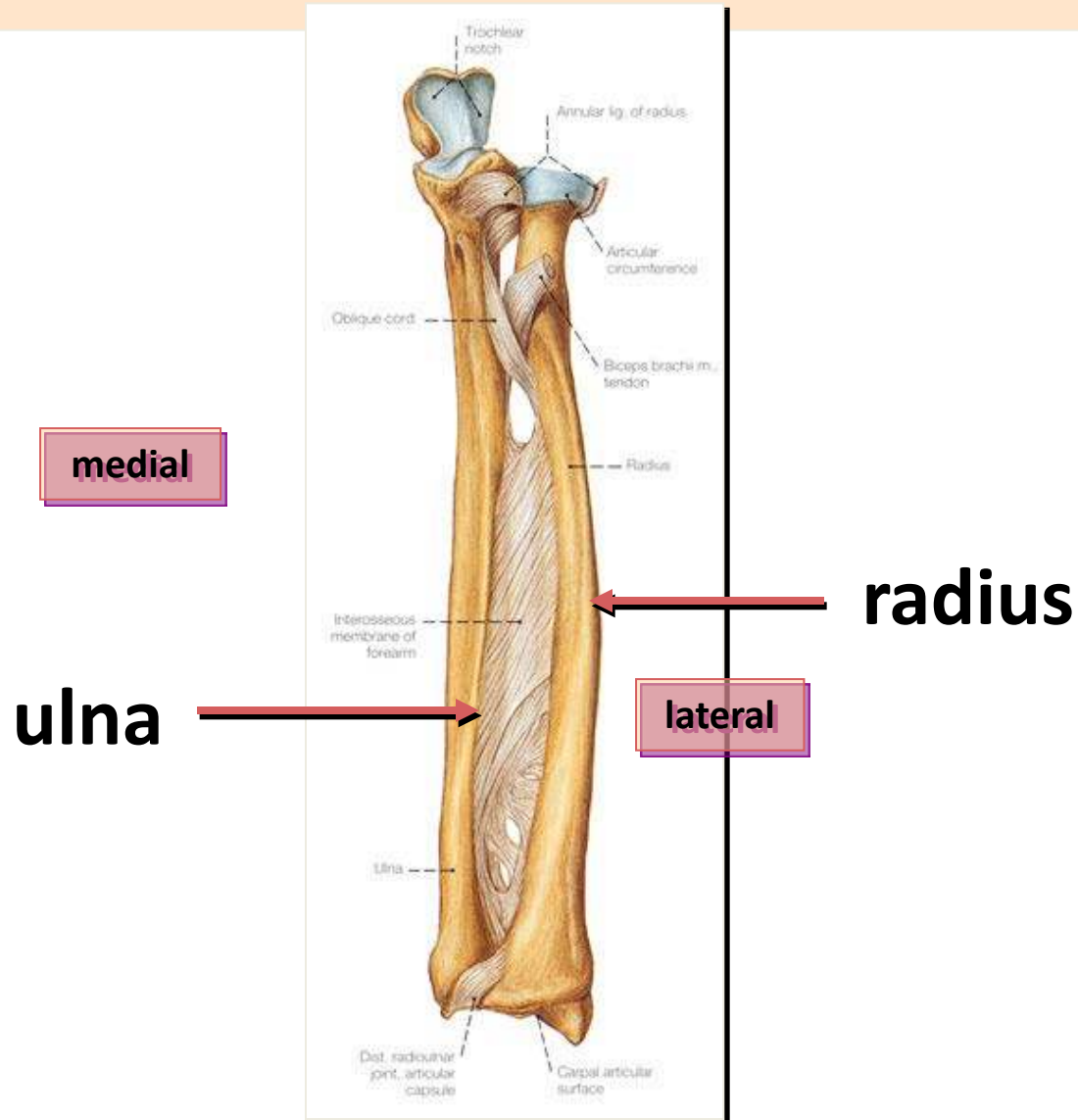


Anatomy of the forearm I: The anterior compartment

Prof Oluwadiya Kehinde
www.oluwadiya.sitesled.com

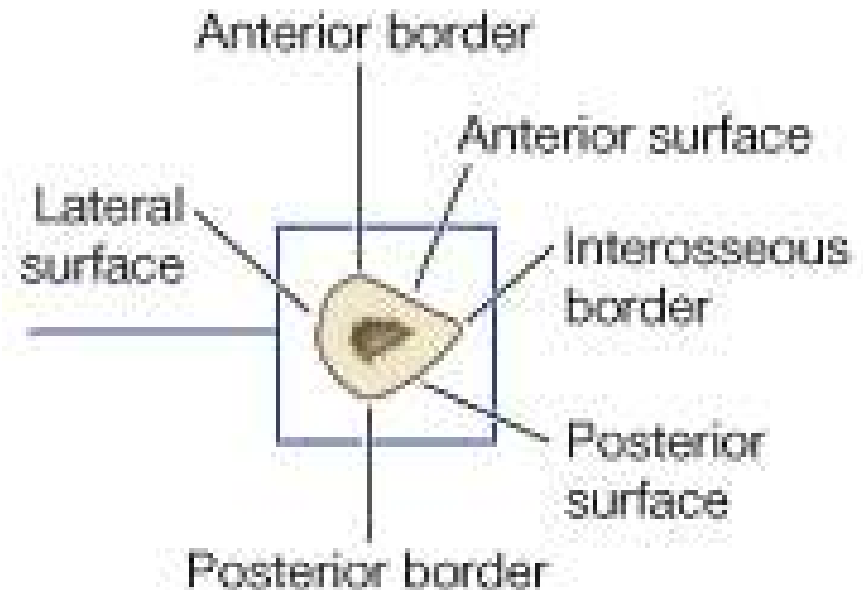


Skeleton of the forearm



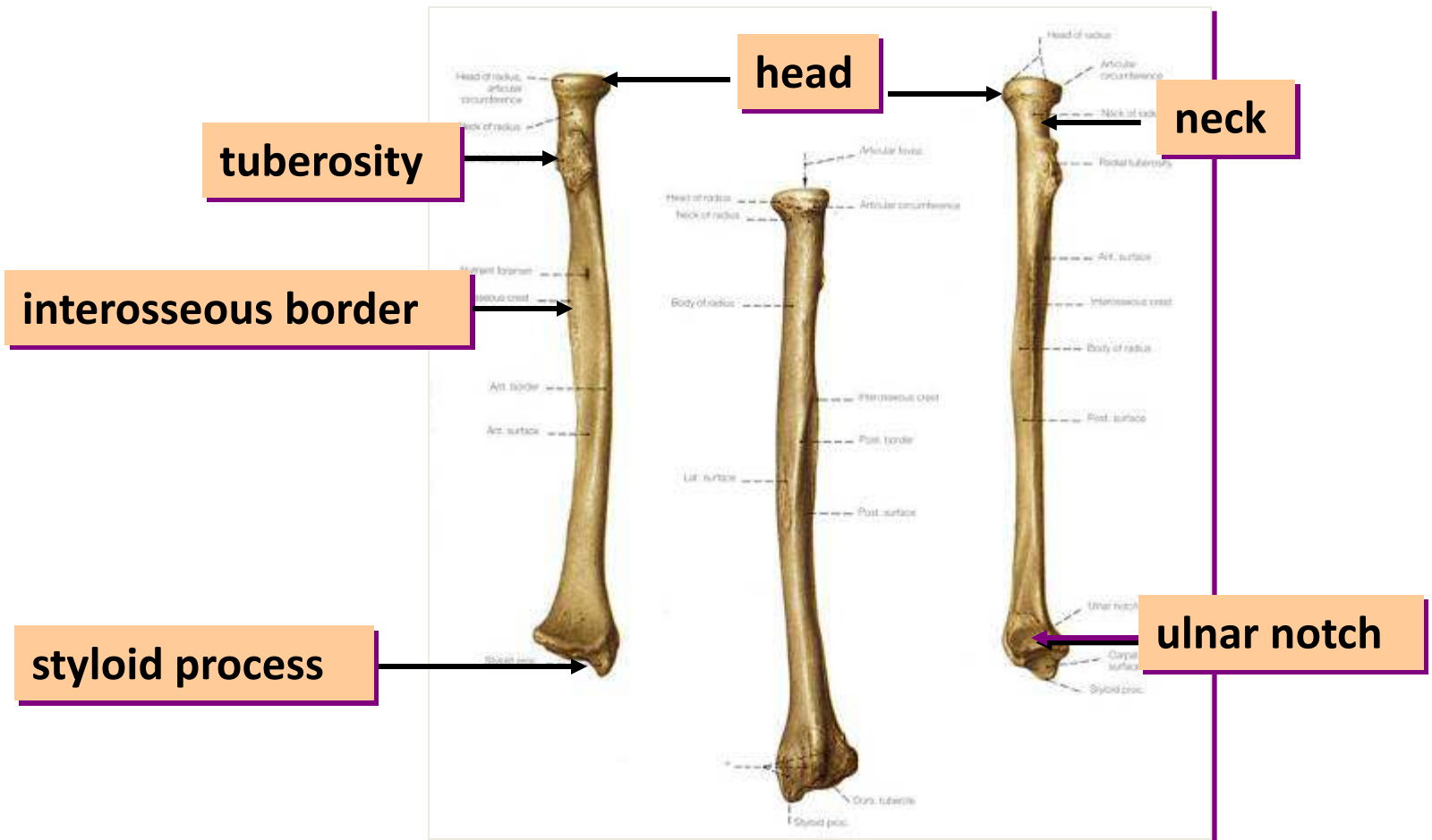
Skeleton of the forearm: The Radius

- **Three borders**
 - I. anterior
 - II. posterior
 - III. interosseous
- **Three surfaces**
 - I. anterior
 - II. posterior
 - III. lateral



Skeleton of the forearm

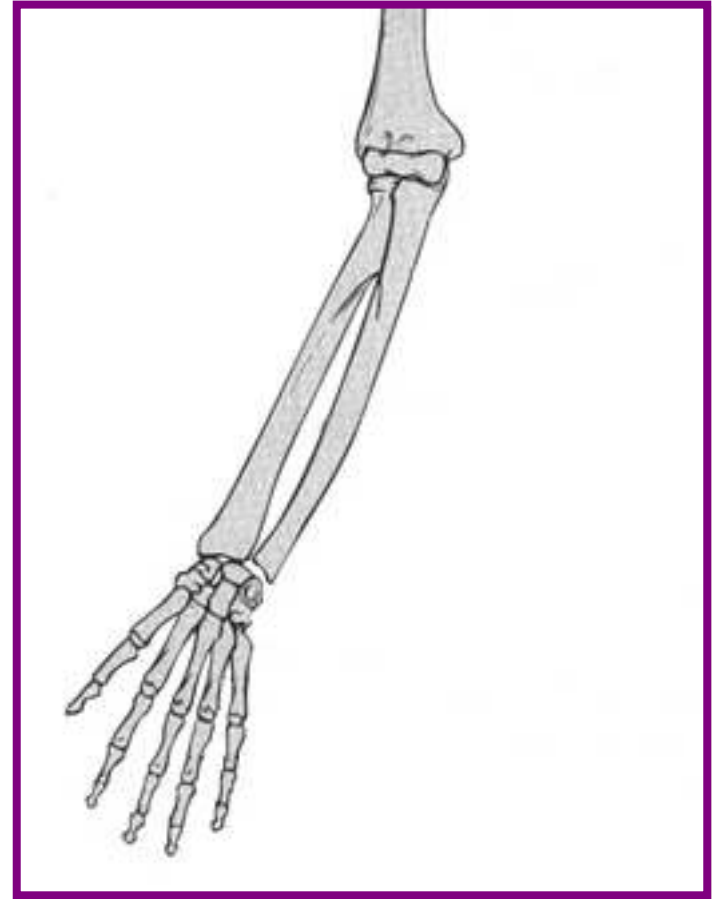
The Radius



Skeleton of the forearm

Radius

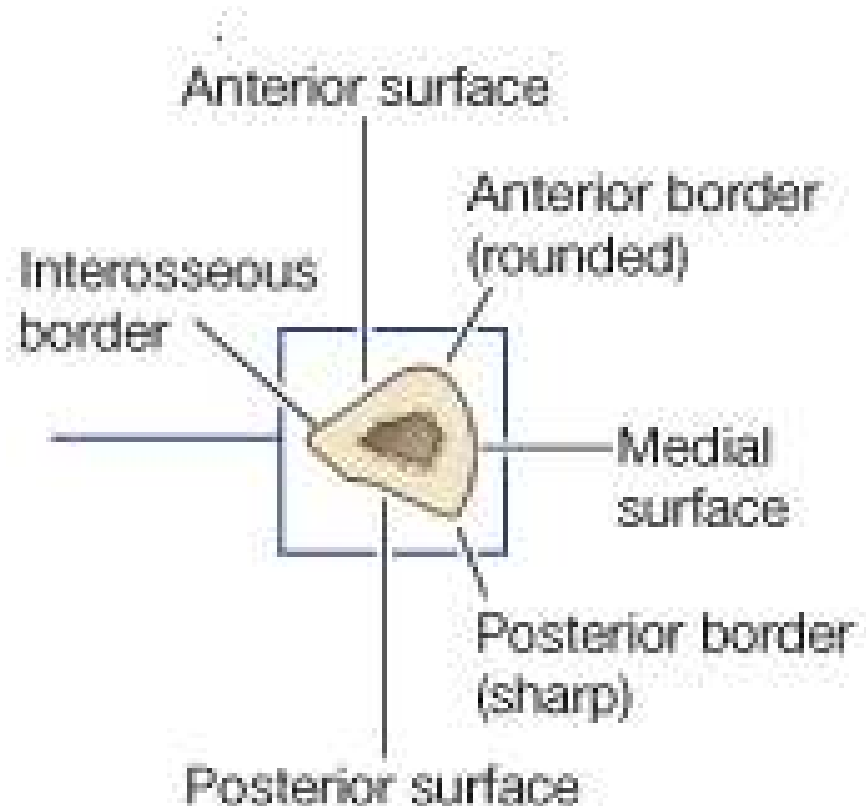
- Articulates with:
 - I. Capitulum of the humerus
 - II. Radial Notch of the Ulna (upper radioulnar joint)
 - III. Distal Ulna (upper radioulnar joint)
 - IV. Scaphoid and lunate of the hand



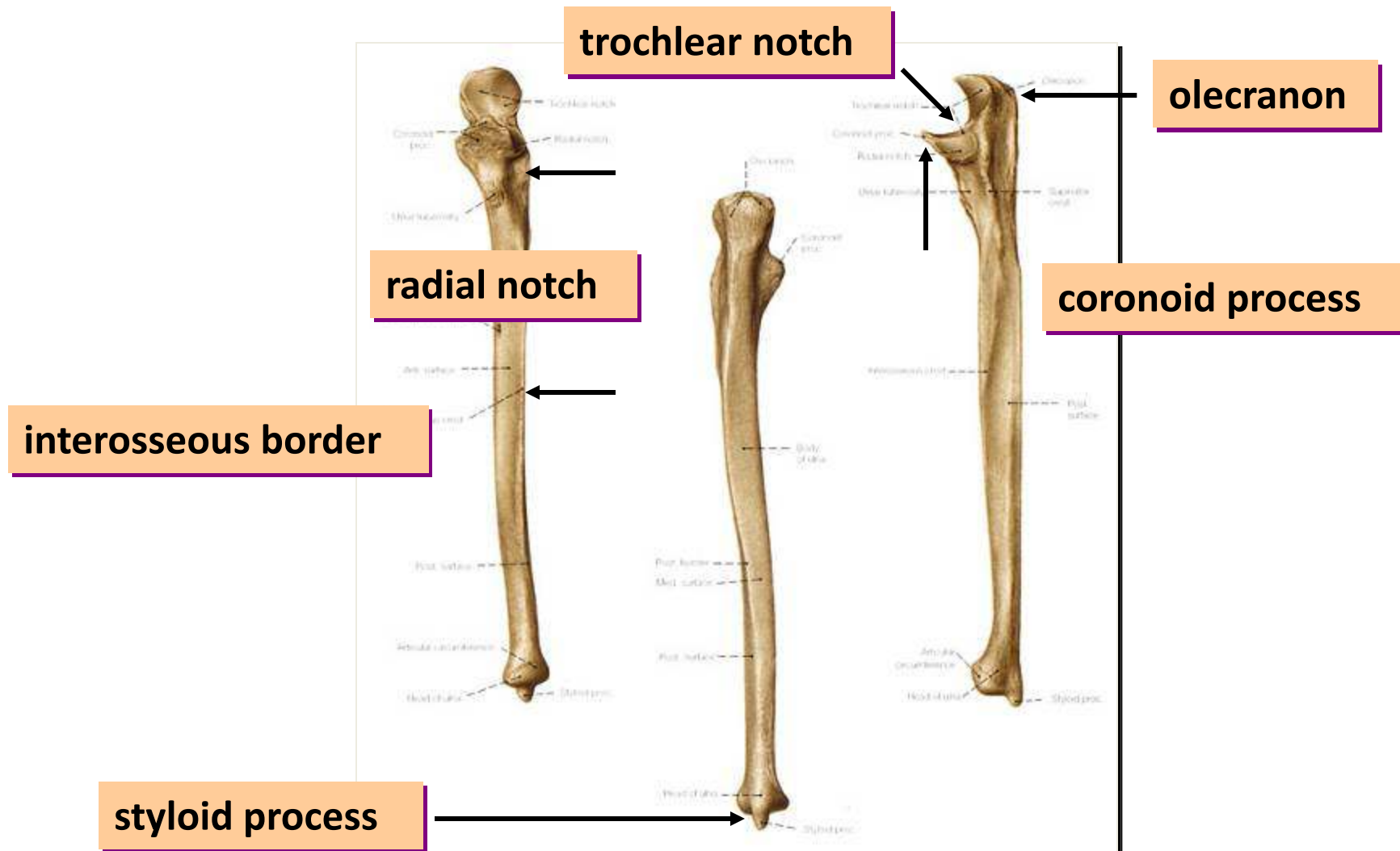
Skeleton of the forearm

The Ulna

- **Three borders**
 - I. anterior
 - II. posterior
 - III. interosseous
- **Three surfaces**
 - I. anterior
 - II. posterior
 - III. medial

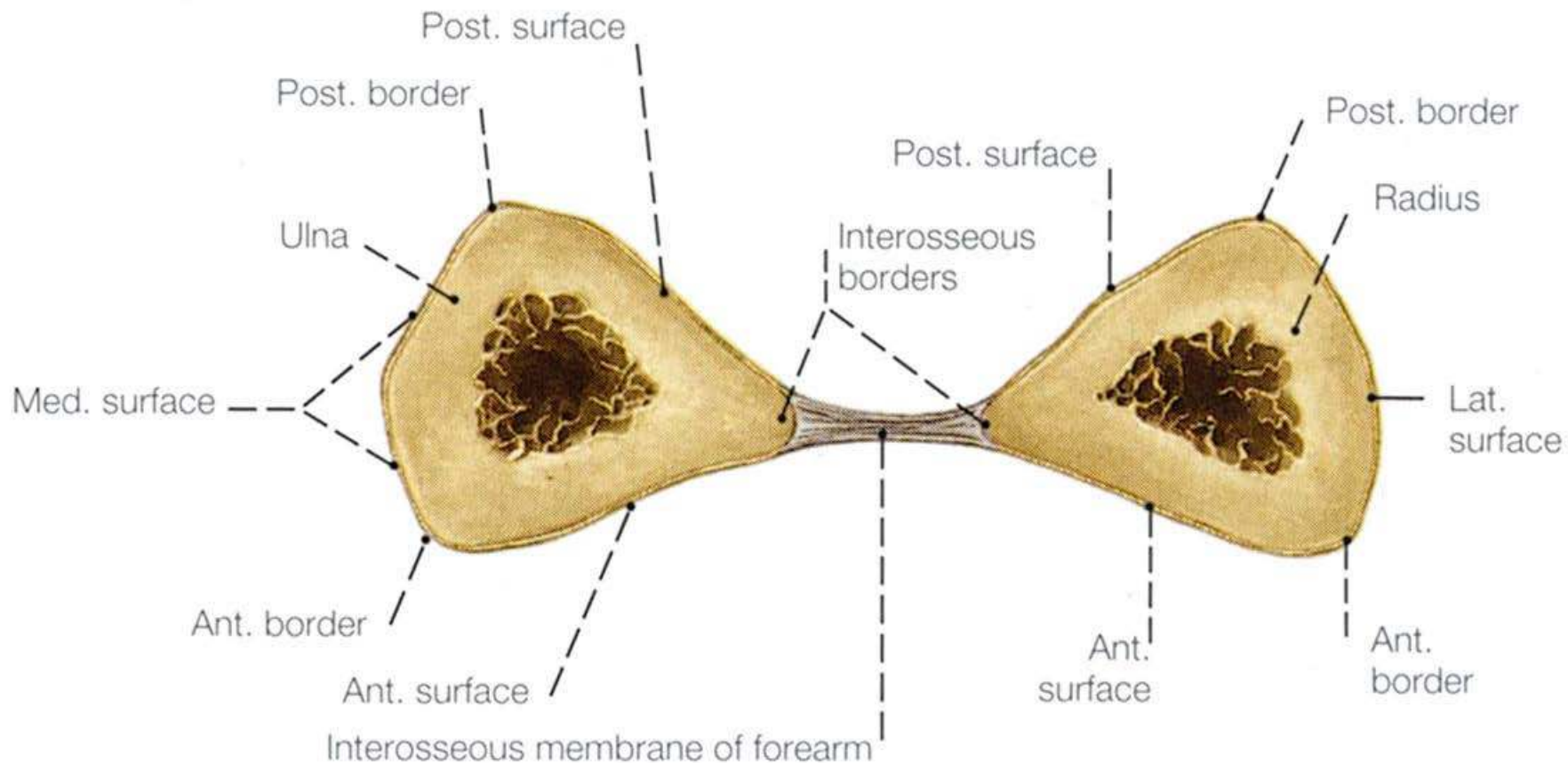


Skeleton of the forearm The Ulna



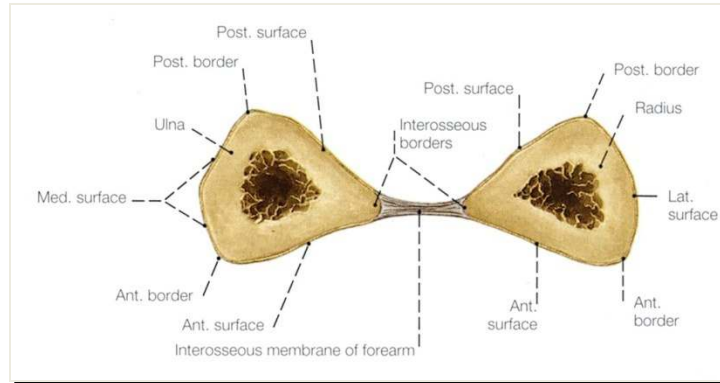
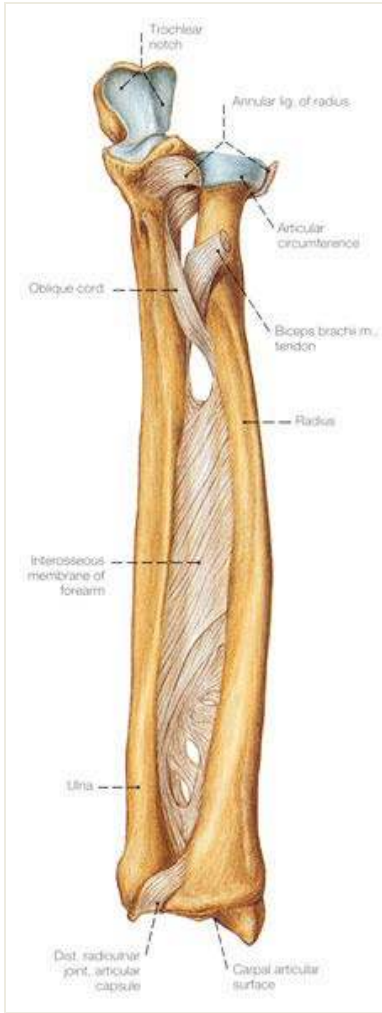
Skeleton of the forearm

Cross-section of the forearm

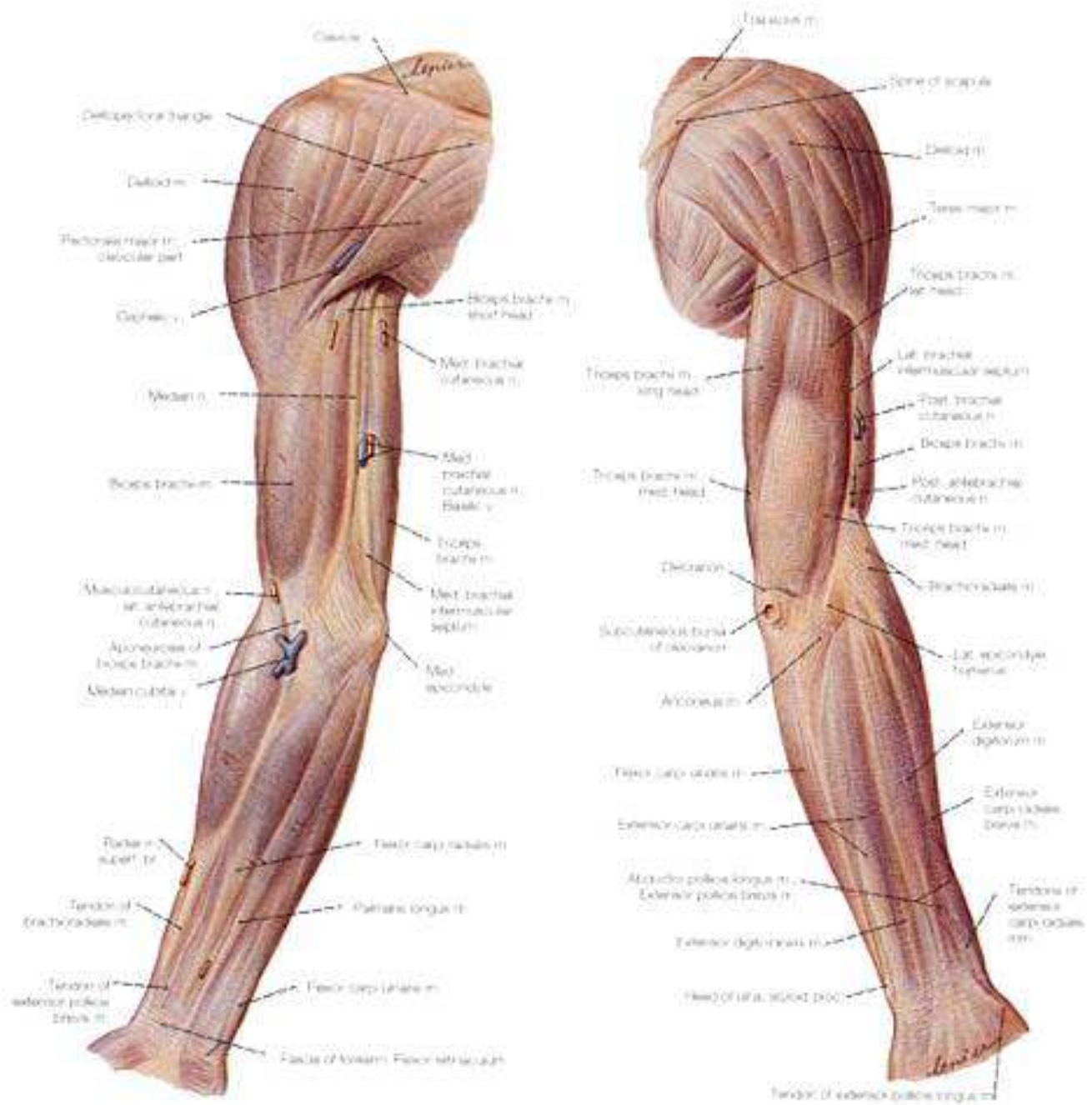


Fascial structures of the forearm

interosseous membrane



The muscles



The Muscles of the anterior group

Superficial Layer (4)

- i. Pronator Teres
- ii. Flexor Carpi Radialis
- iii. Flexor Carpi Ulnaris
- iv. Palmaris Longus

Intermediate Layer (1)

- i. Flexor digitorum Superficialis

Deep Layer (3)

- i. Flexor Digitorum profundus
- ii. Flexor Halucis Longus
- iii. Pronator Quadratus

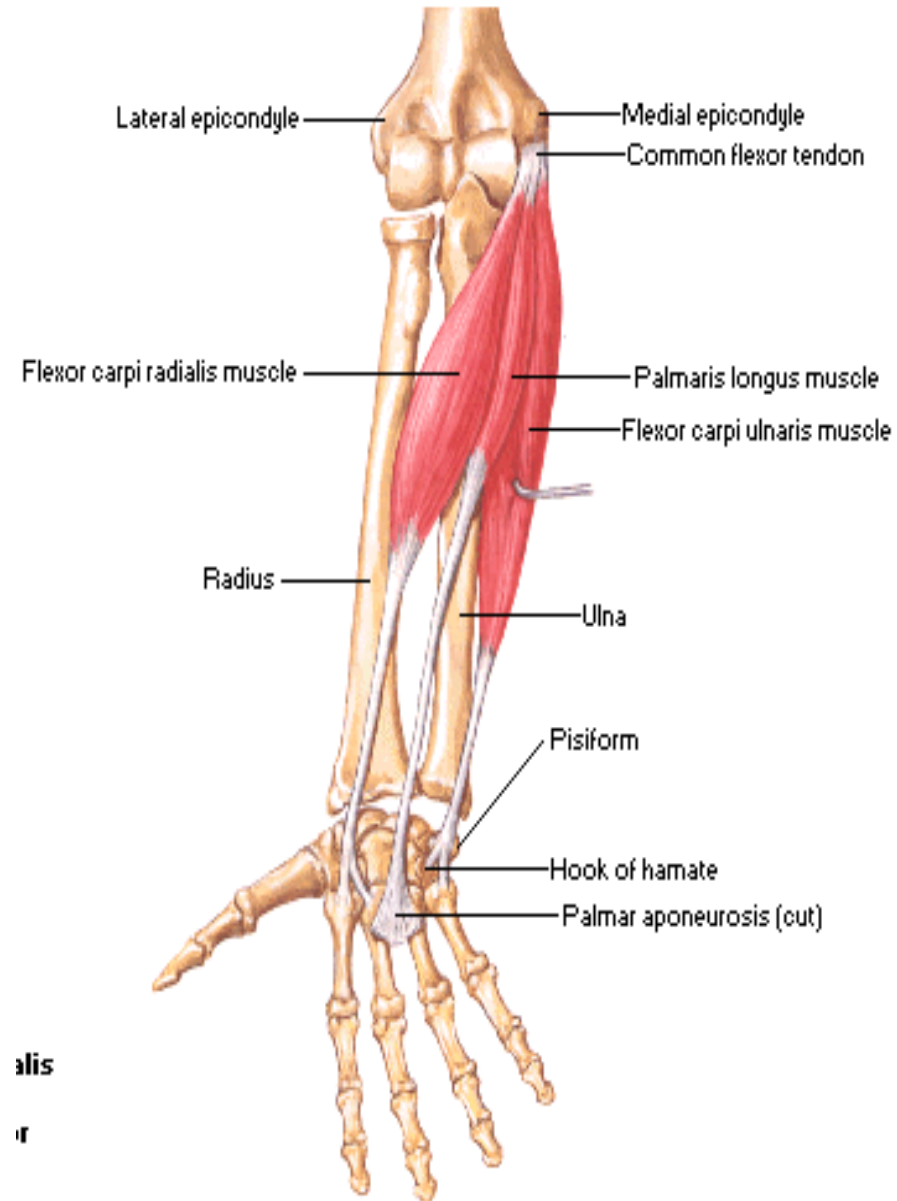
Anterior Group: Pronator Teres

- **O**: Medial distal humerus (condyle) & medial aspect of coronoid process of ulna
- **I**: Lateral aspect of radius; middle 1/3
- **A**: Elbow pronation & flexion
- **N**: Median Nerve
- Note:
 - a) It is the most superficial of the muscles arising from the medial side of the humerus
 - b) It forms the medial border of the cubital fossa



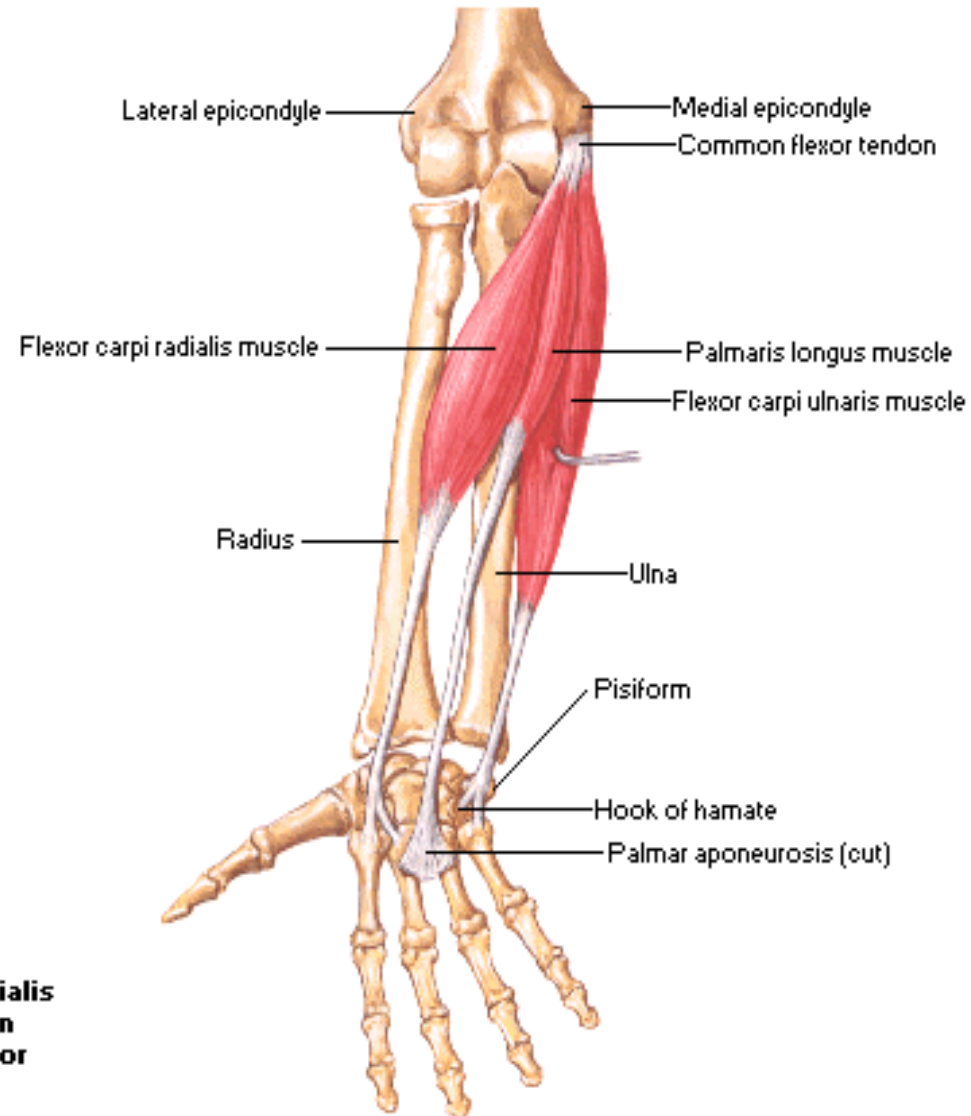
Anterior Group: Flexor Carpi Radialis

- **O:** Medial epicondyle (Common flexor origin)
- **I:** Palmar aspect of base of second metacarpal
- **A:**
 - i. Flexion of the wrist: in conjunction with the Flexor Carpi Ulnaris
 - ii. Abduction of the Wrist: in conjunction with Extensor Carpi Radialis
 - iii. Simultaneously flexes and abducts the wrist when acting alone
- **N:** Median Nerve



Anterior Group: Palmaris Longus

- **O**: Medial epicondyle (Common flexor origin)
- **I**: palmar aponeurosis and part of the flexor retinaculum
- **A**: Flexion of the wrist
- **N**: Median
- **Note:**
 - i. It is absent in about 14-15% of the population
 - ii. At the wrist, it is medial to the Median nerve



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Anterior Group: Flexor Carpi Ulnaris

- **O**: Humeral head: Medial epicondyle (Common flexor origin)
Ulna head: Olecranium
- **I**: Pisiform, hook of hamate and base of 5th metacarpal
- **A**:
 - i. Flexion of the wrist: in conjunction with the Flexor Carpi Radialis
 - ii. Adduction of the Wrist: in conjunction with Extensor Carpi Ulnaris
 - iii. Simultaneously flexes and adducts the wrist when acting alone
- **N**: Ulnar
- **Note**:
 - i. The most medial of the superficial flexor muscles
 - ii. The ulnar nerve enters the forearm by passing between the humeral and the ulnar heads of its proximal attachment
 - iii. It is the only muscle of the anterior compartment that is FULLY innervated by the ulna nerve

Anterior Group: Flexor Carpi Ulnaris

Posterior

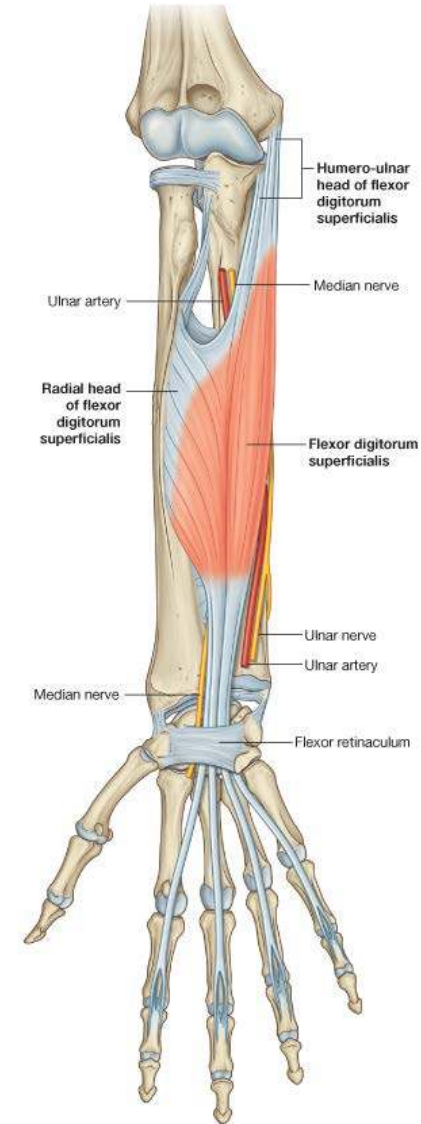


Anterior view

Anterior Group: Intermediate layer

Flexor Digitorum superficialis

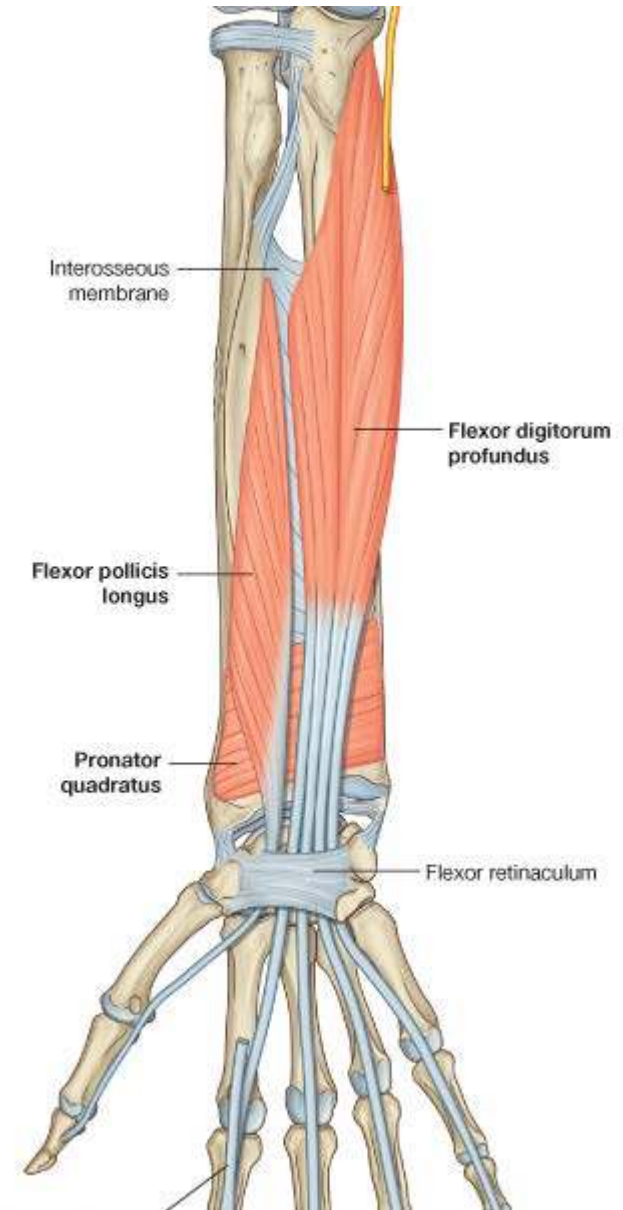
- **O: Humero-ulna head:** medial epicondyle and adjacent coronoid process
Radial head: from oblique line of radius
- **I:** Split to four tendons which are attached to the base of the 2nd to 5th middle phalanges
- **A:** Flexes metacarpophalangeal and proximal interphalangeal joints
- **N:** Median nerve
 - **Note:** The ulna and the median nerves pass between the two heads to lie deep to the muscle
 - In the palm, the tendons lie in the carpal tunnel



Anterior Group: Deep layer

Flexor Digitorum Profundus

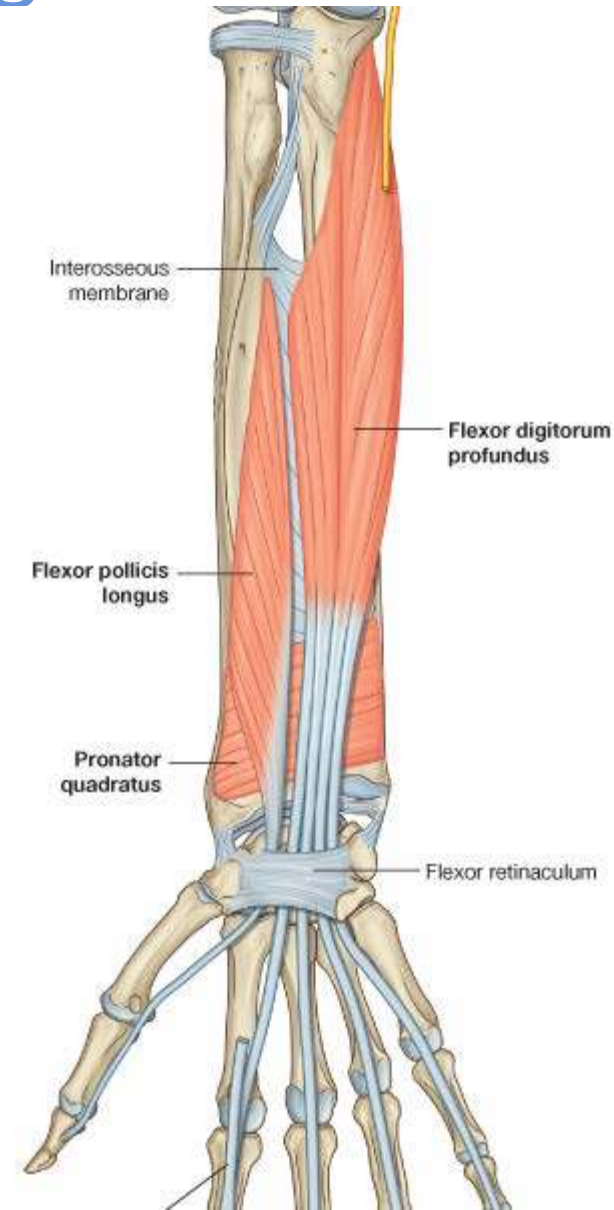
- **O**: Anterior and medial surfaces of ulna and anterior medial half of interosseous membrane
- **I**: Base of the 2nd to 5th distal phalanges
- **A**: Flexes metacarpophalangeal, distal and proximal interphalangeal joints
- **N**: Lateral half by median nerve (anterior interosseous nerve); medial half by ulnar nerve
- **Note**: In the palm, the lumbricals muscles originate from the sides of the tendons of flexor digitorum profundus.



Anterior Group: Deep Layer

Flexor Policis longus

- **O**: Anterior surface of radius and radial half of inter-osseous membrane
- **I**: Palmar surface of base of distal phalanx of thumb
- **A**: Flexes interphalangeal joint of the thumb; can also flex metacarpo-phalangeal joint of the thumb
- **N**: Median nerve (anterior interosseous nerve)



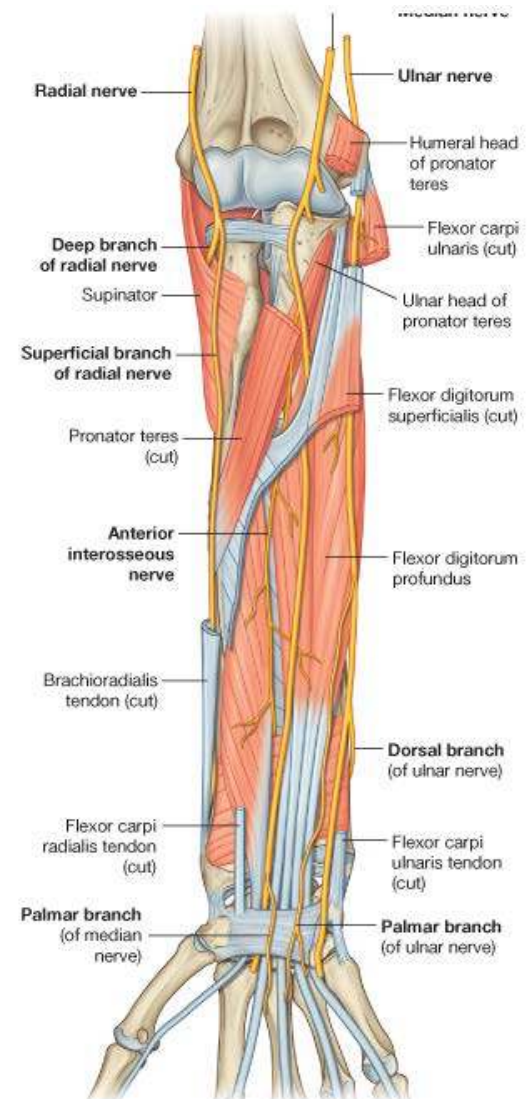
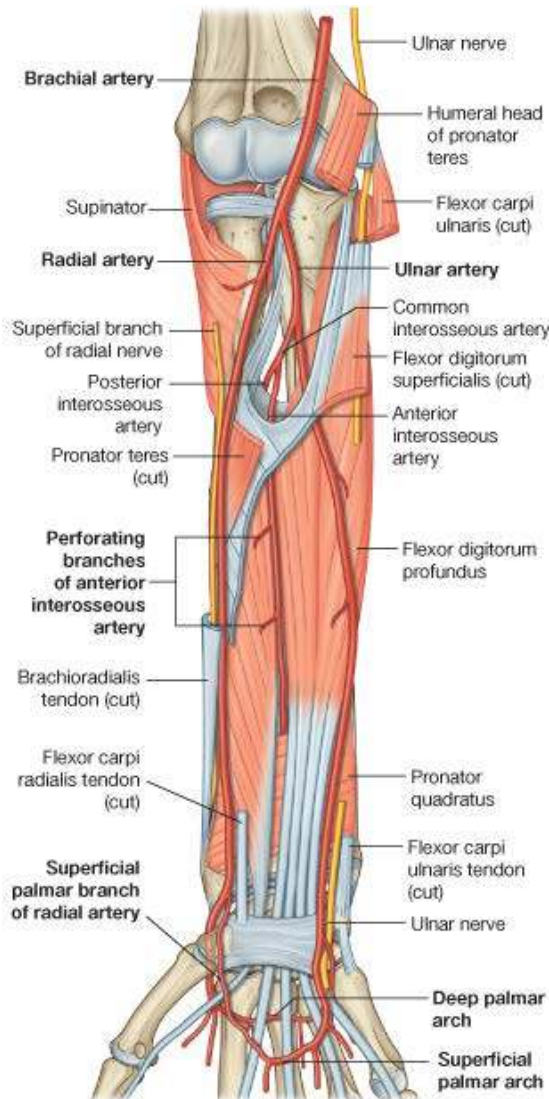
Anterior Group: Deep layer

Pronator quadratus

- **O**: Linear ridge on distal anterior surface of ulna
- **I**: Distal anterior surface of radius
- **A**: Pronation
- **N**: Median nerve (anterior interosseous nerve)



Vascular and Nerve Supply



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