ELBOW JOINT

Type

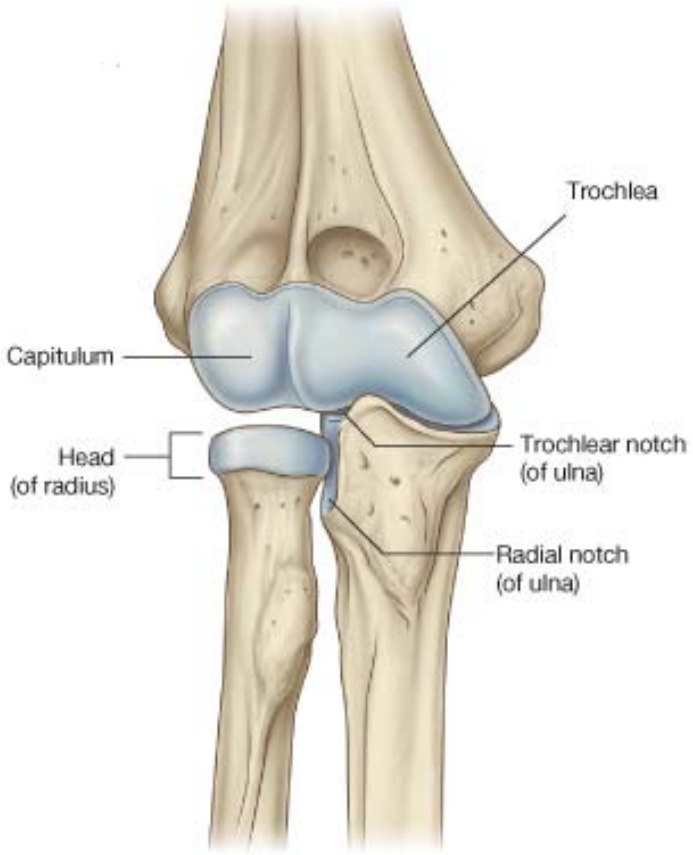
- Synovial / Hinge and
- compound as it has two articulations

  i)humero – ulnar &

  ii)humero – radial

Articular surfaces

1. Humerus –by trochlea & capitulum
2. Ulna – trochlear notch
3. Radius – head




Humerus
Capitulum
Head of radius
Radius
Trochlea
Ulna

Ligaments:

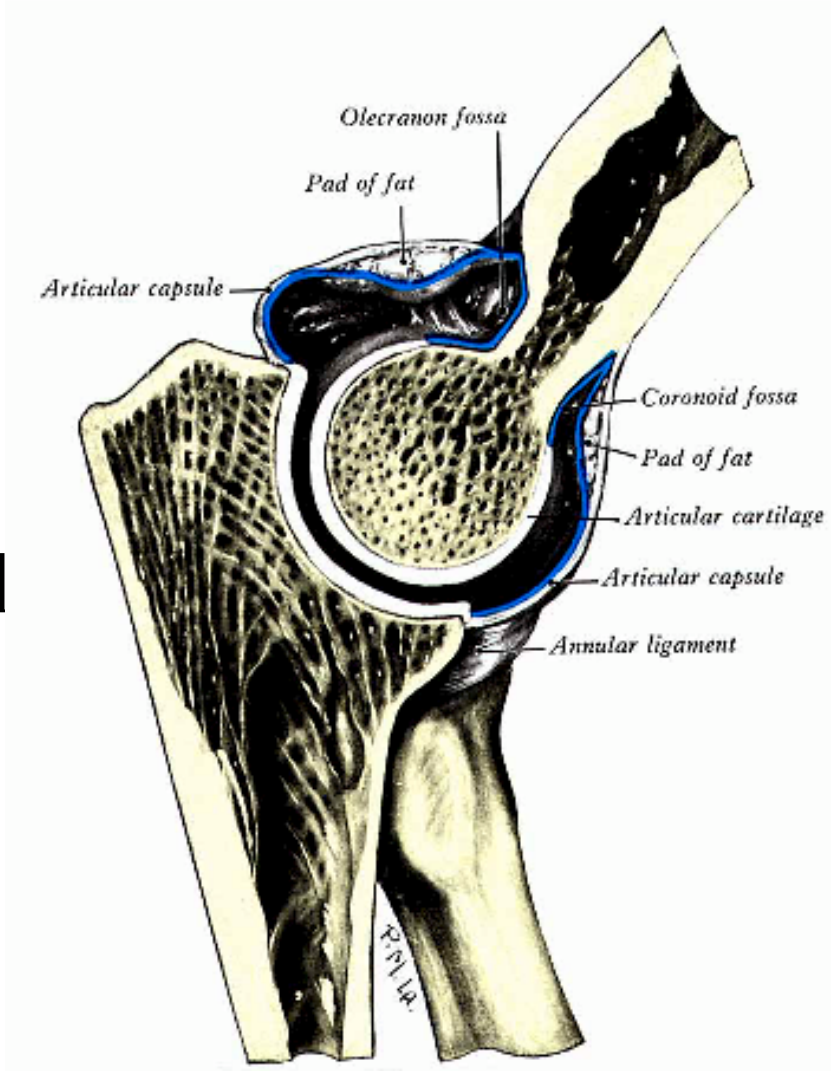
Fibrous capsule

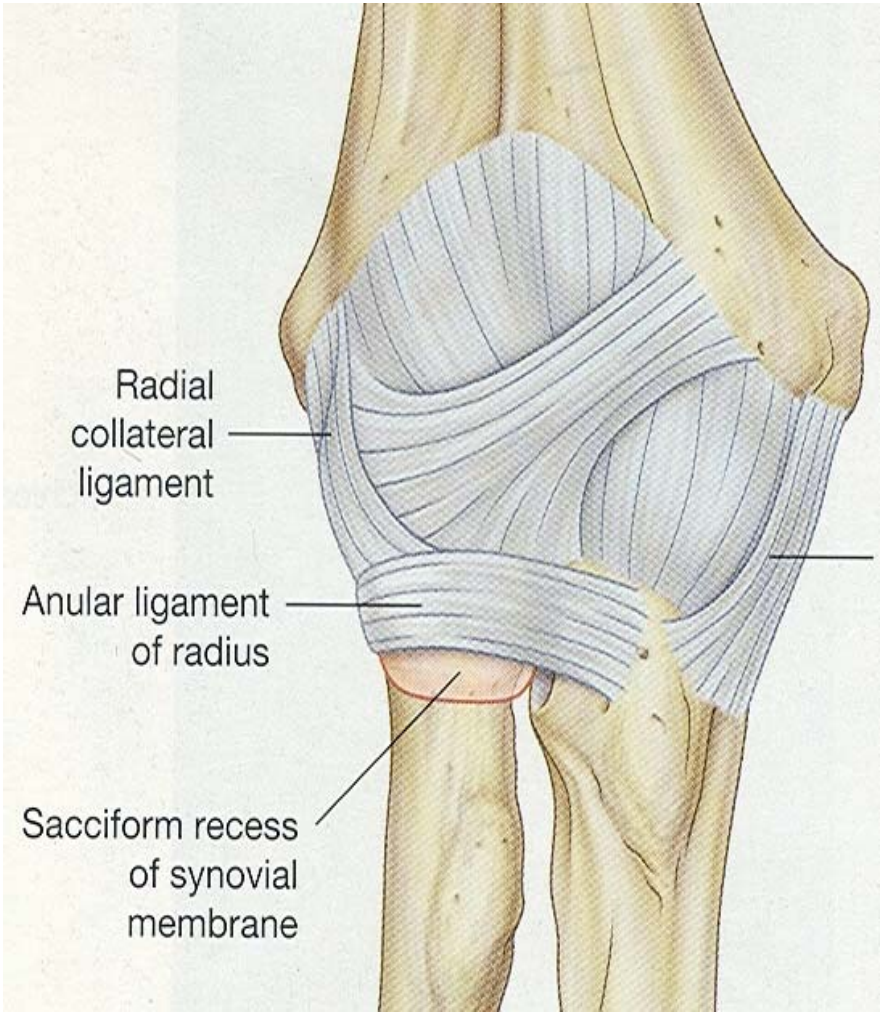
Ulnar collateral

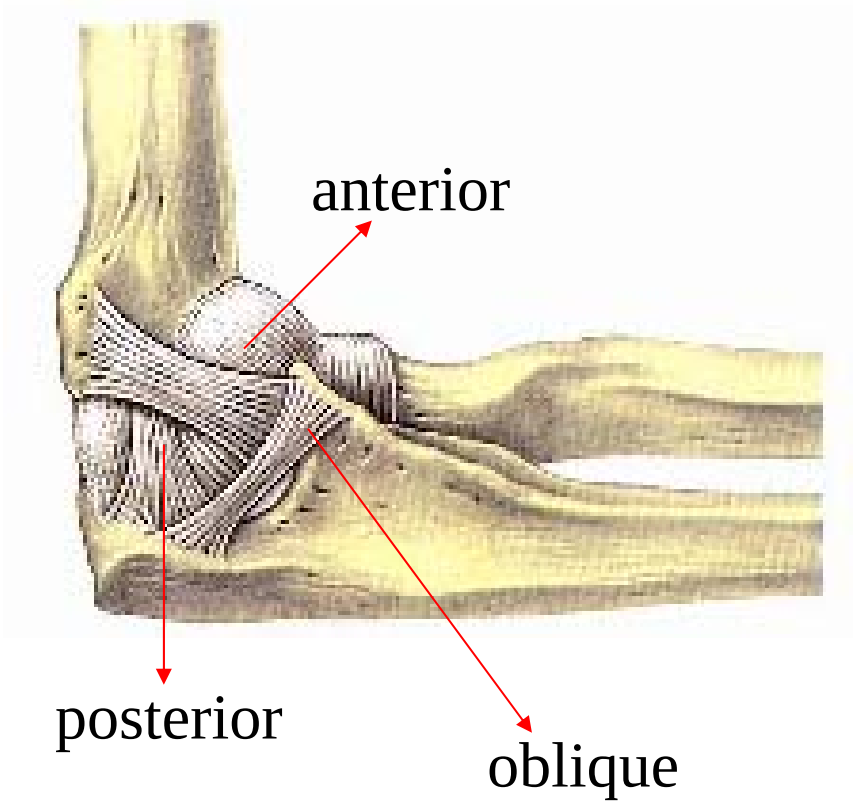
a. Anterior band
b. Posterior band
c. Oblique band

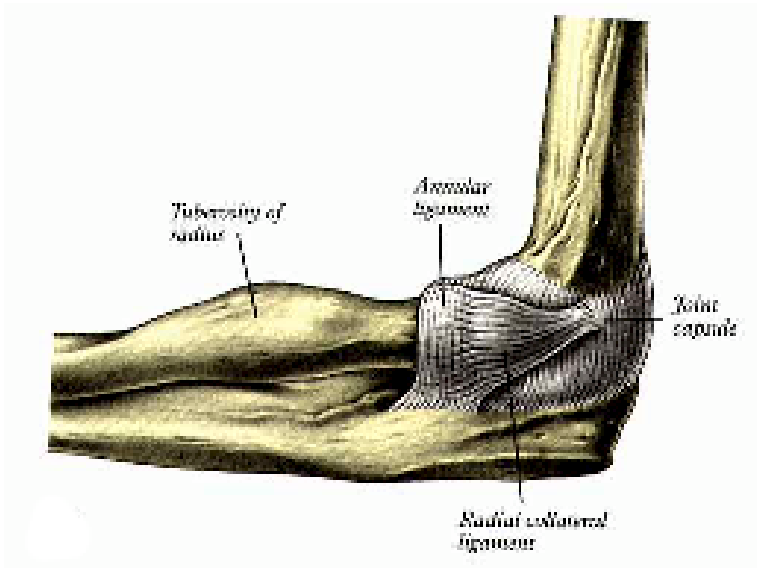
Radial collateral

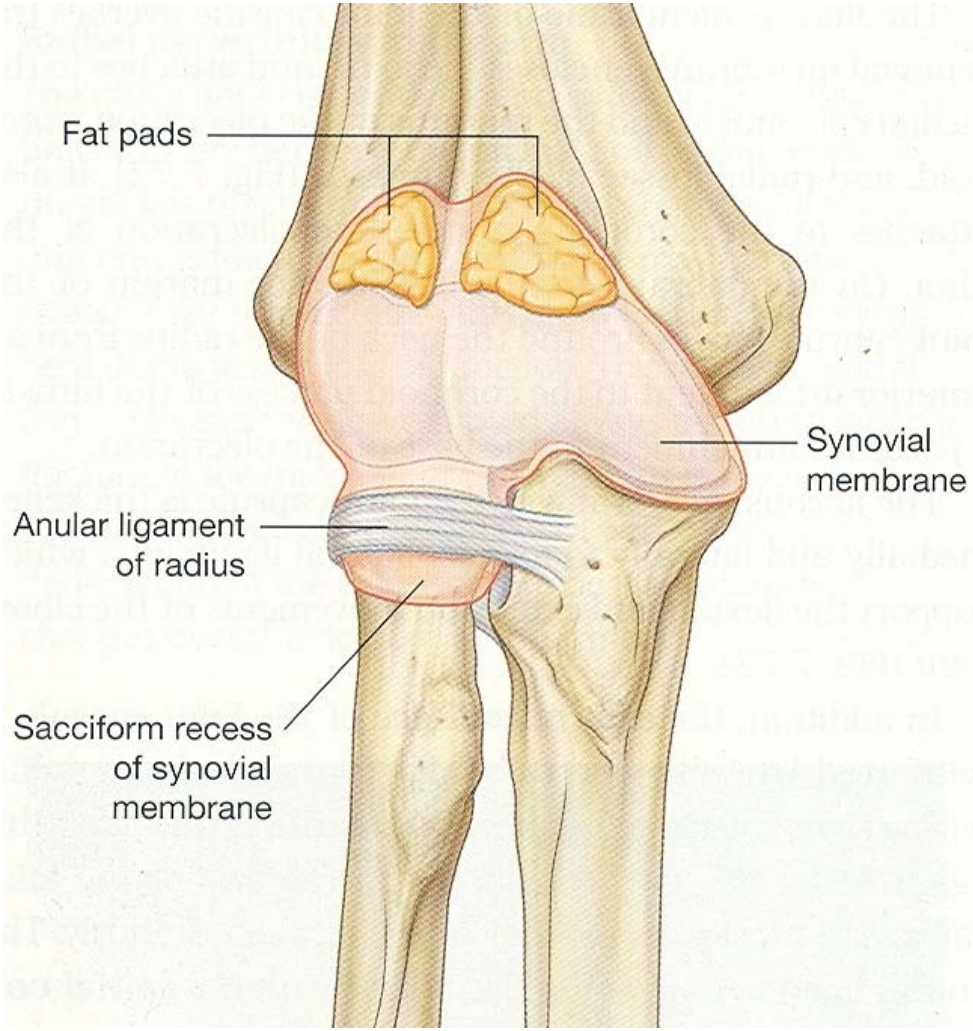
Synovial membrane

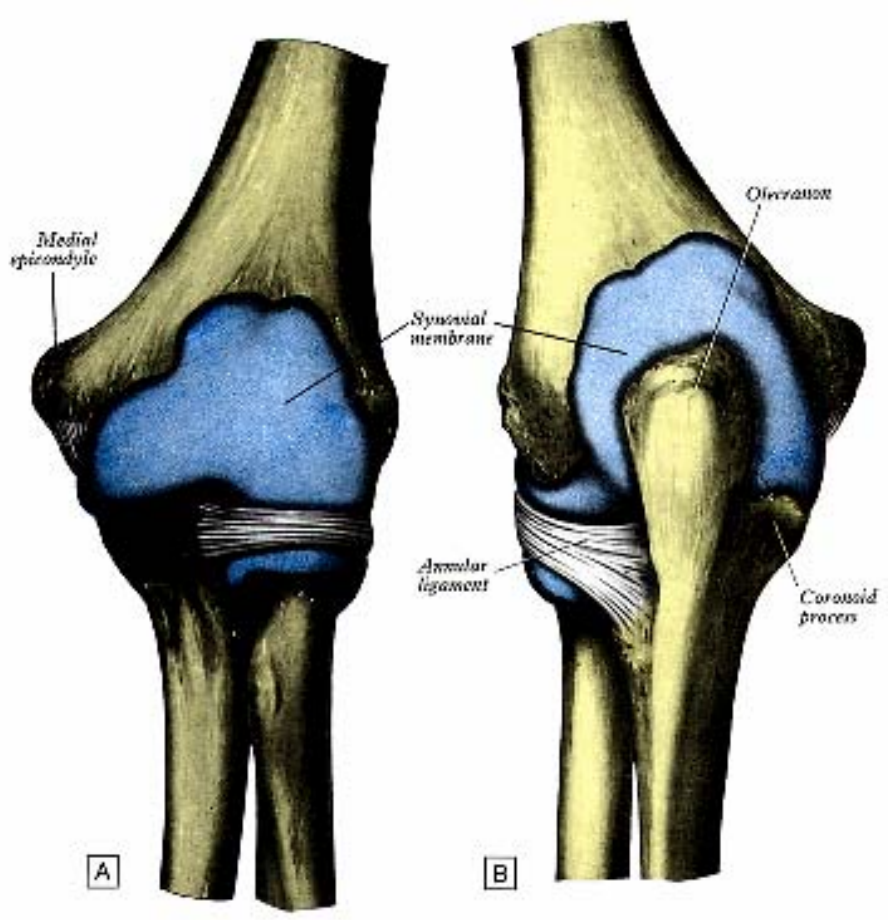


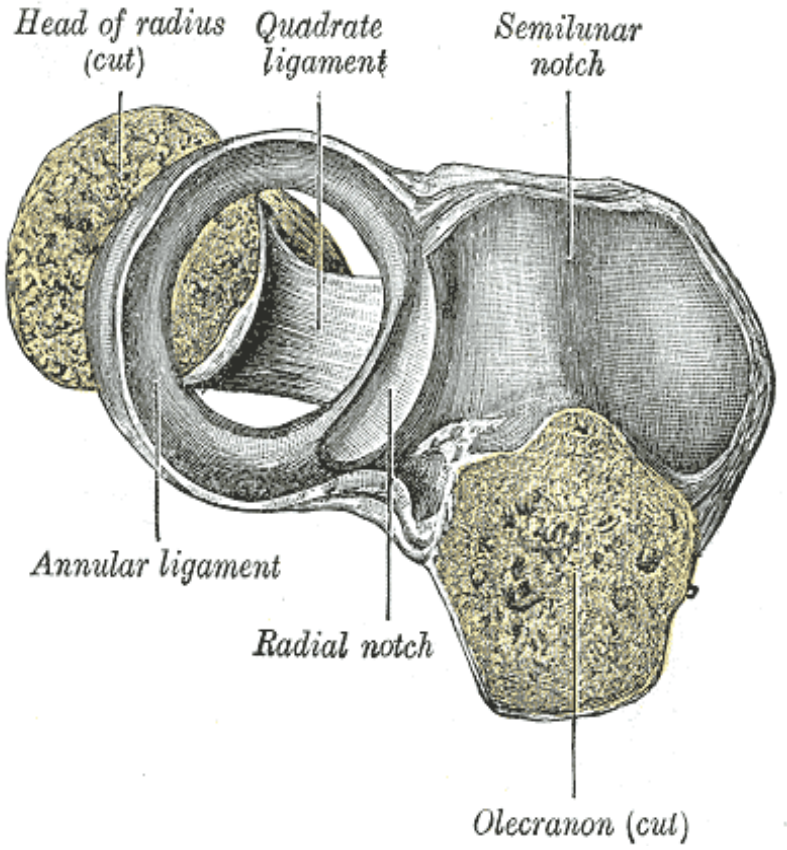

Radial
collateral
ligament
Anular ligament
of radius
Sacciform recess
of synovial
membrane


anterior
posterior
oblique

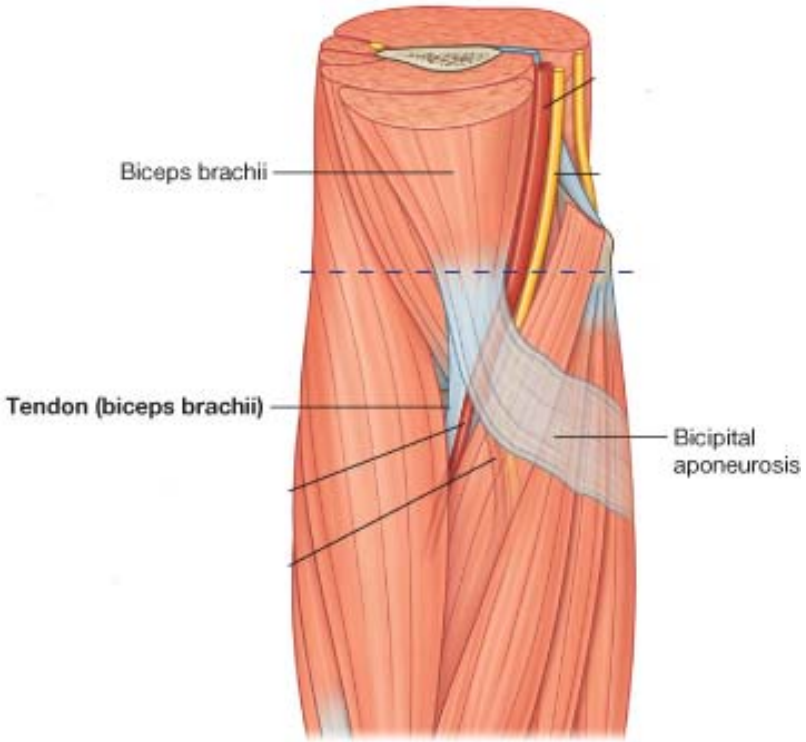

Tuberosity of radius
Annular ligament
Joint capsule
Radial collateral ligament

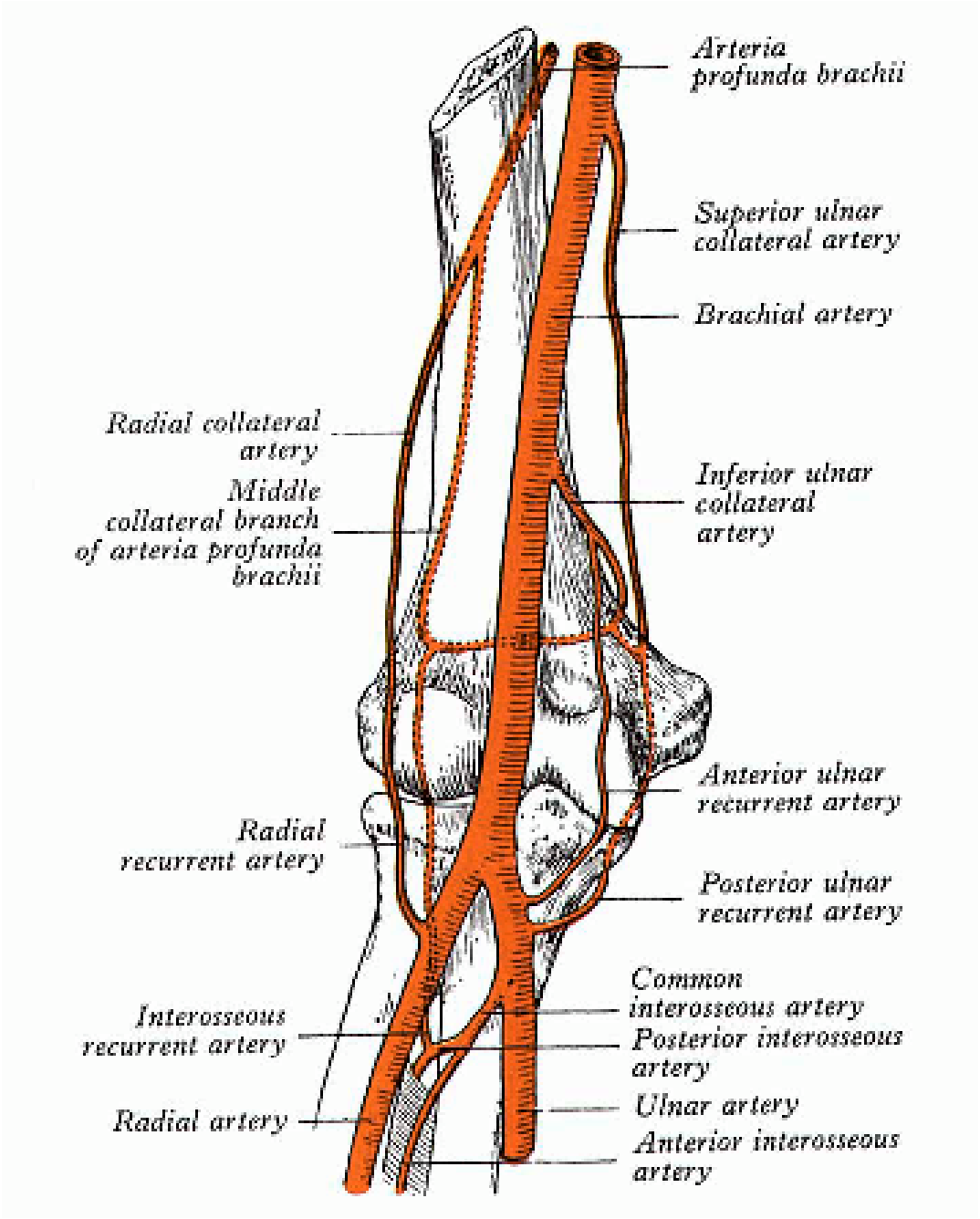

Fat pads
Synovial membrane
Anular ligament of radius
Sacciform recess of synovial membrane


Medial epicondyle
Synovial membrane
Olecranon
Annular ligament
Coronoid process
A
B


Head of radius (cut)
Quadrate ligament
Semilunar notch
Annular ligament
Radial notch
Olecranon (cut)

- Muscles related
  - Anterior – brachialis
  - Posterior– triceps, anconeus
  - Lateral –common extensor tendon, supinator
  - Medial – flexor carpi ulnaris, common flexor tendon
- Arterial supply
  - From anastomosis around elbow joint
- Nerves
  - Musculo-cutaneous and radial (with contributions from ulnar and median nerves)




Arteria profunda brachii
Superior ulnar collateral artery
Brachial artery
Radial collateral artery
Middle collateral branch of arteria profunda brachii
Inferior ulnar collateral artery
Anterior ulnar recurrent artery
Radial recurrent artery
Posterior ulnar recurrent artery
Common interosseous artery
Interosseous recurrent artery
Posterior interosseous artery
Ulnar artery
Radial artery
Anterior interosseous artery

Movements

- Flexion
- Extension
- Carrying angle disappears in flexion

Muscles producing movements:

Flexion

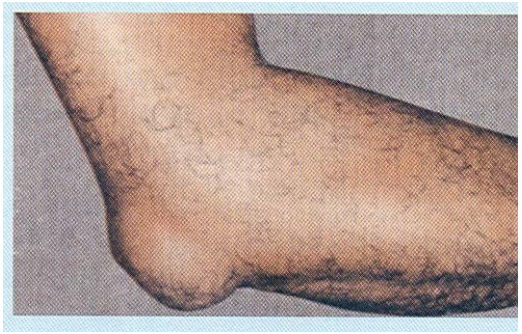
- Brachialis
- Biceps
- Brachioradialis

Extension

- Triceps
- Anconeus

APPLIED ANATOMY

Bursitis of olecranon bursa



Involvement of joint in

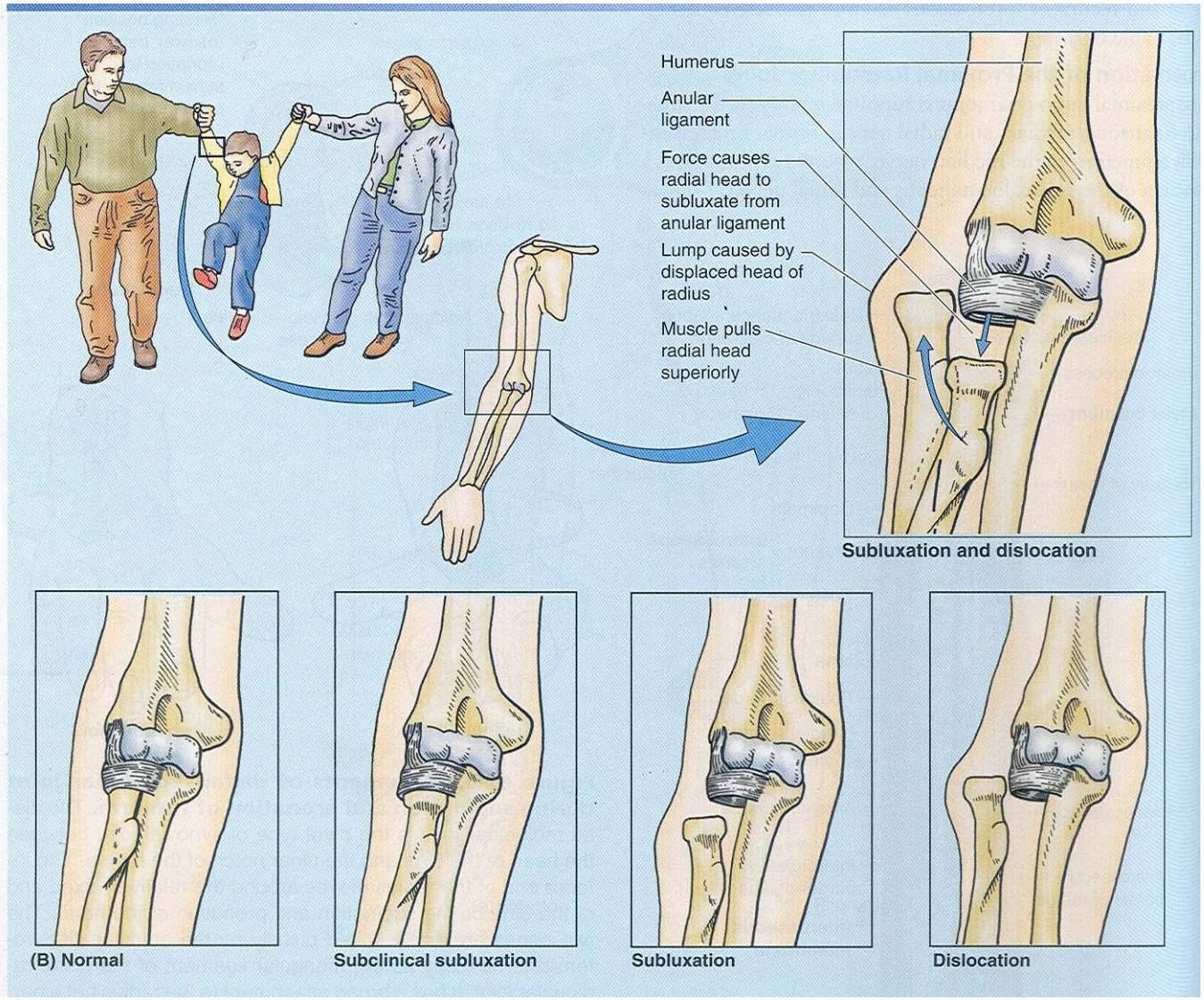
- Rheumatoid arthritis
- Trauma
- Skeletal dysplasia

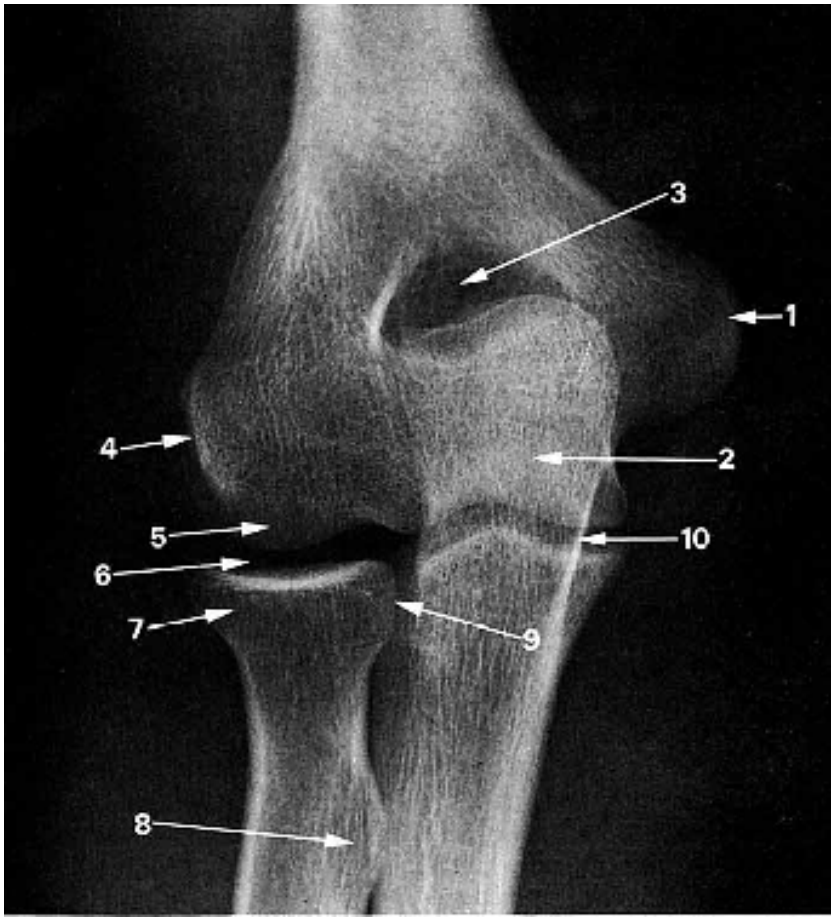
Some conditions treated by total elbow replacement

Posterior dislocation of elbow joint

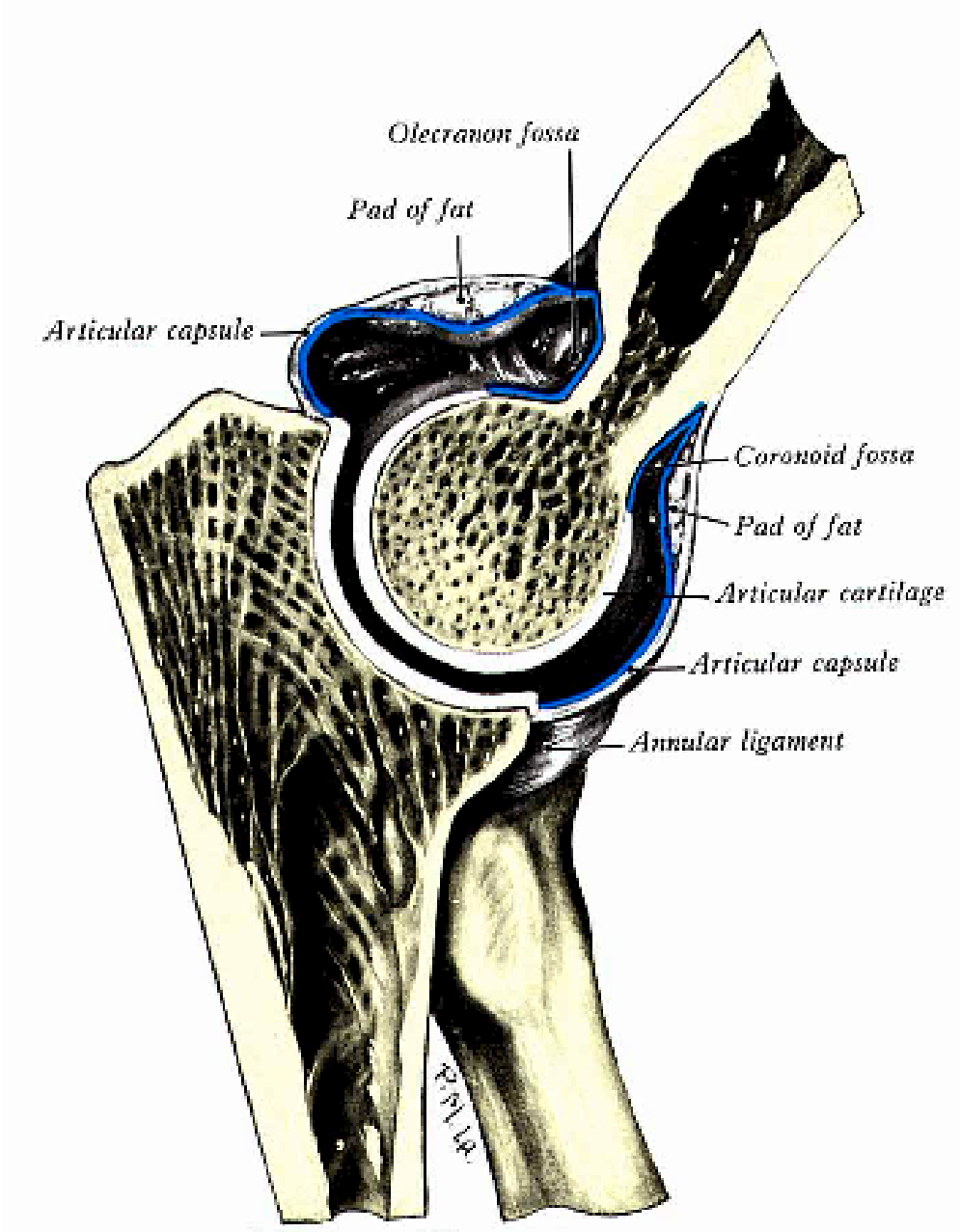
Anterior dislocation of head of radius

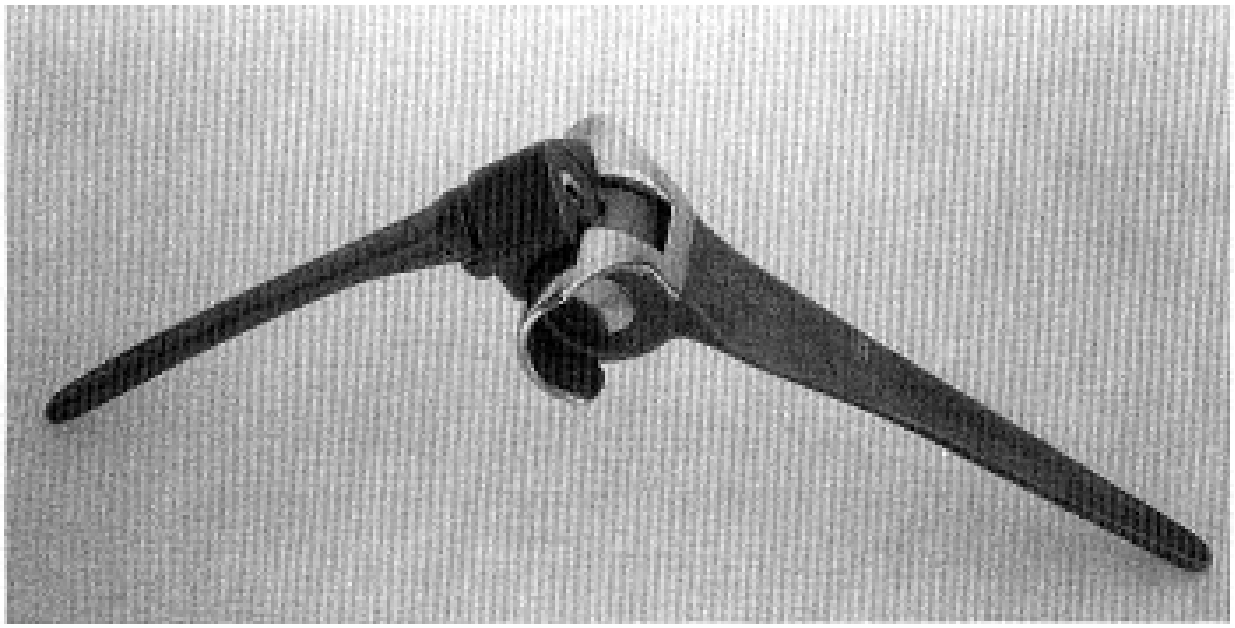
Distal (down ward) subluxation/dislocation of head of radius in children


Humerus
Anular ligament
Force causes radial head to subluxate from anular ligament
Lump caused by displaced head of radius
Muscle pulls radial head superiorly
Subluxation and dislocation
(B) Normal
Subclinical subluxation
Subluxation
Dislocation


3
1
4
2
5
10
6
7
9
8


1
3
2
4


Olecranon fossa
Pad of fat
Articular capsule
Coronoid fossa
Pad of fat
Articular cartilage
Articular capsule
Annular ligament



RADIO ULNAR JOINTS

A. Proximal (Synovial)

Between head of radius & radial notch of ulna held together by

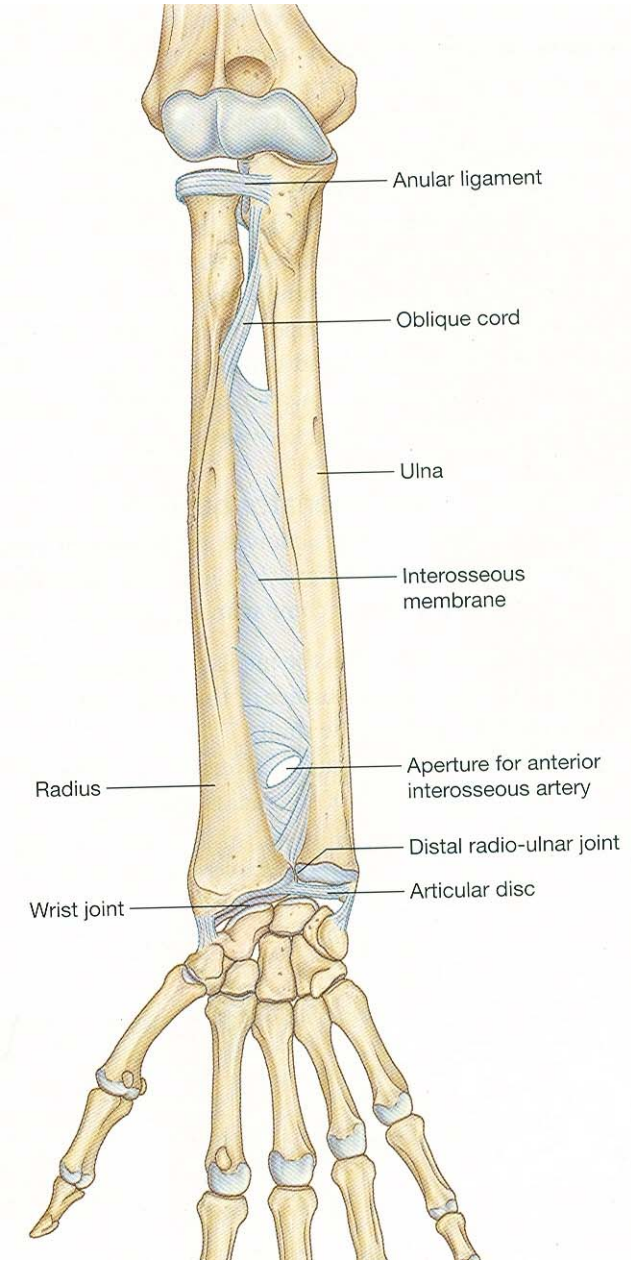
- Annular ligament
- Quadrate ligament

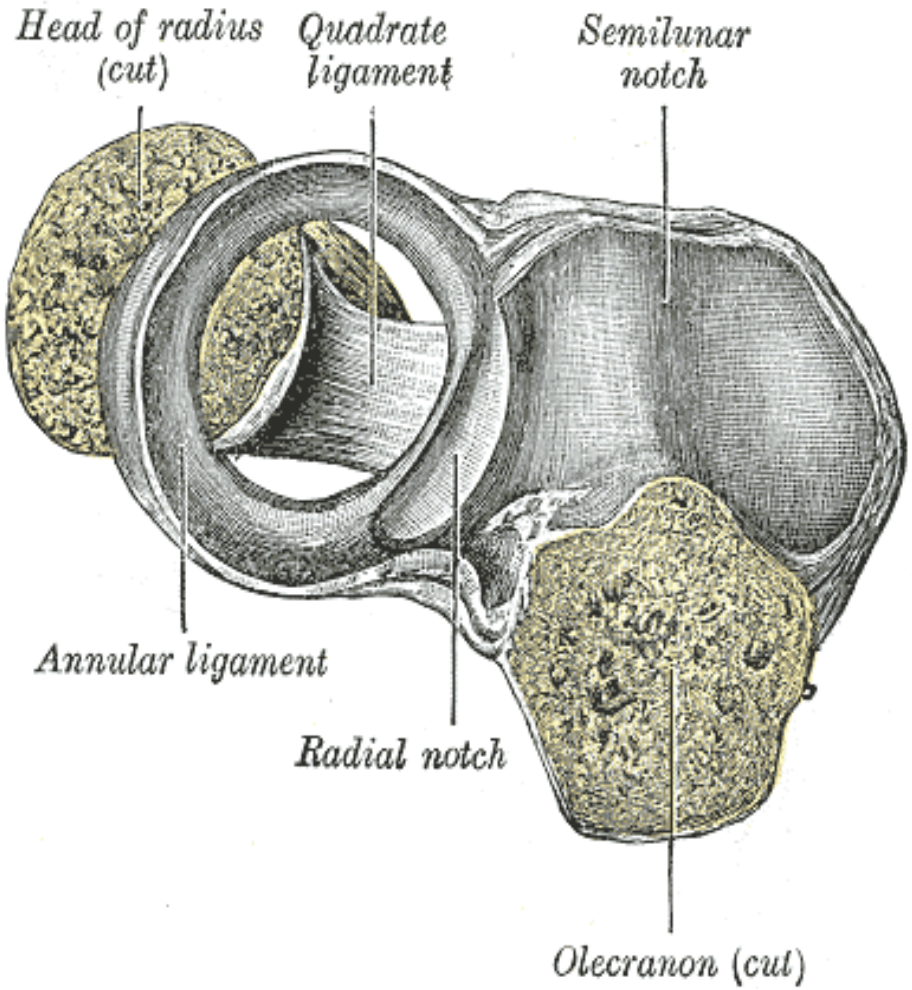
B. ? Middle (Syndesmosis)

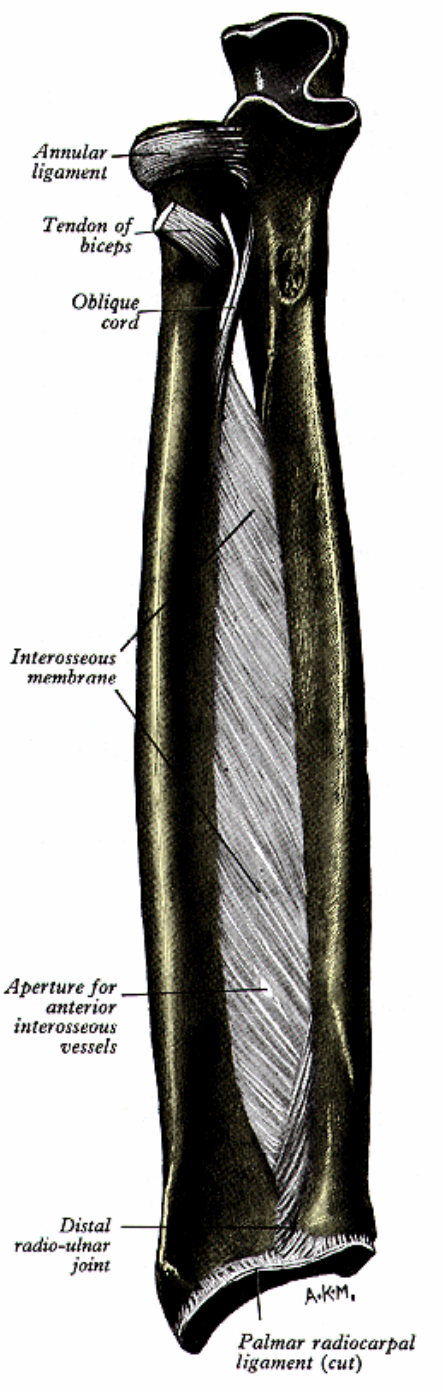
i. Interosseous Membrane

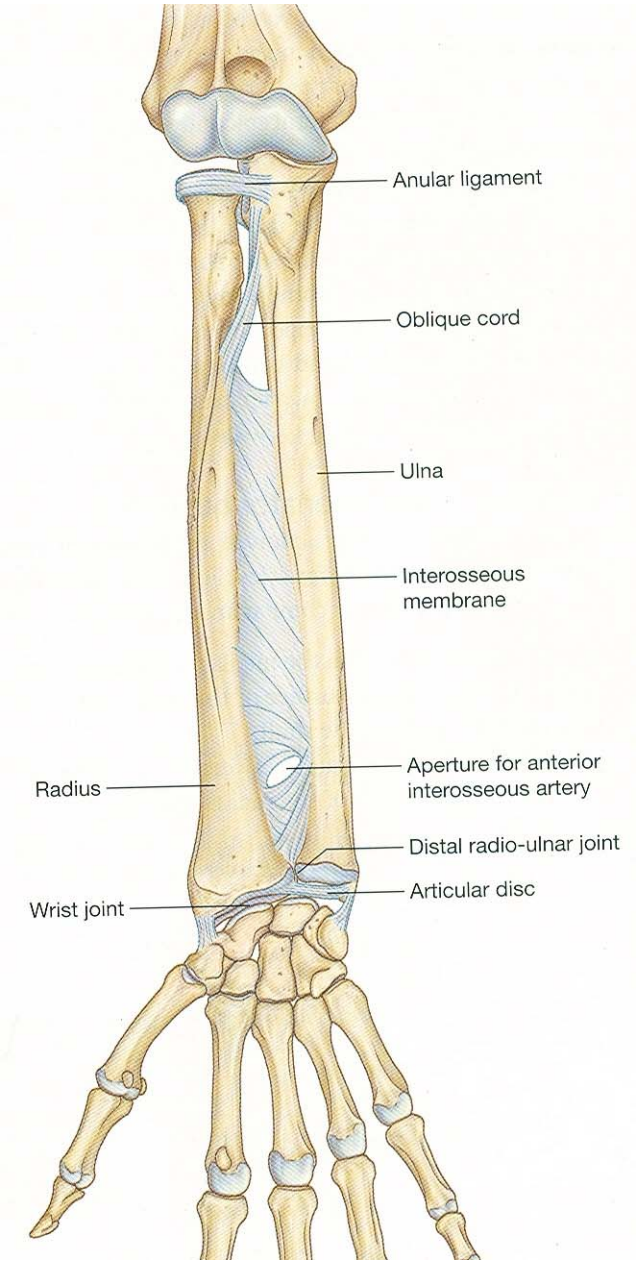
taut in mid-pronation and lax in supination/pronation

ii. Oblique cord




Head of radius (cut)
Quadrate ligament
Semilunar notch
Annular ligament
Radial notch
Olecranon (cut)

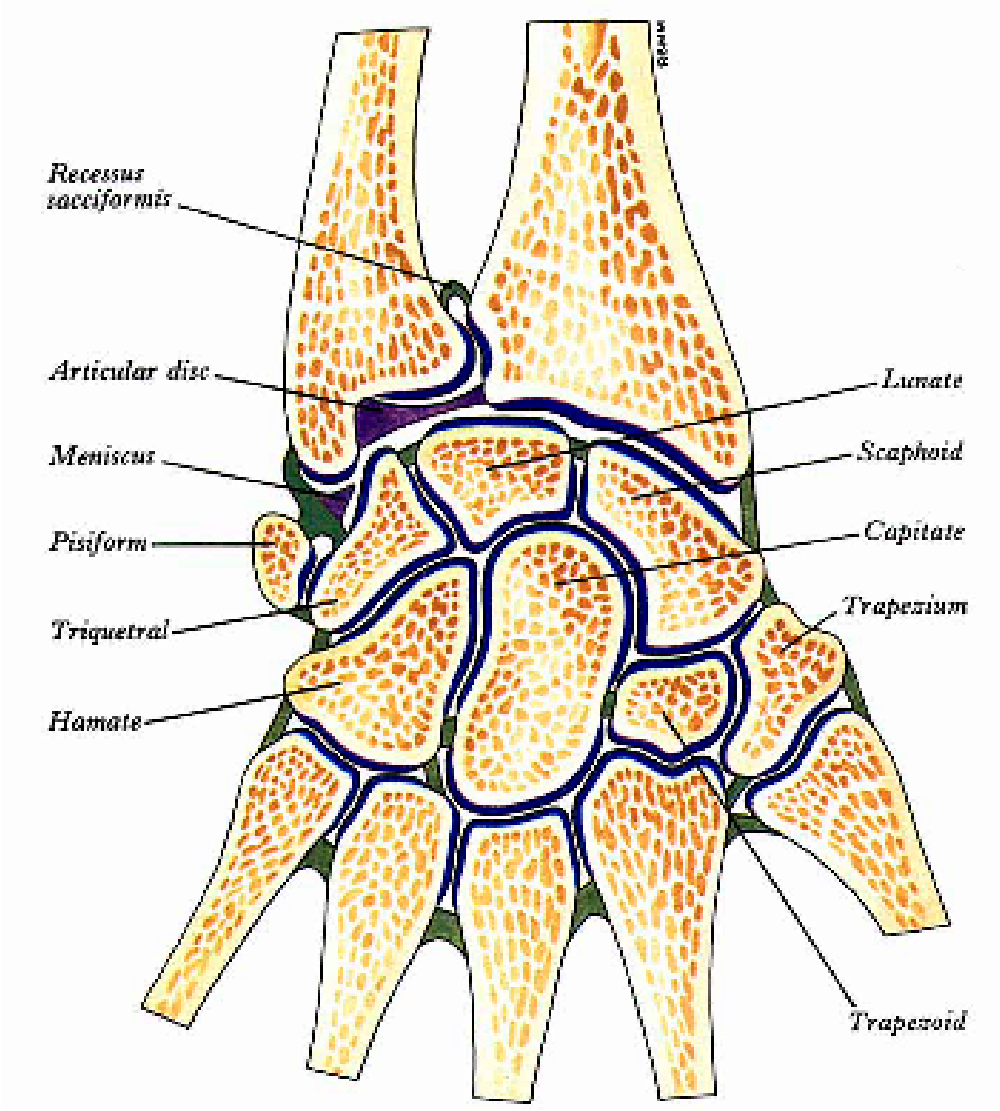

Annular ligament
Tendon of biceps
Oblique cord
Interosseous membrane
Aperture for anterior interosseous vessels
Distal radio-ulnar joint
Palmar radiocarpal ligament (cut)
A.K.M.

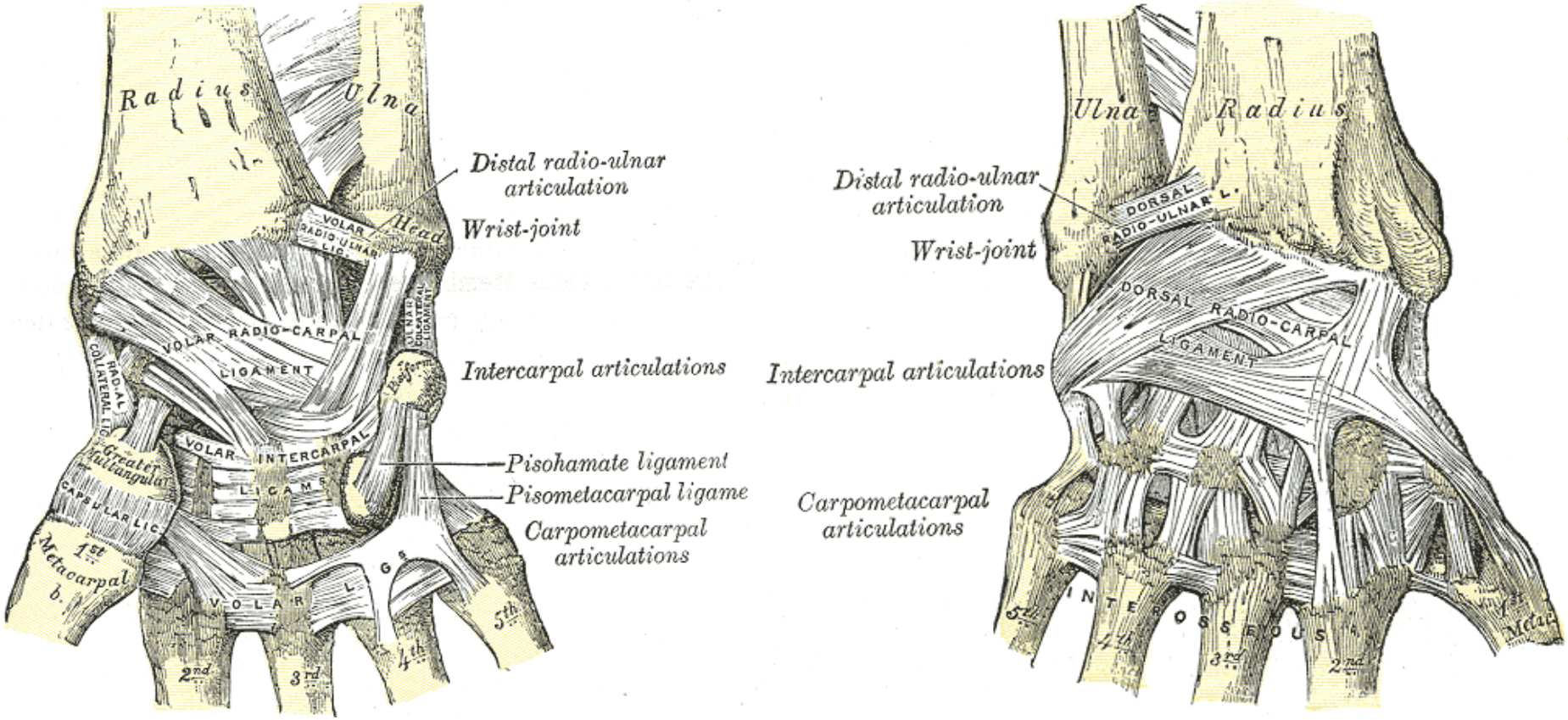

Anular ligament
Oblique cord
Ulna
Interosseous membrane
Aperture for anterior interosseous artery
Radius
Distal radio-ulnar joint
Articular disc
Wrist joint

C. Distal (Synovial)

Between head of ulna & ulnar notch of radius

Bound by a loose capsule closed distally by a fibrocartilage

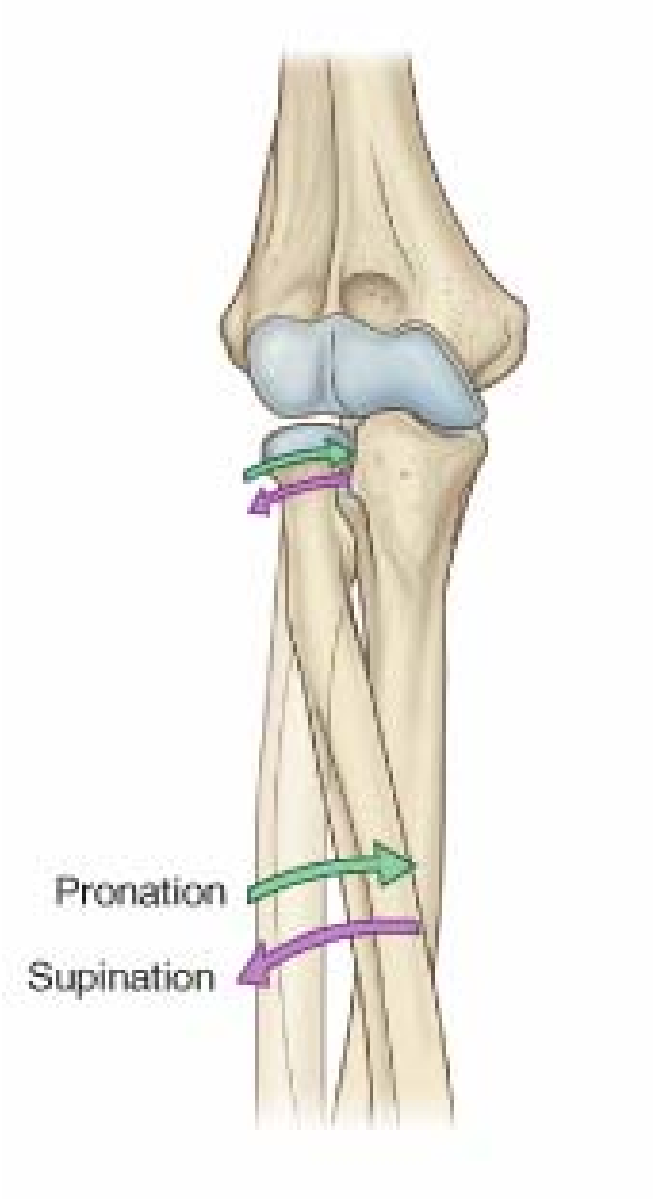



Radius
Ulna
Distal radio-ulnar articulation
Wrist-joint
Intercarpal articulations
Pisohamate ligament
Pisometacarpal ligame
Carpometacarpal articulations
VOLAR RADIO-ULNAR LIG.
Head
VOLAR RADIO-CARPAL LIGAMENT
ULNAR COLLATERAL LIGAMENT
RADIAL COLLATERAL LIG.
Pisiform
VOLAR INTERCARPAL LIGAMENT
Greater multangular
CAPSULAR LIG.
1st Metacarpal b.
VOLAR
2nd
3rd
4th
5th
Ulna
Radius
Distal radio-ulnar articulation
Wrist-joint
Intercarpal articulations
Carpometacarpal articulations
DORSAL RADIO-ULNAR L.
DORSAL RADIO-CARPAL LIGAMENT
INTEROSSEOUS
5th
4th
3rd
2nd
1st Metac

- Nerve Supply

  Anterior interosseous branch of median nerve
- Movements –
  - Pronation and supination

    Movement of radius around an immobile ulna



- Axis

  A line from centre of curvature of proximal radio-ulnar joint to that of distal joint

  i.e. joins centre of head of radius to base of styloid process of ulna

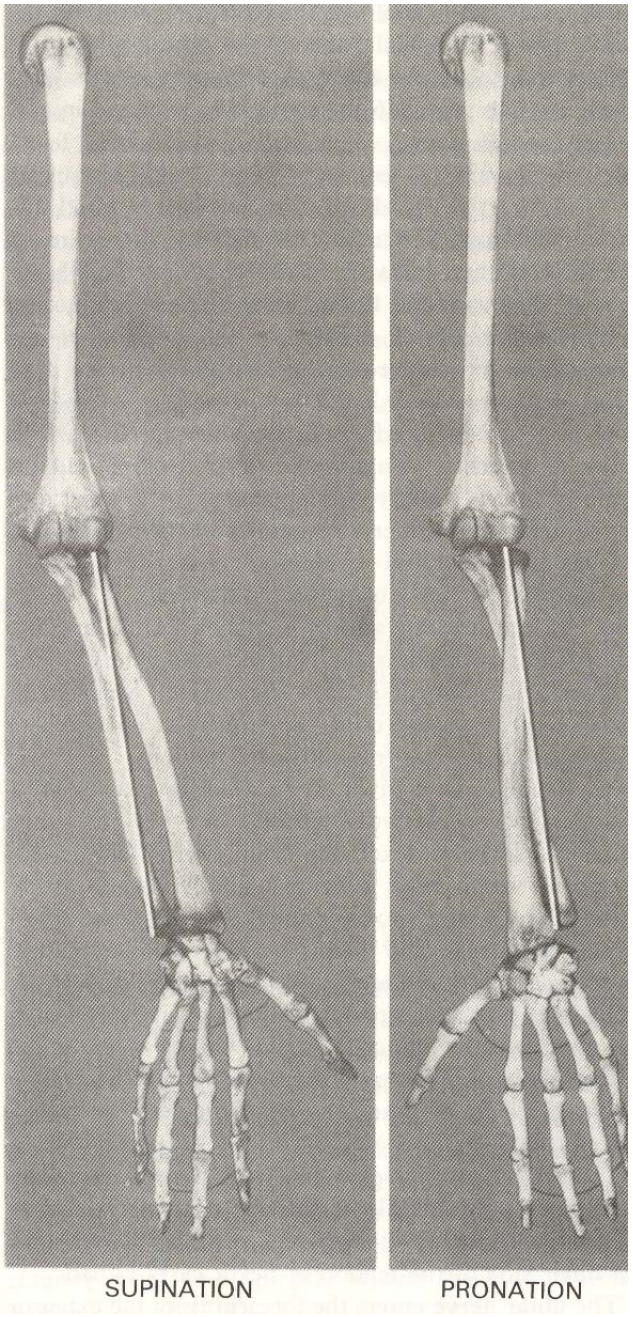
  Traced upwards – in line with the shaft of humerus

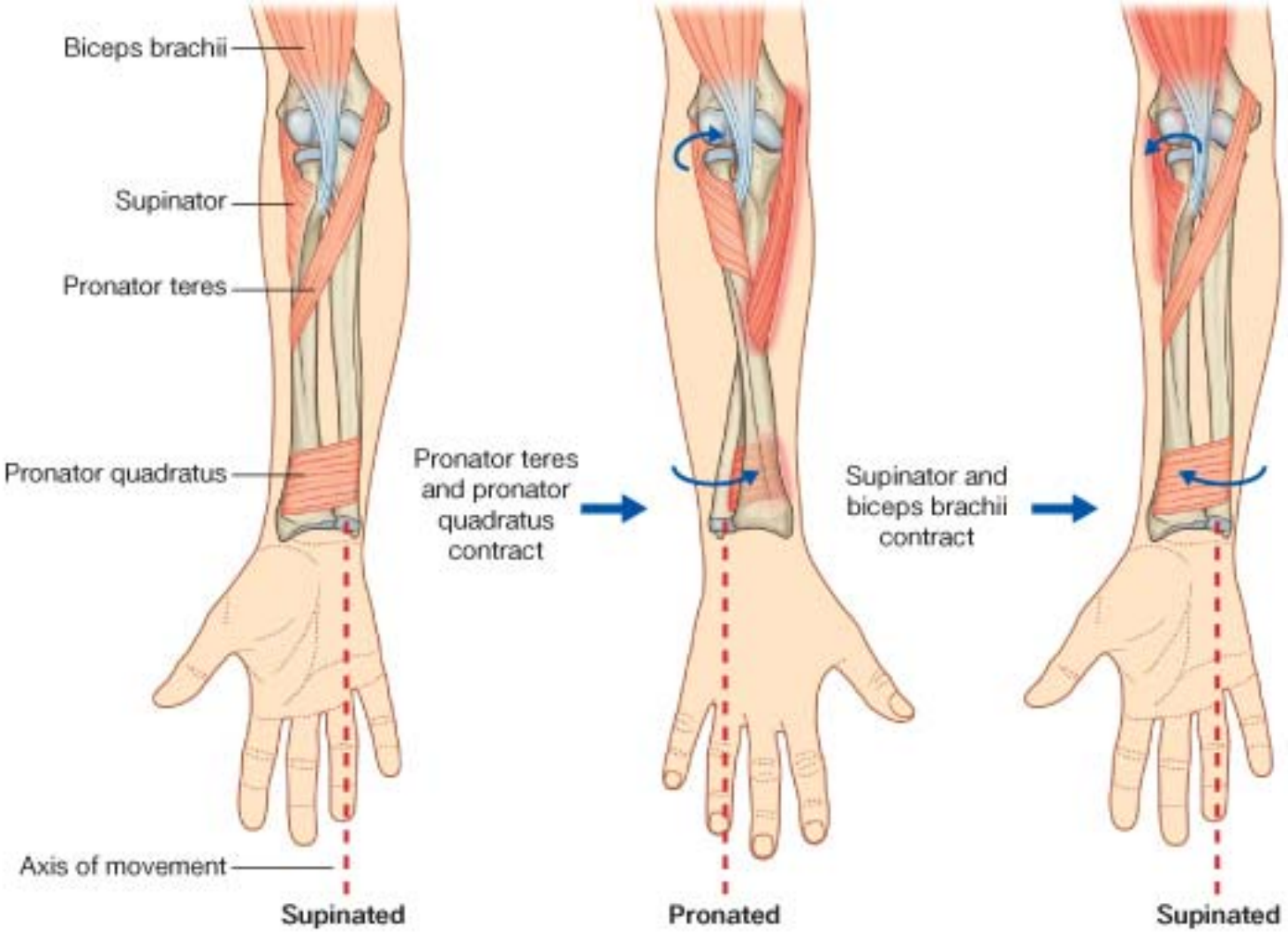
  Prolonged downwards

  Passes along middle finger when the hand is hanging freely

  Or alonglittle finger when the hand to resting on a surface

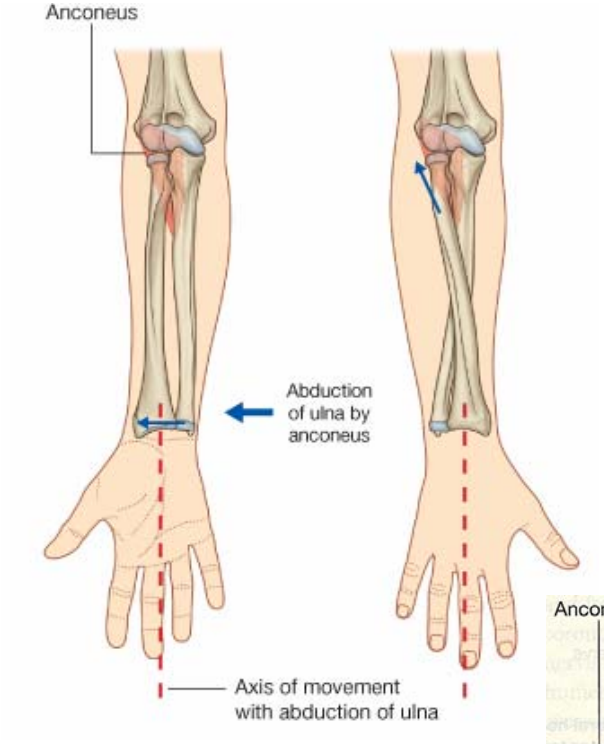
  Or along any finger which is fixed to a surface

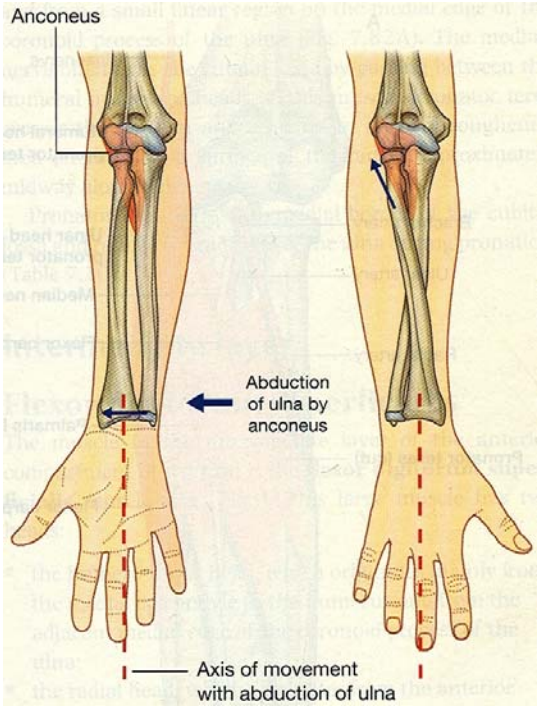


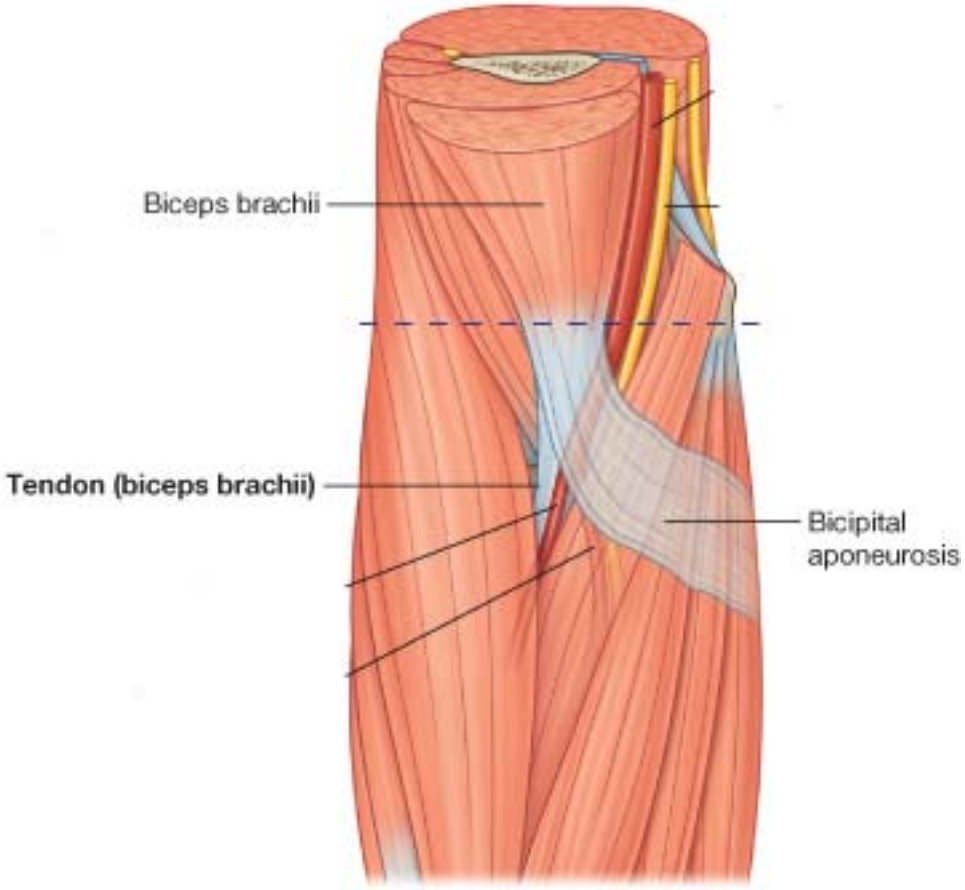

Biceps brachii
Supinator
Pronator teres
Pronator quadratus
Axis of movement
Supinated
Pronator teres and pronator quadratus contract
Pronated
Supinator and biceps brachii contract
Supinated

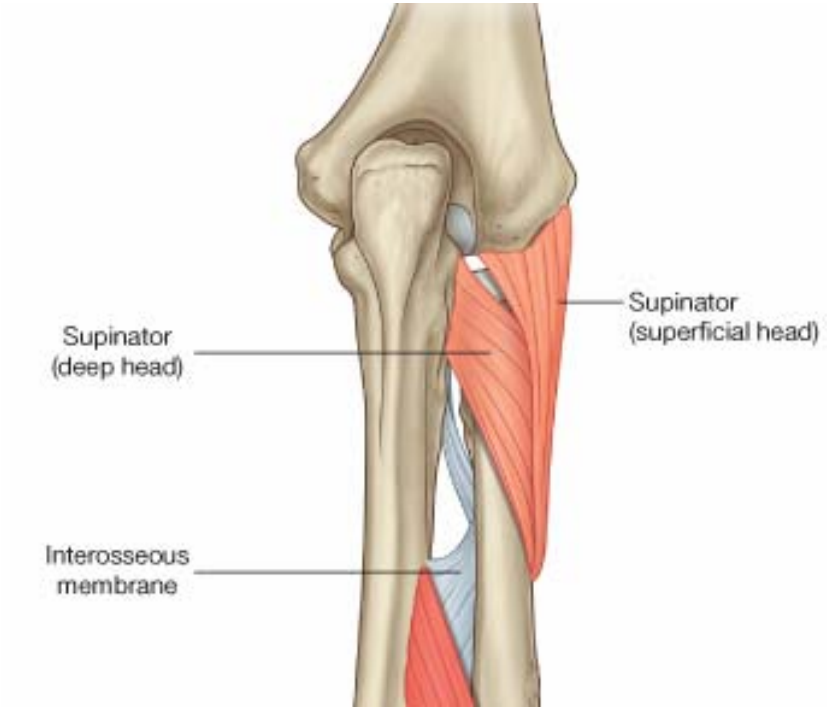
There is

- Slight abduction of ulna in pronation (Anconeus)
- Slight adduction of ulna in supination (pronator teres) and bicipital aponeurosis






Biceps brachii
Tendon (biceps brachii)
Bicipital aponeurosis


Supinator (deep head)
Supinator (superficial head)
Interosseous membrane

Muscles	
Pronation	Supination
Pronator quadratus & teres (Median nerve)	**Supinator (Radial nerve)**
Brachioradialis (Upto mid prone position)	**Biceps (Musculocutaneous nerve)**