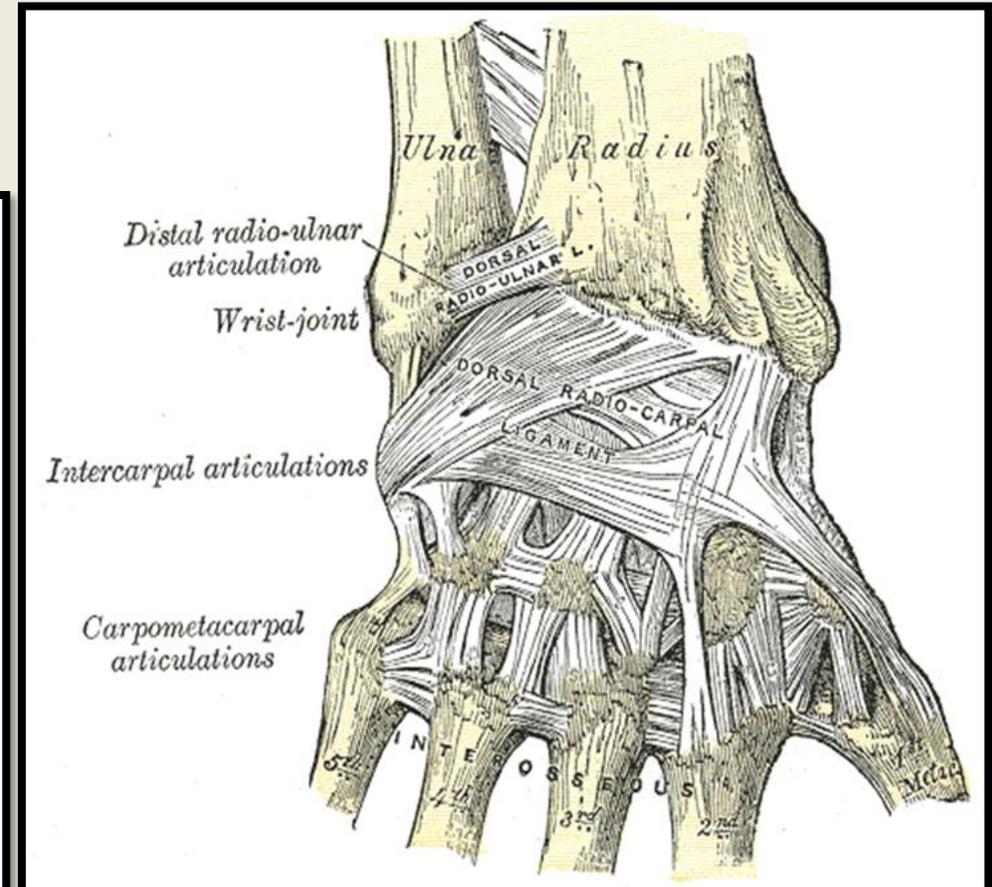


FIGURE 7-24 Wrist Joint Ligaments

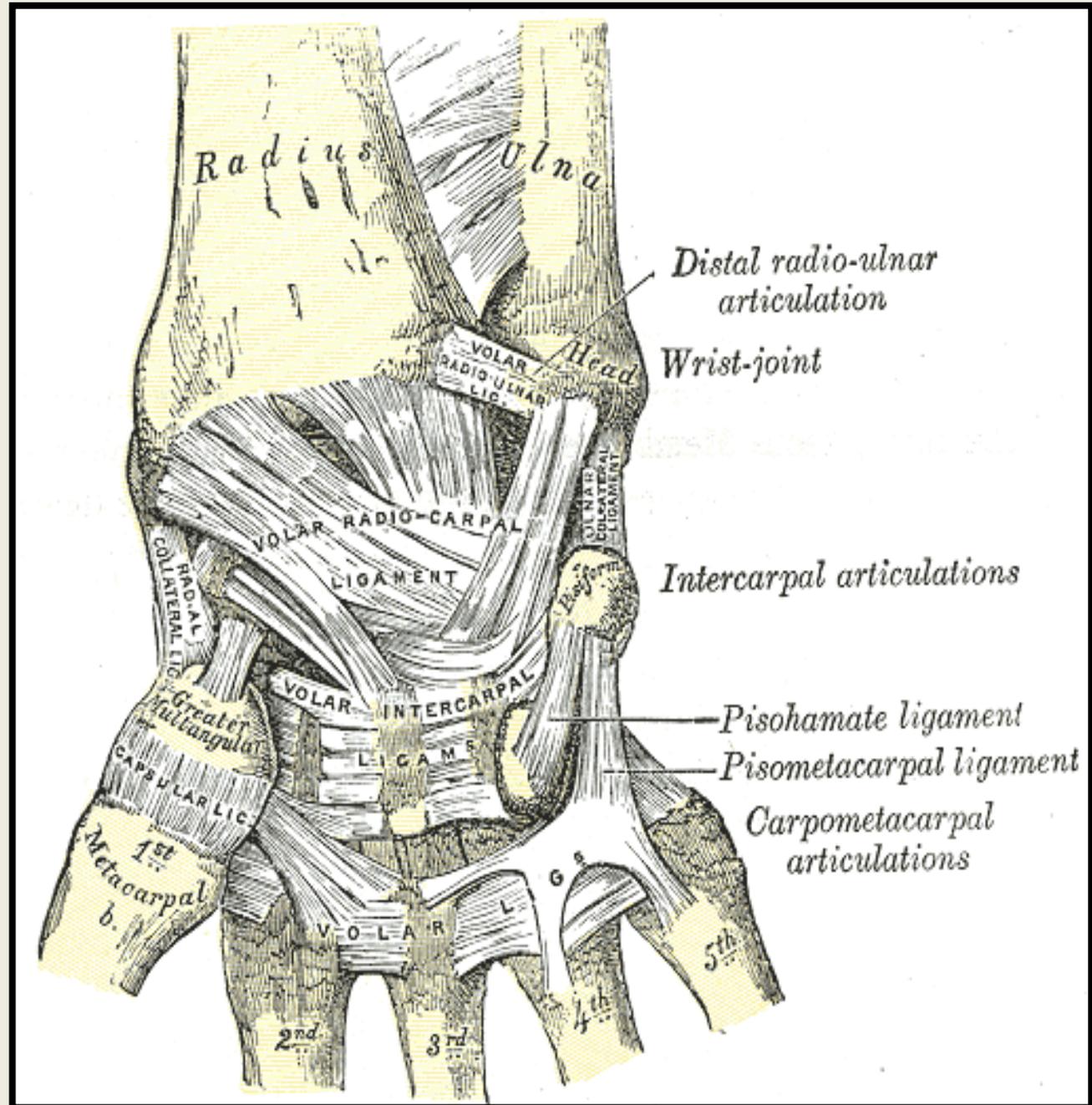


ant.(palmar) radiocarpal ligament:

From ant. Margin of lower end of radius to the front of scaphoid, lunate, capitate bones

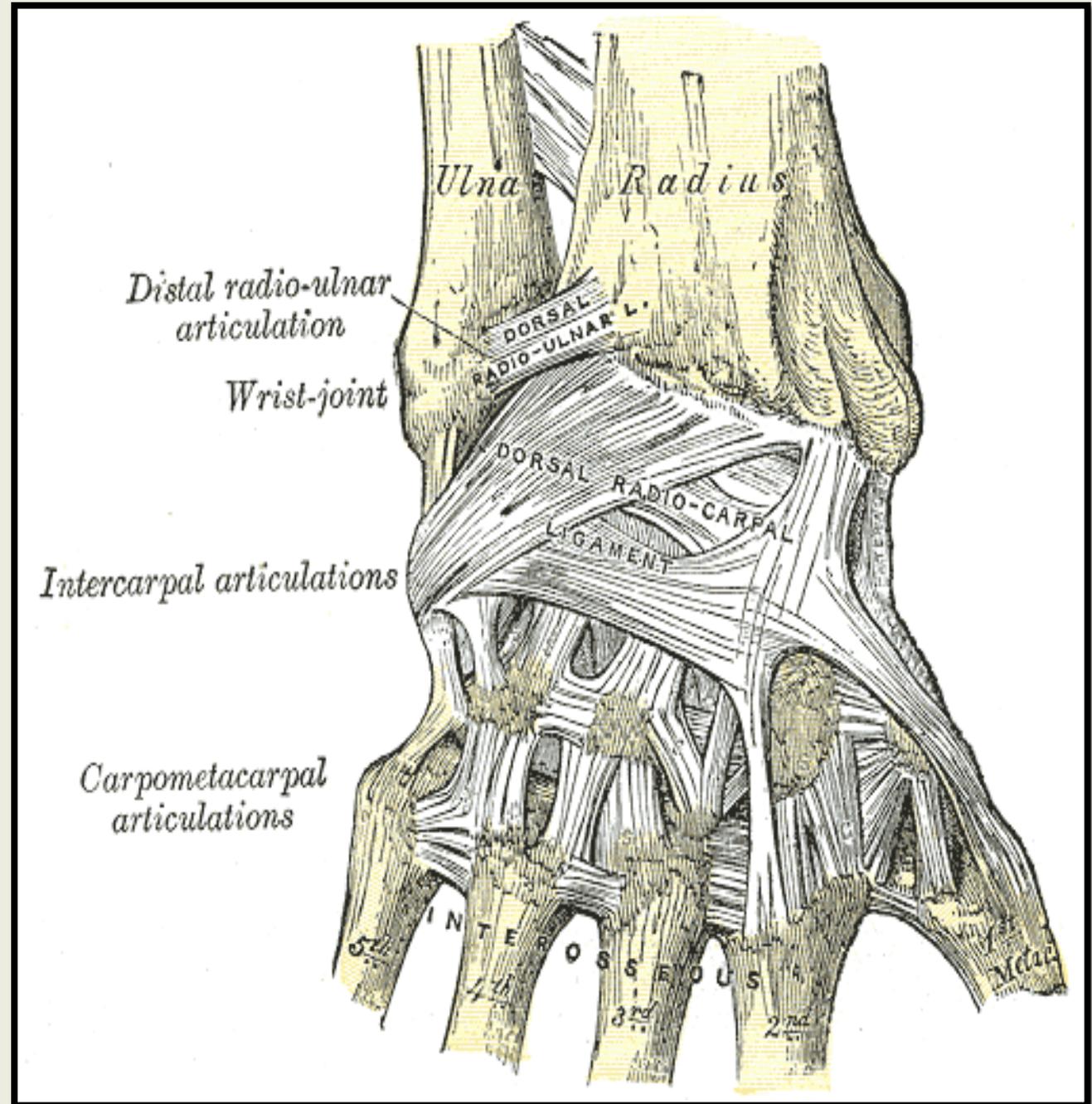
ant.(palmar) ulnocarpal ligament:

From ant. Margin of lower end of ulna to the front of lunate, triquetrum bone



Post.(dorsal)radio-carpal
lig:

**Attached to Post. Margin
of lower end of radius to
back of scaphoid, lunate
and triquetrum .**



Movements of wrist joint

The joint is **Biaxial joint**, so it moves around **two axes**.

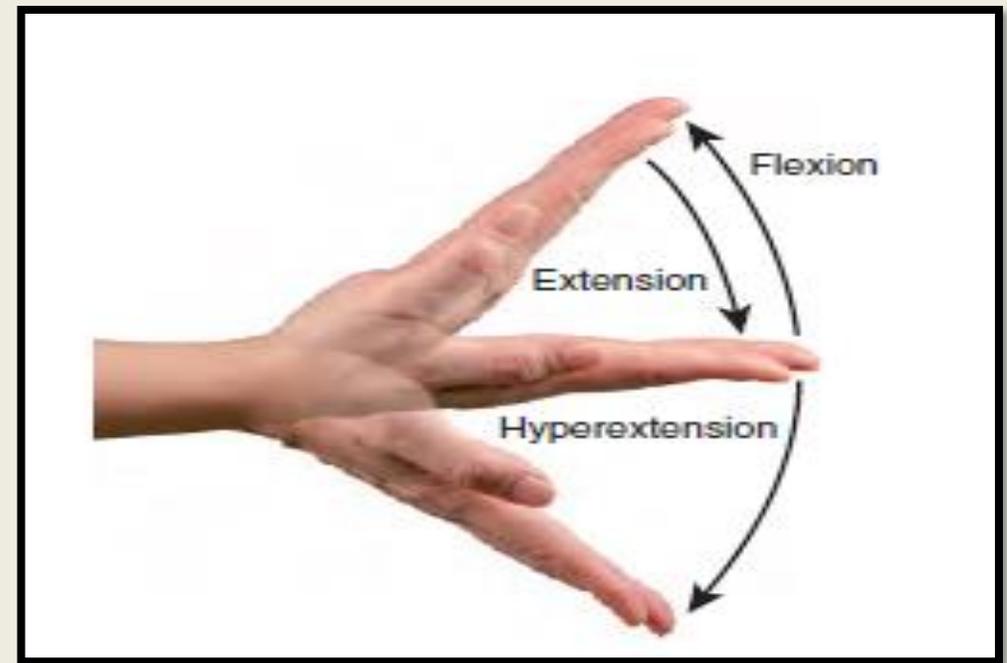
The movements are:

- **Flexion:** done by the **flexor carpi radialis**, **flexor carpi ulnaris** and **Palmaris longus**; these muscles are helped by the **flexors of the fingers**.

- **Extension:** done by the **extensor carpi radialis longus** and **brevis** and **extensor carpi ulnaris**; these muscles are helped by the **extensors of the fingers**.

- **Adduction:** done by the **flexor carpi ulnaris** and **extensor carpi ulnaris**.

- **Abduction:** done by the **flexor carpi radialis**, **extensor carpi radialis longus** and **brevis**.



Small joints of the hand

- 1. Intercarpal joints: plane synovial**
- 2. Carpometacarpal joints: plane synovial except 1st carpometacarpal of the thumb is saddle biaxial synovial**
- 3. Metacarpophalangeal: biaxial synovial**
- 4. Interphalangeal joints: synovial uniaxial hinge**

Metacarpophalangeal and interphalangeal ligaments

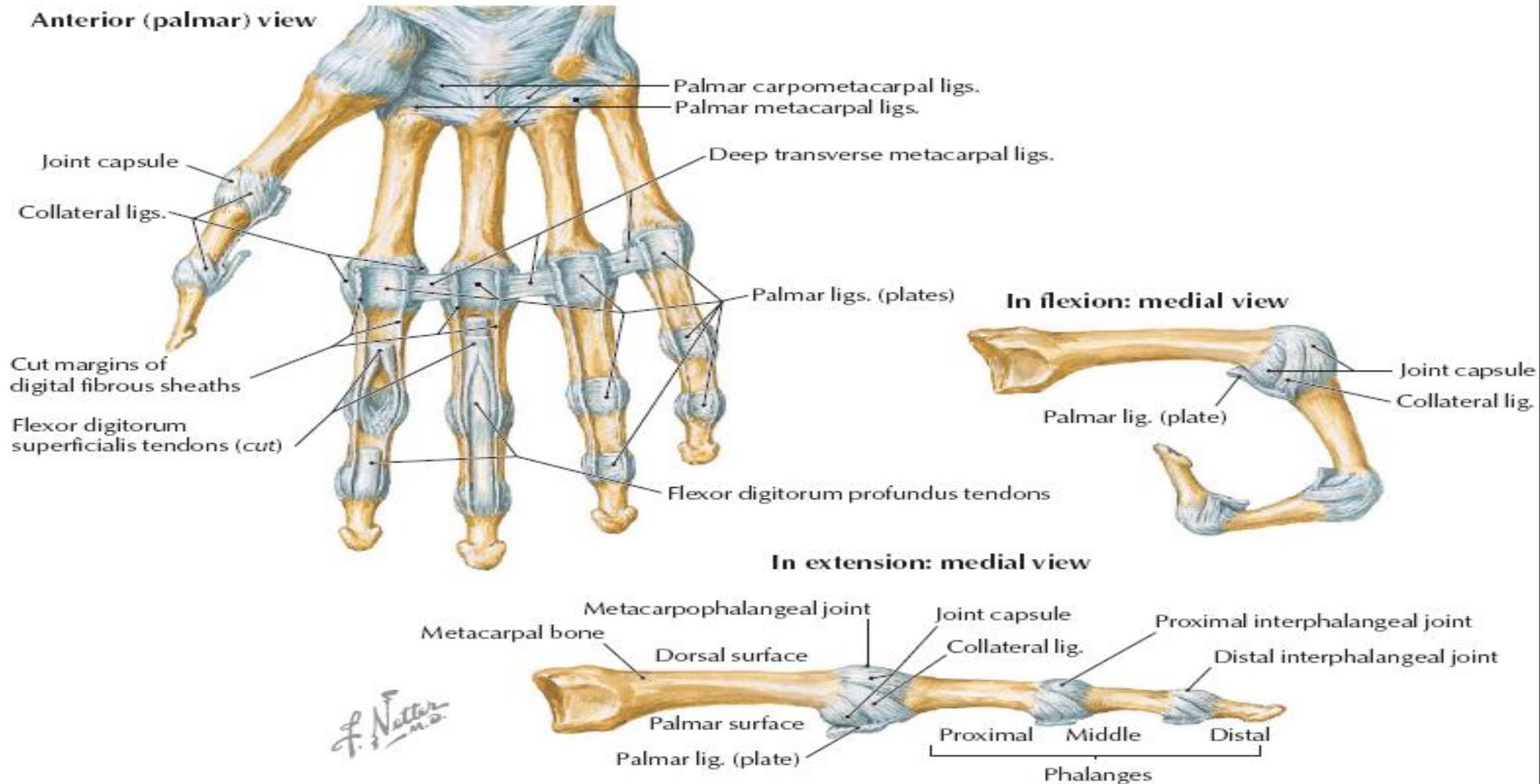


FIGURE 7-26 Finger Joints and Ligaments