# ANTERIOR COMPARTMENT OF THE ARM

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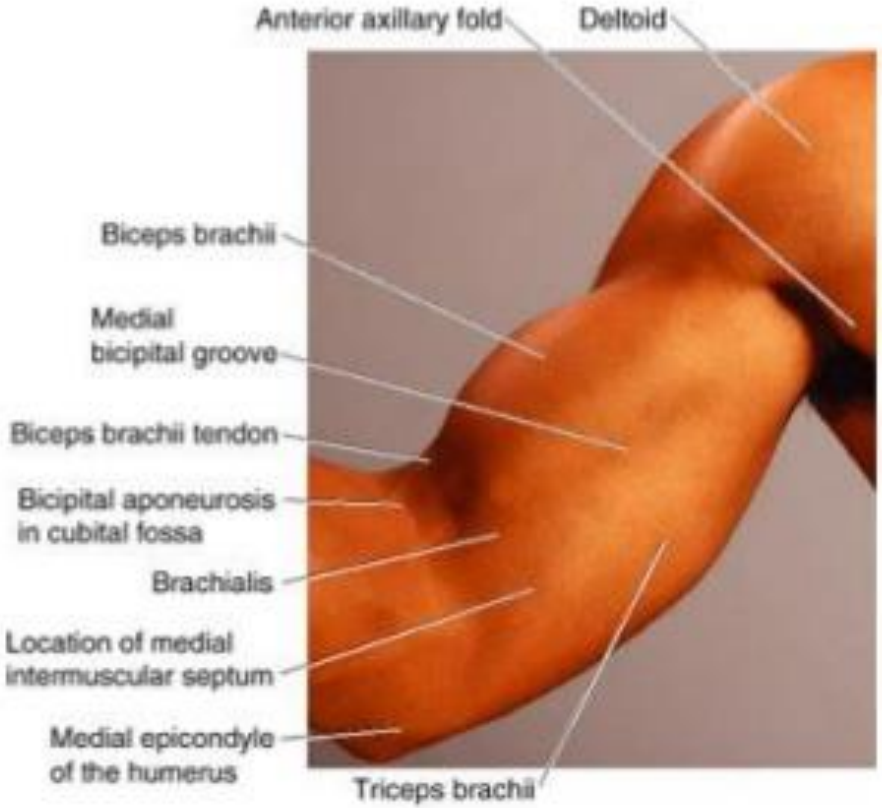
# ARM OR BRACHIUM

- Arm extends from the **shoulder joint to the elbow joint.**
- Medial & lateral intermuscular septa divide the arm into an **anterior or flexor compartment** and **posterior or extensor**




**Medial view**

# FLEXOR COMPARTMENT OF ARM

## Muscles

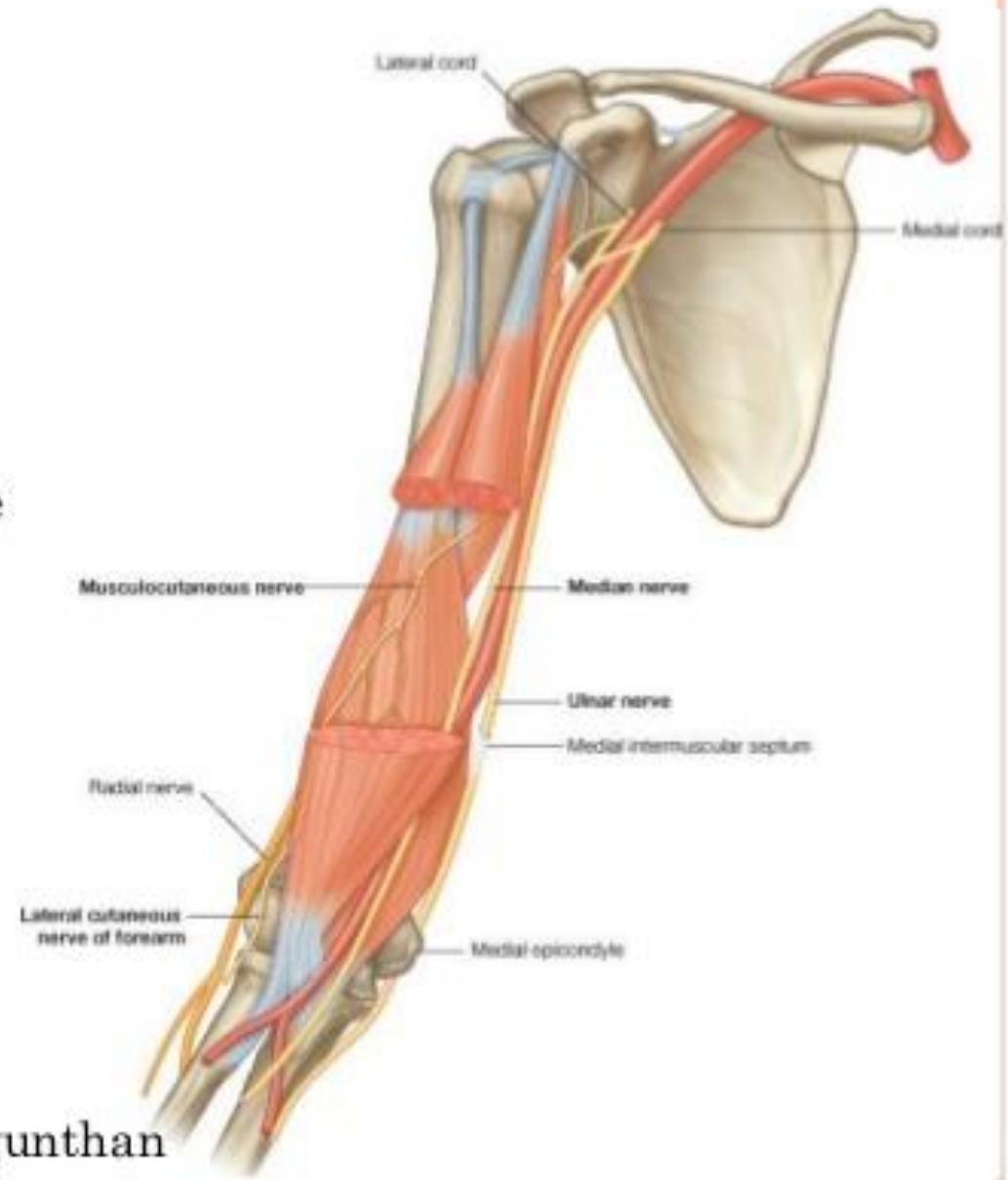
- Coracobrachialis
- Biceps brachii
- Brachialis

## Nerves in the arm

- Musculocutaneous nerve (nerve of the arm)
- Median nerve
- Ulnar nerve
- Radial nerve

## Artery

- Brachial artery



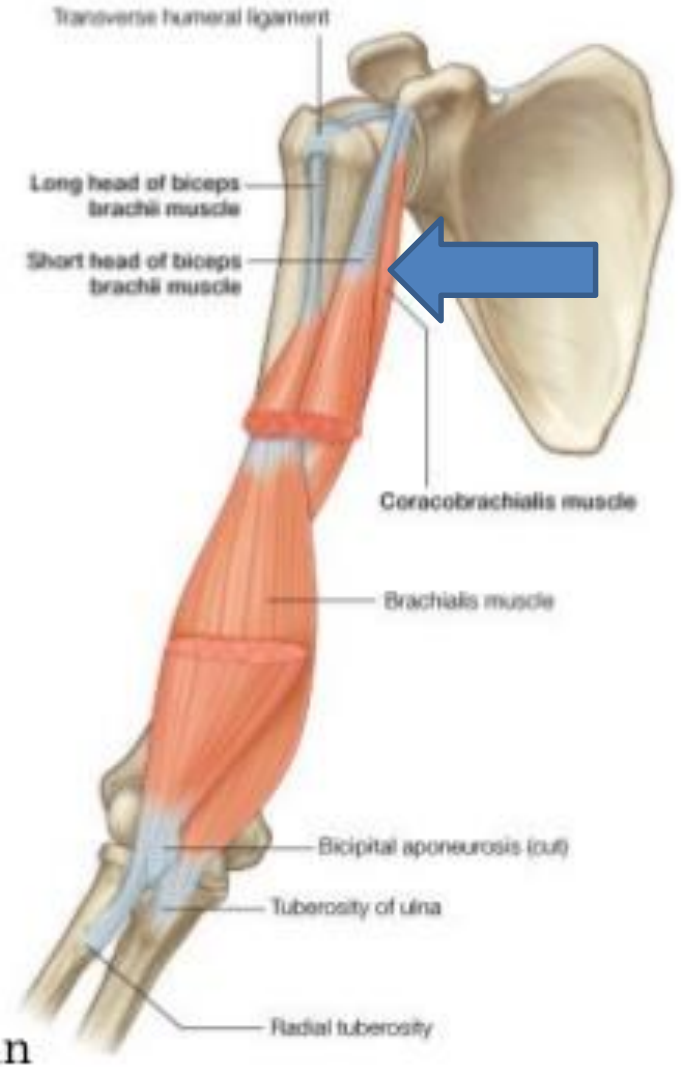
# Muscles of the Anterior Fascial Compartment

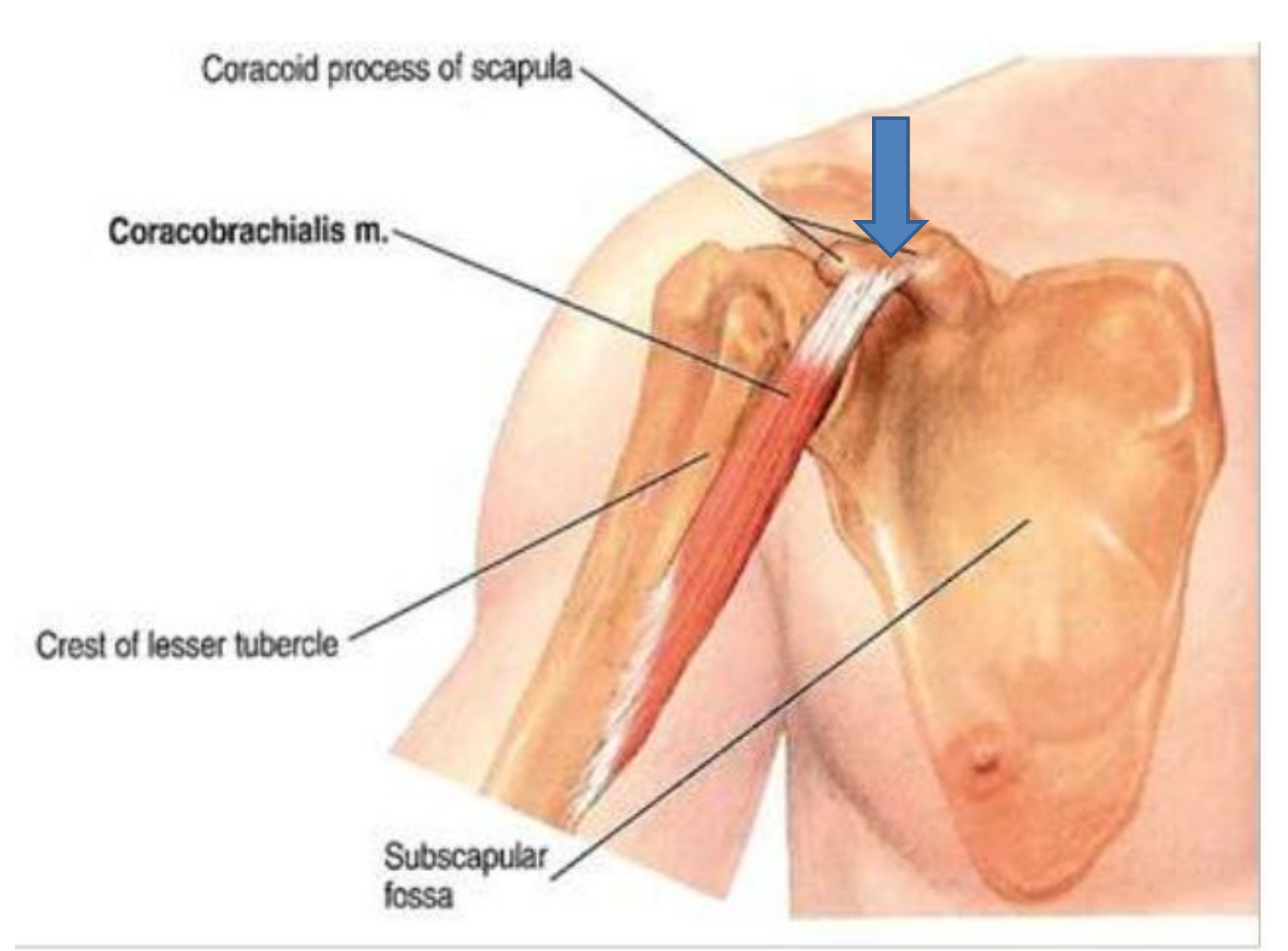
- The biceps brachii.
- Coracobrachialis.
- Brachalis muscles.

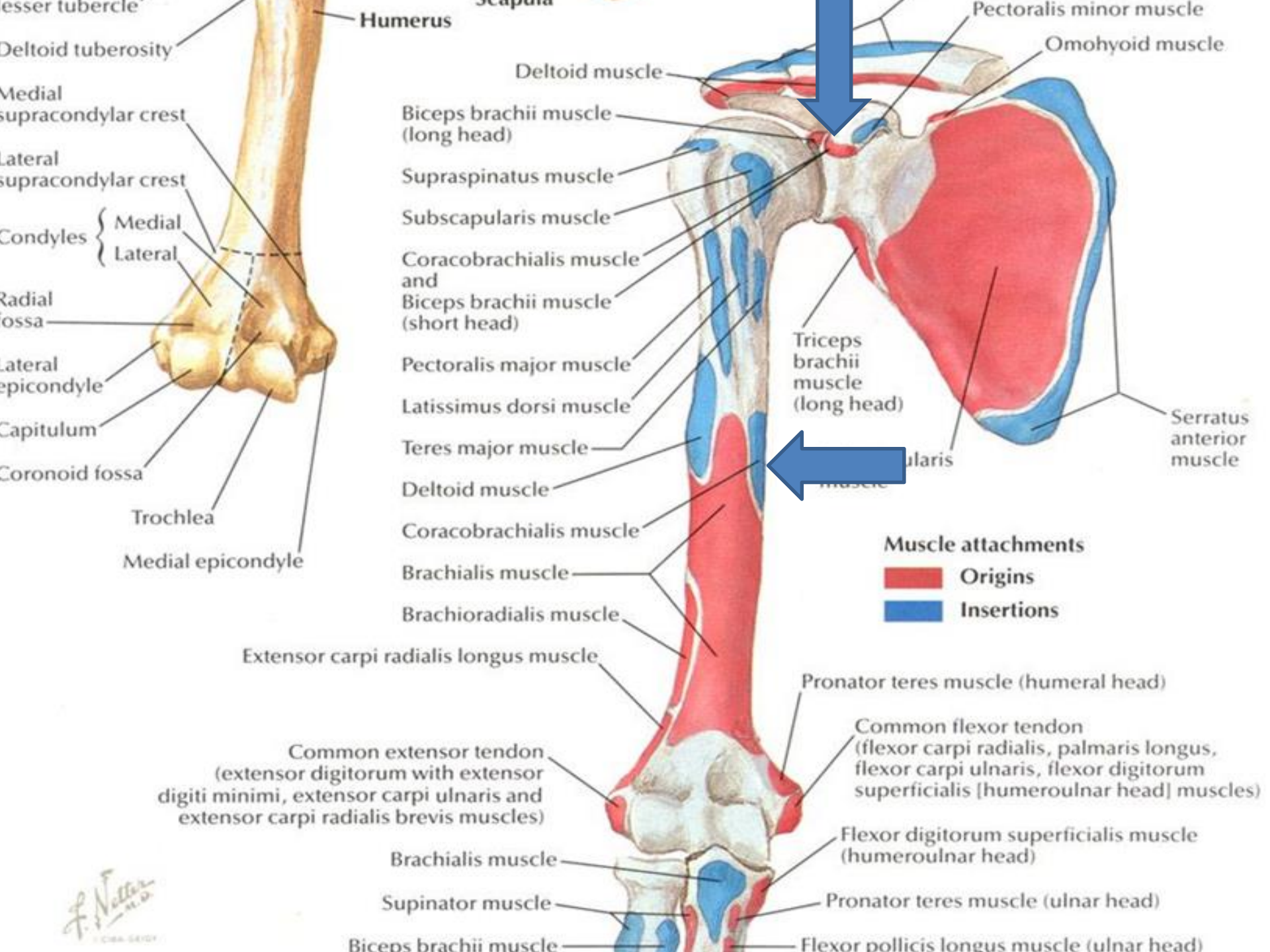
# CORACOBRACHIALIS

- **Origin:** tip of the coracoid process with conjoint origin of short head of biceps

- **Insertion:** medial border of the middle of the shaft of the humerus




Coracoid process of scapula
Coracobrachialis m.
Crest of lesser tubercle
Subscapular fossa


Lesser tubercle
Humerus
Deltoid tuberosity
Medial supracondylar crest
Lateral supracondylar crest
Condyles
Medial
Lateral
Radial fossa
Lateral epicondyle
Capitulum
Coronoid fossa
Trochlea
Medial epicondyle
Scapula
Pectoralis minor muscle
Omohyoid muscle
Deltoid muscle
Biceps brachii muscle (long head)
Supraspinatus muscle
Subscapularis muscle
Coracobrachialis muscle and Biceps brachii muscle (short head)
Pectoralis major muscle
Latissimus dorsi muscle
Teres major muscle
Deltoid muscle
Coracobrachialis muscle
Brachialis muscle
Brachioradialis muscle
Extensor carpi radialis longus muscle
Triceps brachii muscle (long head)
Serratus anterior muscle
Muscle attachments
Origins
Insertions
Pronator teres muscle (humeral head)
Common flexor tendon (flexor carpi radialis, palmaris longus, flexor carpi ulnaris, flexor digitorum superficialis [humeroulnar head] muscles)
Common extensor tendon (extensor digitorum with extensor digiti minimi, extensor carpi ulnaris and extensor carpi radialis brevis muscles)
Flexor digitorum superficialis muscle (humeroulnar head)
Brachialis muscle
Supinator muscle
Pronator teres muscle (ulnar head)
Biceps brachii muscle
Flexor pollicis longus muscle (ulnar head)

# CORACOBRACHIALIS CONT....

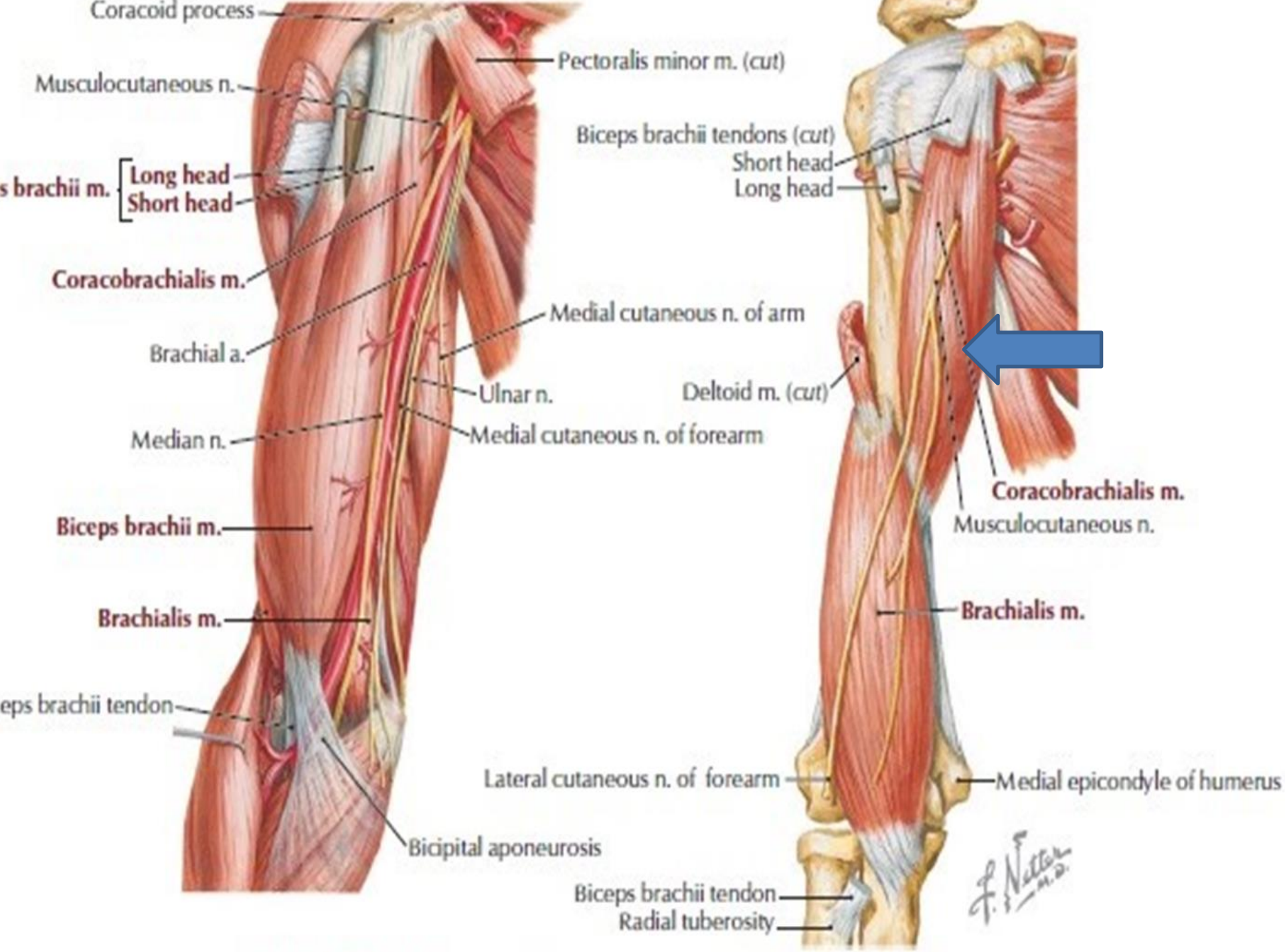
**Nerve supply**

- Musculocutaneous nerve

- Coracobrachialis is **pierced by musculocutaneous nerve**

**Action**

- Flexes the arm


Coracoid process
Pectoralis minor m. (cut)
Musculocutaneous n.
Biceps brachii tendons (cut)
Short head
Long head
s brachii m.
Long head
Short head
Coracobrachialis m.
Medial cutaneous n. of arm
Brachial a.
Ulnar n.
Deltoid m. (cut)
Median n.
Medial cutaneous n. of forearm
Coracobrachialis m.
Musculocutaneous n.
Biceps brachii m.
Brachialis m.
Brachialis m.
eps brachii tendon
Lateral cutaneous n. of forearm
Medial epicondyle of humerus
Bicipital aponeurosis
Biceps brachii tendon
Radial tuberosity

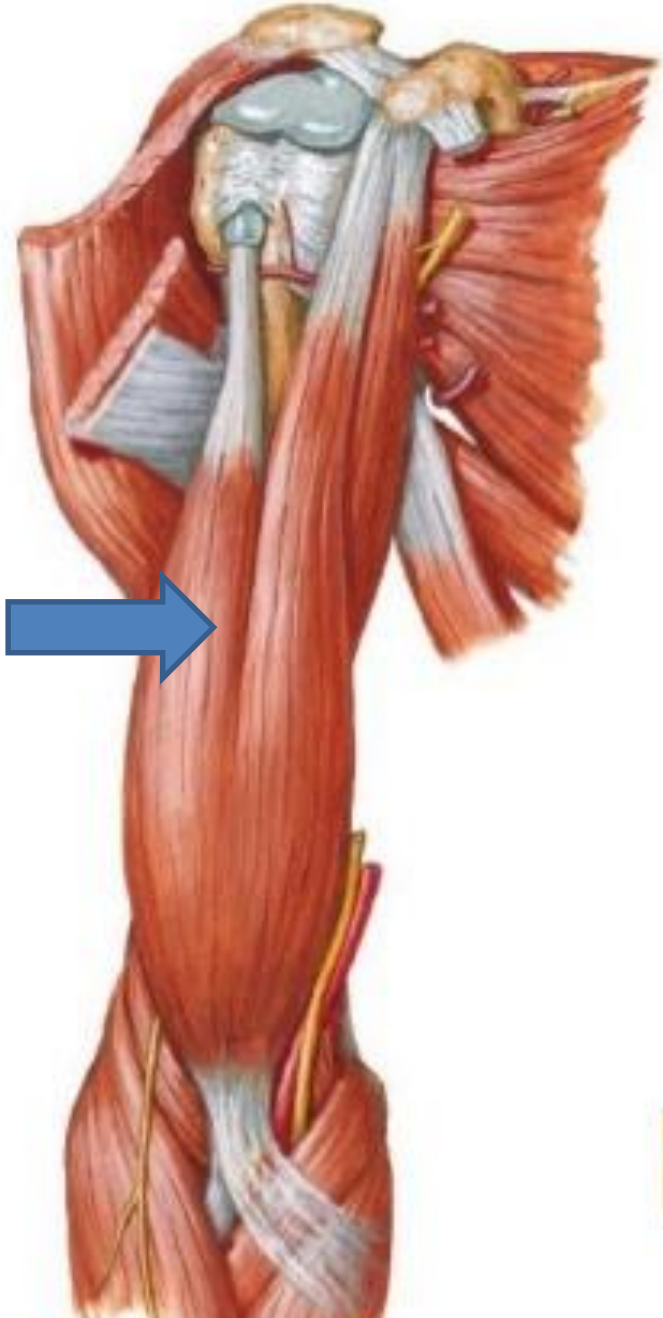
# Biceps Brachii

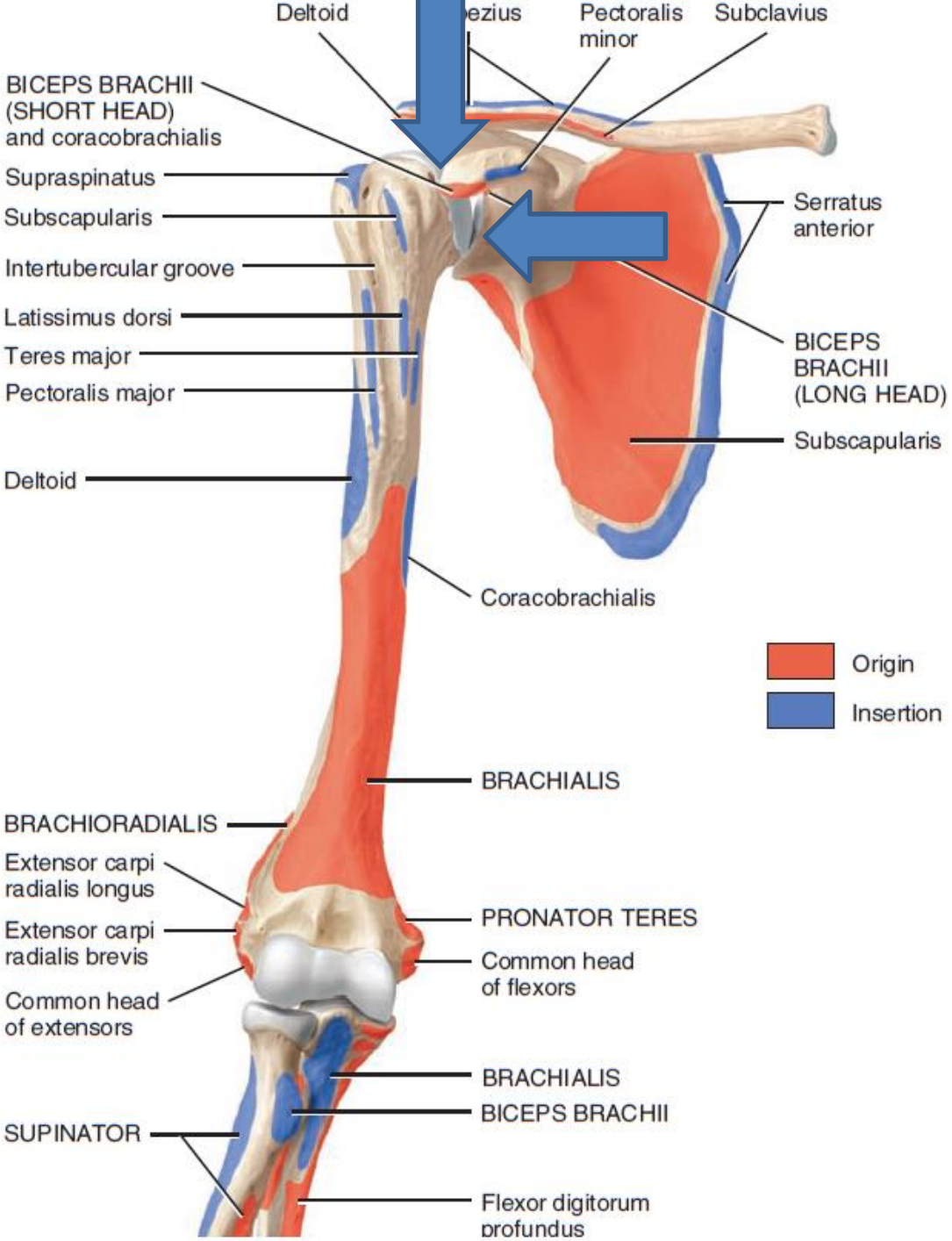
- **Origin:**
- ***Short head:***

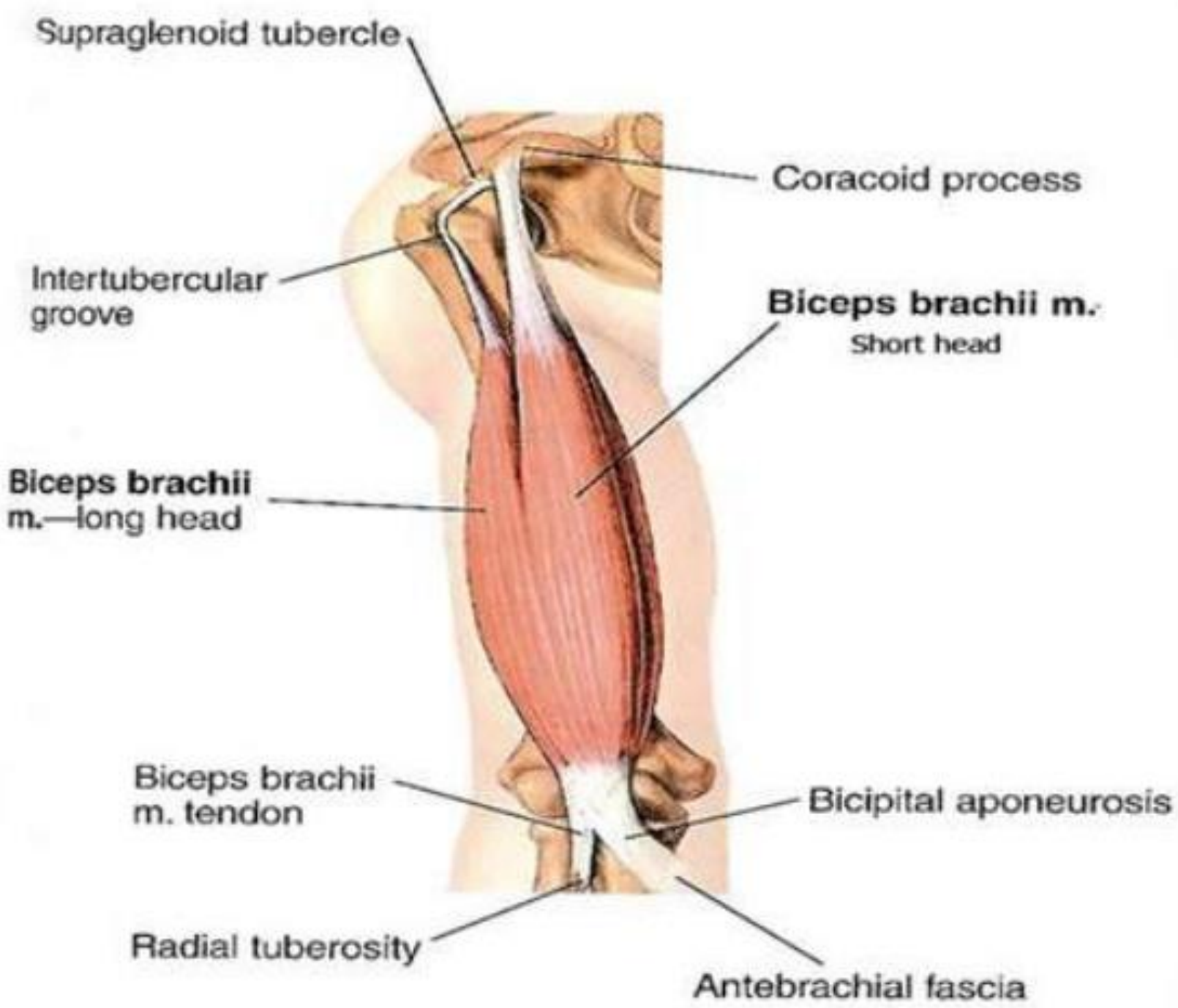
  From Coracoid process with conjoint origin of coracobrachialis

- ***Long head:***

  **Intracapsular origin-** supraglenoid tubercle of scapula




Deltoid
Pectoralis minor
Subclavius
BICEPS BRACHII (SHORT HEAD) and coracobrachialis
Supraspinatus
Subscapularis
Intertubercular groove
Latissimus dorsi
Teres major
Pectoralis major
Deltoid
Serratus anterior
BICEPS BRACHII (LONG HEAD)
Subscapularis
Coracobrachialis
Origin
Insertion
BRACHIALIS
BRACHIORADIALIS
Extensor carpi radialis longus
Extensor carpi radialis brevis
Common head of extensors
PRONATOR TERES
Common head of flexors
BRACHIALIS
BICEPS BRACHII
SUPINATOR
Flexor digitorum profundus

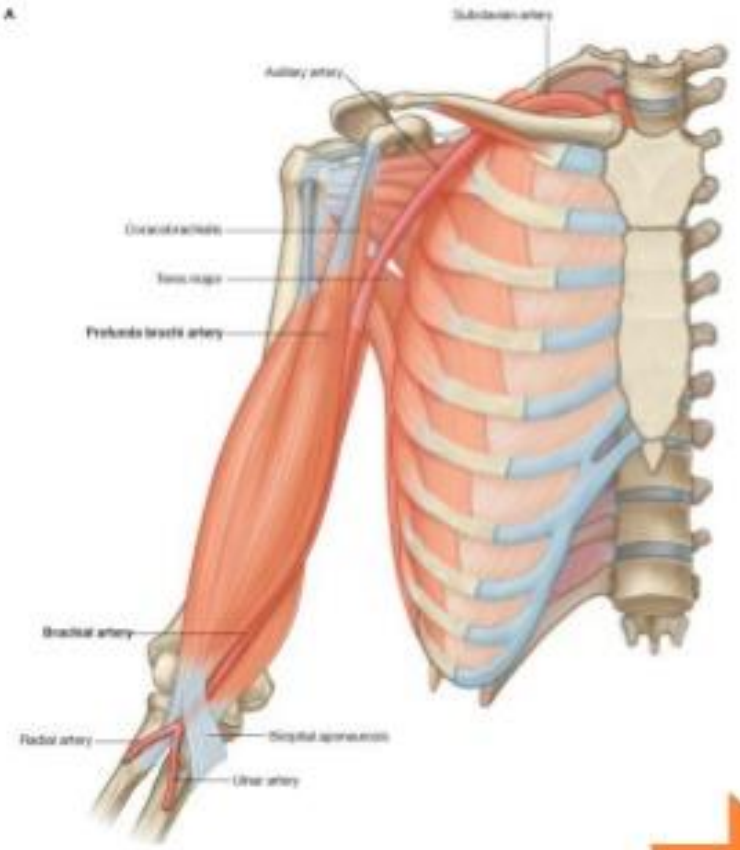

Supraglenoid tubercle
Coracoid process
Intertubercular groove
Biceps brachii m.
Short head
Biceps brachii m.—long head
Biceps brachii m. tendon
Bicipital aponeurosis
Radial tuberosity
Antebrachial fascia

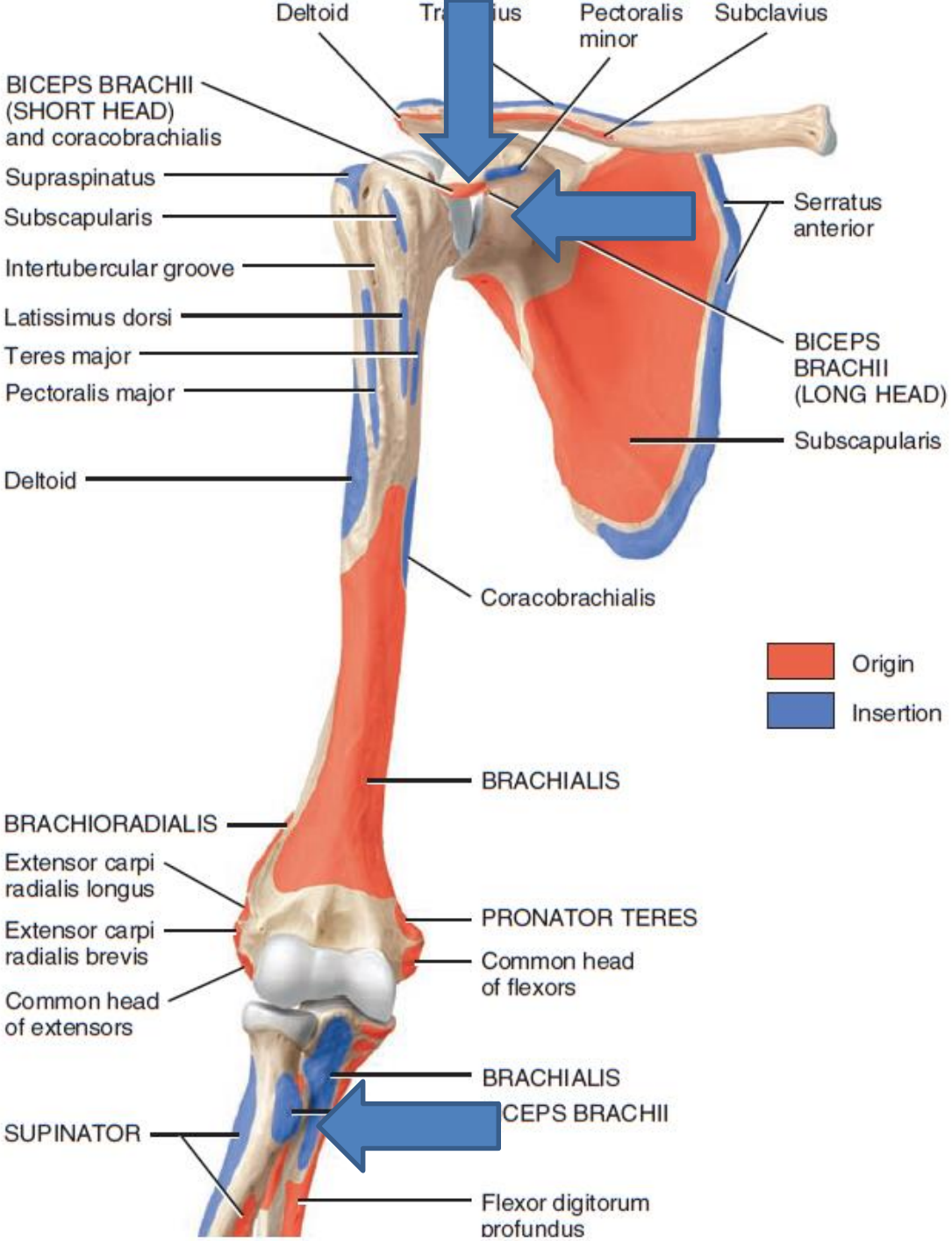
# Biceps Brachii cont....

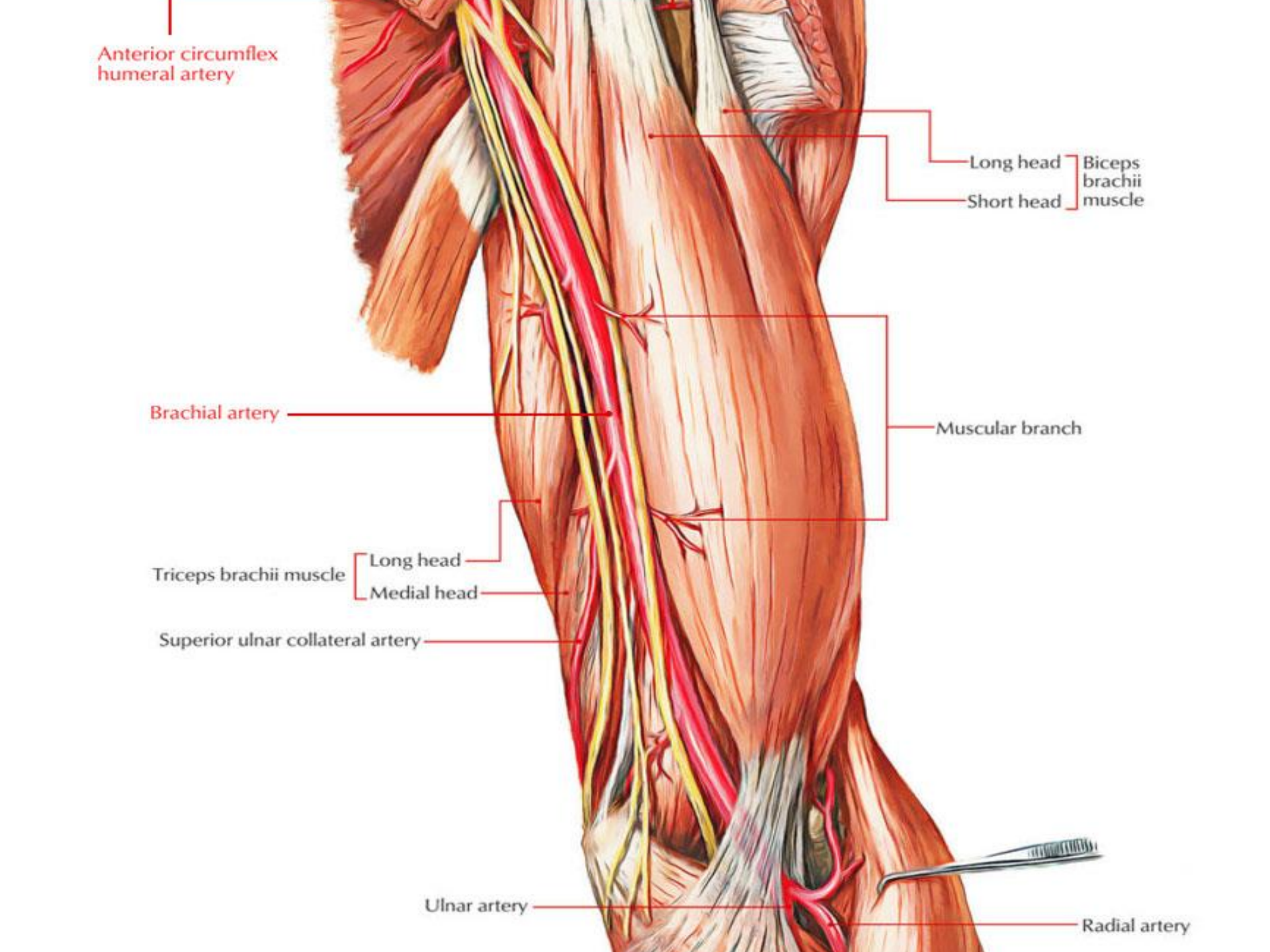
- Long head fuses with short head to form a muscle belly about 7 cm above elbow joint.

# INSERTION OF BICEPS BRACHI

- Muscle belly turns to a tendon which runs in cubital fossa.
- Inserted to posterior part of **radial tuberosity** in a twisted manner
- Before insertion medial part expand to form **bicipital aponeurosis**




Deltoid
Pectoralis minor
Subclavius
BICEPS BRACHII (SHORT HEAD) and coracobrachialis
Supraspinatus
Subscapularis
Intertubercular groove
Latissimus dorsi
Teres major
Pectoralis major
Deltoid
Serratus anterior
BICEPS BRACHII (LONG HEAD)
Subscapularis
Coracobrachialis
Origin
Insertion
BRACHIALIS
BRACHIORADIALIS
Extensor carpi radialis longus
Extensor carpi radialis brevis
Common head of extensors
PRONATOR TERES
Common head of flexors
BRACHIALIS
SUPINATOR
Flexor digitorum profundus


Anterior circumflex humeral artery
Long head
Short head
Biceps brachii muscle
Brachial artery
Muscular branch
Triceps brachii muscle
Long head
Medial head
Superior ulnar collateral artery
Ulnar artery
Radial artery

# Biceps Brachii cont....

**Nerve Supply:**

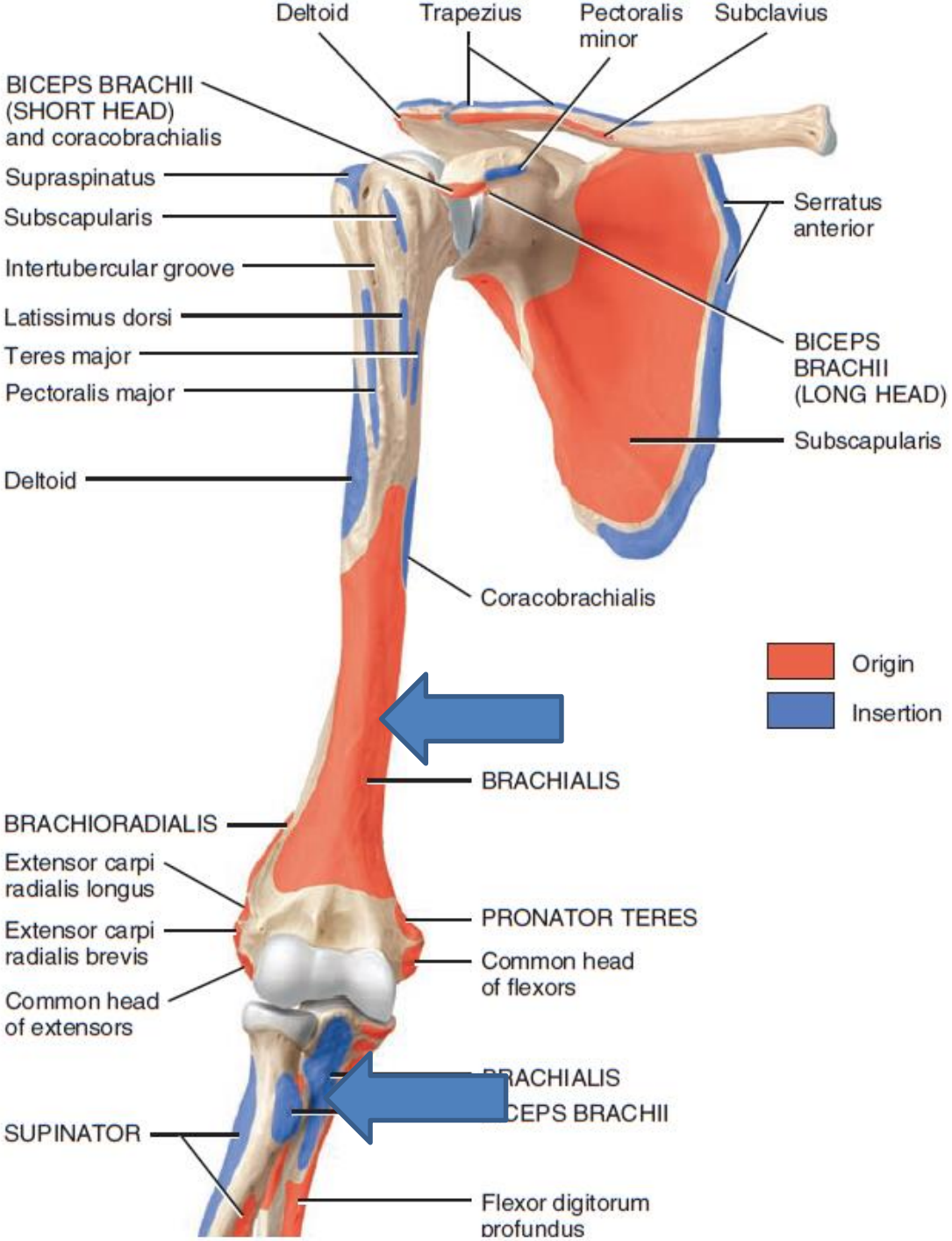
Musculocutaneous nerve

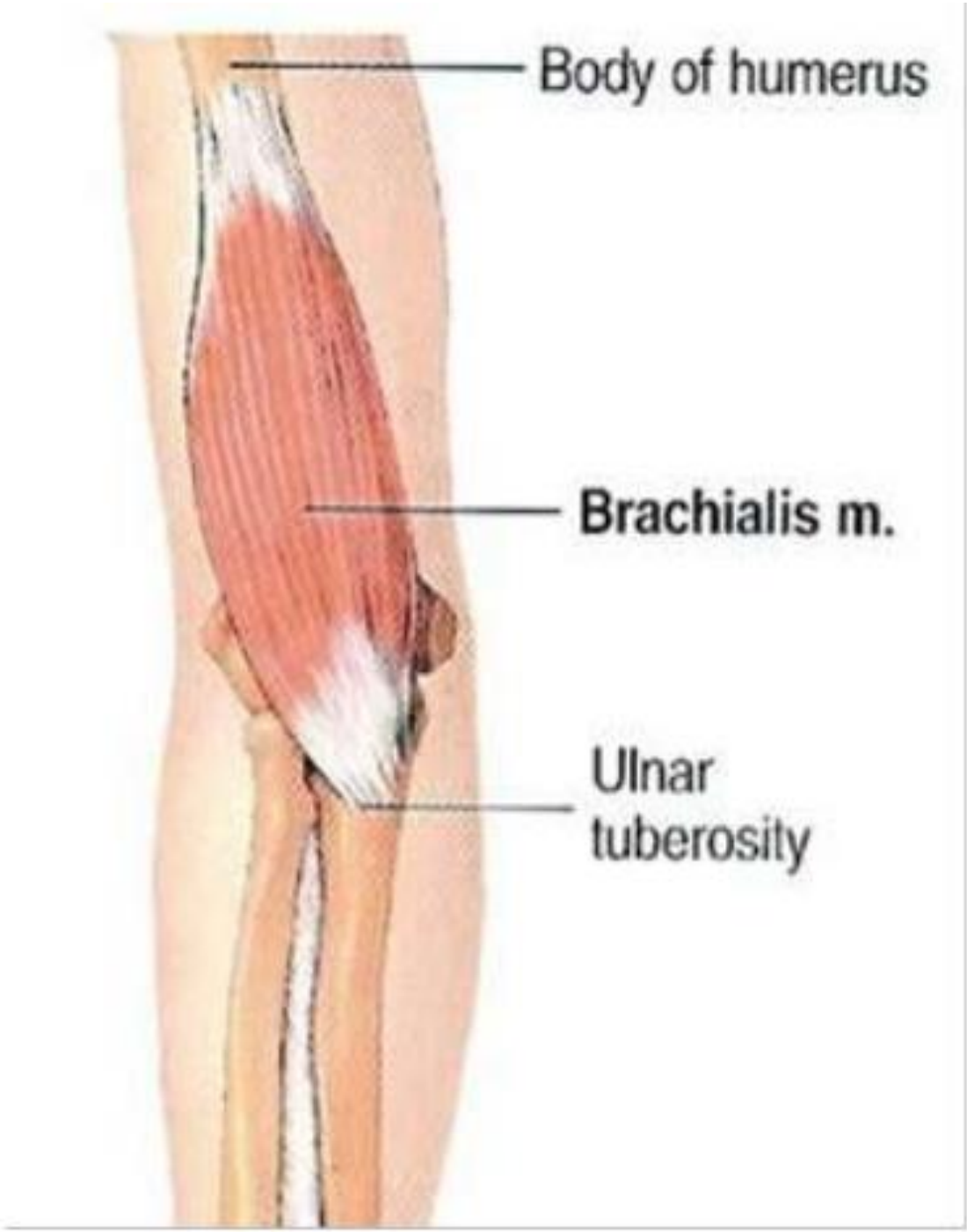
**Action:**

1. Powerful supinator
2. Flexor of elbow joint
3. Long head keeps humeral head inside the glenoid cavity during abduction of shoulder joint

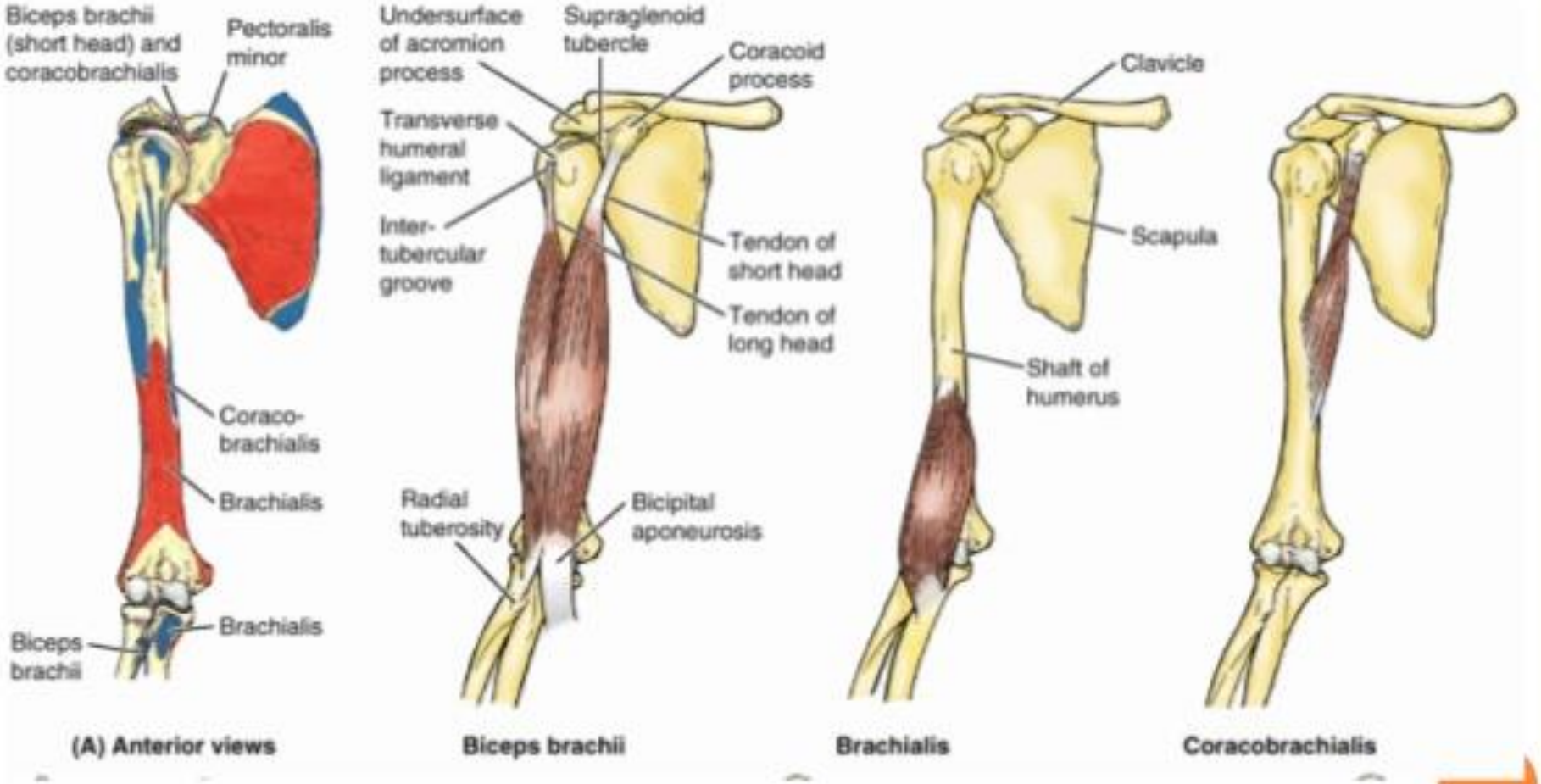
# Brachialis muscle

- **Origin:**
- From the lower half of the anterior surface of the shaft of the humerus.
- **Insertion:** Into the anterior surface of the coronoid process of the ulna.
- **Nerve Supply:**
- Majority of the muscle from musculocutaneous nerve.
- Small lateral part from the radial nerve.
- **Action:** Strong flexion of the elbow joint.


Deltoid
Trapezius
Pectoralis minor
Subclavius
BICEPS BRACHII (SHORT HEAD) and coracobrachialis
Supraspinatus
Subscapularis
Intertubercular groove
Latissimus dorsi
Teres major
Pectoralis major
Deltoid
Serratus anterior
BICEPS BRACHII (LONG HEAD)
Subscapularis
Coracobrachialis
Origin
Insertion
BRACHIALIS
BRACHIORADIALIS
Extensor carpi radialis longus
Extensor carpi radialis brevis
Common head of extensors
PRONATOR TERES
Common head of flexors
BRACHIALIS
CEPS BRACHII
SUPINATOR
Flexor digitorum profundus


Body of humerus
Brachialis m.
Ulnar tuberosity

# SUMMARY OF MUSCLES OF FRONT OF ARM



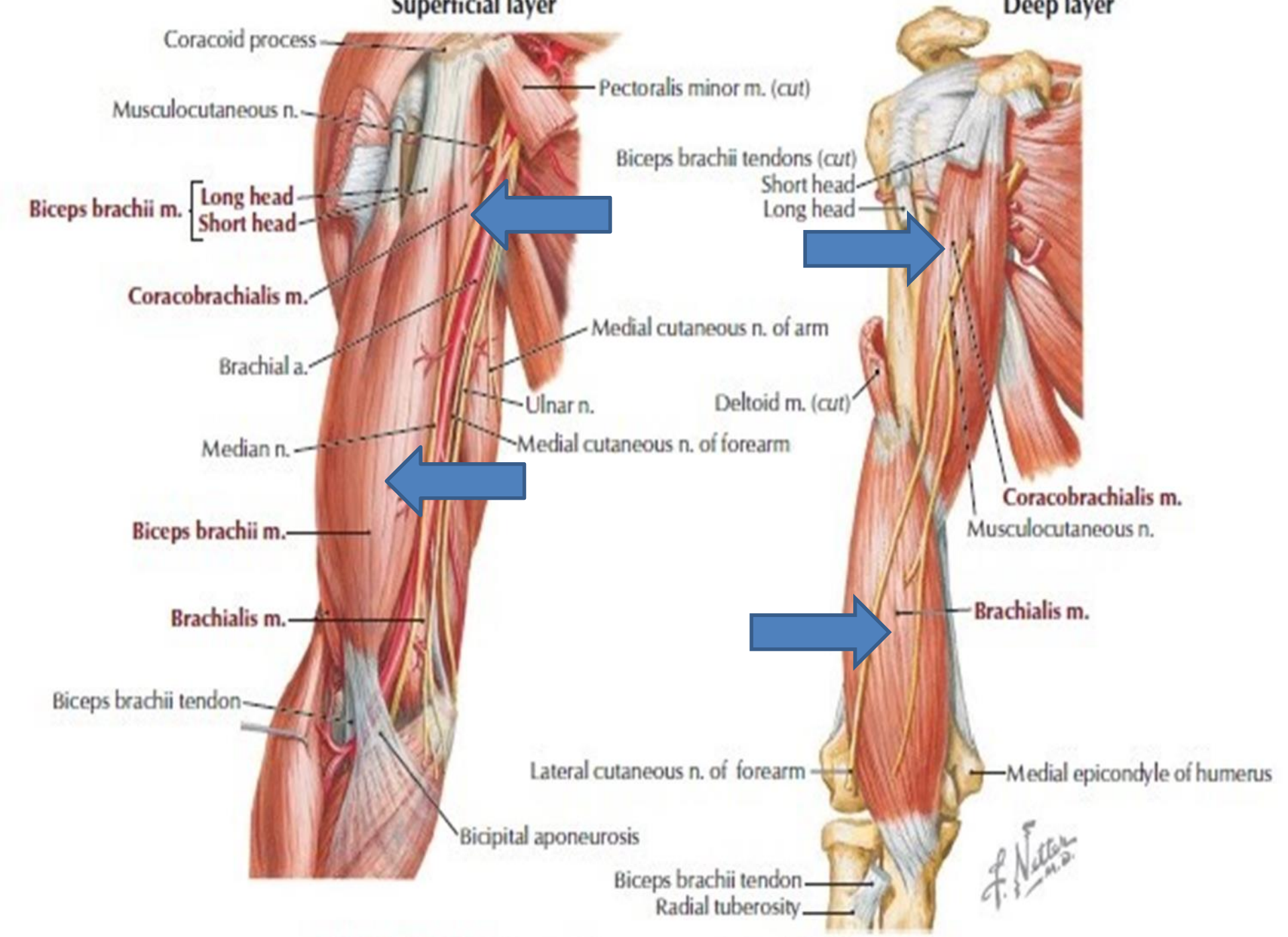


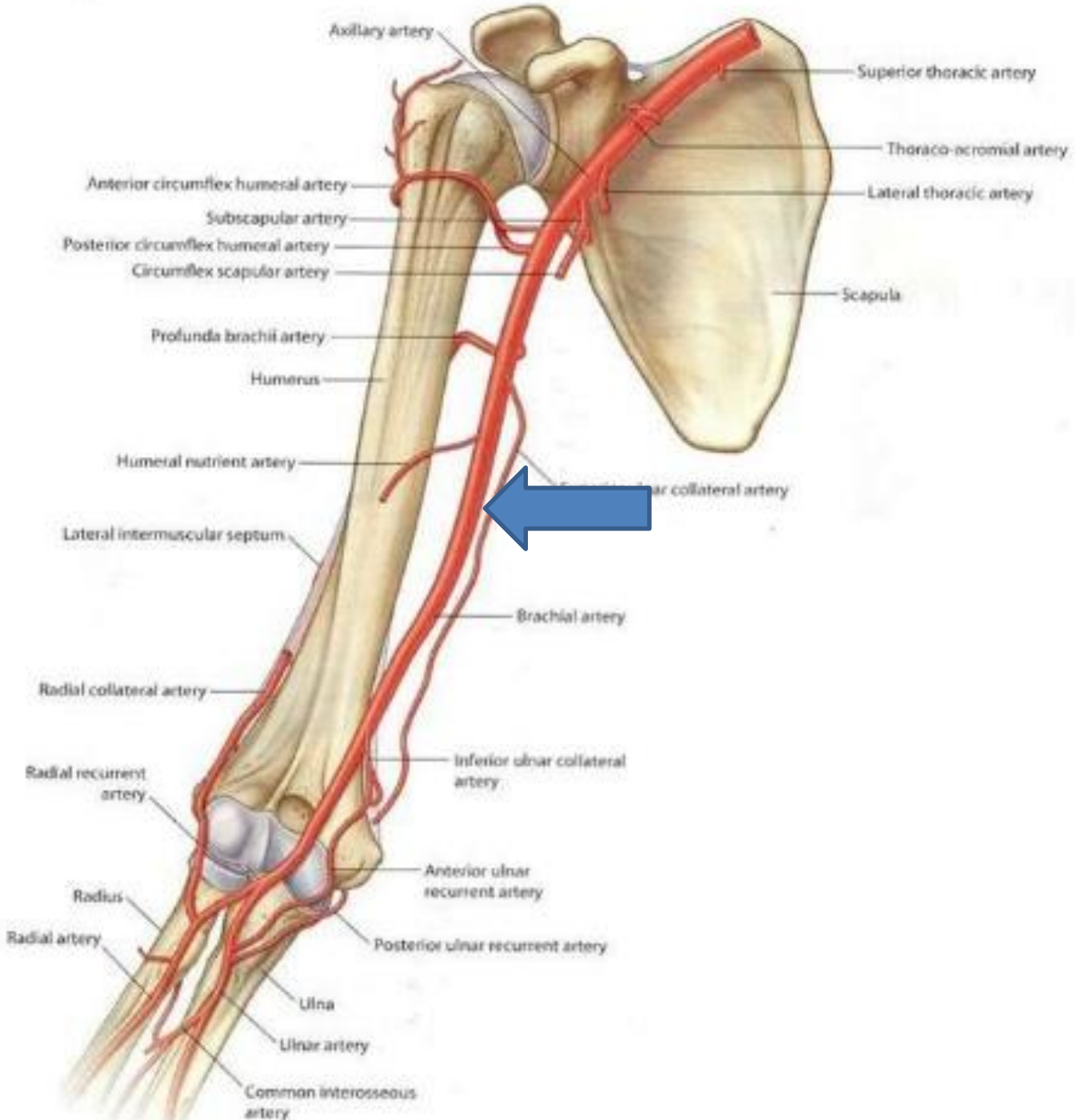

FIGURE 7-12 Anterior Compartment Arm Muscles and Nerves

# Structures Passing Through the Anterior Fascial Compartment

- Brachial artery
- Musculocutaneos nerve
- Median nerve
- Ulnar nerve

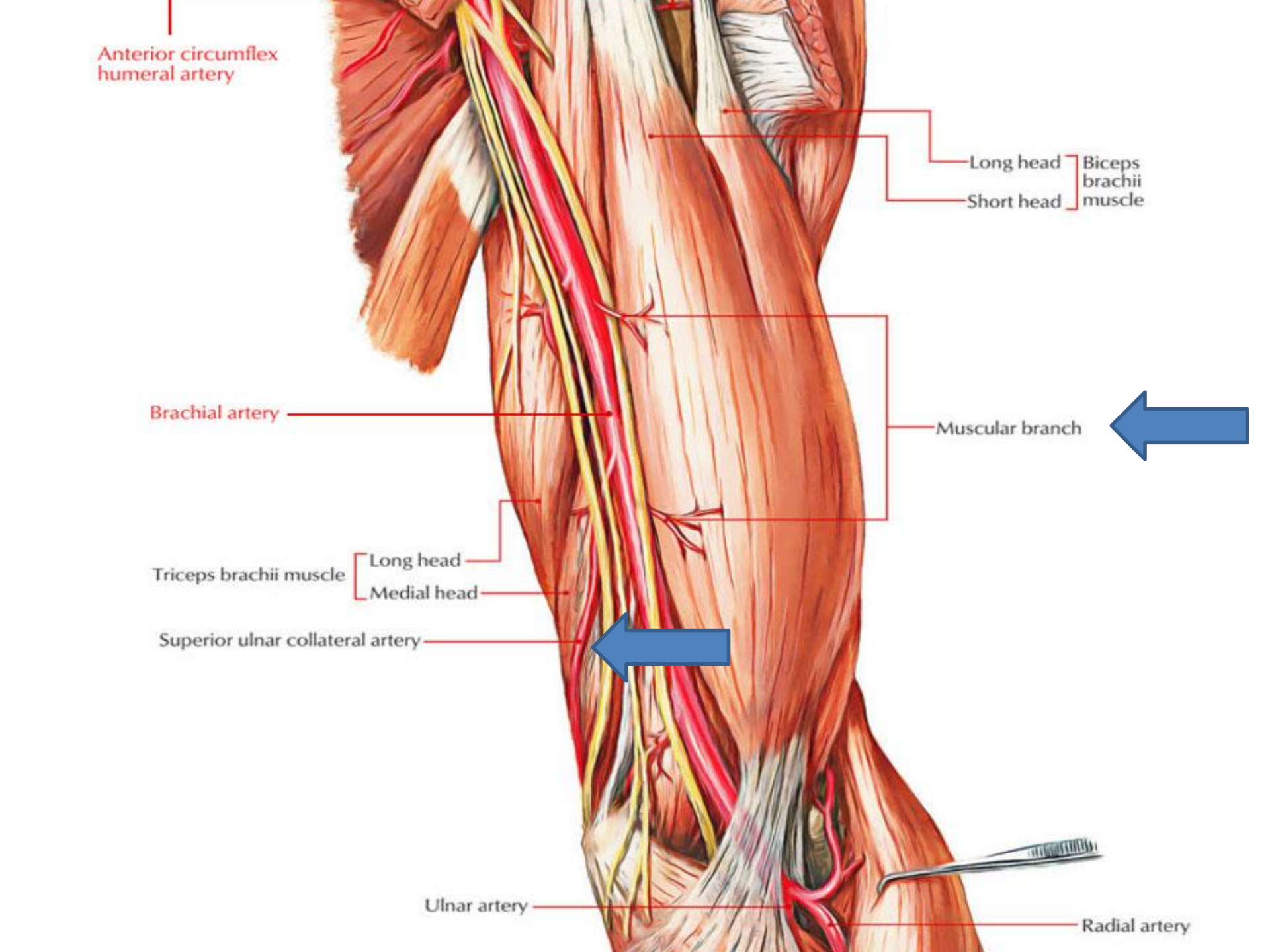
# Brachial Artery

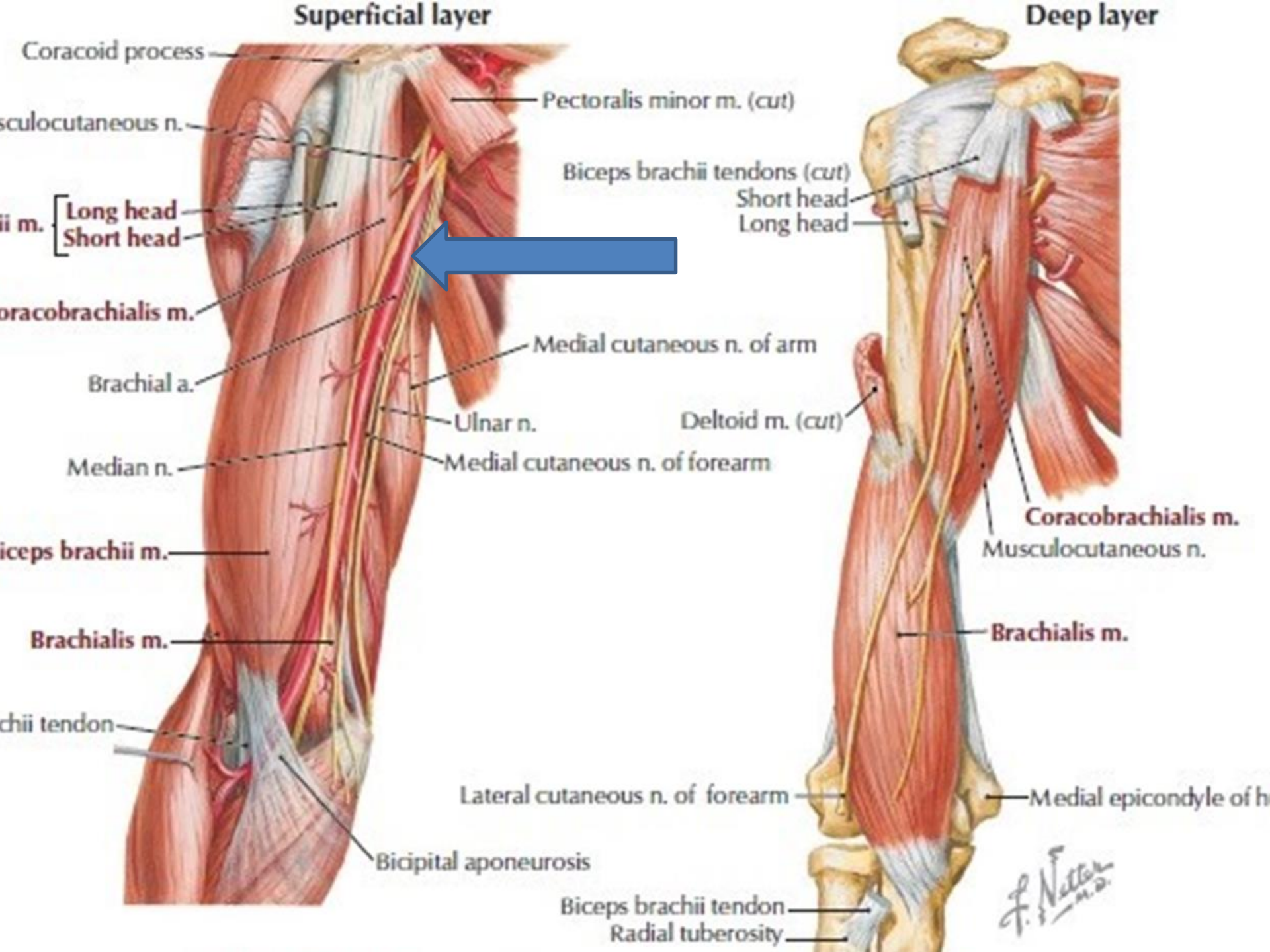
- **Beginning** The brachial artery begins at the lower border of the t major muscle as a continuation of the axillary artery.
- It provides the main arterial supply to the arm.
- **Termination** It terminates opposite the neck of the radius by dividing the radial and ulnar arteries.
- **Relations**
- **Anteriorly:** The vessel is superficial and is overlapped from the lateral by the coracobrachialis and biceps. The medial cutaneous nerve of forearm lies in front of the upper part; the median nerve crosses middle part; and the bicipital aponeurosis crosses its lower part.
- **Posteriorly:** The artery lies on the triceps, the coracobrachialis insert and the brachialis
- **Medially:** The ulnar nerve and the basilic vein in the upper part of arm; in the lower part of the arm, the median nerve lies on its medial s
- **Laterally:** The median nerve and the coracobrachialis and biceps mus above; the tendon of the biceps lies lateral to the artery in the lower of its course


Axillary artery
Superior thoracic artery
Thoraco-acromial artery
Anterior circumflex humeral artery
Lateral thoracic artery
Subscapular artery
Posterior circumflex humeral artery
Circumflex scapular artery
Scapula
Profunda brachii artery
Humerus
Humeral nutrient artery
Lateral intermuscular septum
Brachial artery
Radial collateral artery
Inferior ulnar collateral artery
Radial recurrent artery
Anterior ulnar recurrent artery
Radius
Radial artery
Posterior ulnar recurrent artery
Ulna
Ulnar artery
Common interosseous artery

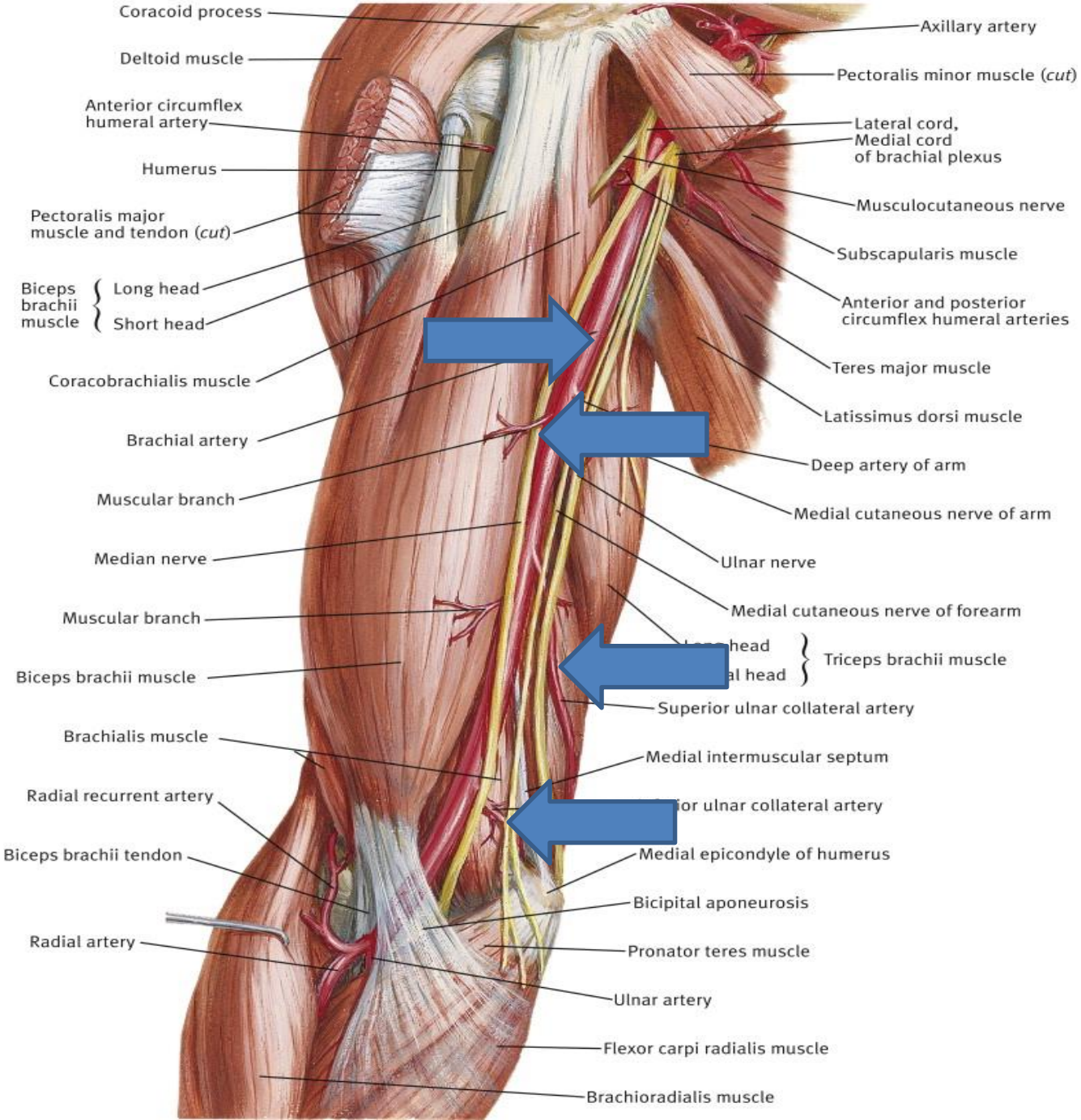
# Branches of brachial artery

- **Muscular branches** to the anterior compartment of the upper arm
- **The nutrient artery** to the humerus
- **The profunda artery** arises near the beginning of the brachial artery and follows the radial nerve into the spiral groove of the humerus.
- It supplies muscular branches, the nutrient artery of the humerus, and finally divides into terminal radial and middle collateral branches.
- **The superior ulnar collateral artery** arises near the middle of the upper arm and follows the ulnar nerve.
- **The inferior ulnar collateral artery** arises near the termination of the artery and takes part in the anastomosis around the elbow joint


Anterior circumflex humeral artery
Long head
Short head
Biceps brachii muscle
Brachial artery
Muscular branch
Triceps brachii muscle
Long head
Medial head
Superior ulnar collateral artery
Ulnar artery
Radial artery


Superficial layer
Deep layer
Coracoid process
Pectoralis minor m. (cut)
sculocutaneous n.
Biceps brachii tendons (cut)
Short head
Long head
ii m.
Long head
Short head
oracobrachialis m.
Medial cutaneous n. of arm
Brachial a.
Ulnar n.
Deltoid m. (cut)
Median n.
Medial cutaneous n. of forearm
Coracobrachialis m.
Musculocutaneous n.
iceps brachii m.
Brachialis m.
Brachialis m.
chii tendon
Lateral cutaneous n. of forearm
Medial epicondyle of h
Bicipital aponeurosis
Biceps brachii tendon
Radial tuberosity

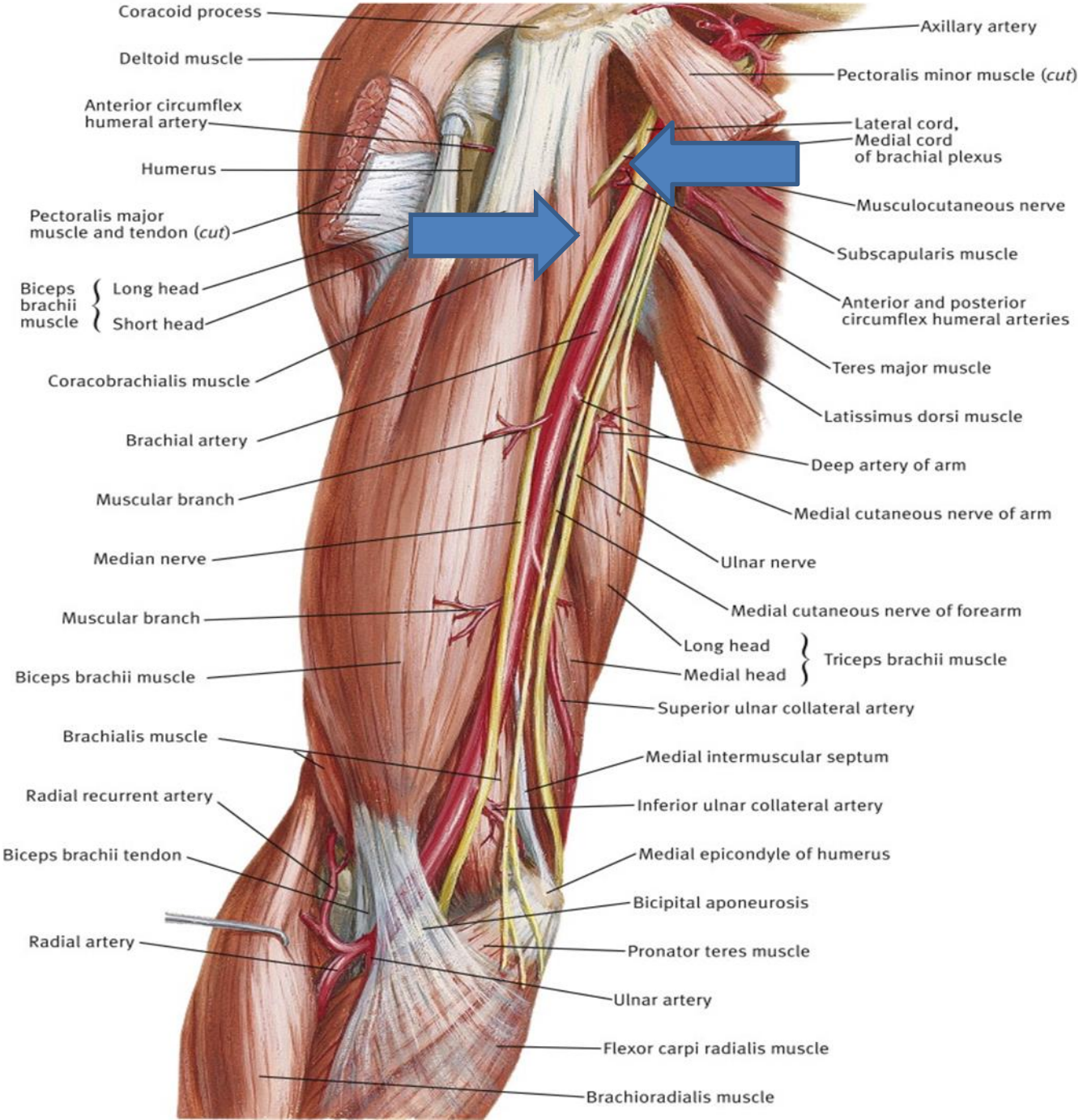
# Brachial Artery *in situ*

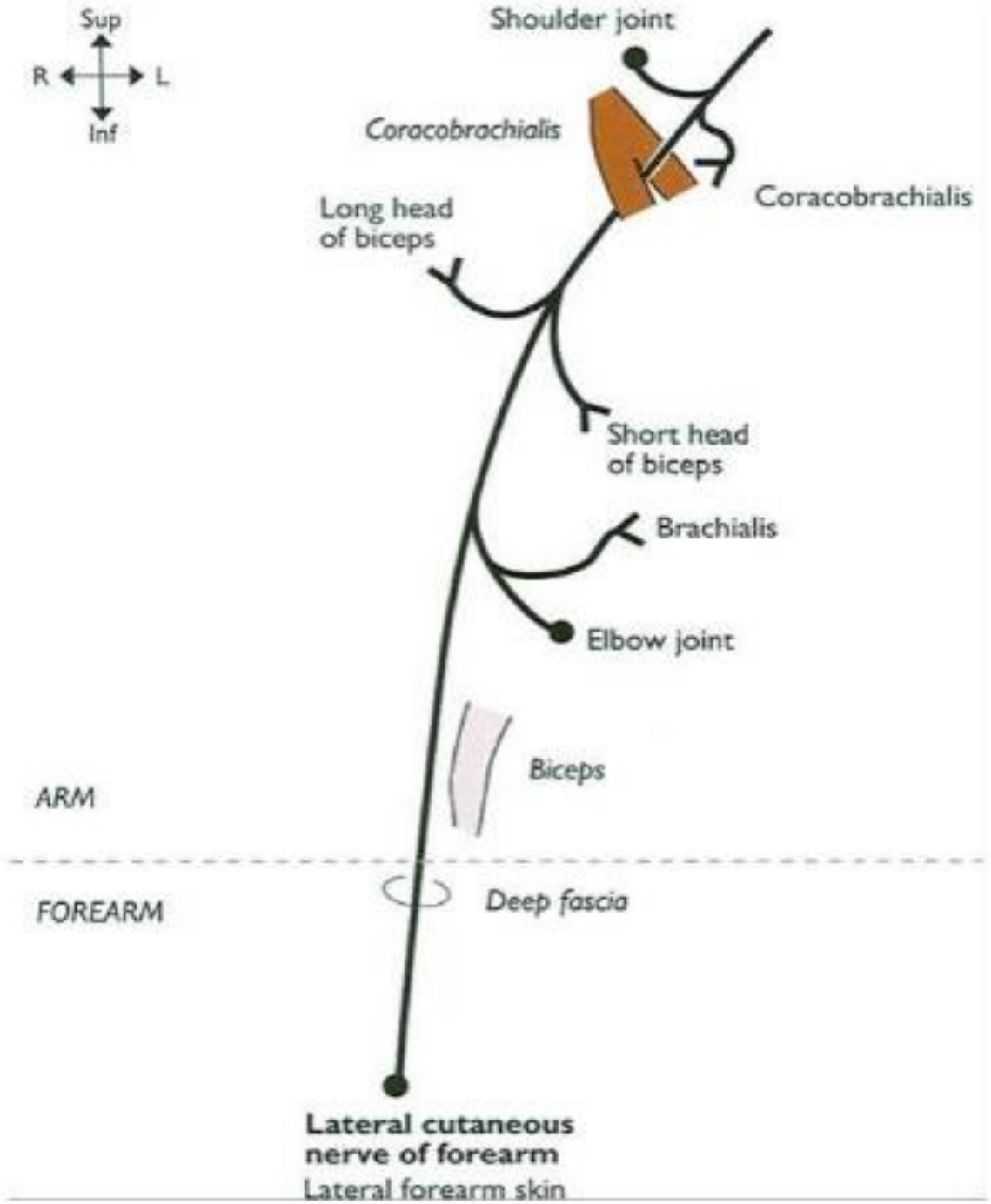


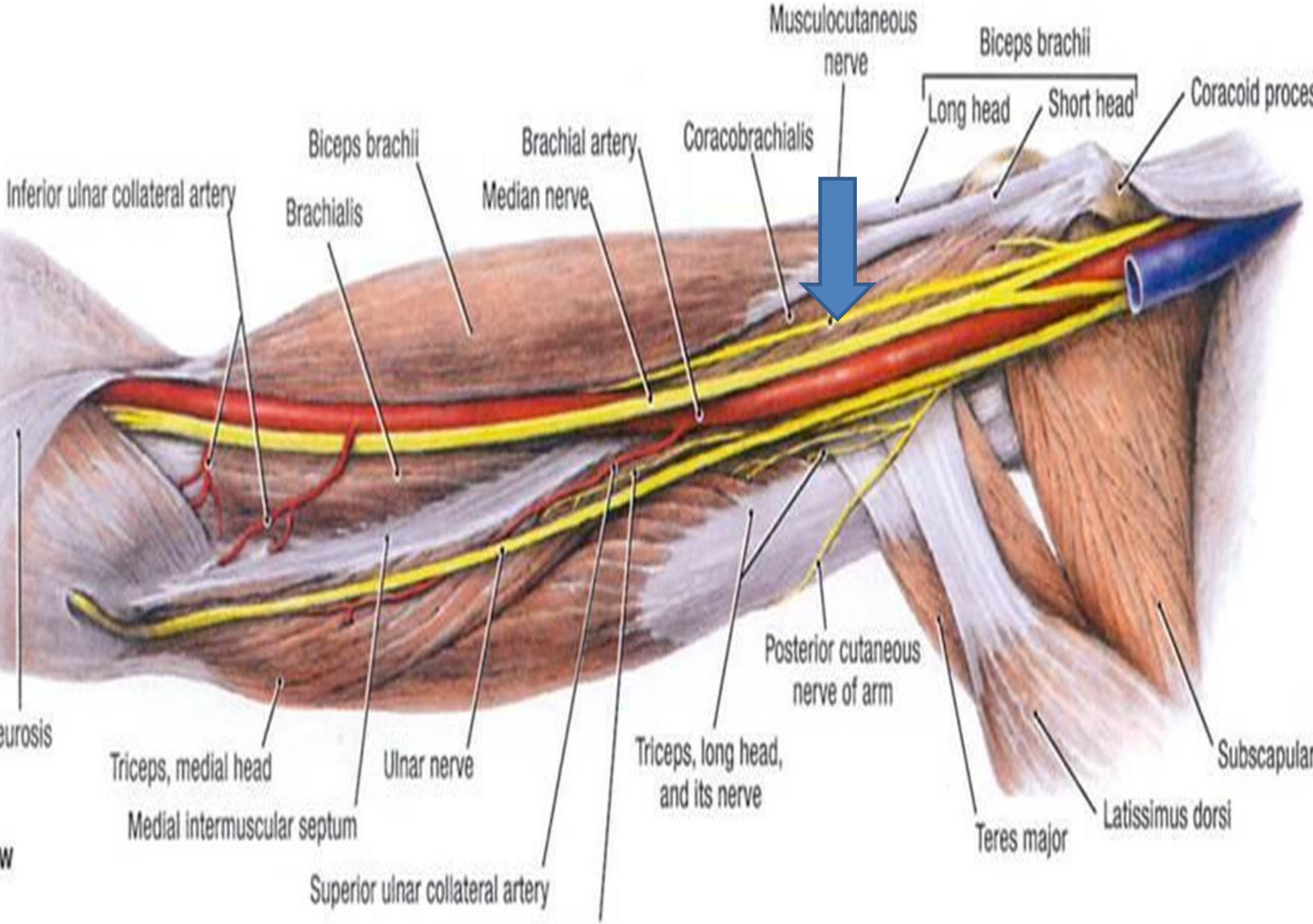
# Musculocutaneous Nerve

- The origin of the musculocutaneous nerve from the lateral cord of the brachial plexus (C5, 6, and 7).
- It runs downward and laterally, pierces the coracobrachialis muscle, and then passes downward between the biceps and brachialis muscles.
- It appears at the lateral margin of the biceps tendon and pierces the deep fascia just above the elbow.
- It runs down the lateral aspect of the forearm as the **lateral cutaneous nerve of the forearm**

# Brachial Artery *in situ*




Sup
R
L
Inf
Shoulder joint
Coracobrachialis
Coracobrachialis
Long head of biceps
Short head of biceps
Brachialis
Elbow joint
Biceps
ARM
FOREARM
Deep fascia
Lateral cutaneous nerve of forearm
Lateral forearm skin


Musculocutaneous nerve
Biceps brachii
Long head
Short head
Coracoid proces
Biceps brachii
Brachial artery
Coracobrachialis
Inferior ulnar collateral artery
Brachialis
Median nerve
Posterior cutaneous nerve of arm
Triceps, medial head
Ulnar nerve
Triceps, long head, and its nerve
Subscapular
Medial intermuscular septum
Teres major
Latissimus dorsi
Superior ulnar collateral artery

# Branches of musculocutaneous nerve

- **Muscular branches** to the biceps coracobrachialis, and brachialis
- **Cutaneous branches;** the lateral cutaneous nerve of the forearm supplies the skin of the front and lateral aspects of the forearm down as far as the root of the thumb.
- **Articular branches** to the elbow joint

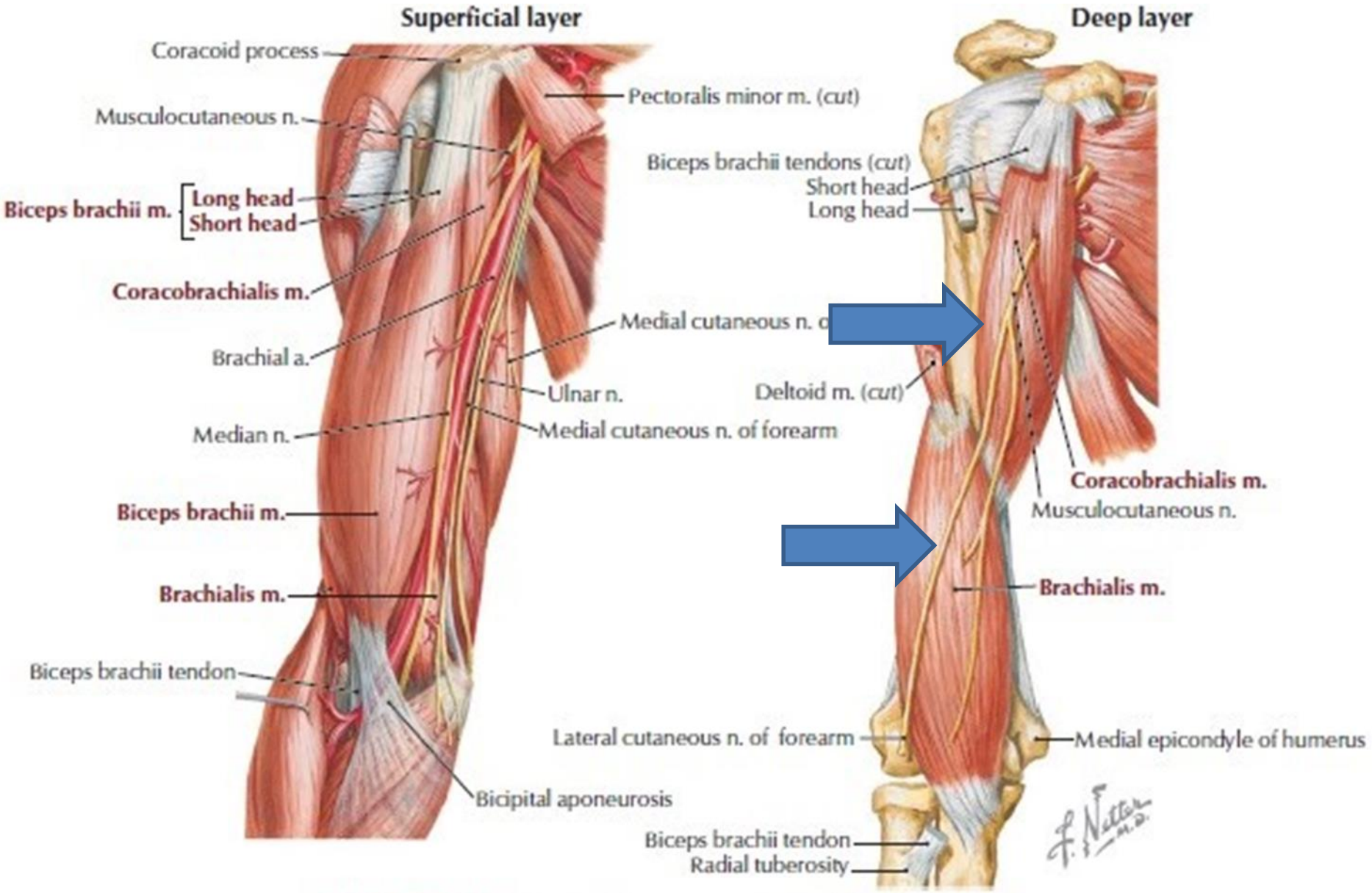
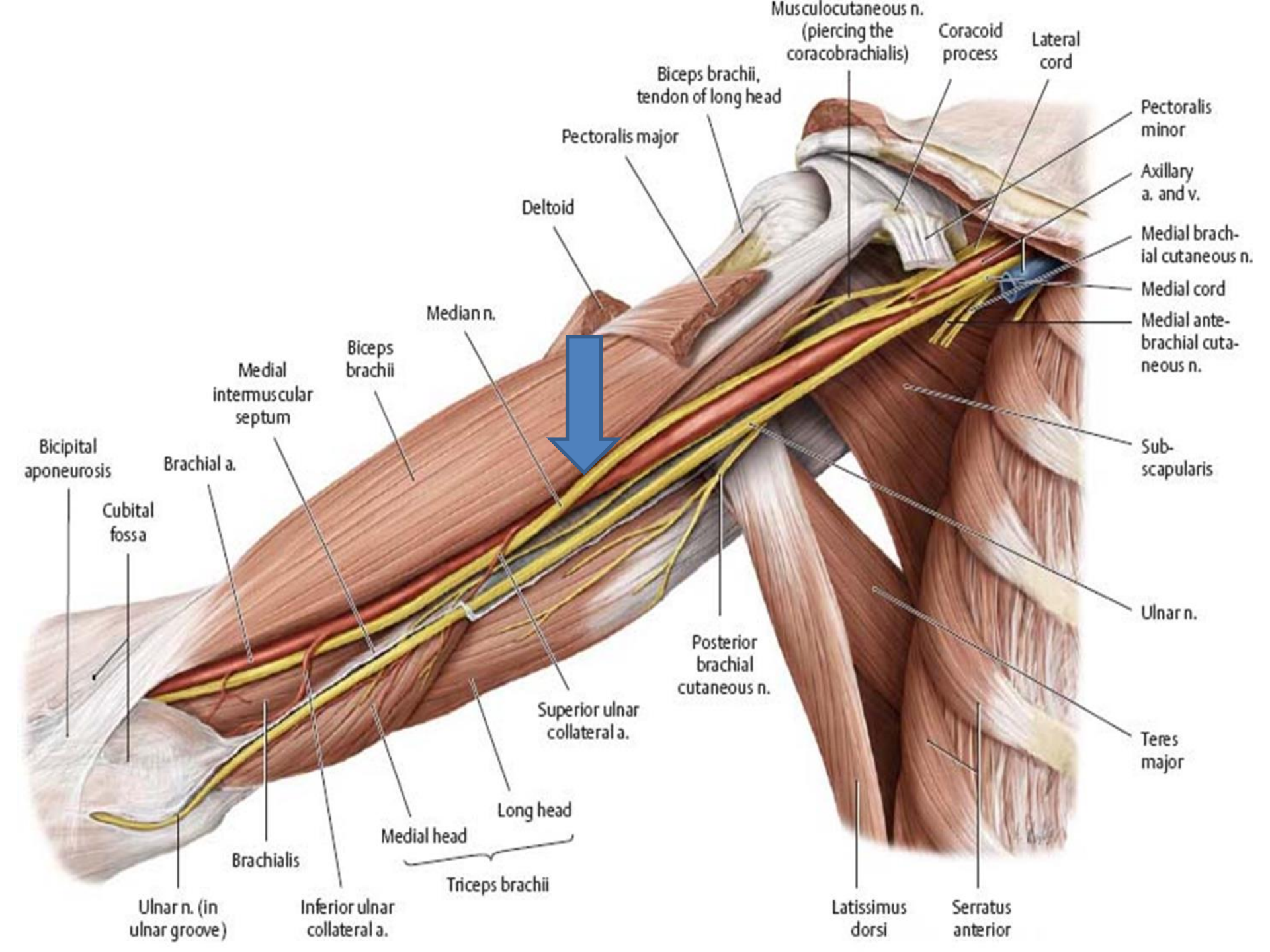
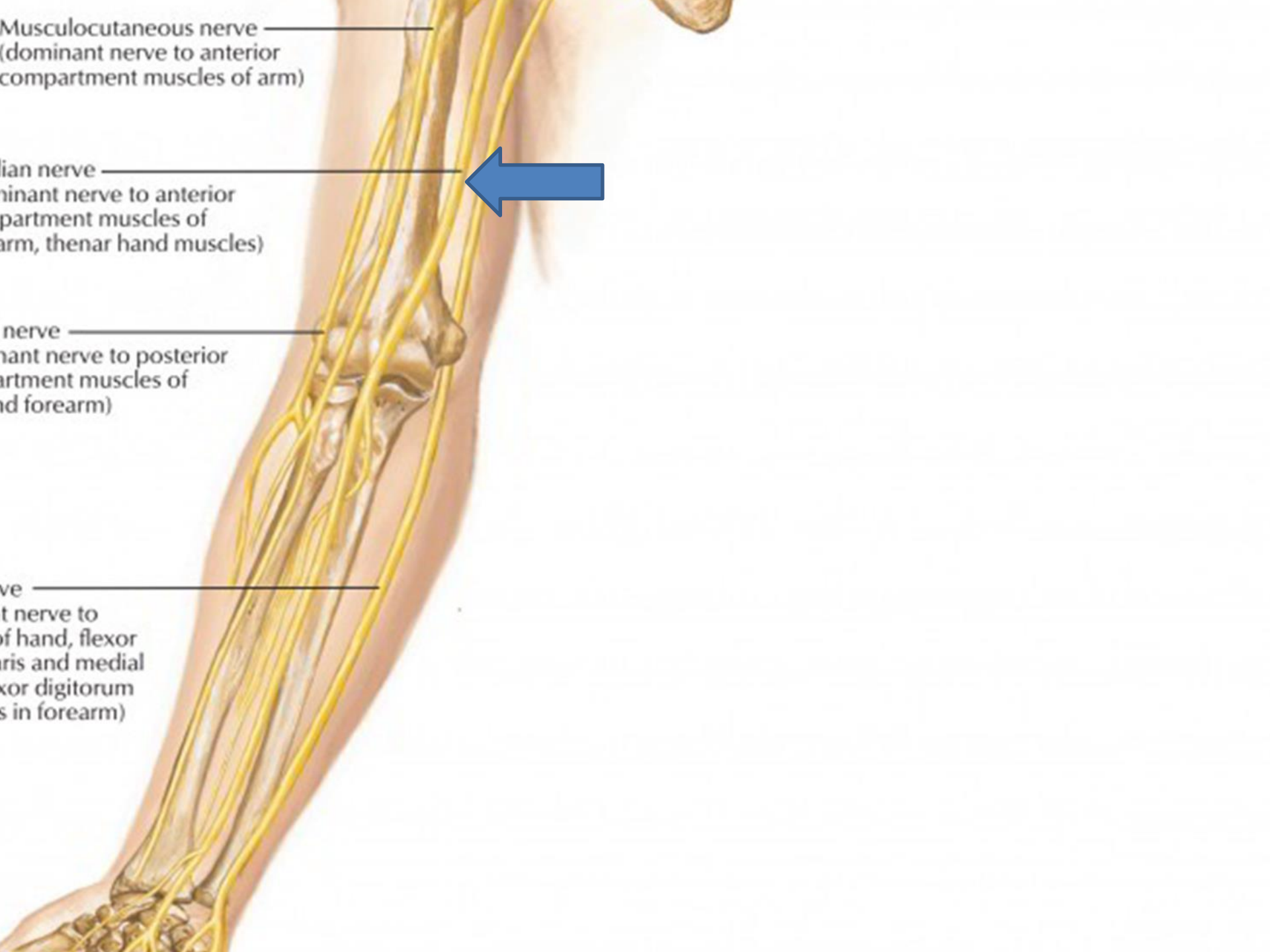


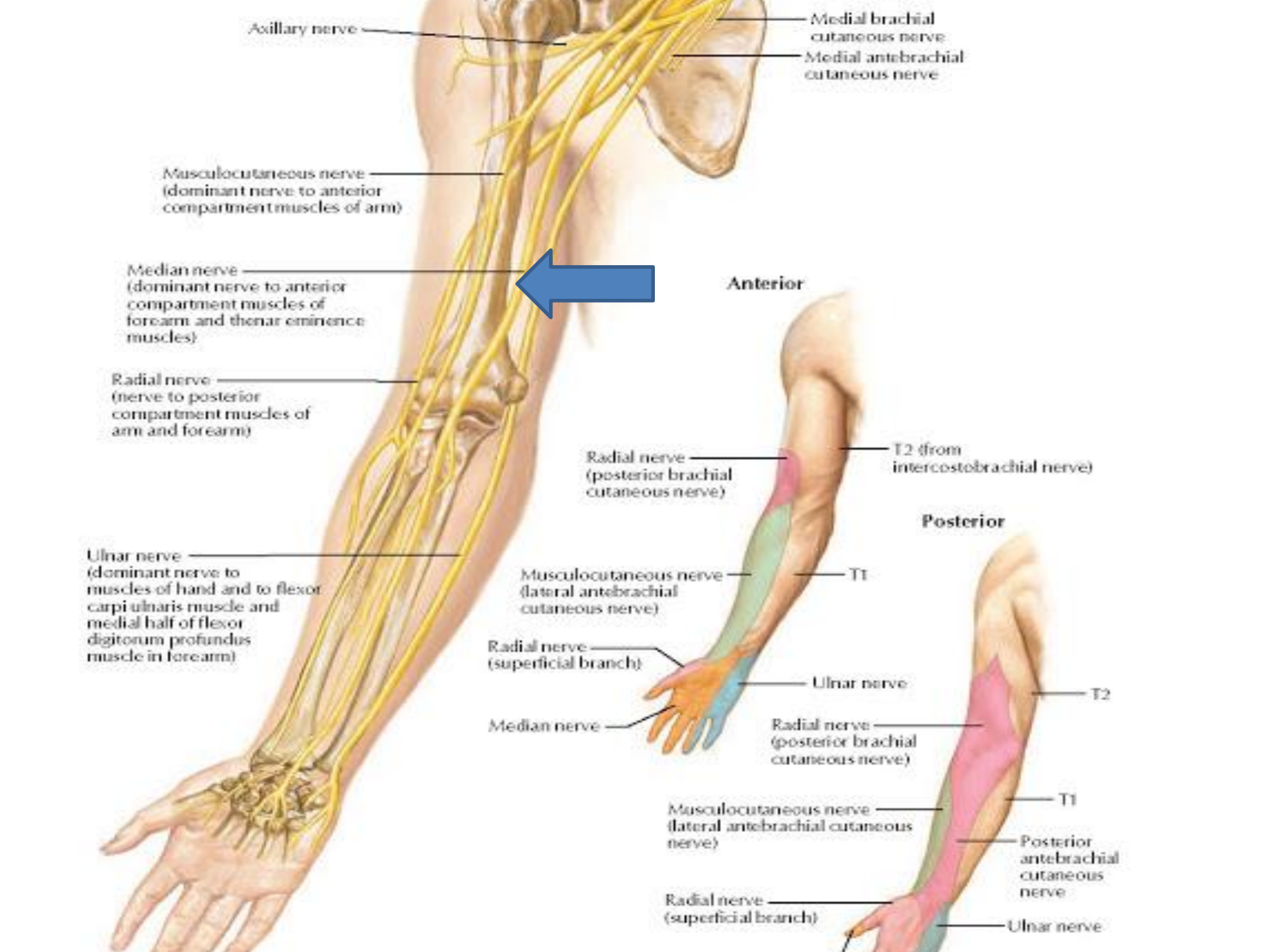

**FIGURE 7-12** Anterior Compartment Arm Muscles and Nerves

# Median Nerve

- The origin of the median nerve from the medial and lateral cords of the brachial plexus in the axilla.
- It runs downward on the lateral side of the brachial artery . Halfway down the upper arm, it crosses the brachial artery and continues downward on its medial side.
- The nerve, like the artery, is therefore superficial, but at the elbow, it is crossed by the bicipital aponeurosis.
- The median nerve has no branches in the upper arm , except for a small vasomotor nerve to the brachial artery.


Musculocutaneous n. (piercing the coracobrachialis)
Coracoid process
Lateral cord
Biceps brachii, tendon of long head
Pectoralis minor
Pectoralis major
Axillary a. and v.
Deltoid
Medial brachial cutaneous n.
Medial cord
Median n.
Medial antebrachial cutaneous n.
Biceps brachii
Medial intermuscular septum
Subscapularis
Bicipital aponeurosis
Brachial a.
Cubital fossa
Ulnar n.
Posterior brachial cutaneous n.
Superior ulnar collateral a.
Teres major
Long head
Medial head
Brachialis
Triceps brachii
Ulnar n. (in ulnar groove)
Inferior ulnar collateral a.
Latissimus dorsi
Serratus anterior


Musculocutaneous nerve
(dominant nerve to anterior
compartment muscles of arm)
lian nerve
hinant nerve to anterior
partment muscles of
arm, thenar hand muscles)
nerve
hant nerve to posterior
artment muscles of
nd forearm)
ve
t nerve to
f hand, flexor
aris and medial
xor digitorum
s in forearm)

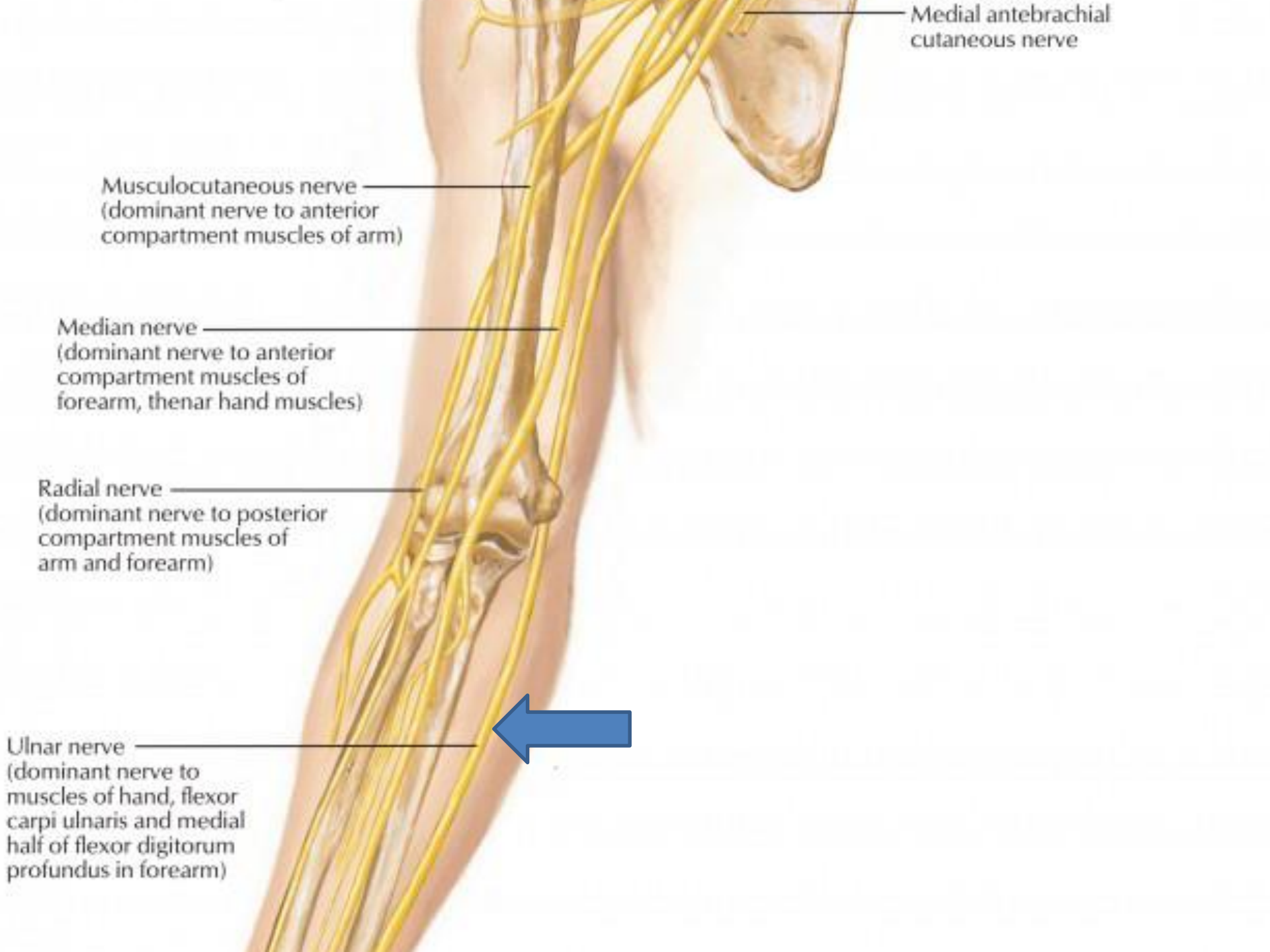

Axillary nerve
Medial brachial cutaneous nerve
Medial antebrachial cutaneous nerve
Musculocutaneous nerve (dominant nerve to anterior compartment muscles of arm)
Median nerve (dominant nerve to anterior compartment muscles of forearm and thenar eminence muscles)
Radial nerve (nerve to posterior compartment muscles of arm and forearm)
Ulnar nerve (dominant nerve to muscles of hand and to flexor carpi ulnaris muscle and medial half of flexor digitorum profundus muscle in forearm)
Anterior
Radial nerve (posterior brachial cutaneous nerve)
T2 (from intercostobrachial nerve)
Musculocutaneous nerve (lateral antebrachial cutaneous nerve)
T1
Radial nerve (superficial branch)
Ulnar nerve
Median nerve
Posterior
T2
Radial nerve (posterior brachial cutaneous nerve)
T1
Musculocutaneous nerve (lateral antebrachial cutaneous nerve)
Posterior antebrachial cutaneous nerve
Radial nerve (superficial branch)
Ulnar nerve

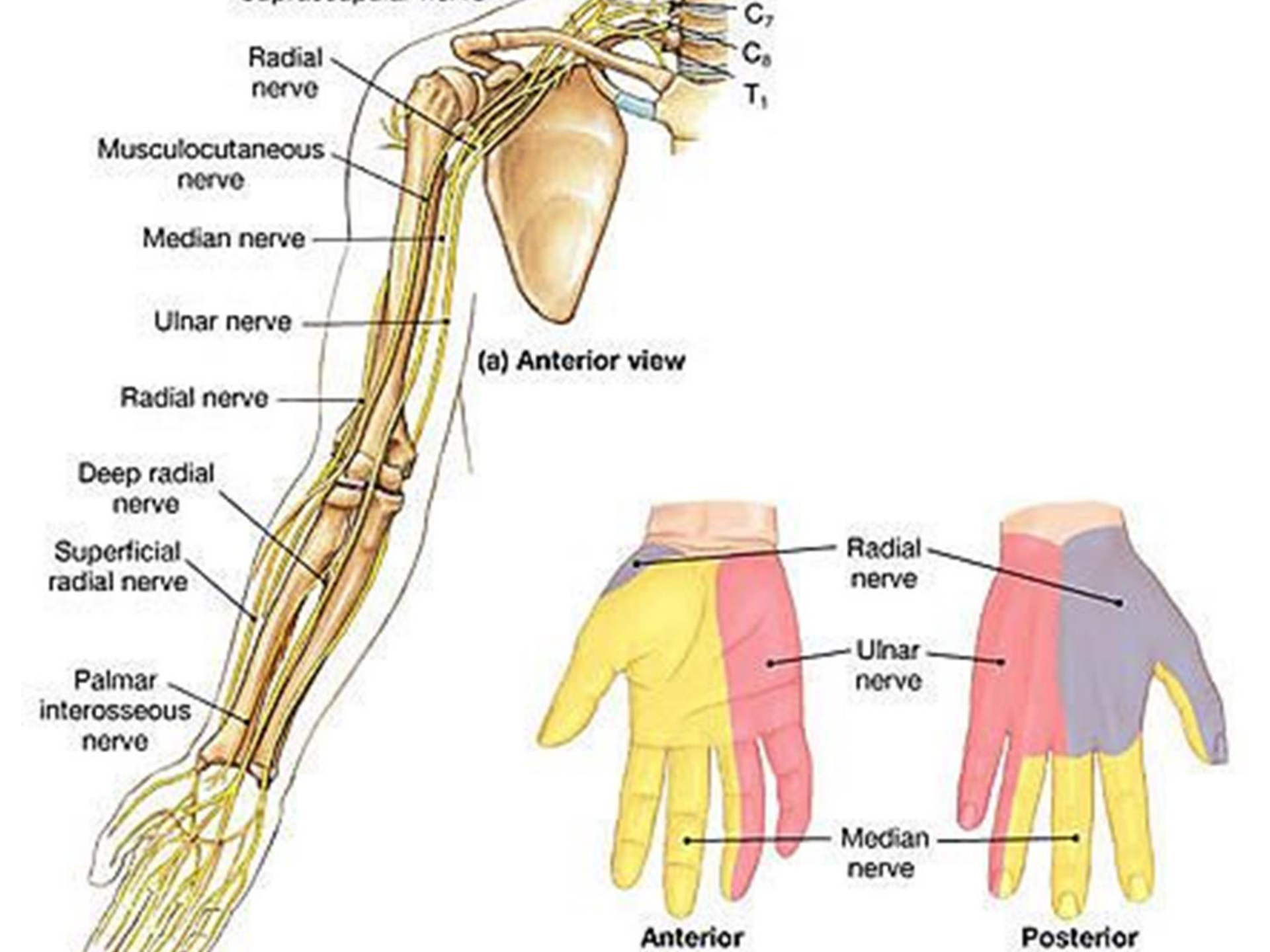
# Ulnar Nerve

- The ulnar nerve passes behind the medial epicondyle of the humerus and enters the front of the forearm by passing between the two heads of the flexor carpi ulnaris.
- It then runs down the forearm between the flexor carpi ulnaris and the flexor digitorum profundus muscles.
- In the distal two thirds of the forearm, the ulnar artery lies on the lateral side of the ulnar nerve.
- At the wrist, the ulnar nerve becomes superficial and lies between the tendons of the flexor carpi ulnaris and flexor digitorum superficialis muscles.
- The ulnar nerve enters the palm of the hand by passing in front of the flexor retinaculum and lateral to the pisiform bone.

# ULNAR NERVE

- Motor Functions: Innervates the muscles of the hand (apart from the thenar muscles and two lateral lumbricals), flexor carpi ulnaris and medial half of flexor digitorum profundus.
- Sensory Functions: Innervates the anterior and posterior surfaces of the medial one and half fingers, and associated palm area


Medial antebrachial cutaneous nerve
Musculocutaneous nerve (dominant nerve to anterior compartment muscles of arm)
Median nerve (dominant nerve to anterior compartment muscles of forearm, thenar hand muscles)
Radial nerve (dominant nerve to posterior compartment muscles of arm and forearm)
Ulnar nerve (dominant nerve to muscles of hand, flexor carpi ulnaris and medial half of flexor digitorum profundus in forearm)


C7
C8
T1
Radial nerve
Musculocutaneous nerve
Median nerve
Ulnar nerve
(a) Anterior view
Radial nerve
Deep radial nerve
Superficial radial nerve
Palmar interosseous nerve
Radial nerve
Ulnar nerve
Median nerve
Anterior
Posterior

# THANK YOU