# Forearm

Two Compartments

- Anterior (flexor) Compartment
- Posterior (extensor) compartment

Invested by deep fascia
Attached to olecranon & post. Border of ulna
Sending no. of septa
Deep fascia –thichened to form Fexor and Extensor
Retnaculum close to wrist to retain digital tendons in position

## Anterior (Flexor) Compartment

demarcated from post. compartment

**Medially**
Olecranon process and post. border of Ulna

**Laterally**
by anterior border of radius

## Floor of Anterior Compartment

- Ant. Surface of Radius
- Ant. and Medial surfaces of Ulna
- Interosseous Membrane
  (Fibres – downwards & medially)

# Contents

**Muscles** – 8 muscles
-- arrranged in two groups
– Superficial (Five)
-- Deep (Three)

**Vessels** – Radial and Ulnar

Common interosseous branch of ulnar artery
dividing into
Ant. & post. interosseous branches

**Nerves** – Median and Ulnar nerves

-- Anterior interosseous branch of median nerve

# Flexor Muscles of the Forearm

## Superficial flexors

Five(5) in number

common origin -- medial epicondyle of Humerus

All crosses Elbow Joint

- Pronator Teres
- Flexor Carpi Radialis
- Palmaris Longus
- Flexor Carpi Ulnaris
- Flexor Digitorum Superficialis

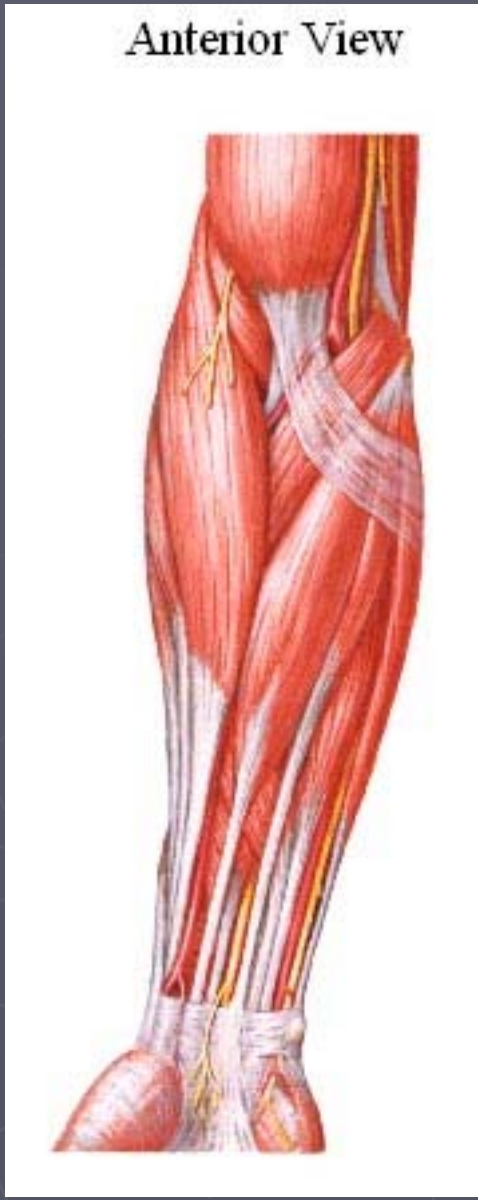
Muscles with additional origin – PT, FCU, FDS

## Deep Flexors

Three(3) in number

Origin confined to radius and Ulna

- Flexor Pollicis Longus
- Flexor Digitorum Profundus
- Pronator Quadratus



# Pronator Teres

## Origin

by Humeral (Superficial) And Ulnar (deep) Heads

**Humeral Head**

Lower Part of medial supracondylar ridge
And ant. And lower part of medial epicondyle

**Ulnar Head**

medial border of coronoid process of ulna

## Course

two heads join ,proceed downward and laterally forming medial boundary of cubital fossa

median nerve passes in b/w two heads

## Insertion

by a flat tendon to the middle of the lateral surface of Radius

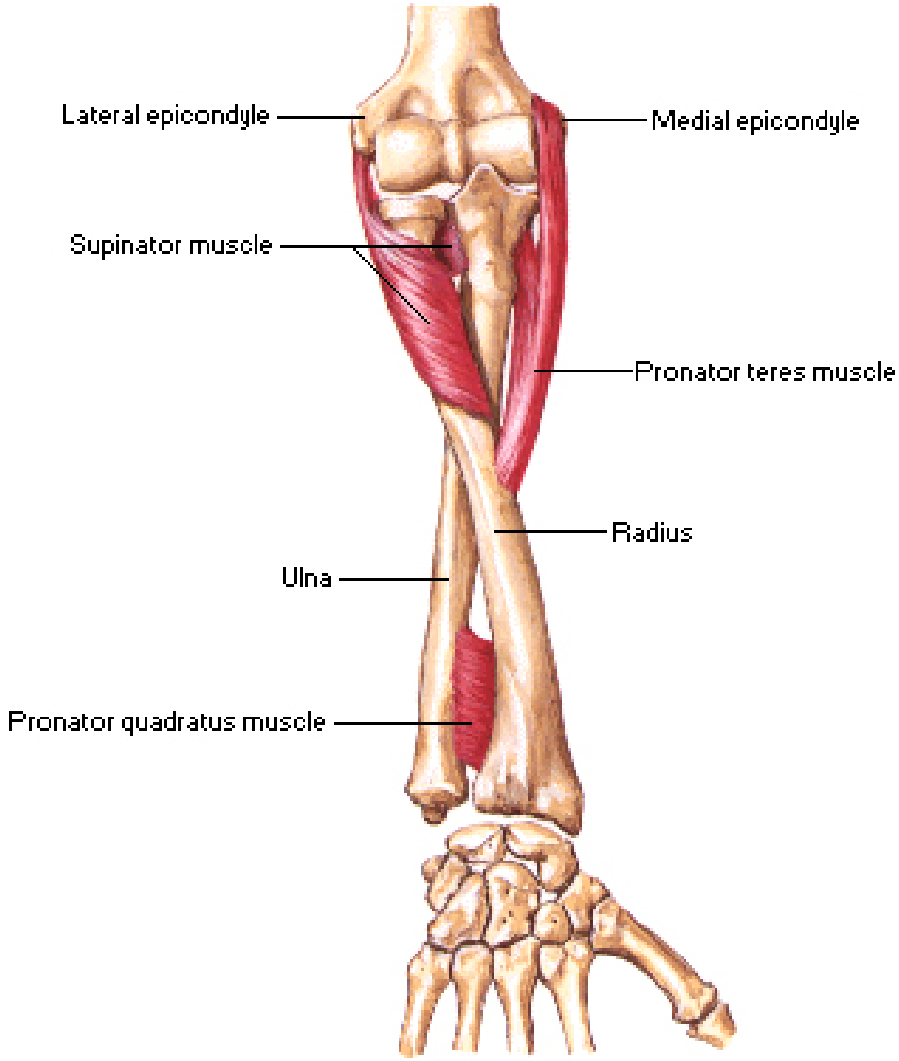
## N. Supply

median nerve , before it pass b/w two heads

Right Radius and Ulna in Pronatio

Anterior View

Rotators of Radius - Pronation




**Action** : Pronation of Forearm , Weak Flexor of Elbow

# Flexor Carpi Radialis

## Origin

- Medial epicondyle
- from adjoining deep fascia

## Course

Form fusiform belly
form tendon in middle of forearm
At wrist
accompanied by tendon of brachioradialis laterally
radial artery intervenes in b/w two tendons
Perforates Fl. Retinaculum

## Insertion

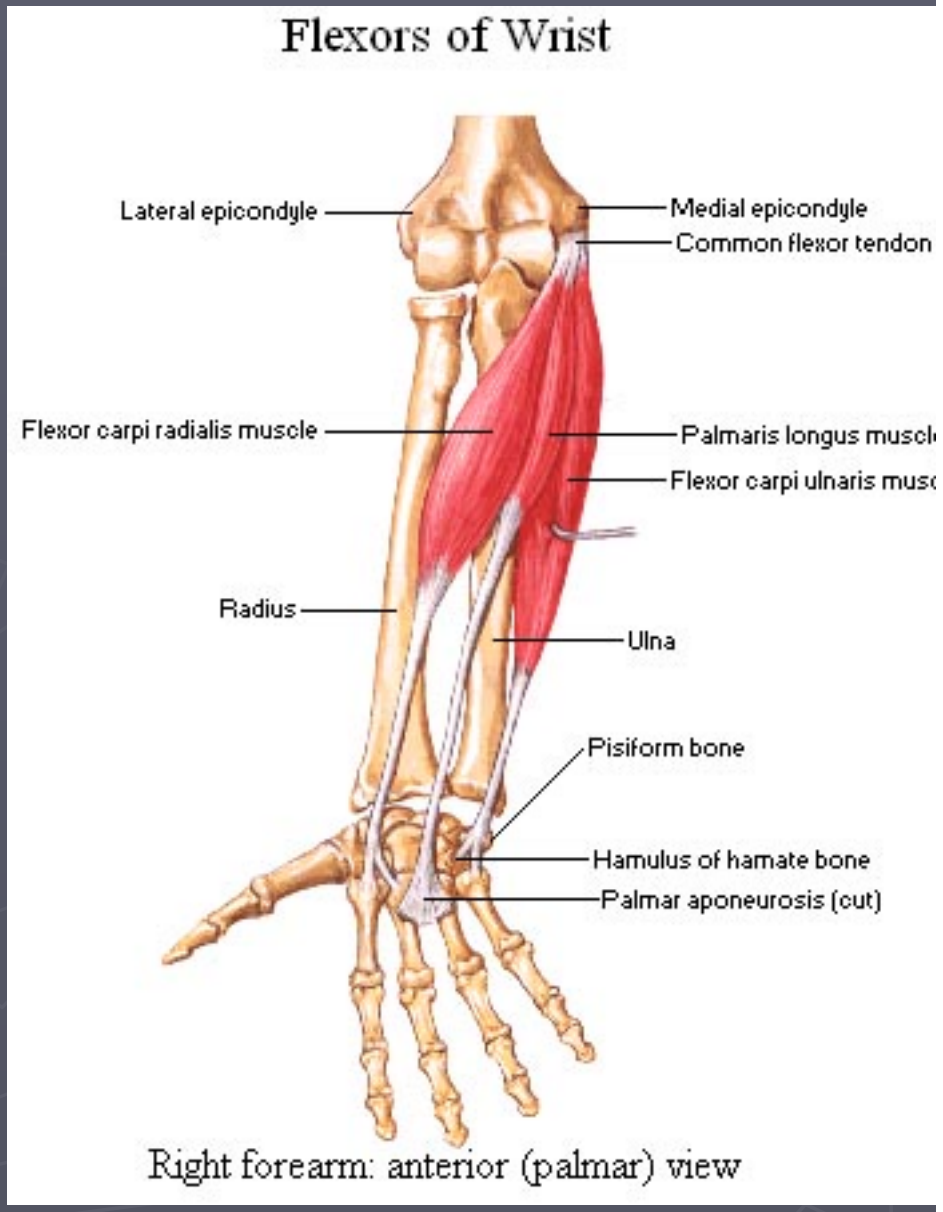
Palmer surface of base of second and third metacarpal bones

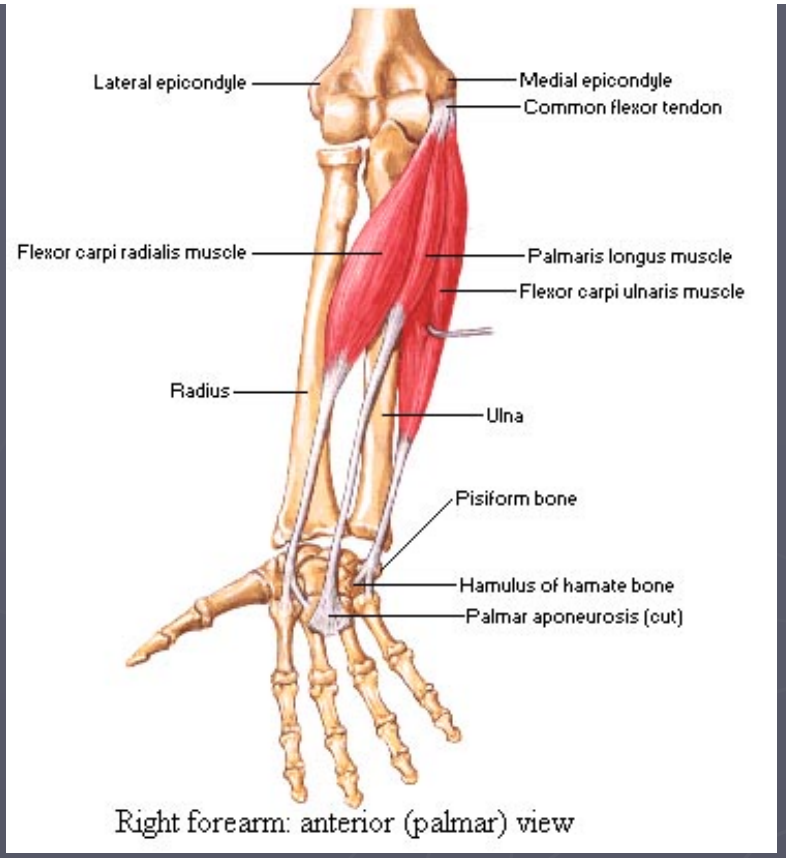
## Nerve supply

Median nerve

## Action

Flexor of wrist
Along with ECRL & ECRB – abduction of wrist





Right forearm: anterior (palmar) view

# Palmaris longus

**Origin**

Medial epicondyle of humerus

**Course**

Long tendon

Passes in front of flexor retinaculum

**Insertion**

Continues as central part of Palmer aponeurosis

**Nerve Supply**

Median Nerve

**Action**

Weak flexor of wrist

# Flexor Carpi Ulnaris

## Origin

Two heads

Humeral head

Medial epicondyle of humerus

Ulnar head

Medial margin of olecranon process and 2/3rd of the post border of ulna

## Course

Two heads form a tendinous arch

Ulnar nerve and post ulnar recurrent artery passes below it

## Insertion

To pisiform bone

through pisohammate and pisometacarpal li

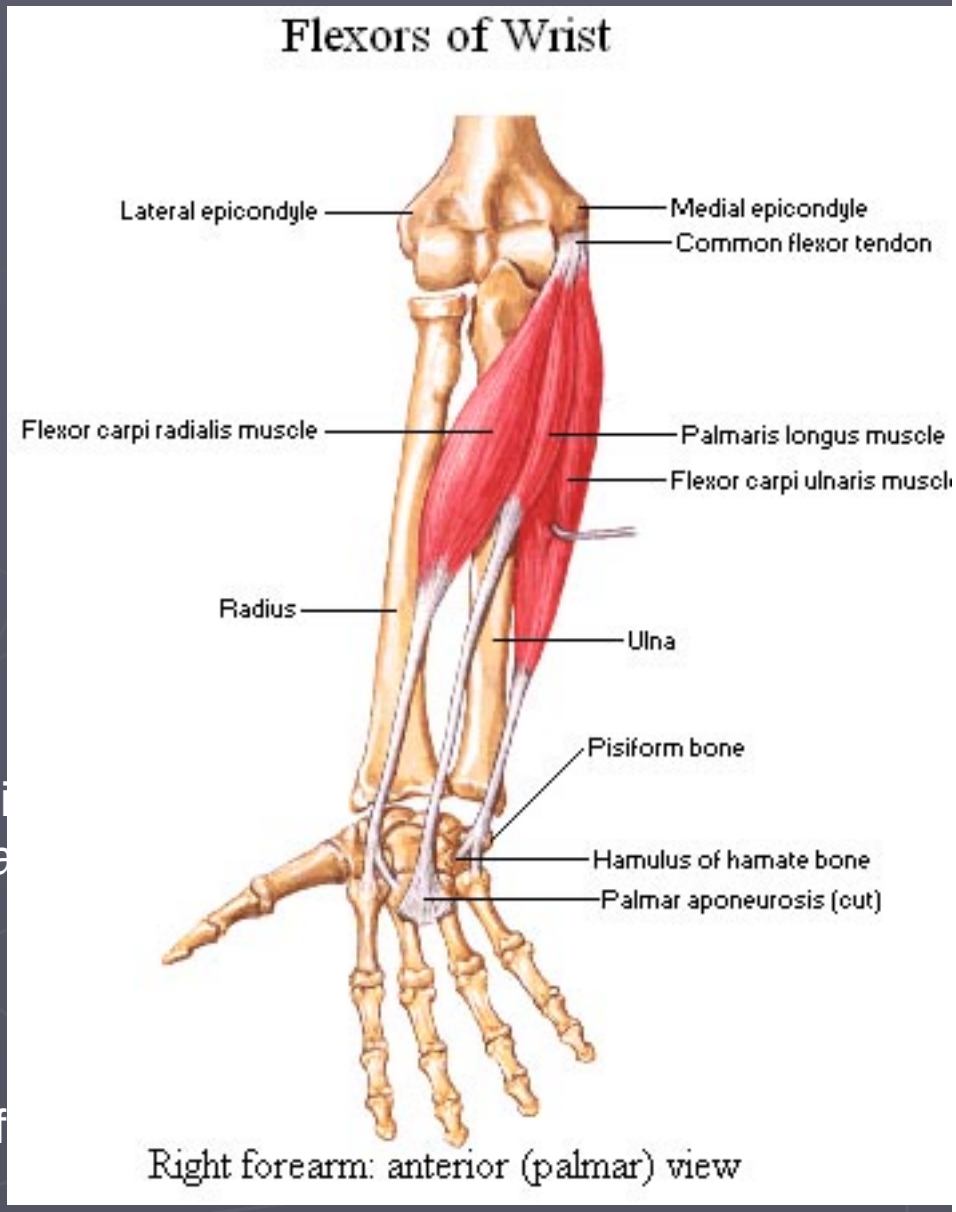
hook of hamate and base of fifth metacarpa

## Nerve supply

Ulnar nerve

## Action

Flexor of wrist,along with ECU – adduction of



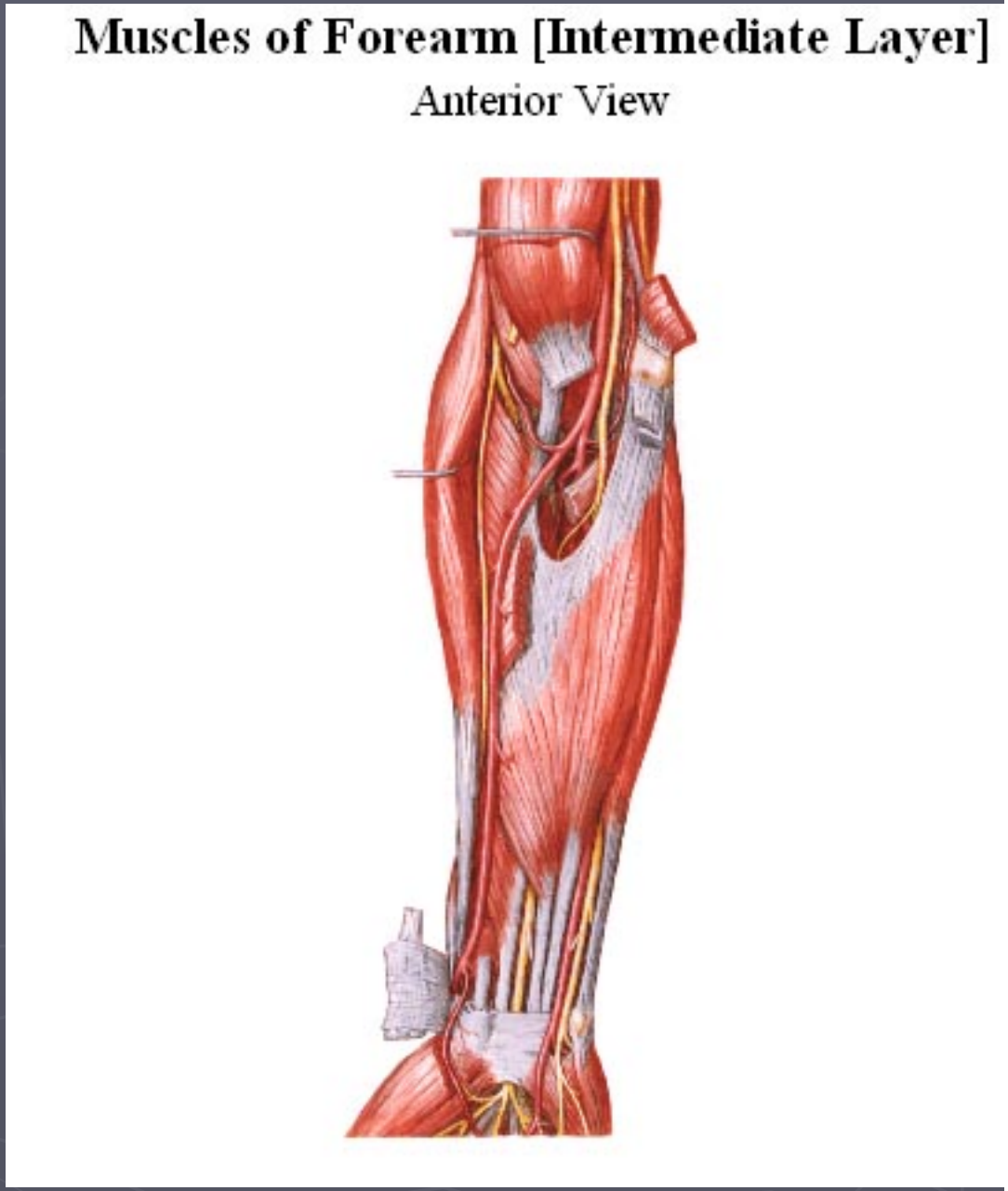
# Flexor digitorum Superficialis

## Origin

Two heads

Humero-ulnar
- Medial epicondyle of humerus and medial margin of coronoid process

Radial head
- Whole length of ant. Oblique line of radius



## Course

Form four tendons above wrist arranged in superficial (mostly radial) and deep group of two each

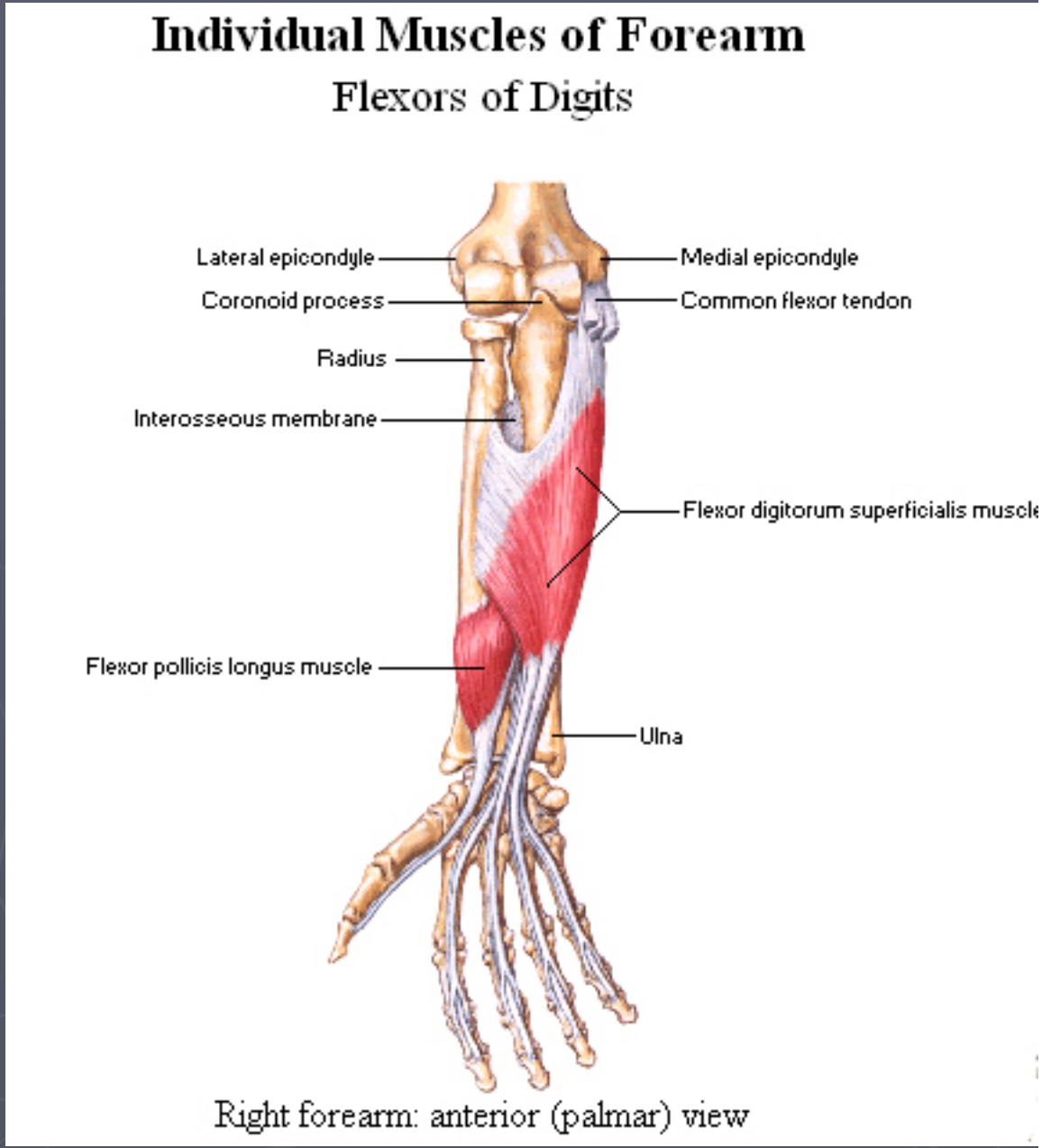
Passes below fl. Retinaculum and diverge in palm

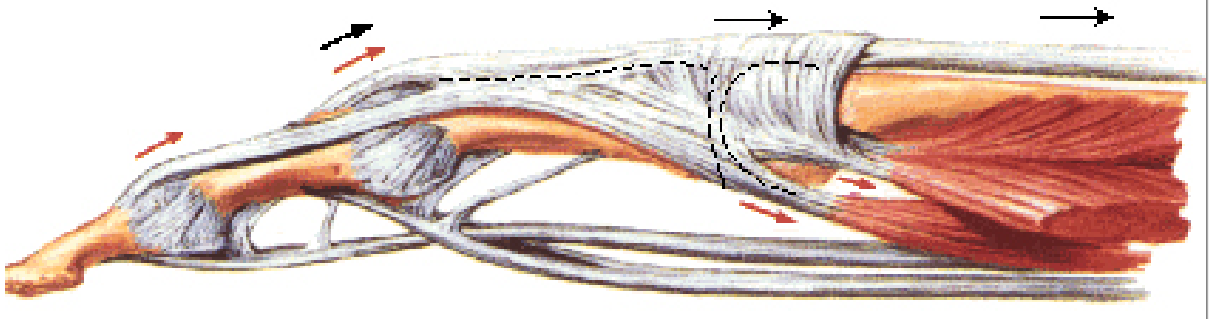
Superficial – for middle and ring finger

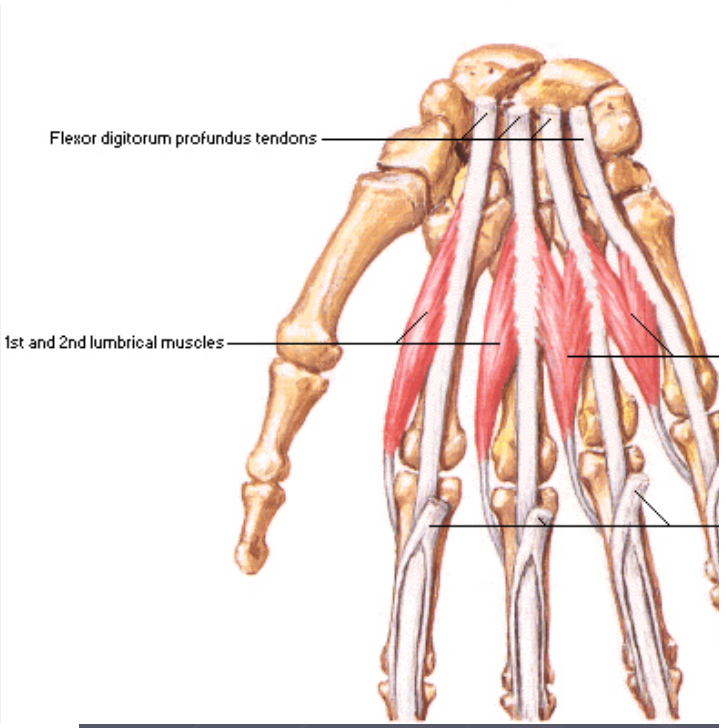
Deep – for index and ring finger

## Nerve supply

Median nerve








## Insertion

At base of proximal phalanx each digit tendon splits into two
Allow the passage of tendon of F. digitorum porofundus
Slips reunite again, and split again to be attached to
side of the shaft of middle phalanx

## Action

Flexion of middle phalanx at proximal interphalangeal joint
In prolonged contraction – Flexion of metacarpophalangeal joint and wrist joint

# Deep Flexors

- Flexor Pollicis Longus
- Flexor Digitorum Profundus
- Pronator Quadratus

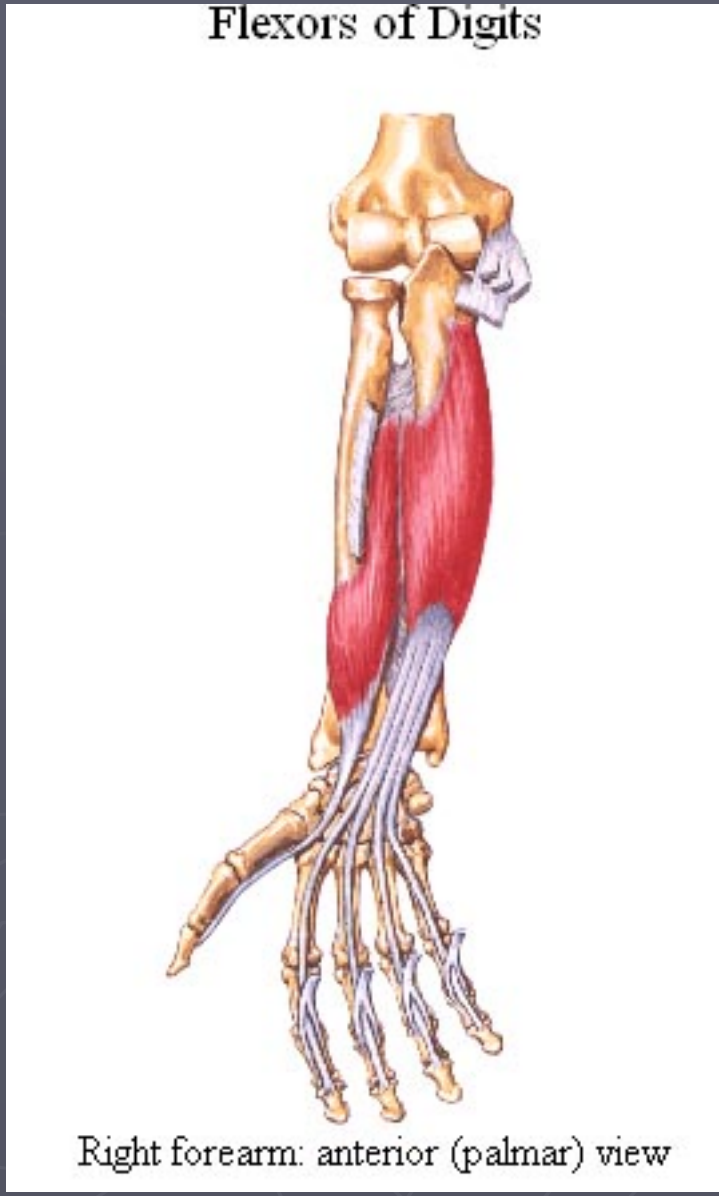
# Flexor Poliicis Longus

**Origin**
Ant. Surface of shaft of radius below anterior oblique line
and adjoining Interosseous membrane
Passes below Fl. Retinaculum

**Insertion**
Palmer surface of base of distal phalanx of thumb

**Nerve supply**
Ant. Interosseous branch Of Median Nerve

**Action**
Flexor of Thumb



## Flexor Digitorum Profundus

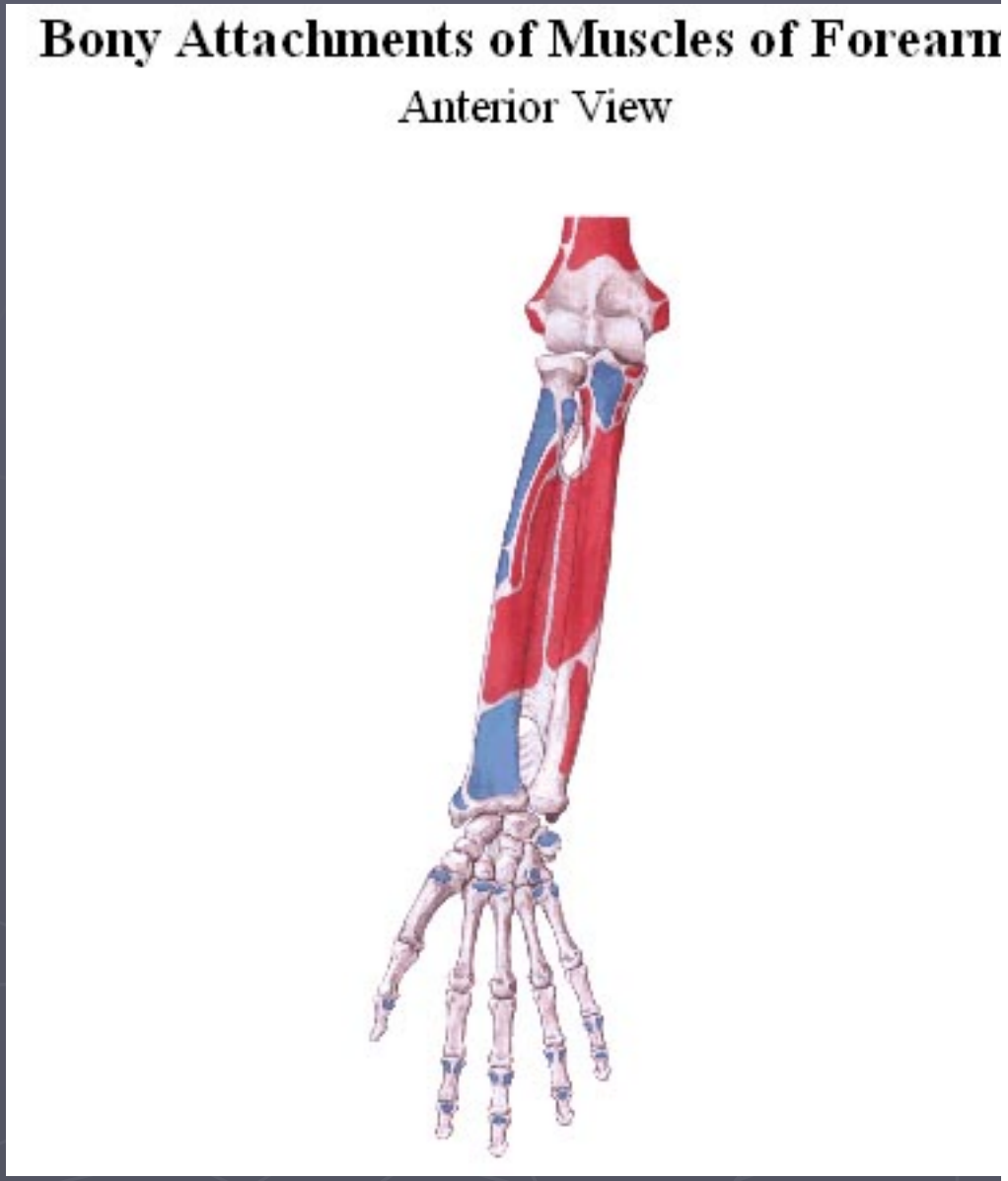
Origin

Ant. and Medial surface of upper 3/4th of shaft of ulna

Including medial surface of coronoid and olecranon process

Adjoining Interosseous memb

And upper3/4th of post. border of ulna



## Course

Form four tendons

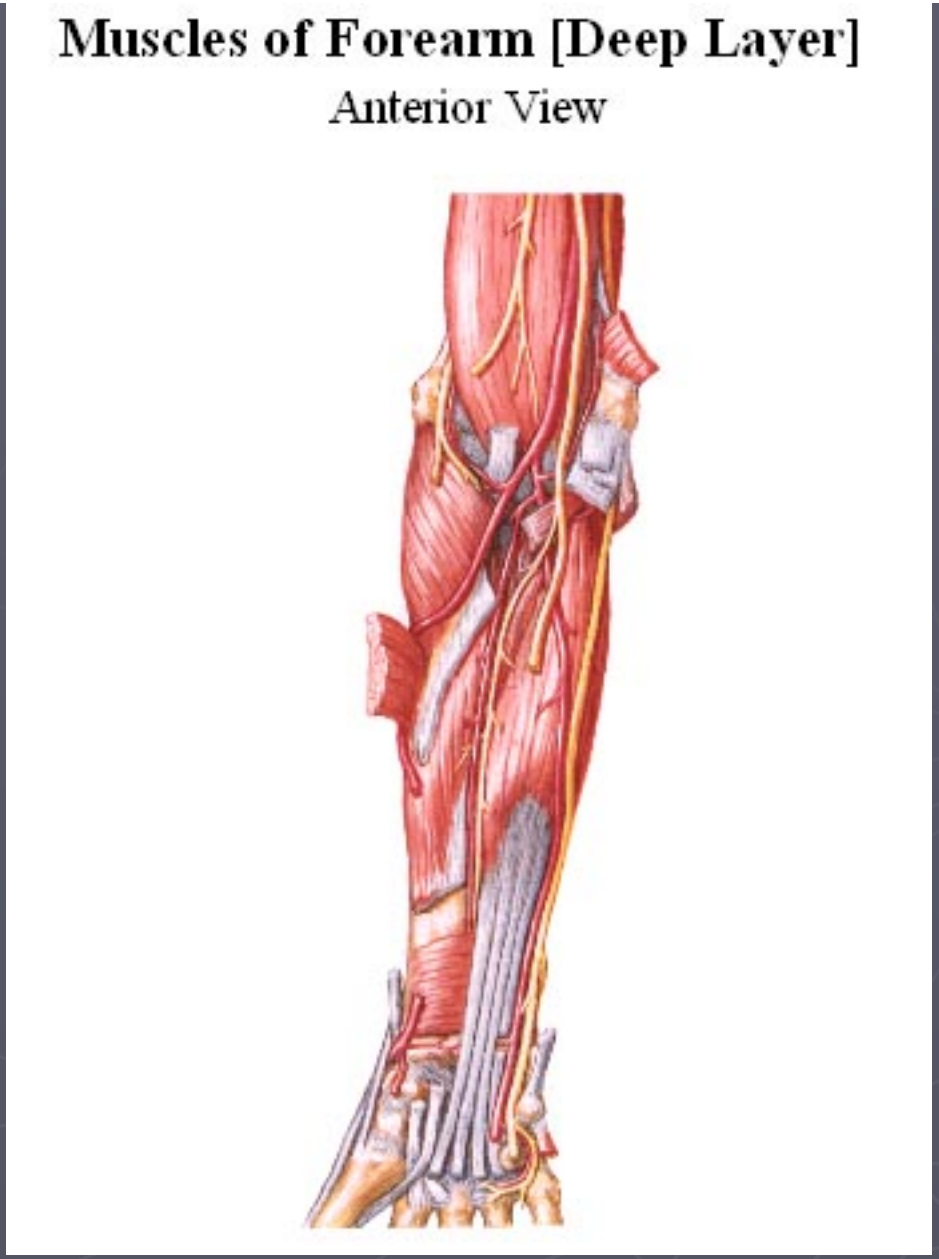
Remain united except the tendon for index finger

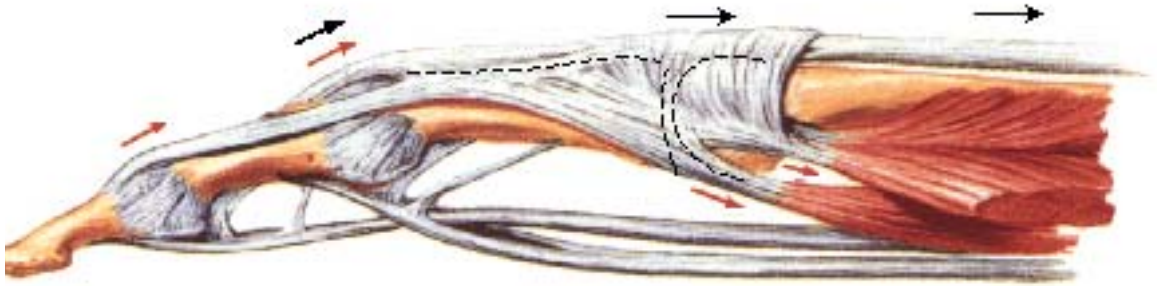
Passes deep to flexor retinaculum

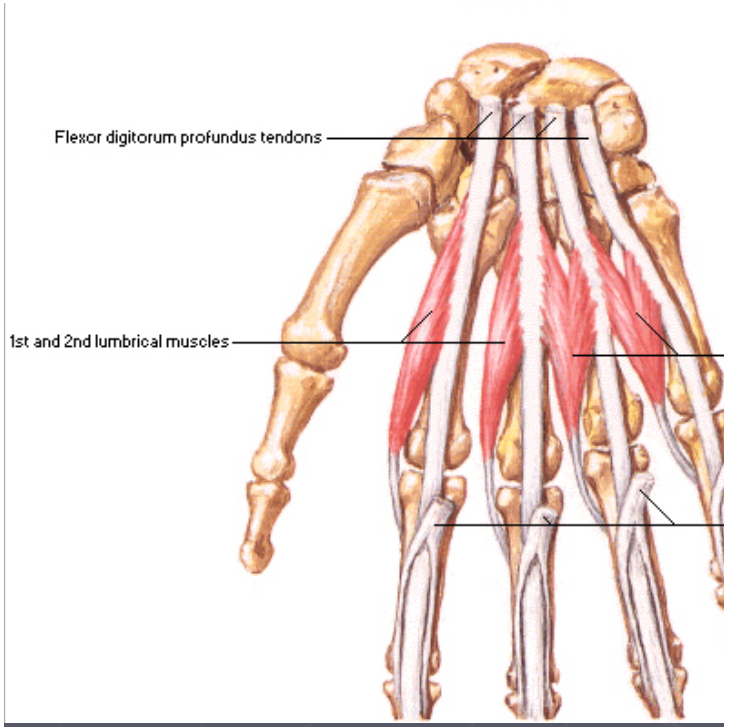
Diverge in palm

Passes in b/w slips of superficialis

Give origin to four lumbricals








## Insertion

Palmer surface of base of terminal (distal) phalanx of medial four fingers

## Nerve Supply

Medial part- Ulnar nerve

Latreral part - Ant. Interosseous branch Of Median Nerve

**Action** - Flexes terminal phalanx

# Pronator Quadratus

Quadrilateral muscle
Extend anteriorly in front of Interosseous membrane to both bones of Forearm

**Origin**

Bony ridge on antero-medial surface of lower1/4th of ulna

**Insertion**

**Superficial fibres**

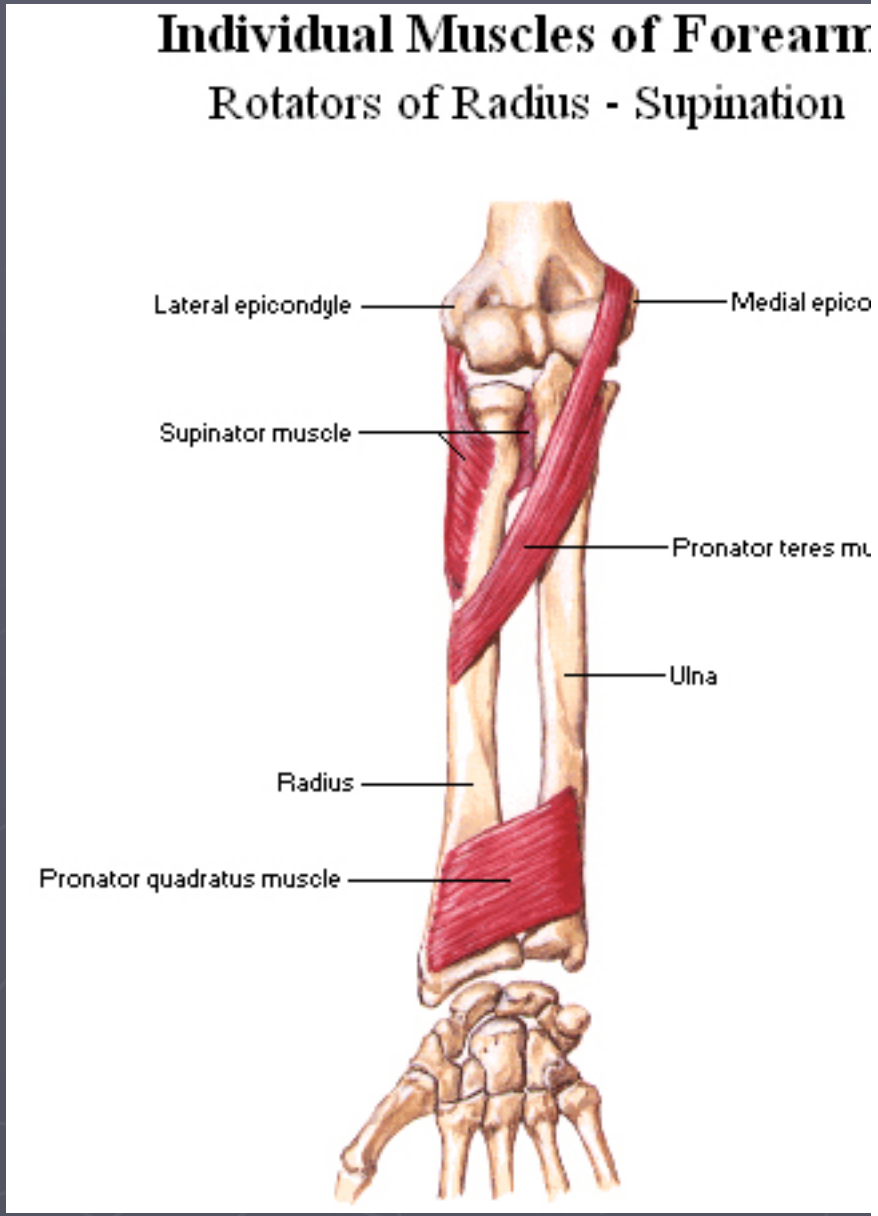
Ant. Surface of lower 1/4th of radius and adjoining anterior border of radius

**Deep Fibres**

Tiangular area just above the ulnar notch

**Nerve Supply**

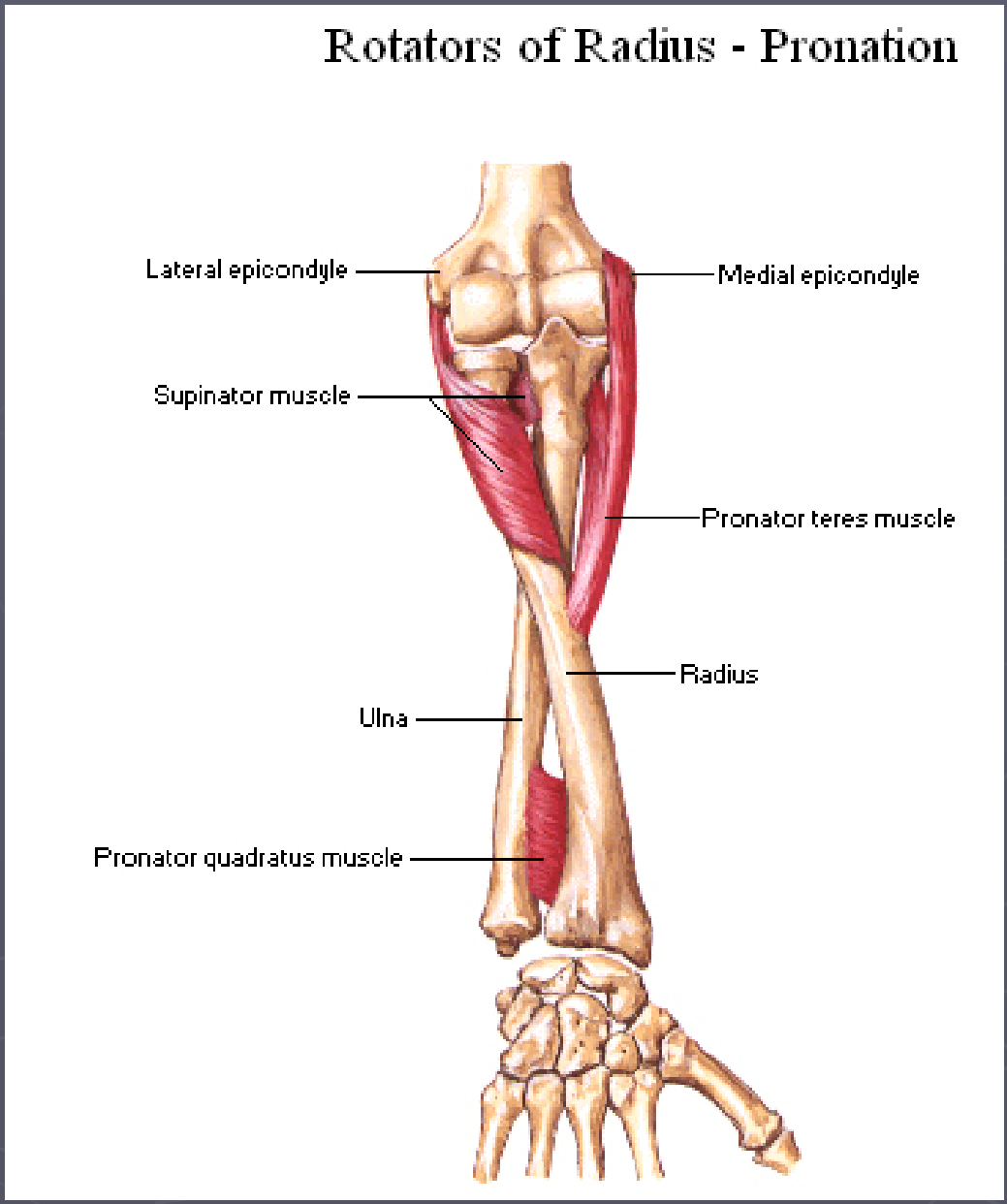
Anterior Interosseous branch of Median Nerve



## Action

Superficial fibres
principal pronators

Deep fibres
prevent separation of two bones on thurst



# Functional Classification of Flexor Muscles

**Flexors of Wrist**

- Fl. Carpi Radialis
- Fl. Carpi Ulnaris

**Flexors of Middle Phalanges**

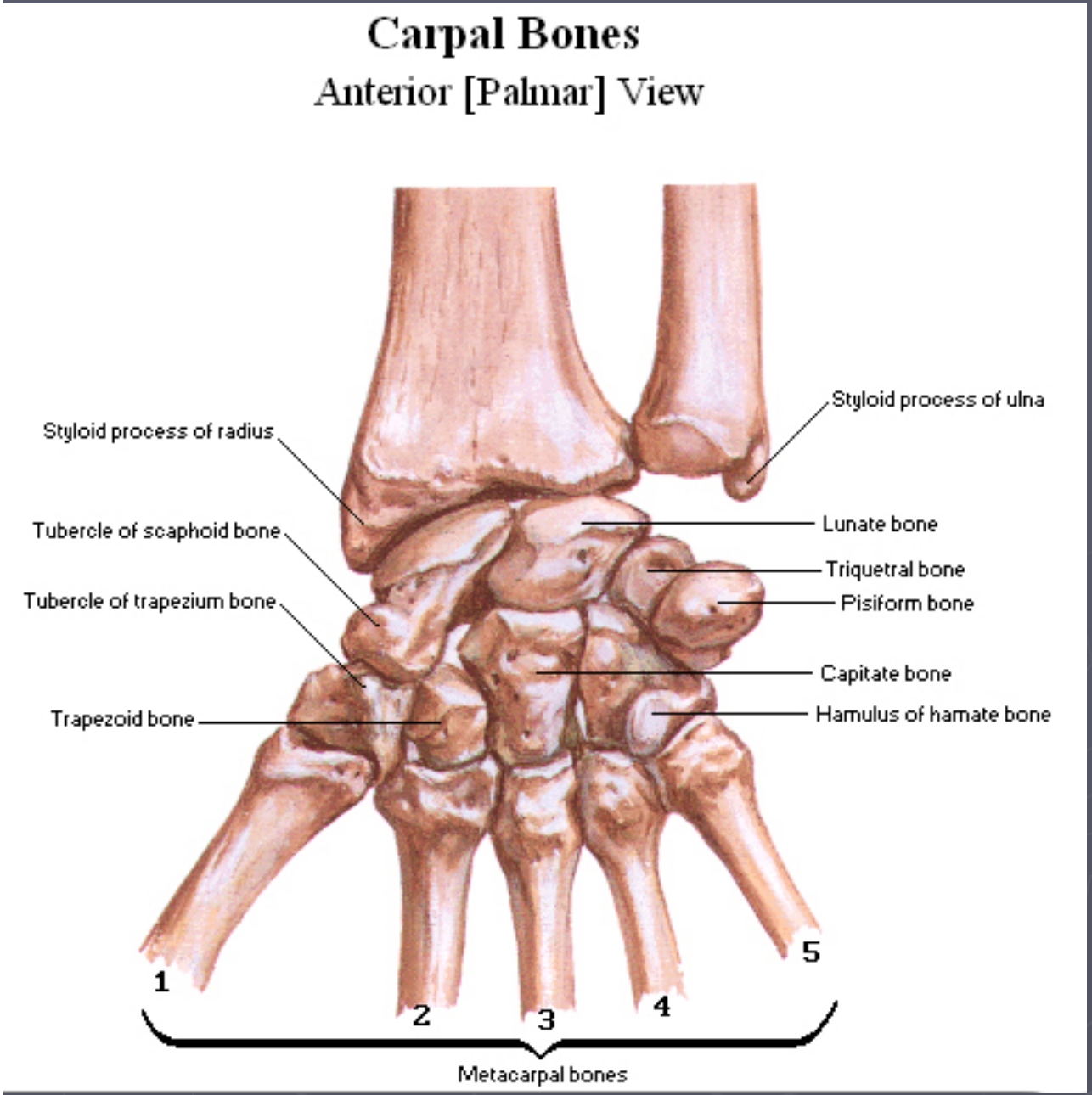
- Fl. Digitorum Superficialis

**Flexors of Distal Phalanges**

- Fl. Digitorum Profundus
- Fl. Pollicis Longus

**Pronator of the Forearm**

- Pronator Teres
- Pronator Quadratus




## Flexor Retinaculum

Attachment

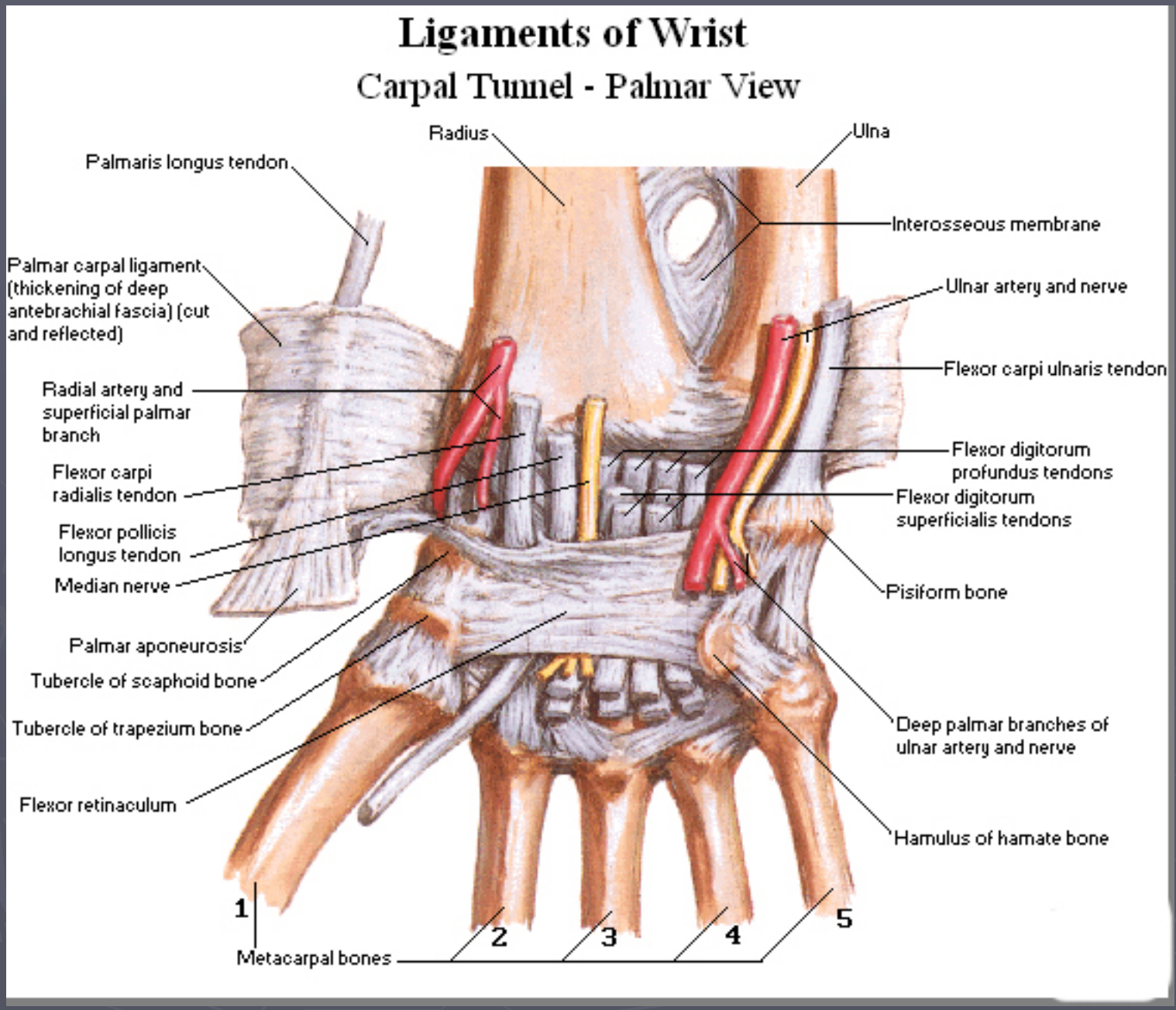
Medially
- Pisiform
- Hook of Hamate

Laterally

- Tubercle of Scaphoid
- Crest of Trapezium

# Ligaments of Wrist

## Carpal Tunnel - Palmar View

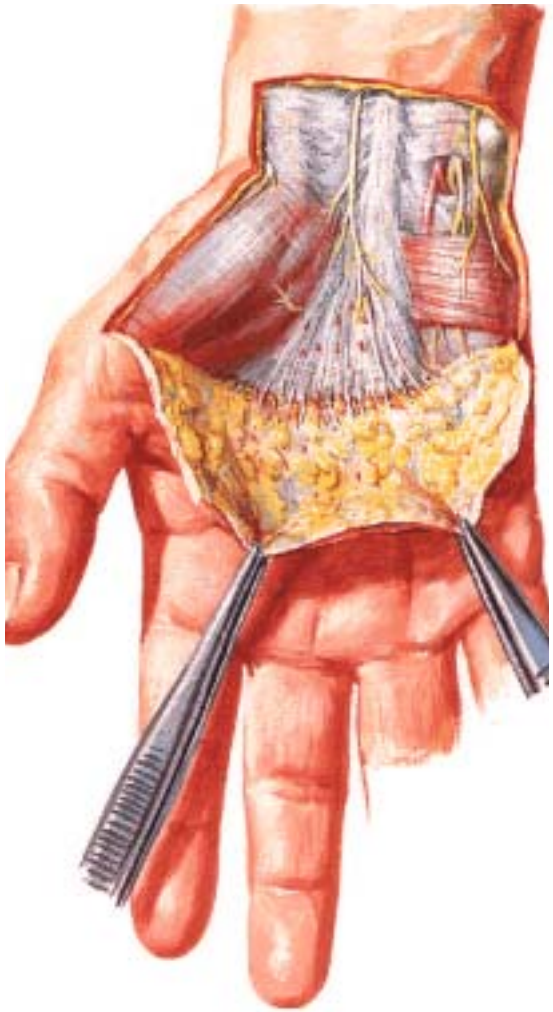


Structures passing superficial to flexor retinaculum

- Tendon of Palmaris longus
- Palmer cutaneous branch of Median nerve
- Palmer cutaneous branch of Ulnar nerve
- Ulnar vessels
- Ulnar nerve

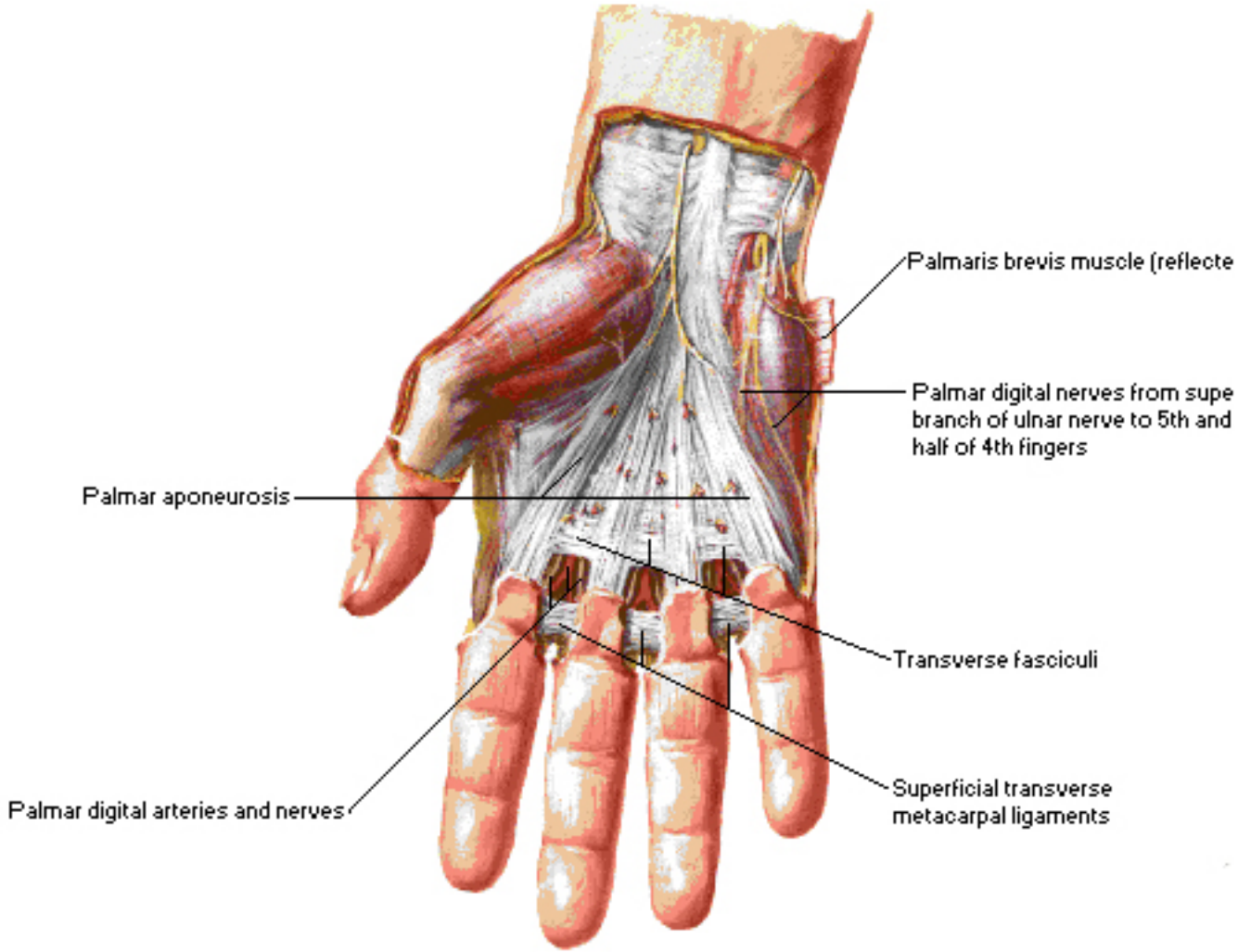
Structures passing deep to Flexor retinaculum

- Median nerve
- Tendon of flexor digitorum superficialis
- Tendon of flexor digitorum profundus
- Tendon of flexor pollicis longus
- Ulnar bursa
- Radial bursa



# Wrist and Hand

## Superficial Palmar Dissections [Continued]

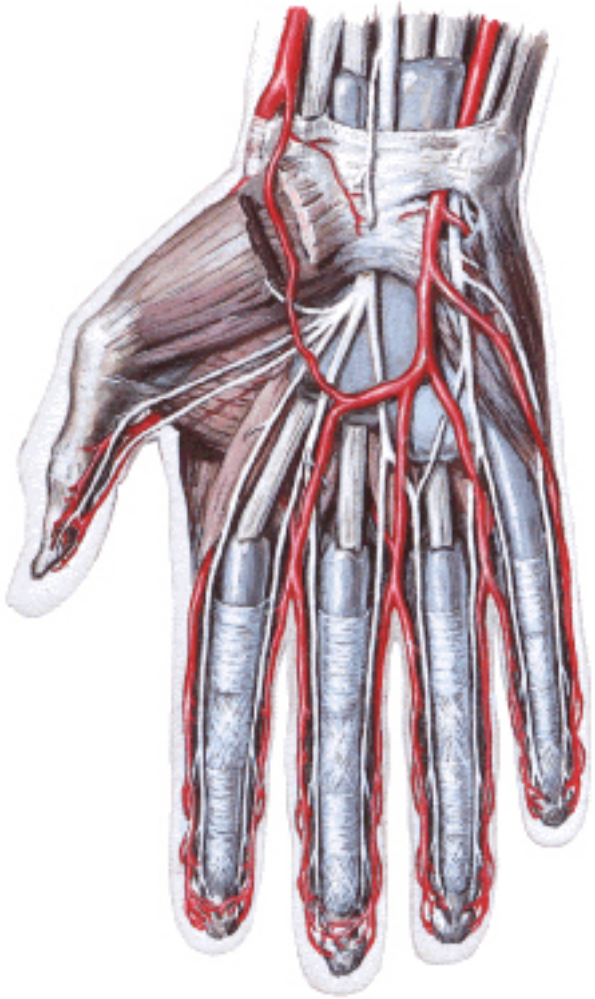


# Palmer Aponeurosis

- Central thickened part of deep fascia of palm
- Triangular in shape
- Apex proximal, blend with distal border of Fl. Retinaculum
- Is continuous with tendon of palmaris longus
- Distally fans out
- At base of fingers split in four digital slips
- Attached to palmer ligaments
- Protects vessel and nerves, tendons

## Arteries and Nerves of Hand

Palmar View



## Fibrous Flexor Sheath of Digits

Extend from head of metacarpal to Base of distal phalanx

Form osteofibrous canal for tendons

## Median Nerve

In Cubital Fossa

- •Lies medial to brachial artery and Biceps tendon
- •And rests on Brachialis

Enter Forearm

- •b/w two heads of Pronator teres
- •Passes down along post surface of FDS in between sup. and deep flexors
- •Descends vertically along midline of forearm
- •5 cm above Fl. Retinaculum
- •Emerges from medial border of FDS and lies between and deep to tendon of FCR and PL
- •Enter palm deep to Fl. Retinaculum

Branches

Muscular

- •Anterior Interosseousarise distal to PT
- •Descend in front of Interosseous membrane between FPL and FDP

along with ant. Int. artery

# Ulnar Nerve

- Enter forearm b/w two heads of FCU
- Pass straight downward along medial side of front of forearm resting on FDP
- In upper half covered by FCU
- In lower half pass lateral to FCU
- Along Ulnar artery laterally
- Enter palm passing superficial to flexor retinaculum
- Supply FCU and medial ½ of FDP