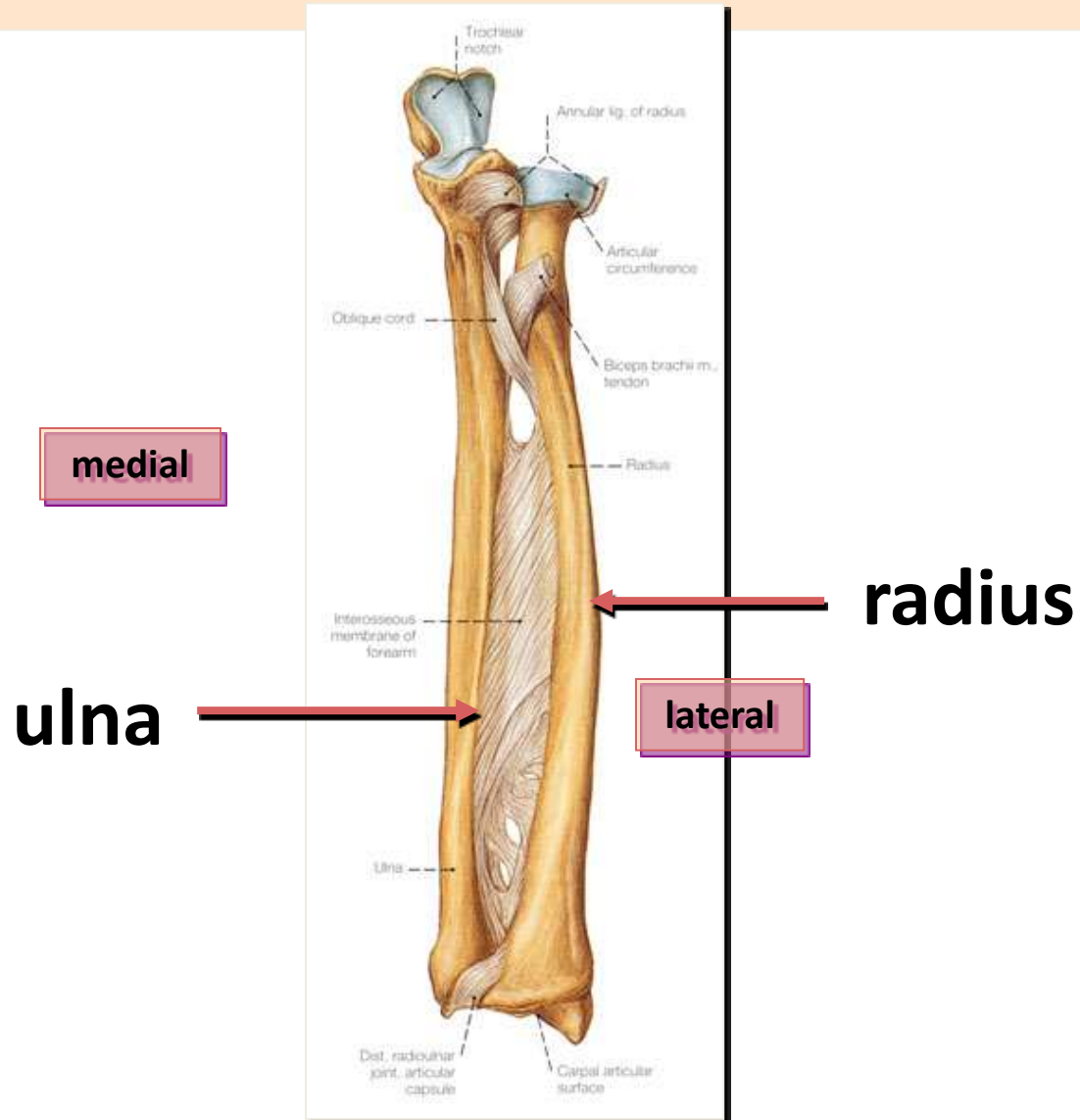


# Anatomy of the forearm I: The anterior compartment

Prof Oluwadiya Kehinde

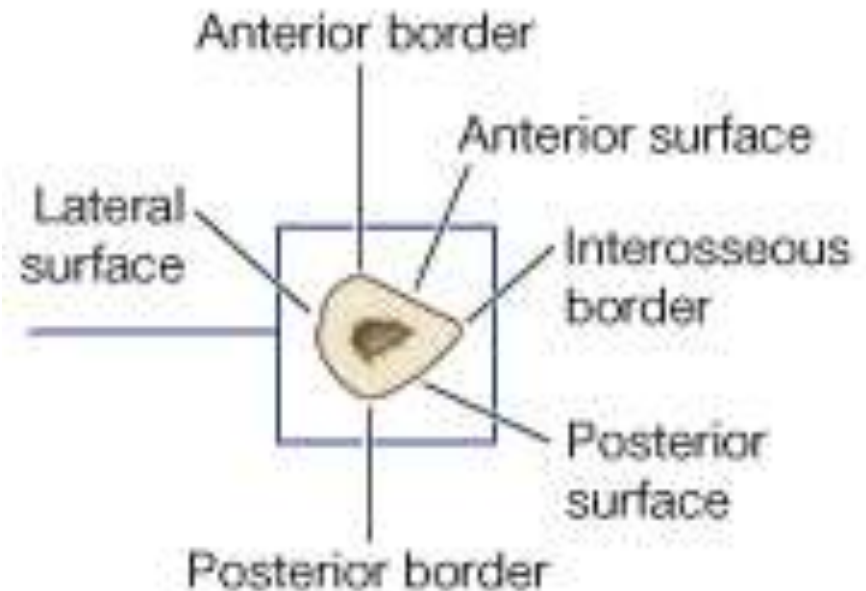
[www.oluwadiya.com](http://www.oluwadiya.com)

# Skeleton of the forearm



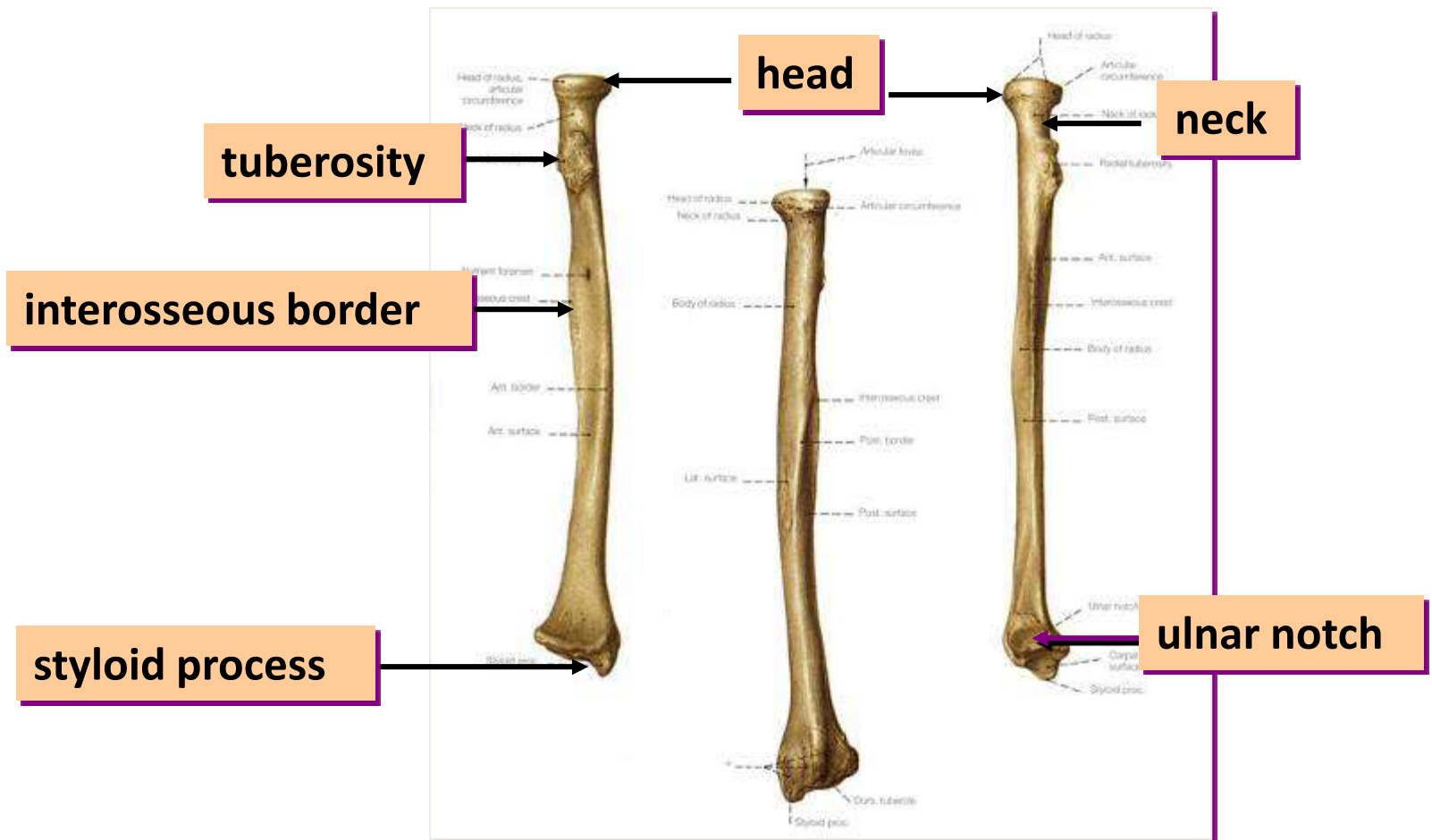
# Skeleton of the forearm: The Radius

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



# Skeleton of the forearm

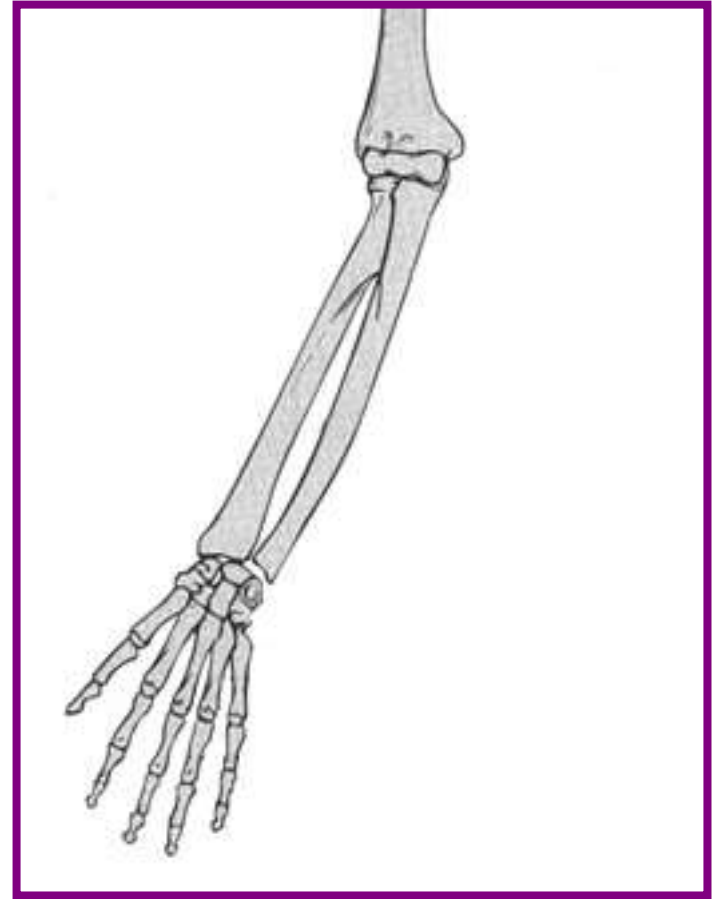
## The Radius



# Skeleton of the forearm

## Radius

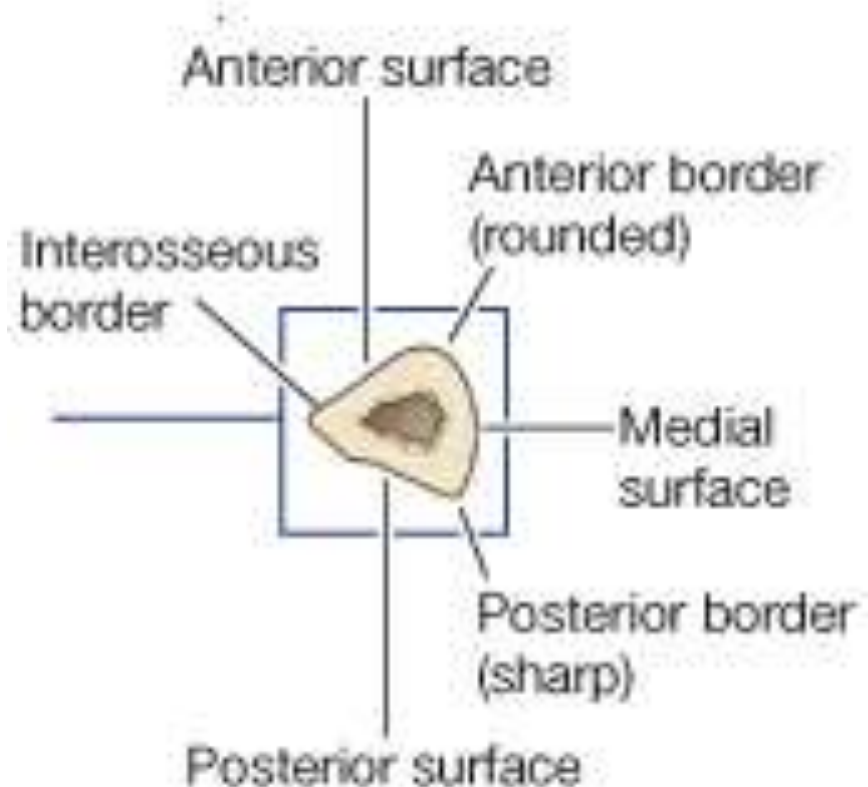
- Articulates with:
  - I. Capitulum of the humerus
  - II. Radial Notch of the Ulna (upper radioulnar joint)
  - III. Distal Ulna (upper radioulnar joint)
  - IV. Scaphoid and lunate of the hand



# Skeleton of the forearm

## The Ulna

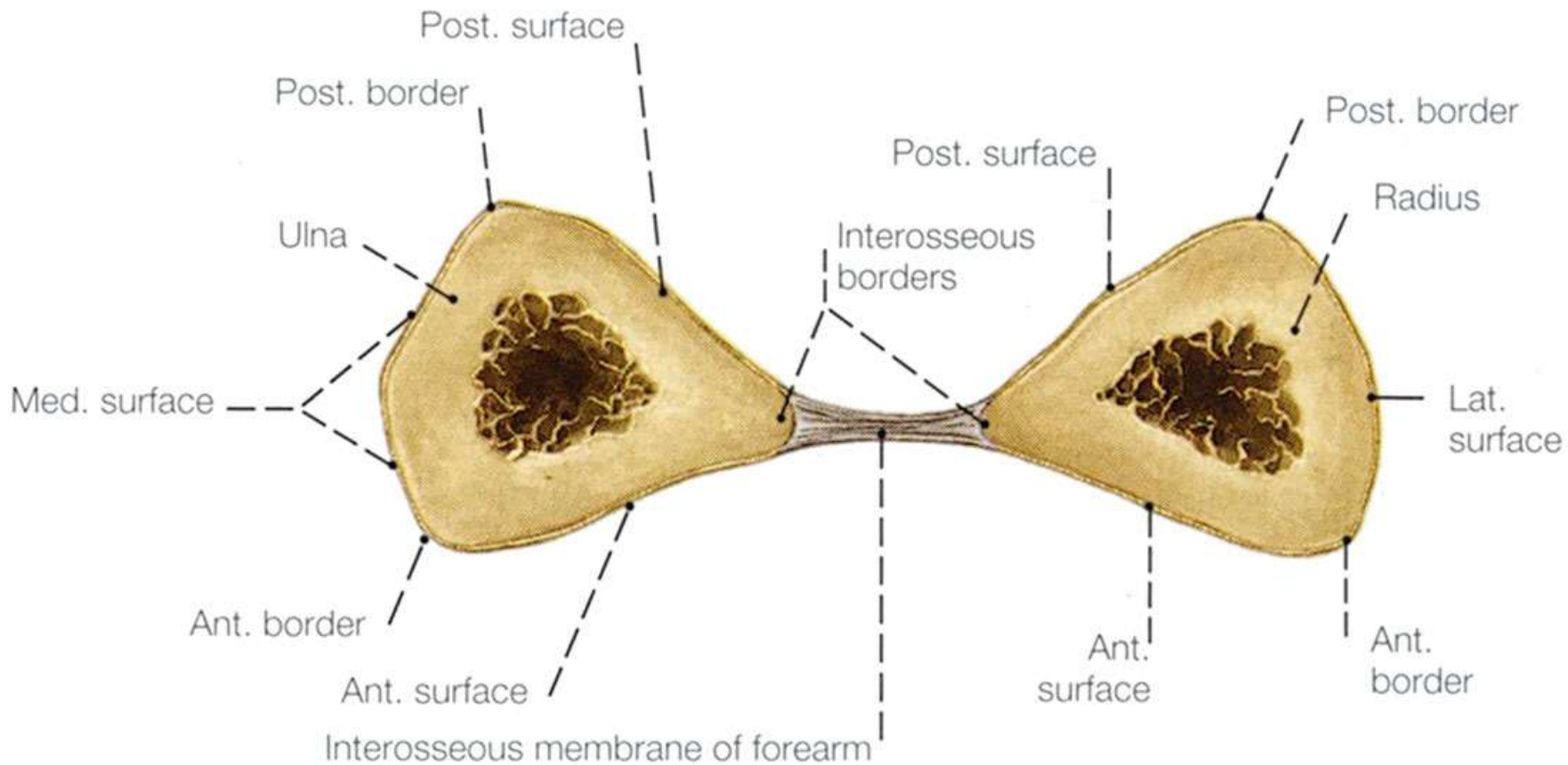
- **Three borders**
  - I. anterior
  - II. posterior
  - III. interosseous
- **Three surfaces**
  - I. anterior
  - II. posterior
  - III. medial





# Skeleton of the forearm

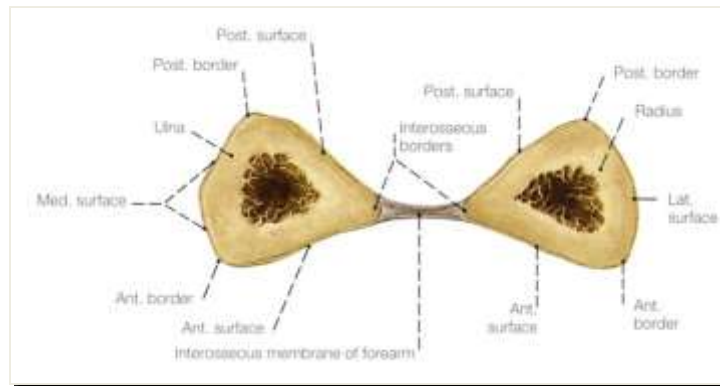
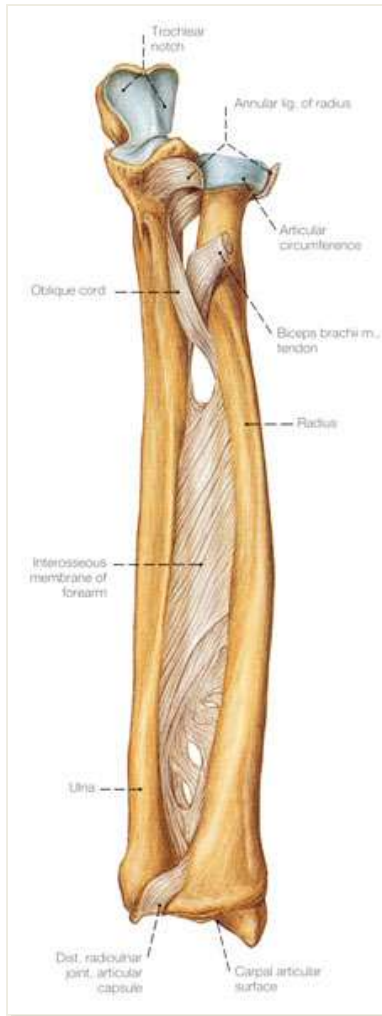
## Cross-section of the forearm



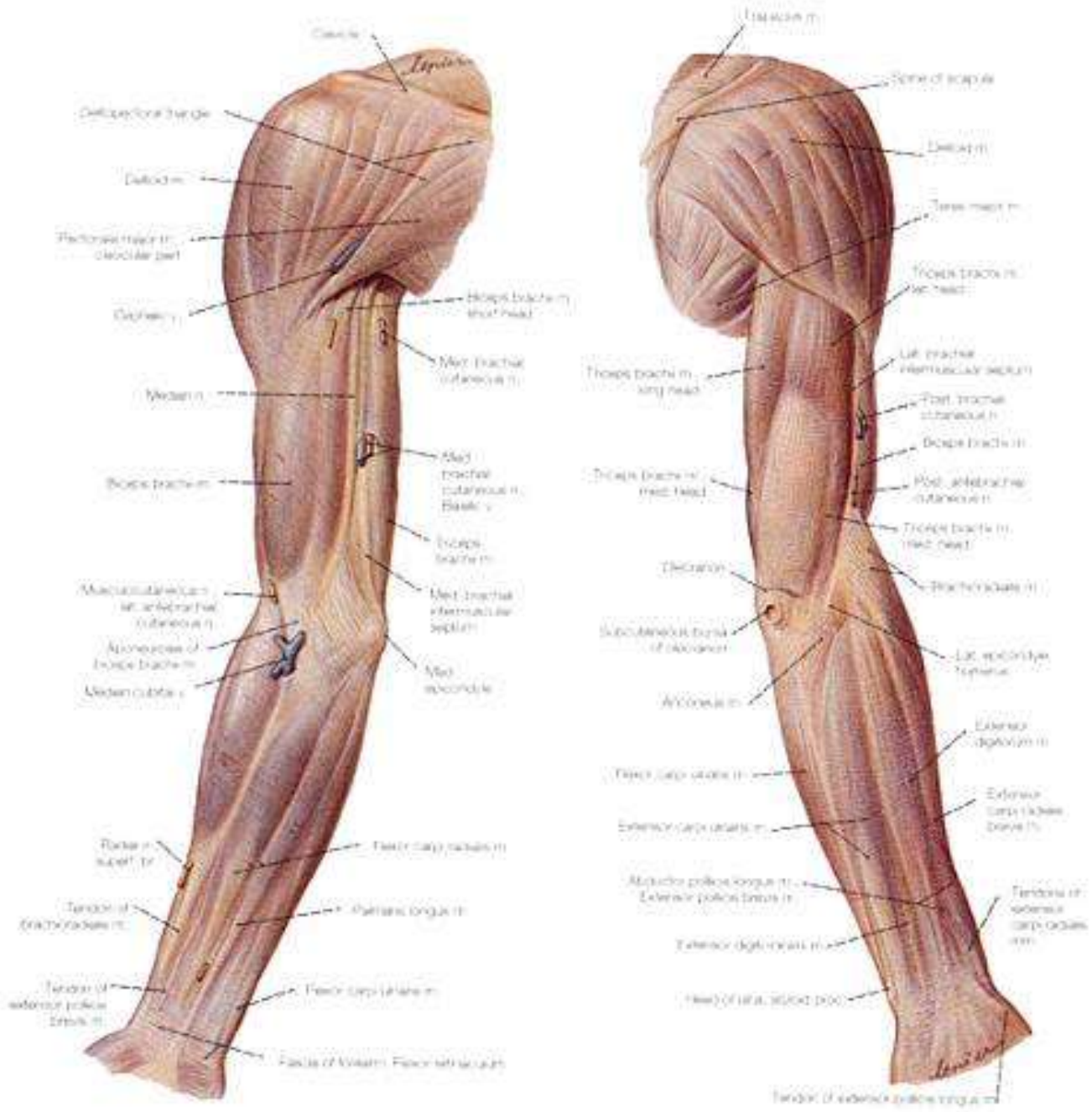


# Fascial structures of the forearm

## 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

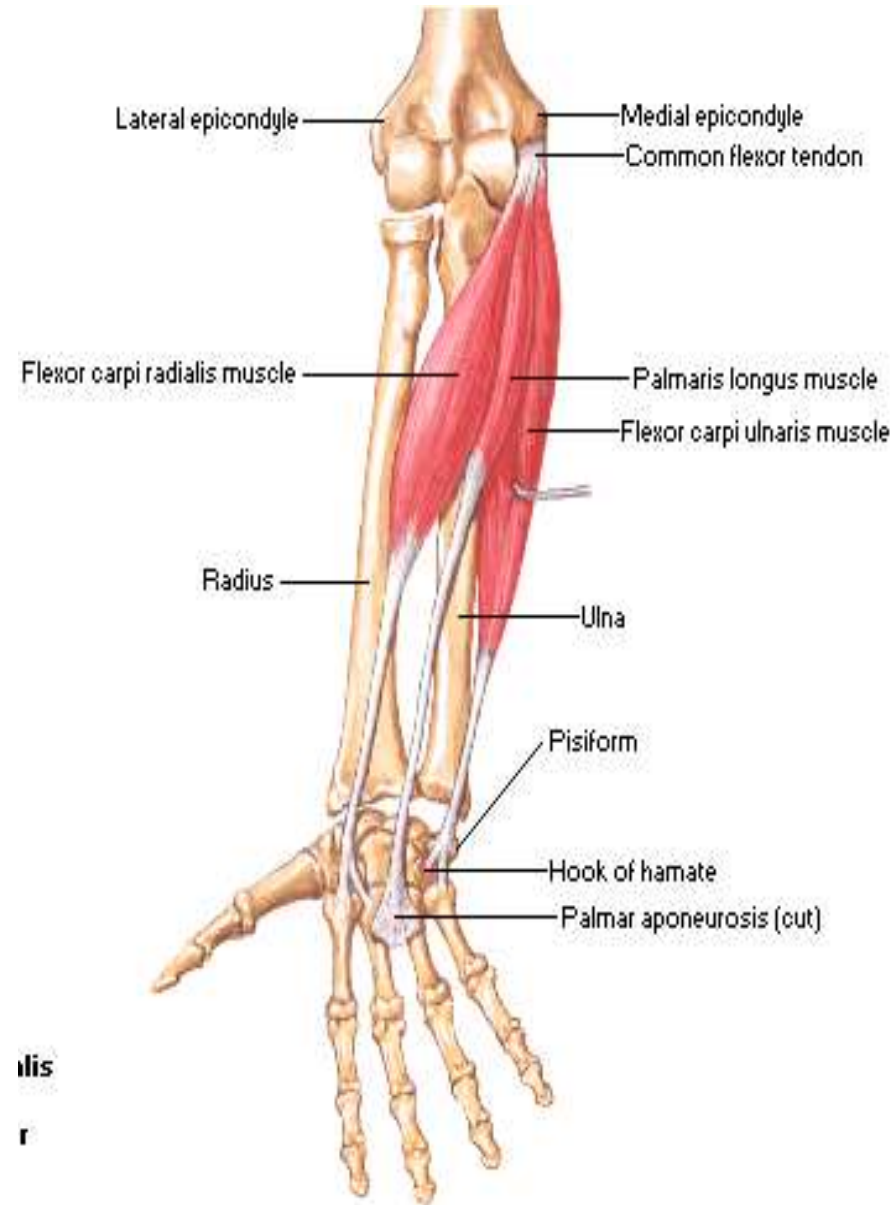
# Anterior Group: Pronator Teres

- **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



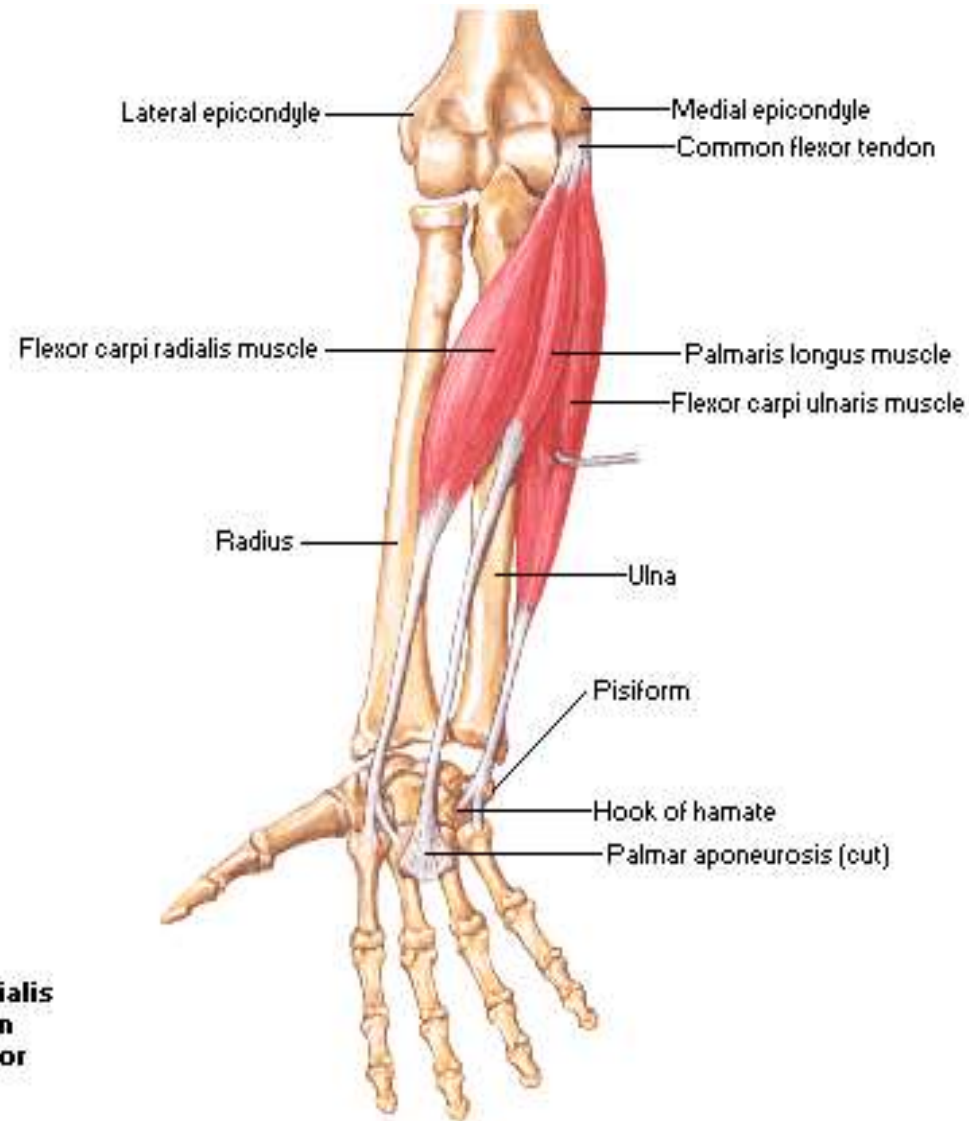
# Anterior Group: Flexor Carpi Radialis

- **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



Palmaris  
longus

# Anterior Group: Flexor Carpi Ulnaris

- **O**: Humeral head: Medial epicondyle (Common flexor origin)  
Ulna head: Olecranium
- **I**: Pisiform, hook of hamate and base of 5<sup>th</sup> 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**



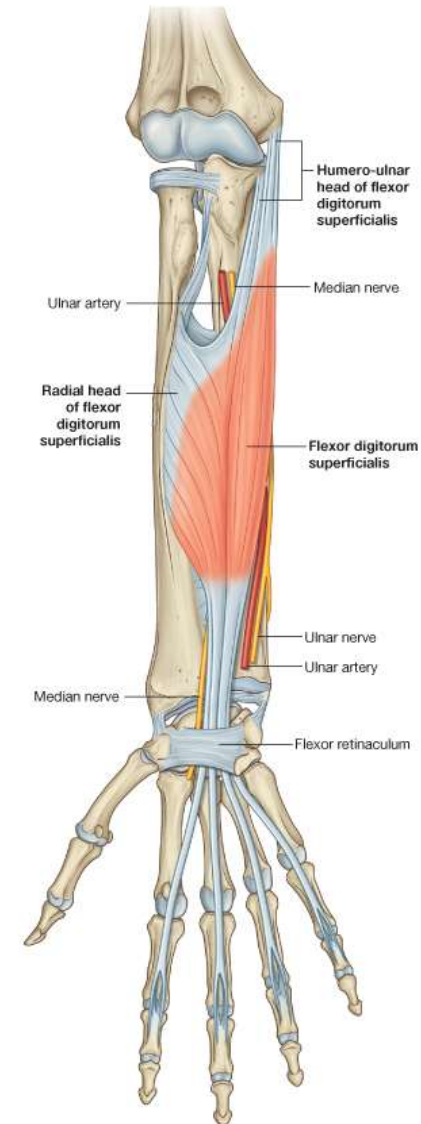
**Anterior view**



# Anterior Group: Intermediate layer

## Flexor Digitorum superficialis

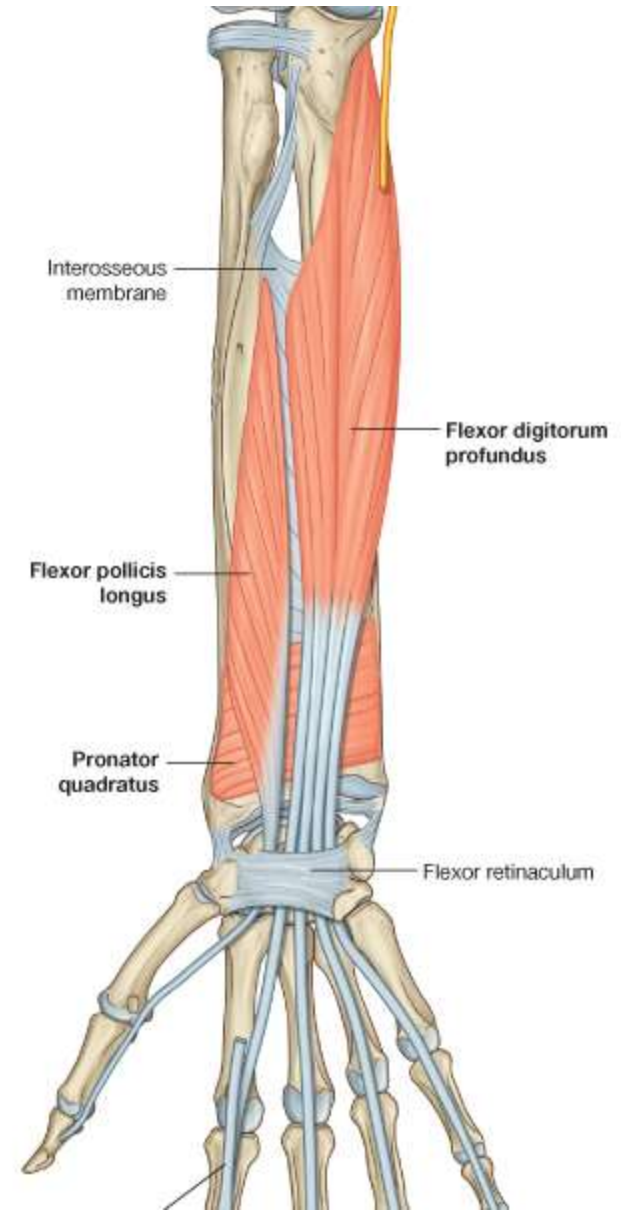
- **O: Humero-ulna head:** medial epicondyle and adjacent coronoid process  
**Radial head:** from oblique line of radius
- **I:** Split to four tendons which are attached to the base of the 2<sup>nd</sup> to 5<sup>th</sup> middle phalanges
- **A:** Flexes metacarpophalangeal and proximal interphalangeal 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

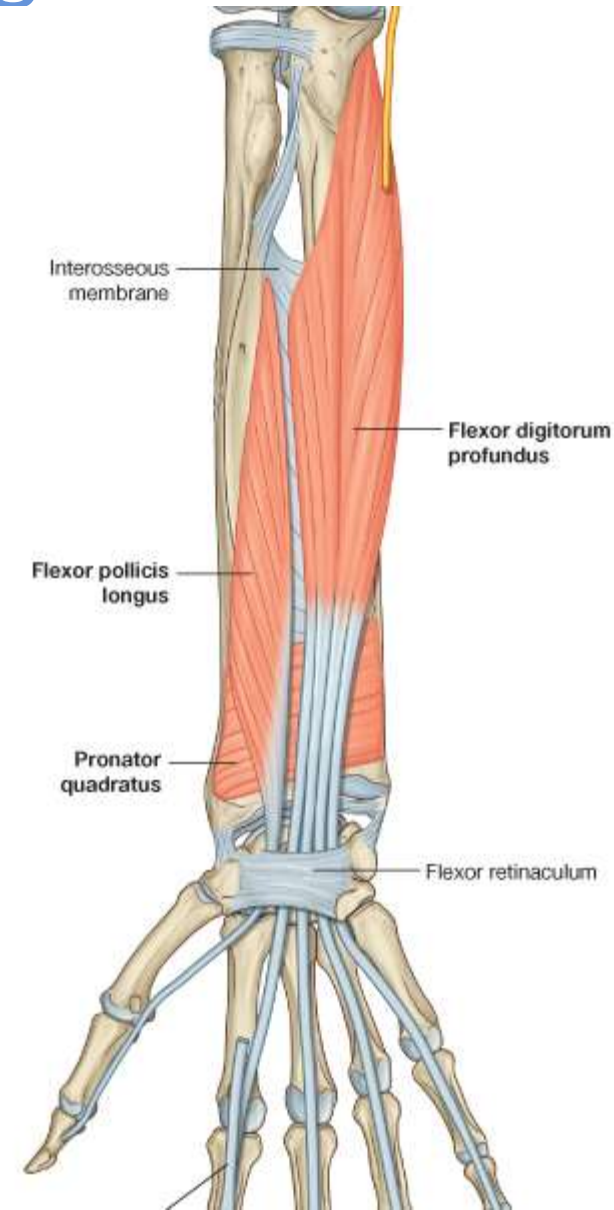
- **O**: Anterior and medial surfaces of ulna and anterior medial half of interosseous membrane
- **I**: Base of the 2<sup>nd</sup> to 5<sup>th</sup> distal phalanges
- **A**: Flexes metacarpophalangeal, distal and proximal interphalangeal joints
- **N**: Lateral half by median nerve (anterior interosseous nerve); medial half by ulnar nerve
- **Note**: In the palm, the lumbrical 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)



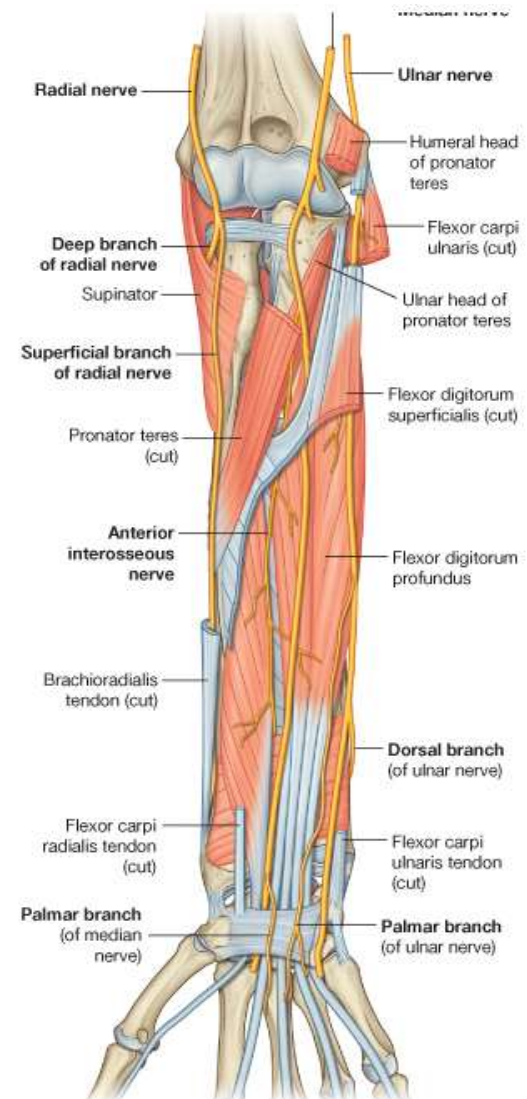
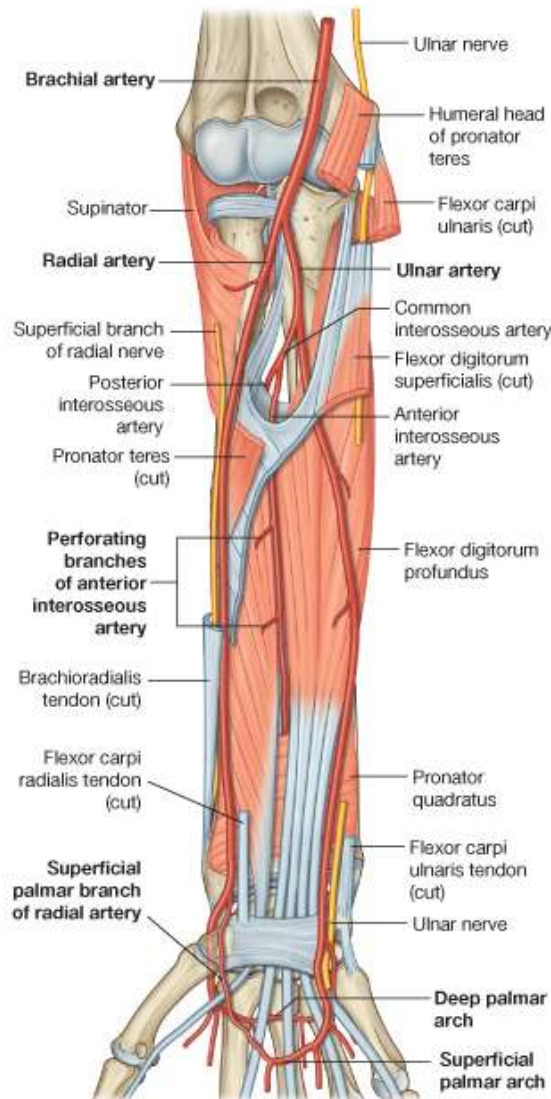
# Anterior Group: Deep layer

## 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





Tag By Adana

**Thank You**