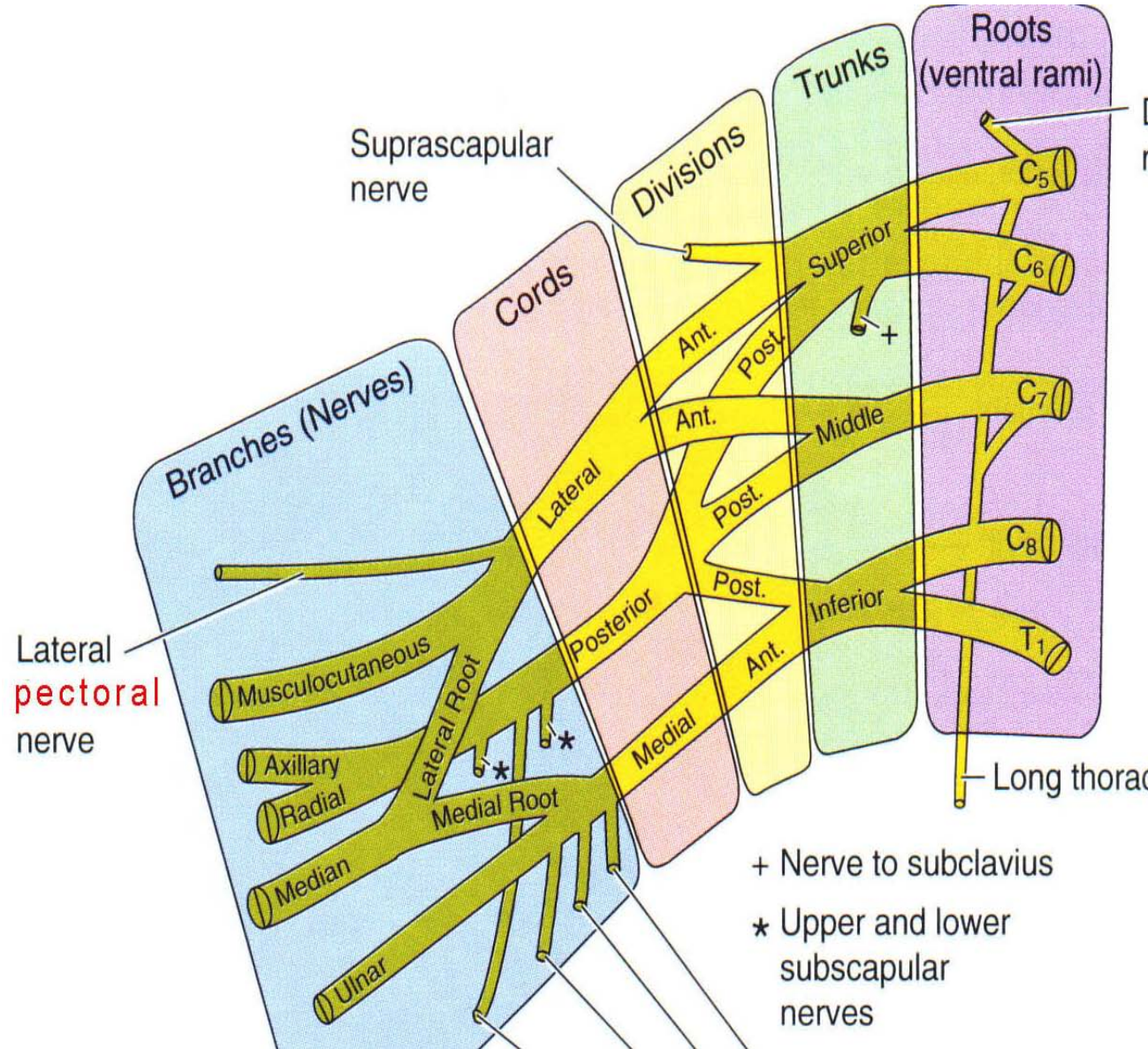


Brachial plexus

- ◆ Roots (ventral rami)
 - ◆ C5-T1
- ◆ Trunks
 - ◆ superior, middle, inferior
- ◆ Divisions
 - ◆ anterior, posterior
- ◆ Cords
 - ◆ Lateral, posterior, anterior
- ◆ Branches (Nerves)

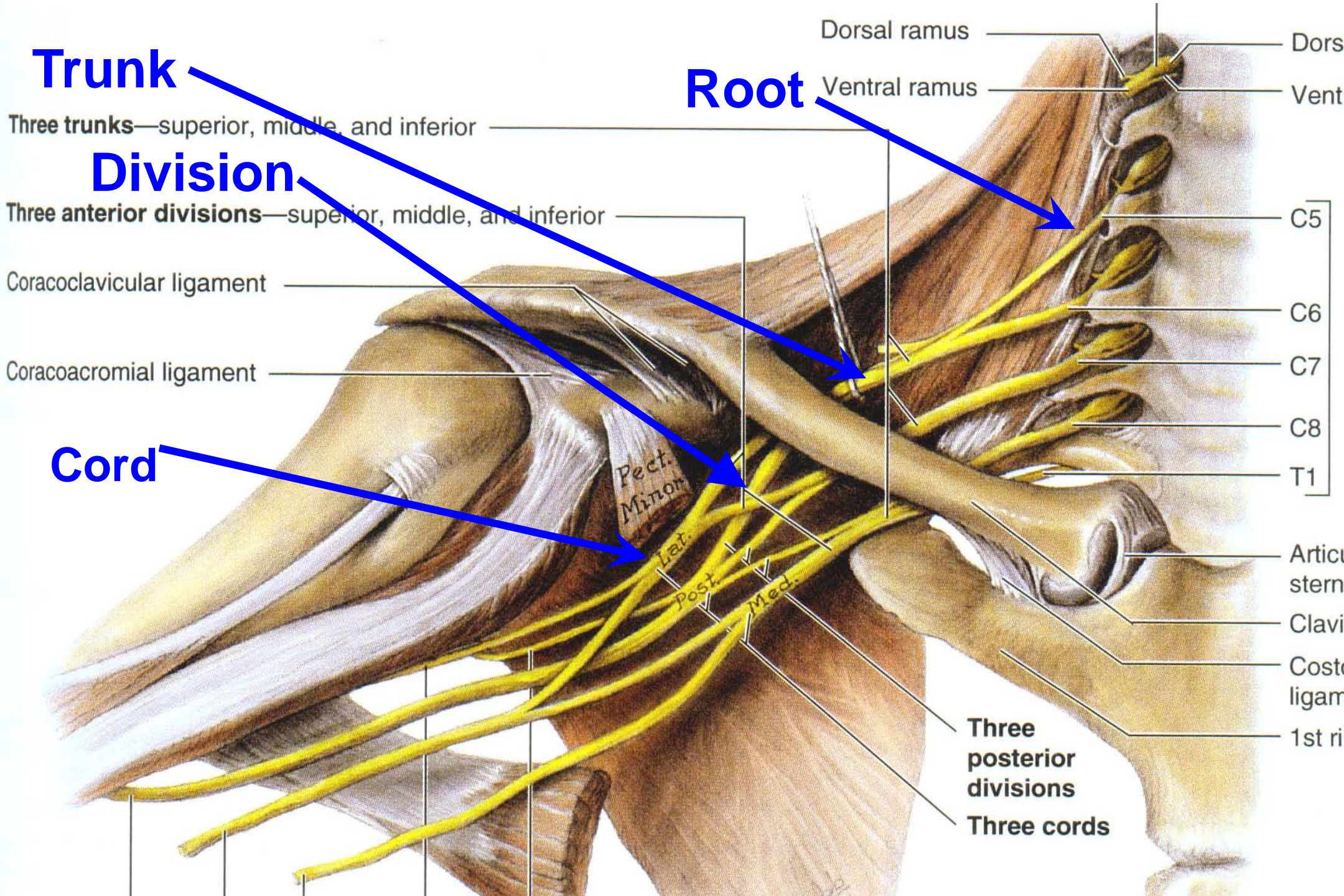


Trunk

Root

Division

Cord



Dorsal ramus

Ventral ramus

Dors

Vent

C5

C6

C7

C8

T1

Articu
stern

Clavi

Coste
ligam

1st ri

Three trunks—superior, middle, and inferior

Three anterior divisions—superior, middle, and inferior

Coracoclavicular ligament

Coracoacromial ligament

Pect.
Minor

Lat.

Post.

Med.

Three
posterior
divisions

Three cords

Brachial plexus: TRUNKS and DIVISIONS

◆ Trunks

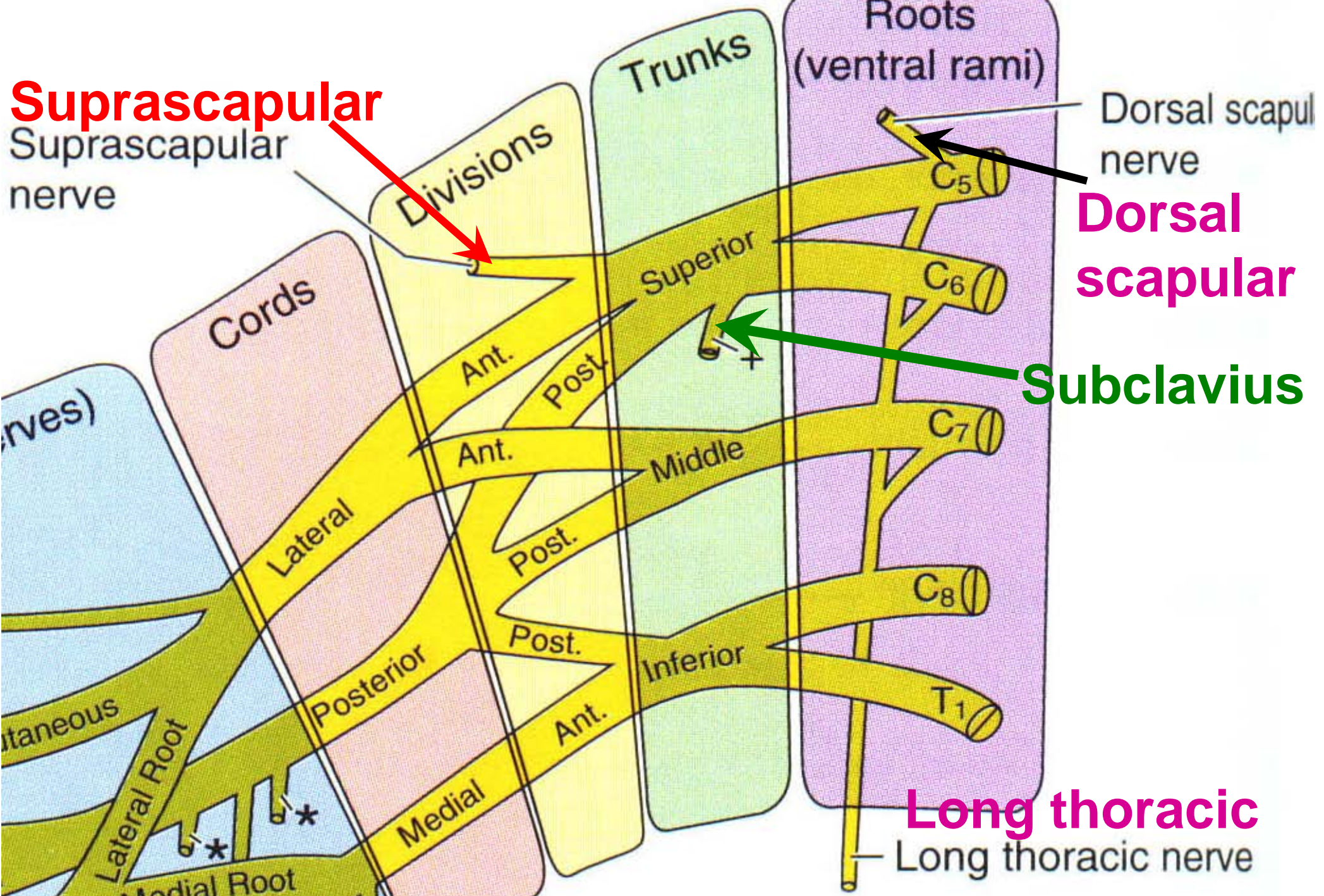
- ◆ Superior trunk: union of C5-C6 roots
- ◆ Middle trunk: continuation of C7 root
- ◆ Inferior trunk: union of C8-T1 roots

◆ Divisions

- ◆ Each trunk divides into 2 Divisions when passing posterior to clavicle (cervicoaxillary canal)
 - ◆ Anterior division: anterior (flexor) compartments
 - ◆ Posterior division: posterior (extensor) compartments

Suprascapular

Suprascapular nerve



Dorsal scapular nerve

Dorsal scapular

Subclavius

Long thoracic

Long thoracic nerve

Brachial plexus: branches

◆ Root level

- ◆ long thoracic n (serratus anterior)

- ◆ dorsal scapular n (rhomboid, levator scapulae)

◆ Trunk level

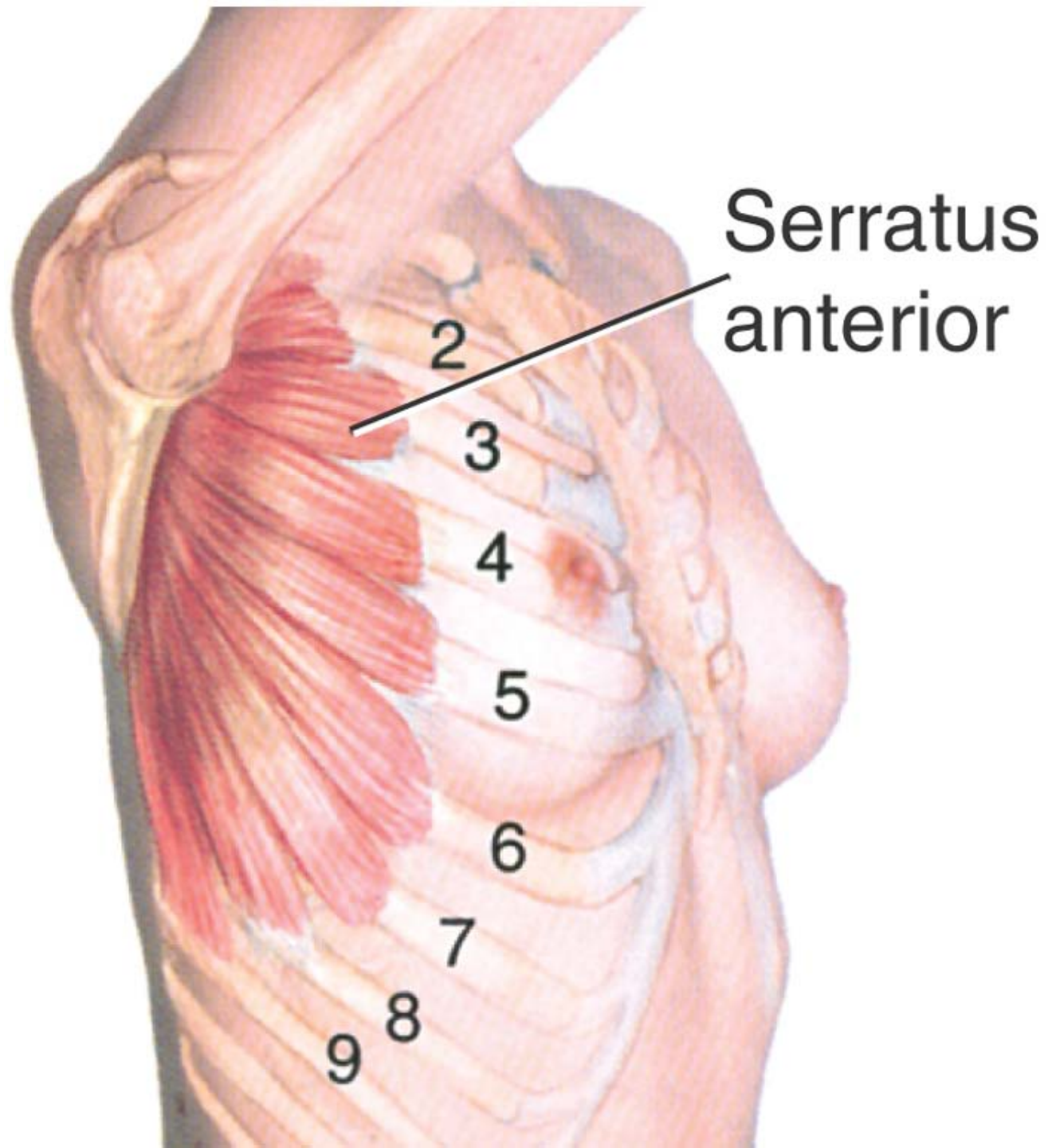
- ◆ N to subclavius (subclavius)

◆ Division level

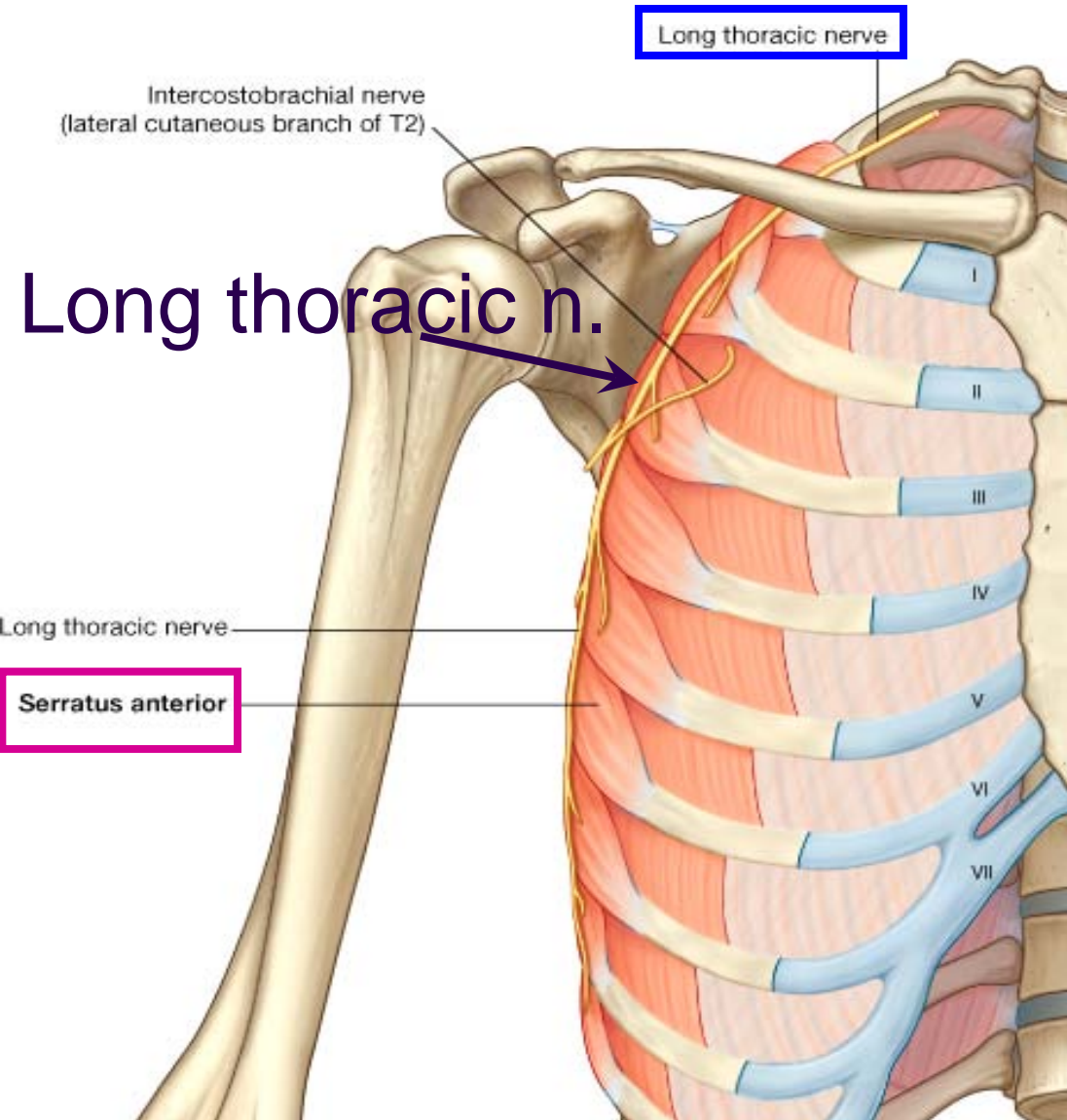
- ◆ suprascapular n (suprascapularis, infraspinatus)

Serratus anterior

- ◆ Rib 1-8
- ◆ → med. border of scapula
- ◆ Nerve: C5-7;
long thoracic n.
- ◆ Action: keep scapula against thoracic wall on pushing



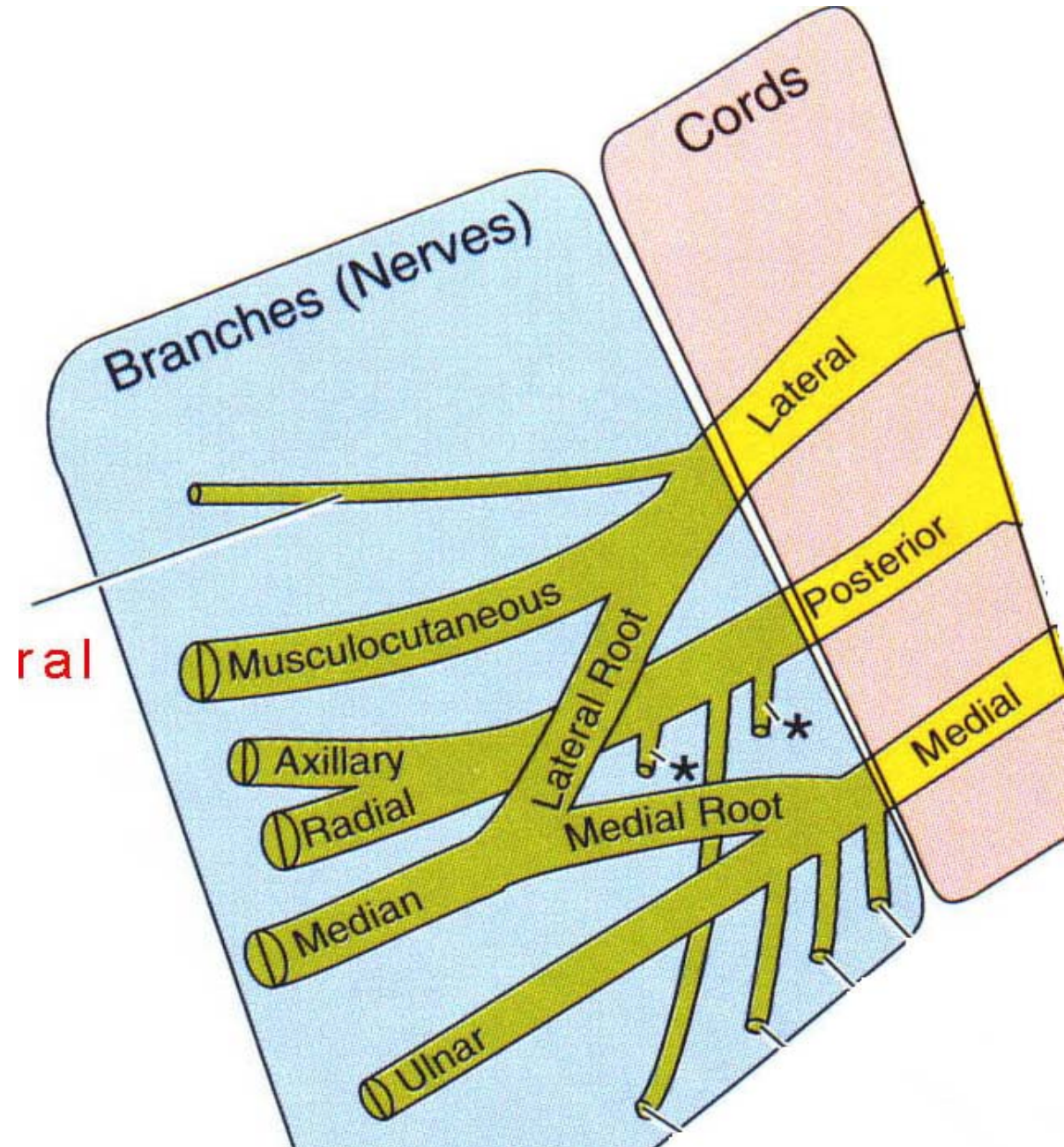
Scapular winging: paralysis of serratus anterior muscle



Right winged scapula

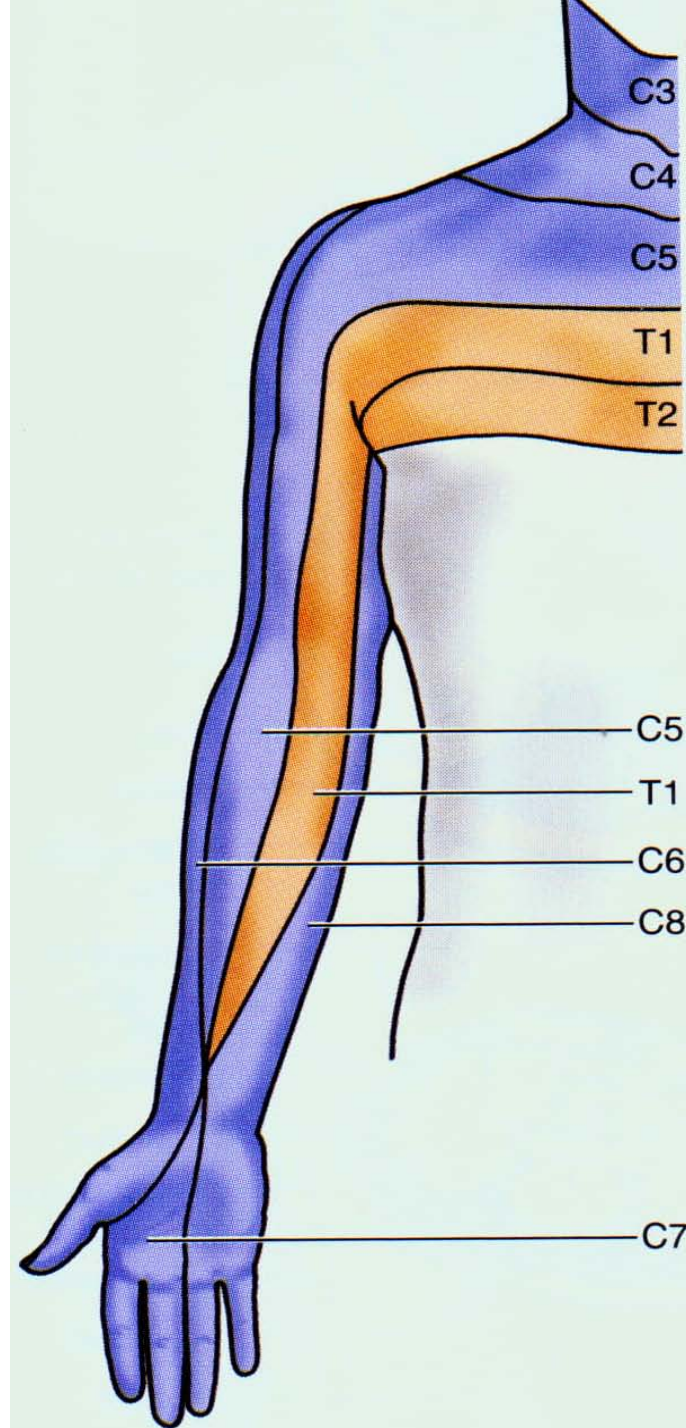
Brachial plexus: terminal mixed n

- ◆ ulnar n (medial cord)
- ◆ musculocutaneous n (lat cord)
- ◆ axillary n (post cord)
- ◆ radial n. (post cord)
- ◆ median n (lat/med cord)



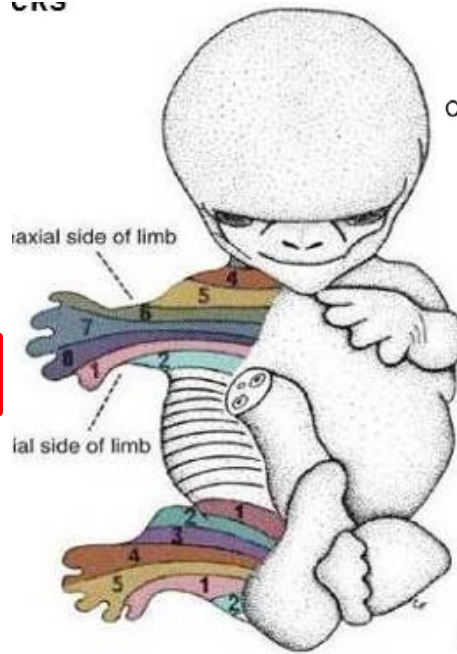
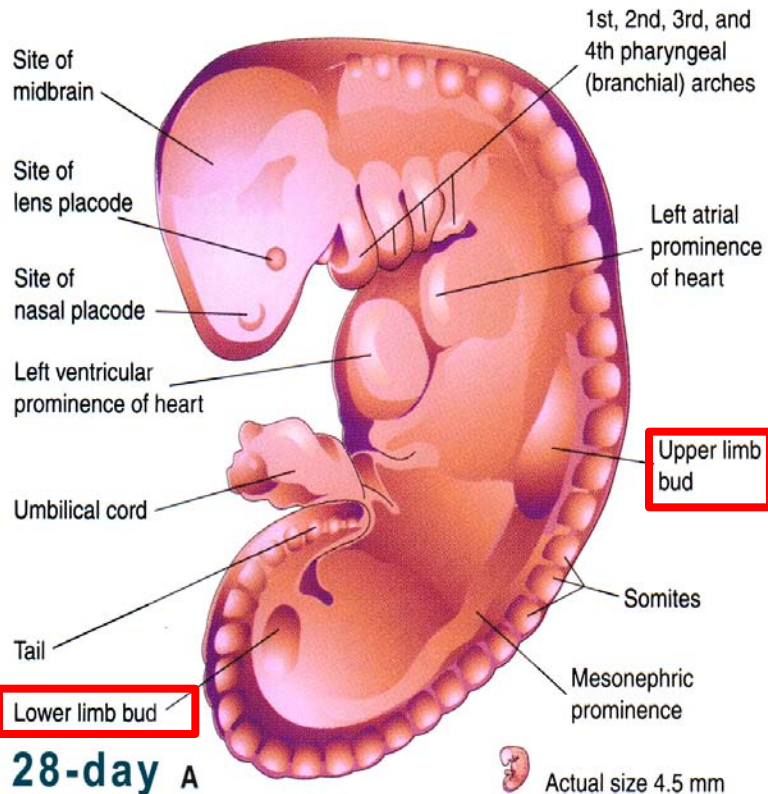
Dermatome of upper limb

- ◆ C3-4: neck, shoulder
- ◆ C5: arm (sup/lat)
- ◆ C6: forearm (lat), thumb
- ◆ C7: 2-4 fingers
- ◆ C8: 4-5 fingers
- ◆ T1: forearm (middle)
- ◆ T2: arm, axillary

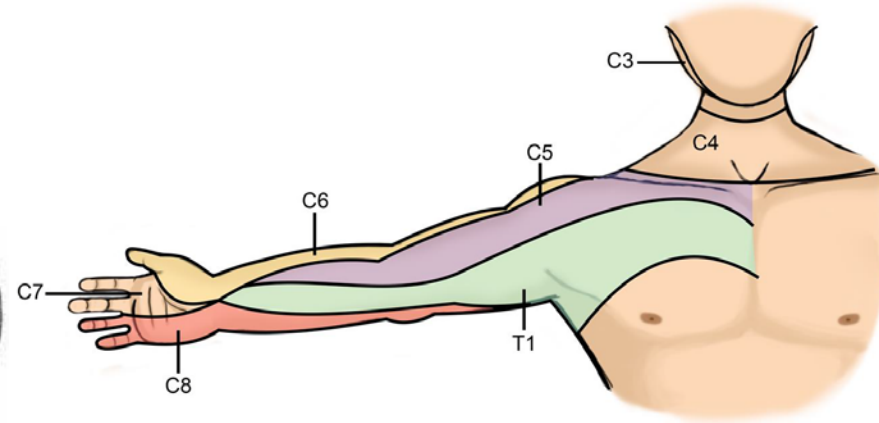


Dermatome: Embryology view

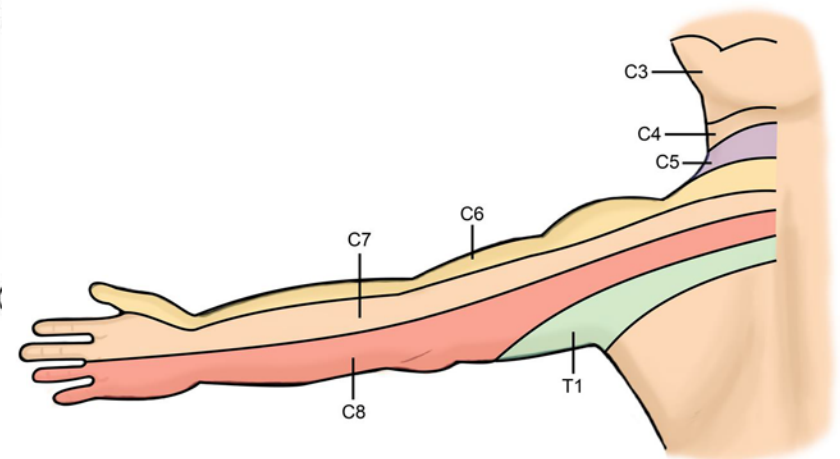
◆ Extremities developed from limb buds in the body wall



Upper Extremity Dermatome Anterior View



Upper Extremity Dermatome Posterior View



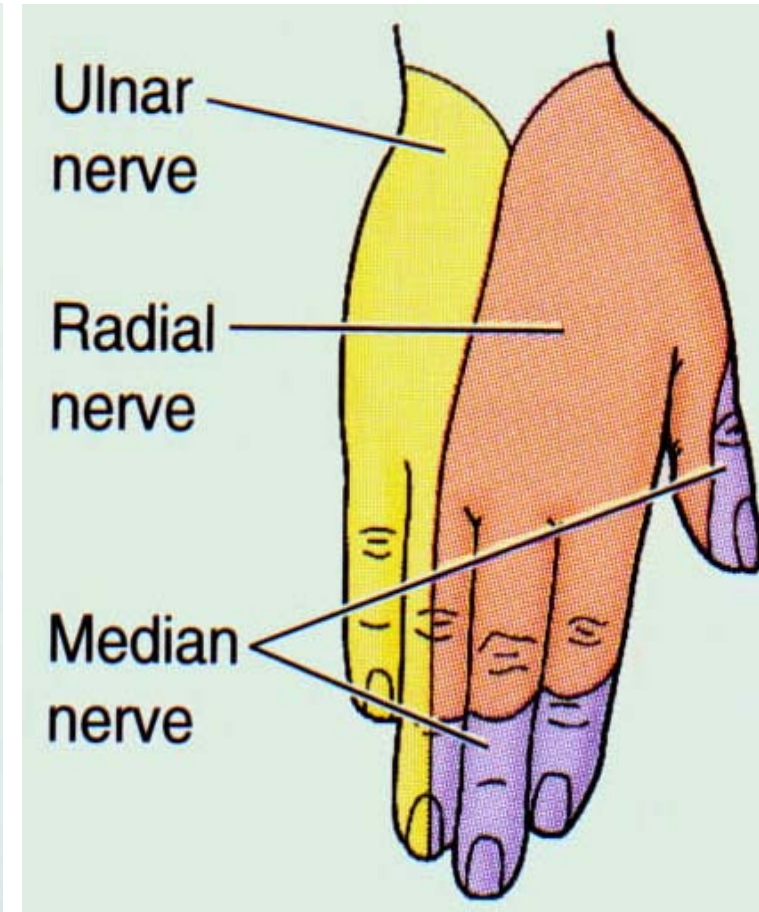
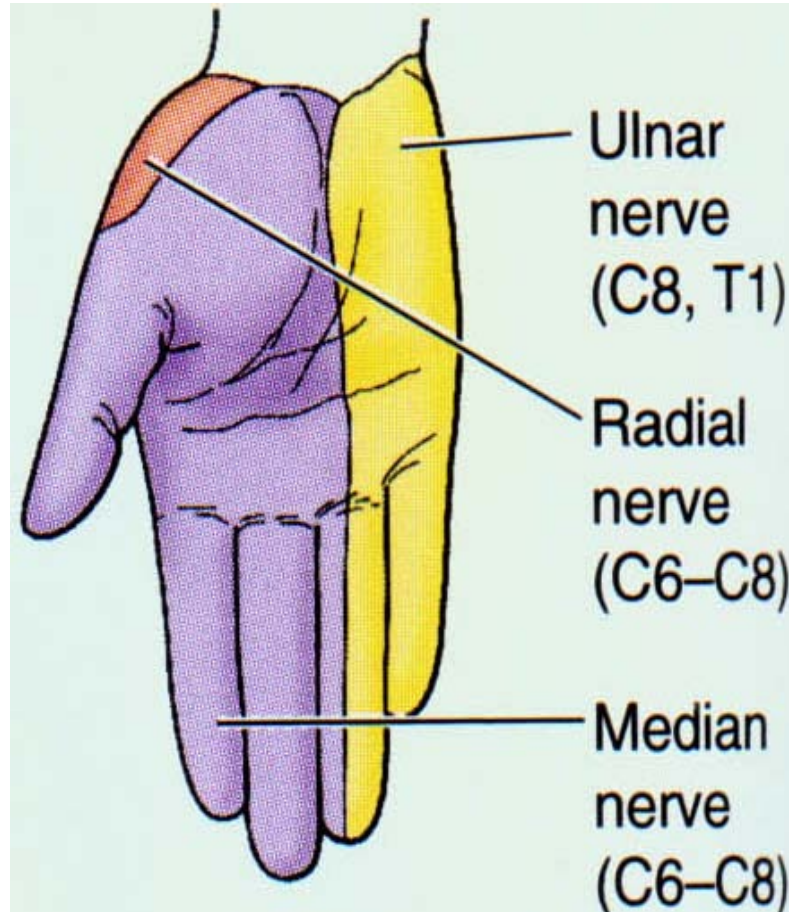
Peripheral nerve territory of upper limbs

◆ Hand/Finger

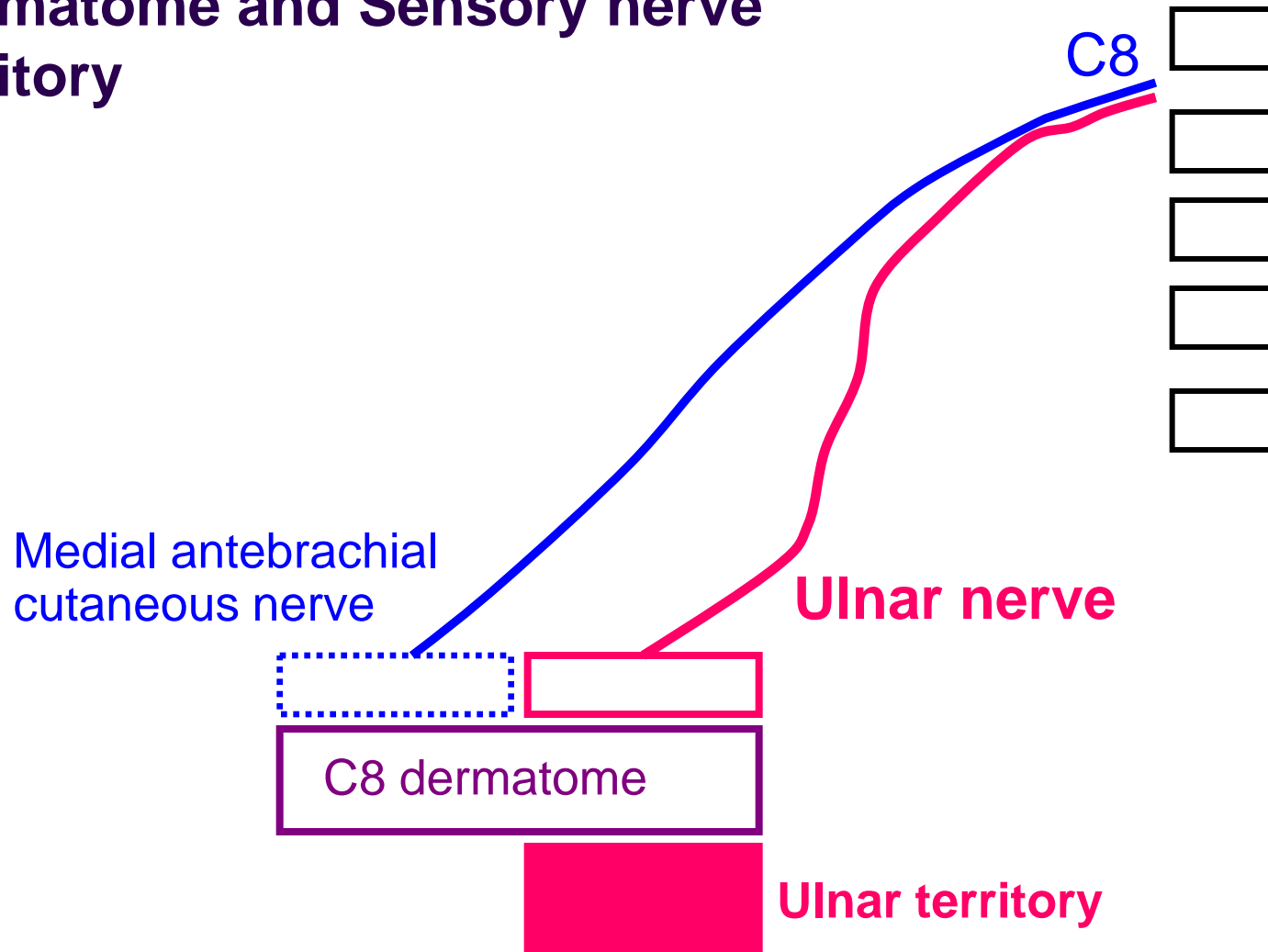
◆ Ulnar

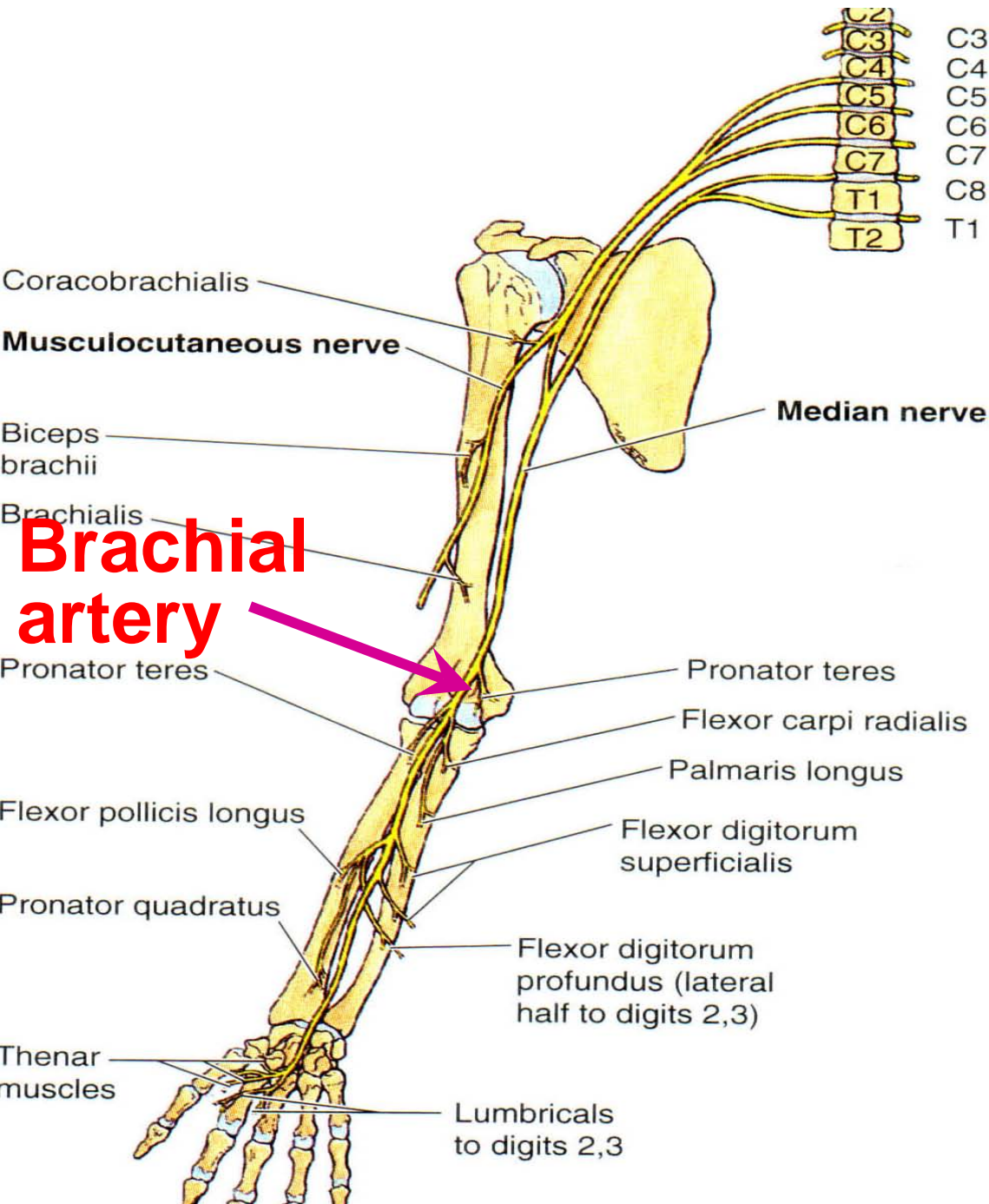
◆ Radial

◆ Median



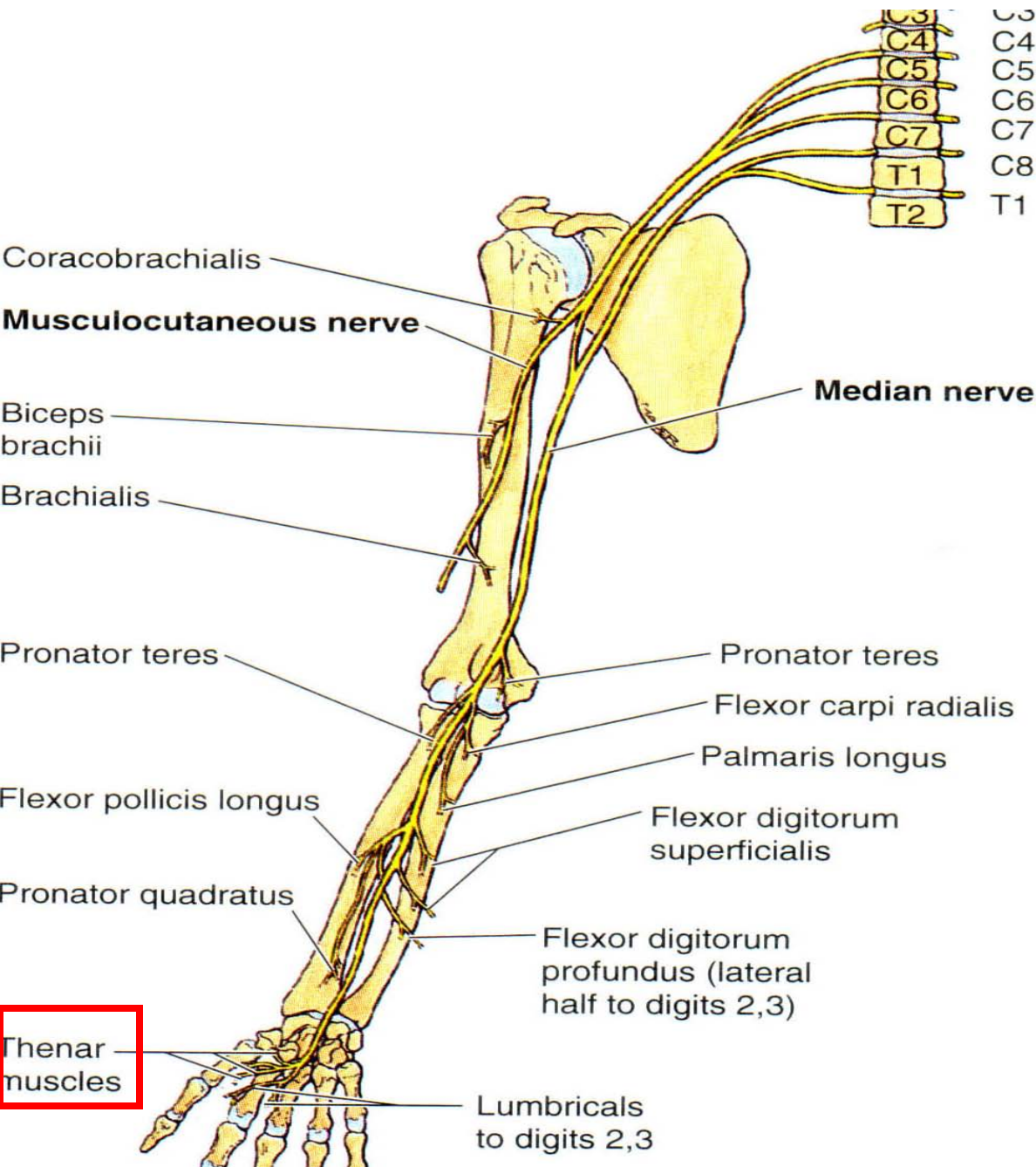
Dermatome and Sensory nerve territory





Median nerve

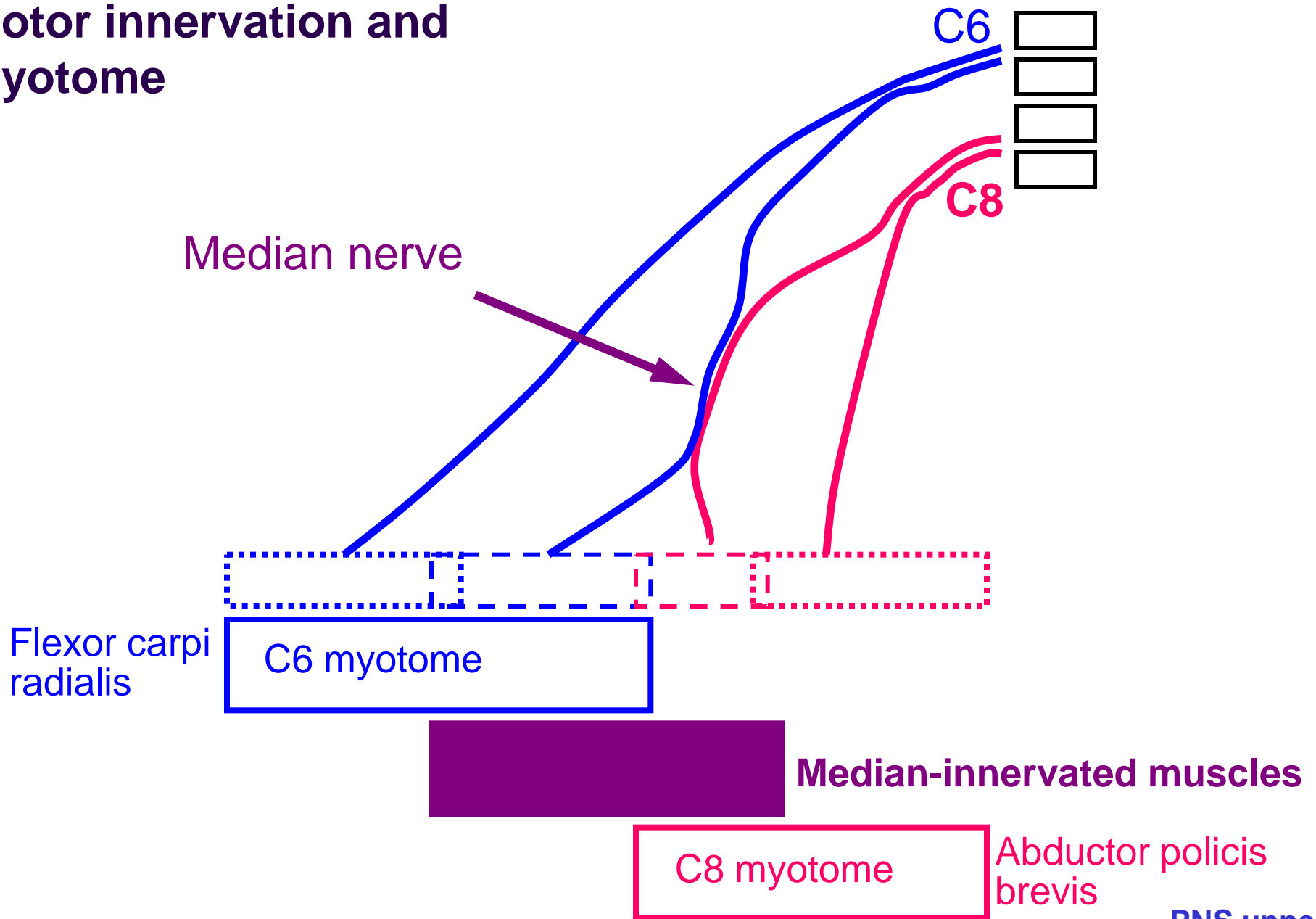
- ◆ Mainly C6-T1; medial to brachial artery
- ◆ Sensory fibers: cutaneous and articular branches
- ◆ Motor fibers
 - ◆ Flexors of wrist
 - ◆ to thenar muscles



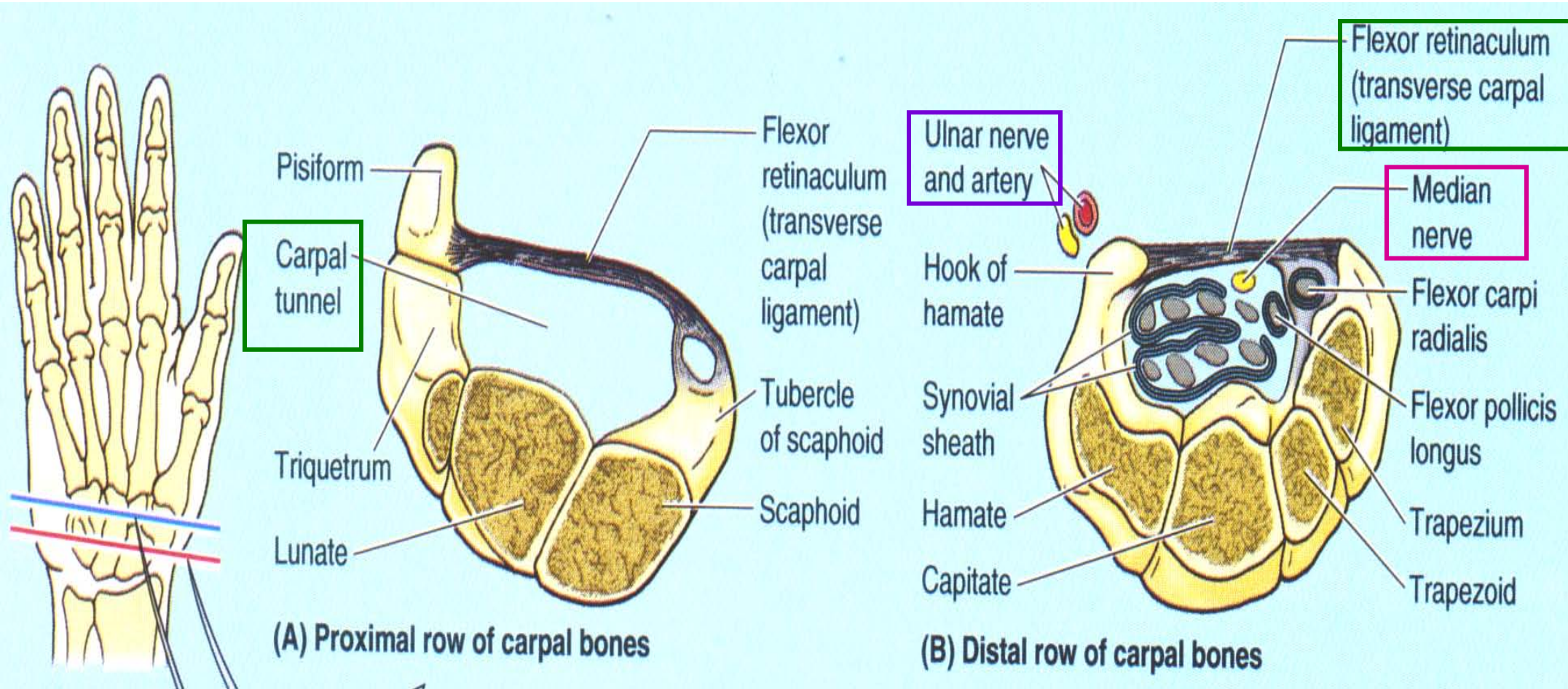
Median N: motor

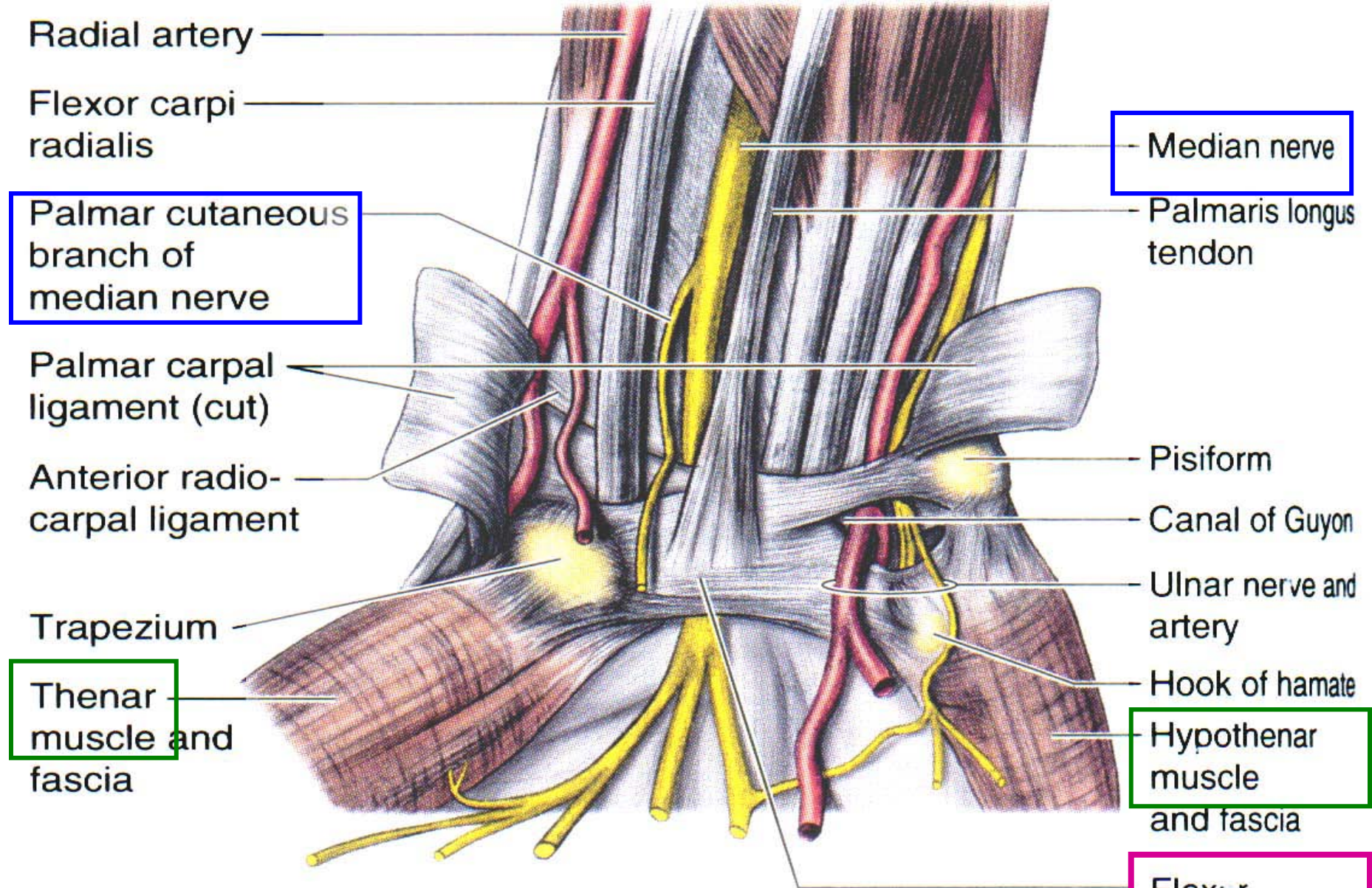
- ◆ Abduction/opposition of thumb
 - ◆ abductor pollicis brevis
 - ◆ opponens pollicis
- ◆ Pronation of forearm
 - ◆ Pronator teres
- ◆ Flexion of hand
 - ◆ Flexor muscles of wrist and fingers

Motor innervation and Myotome



Flexor retinaculum / Carpal tunnel



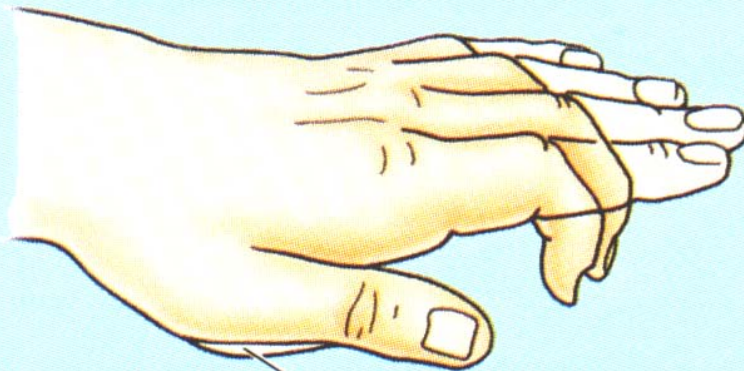


Median nerve lesion at wrist

Median nerve palsy



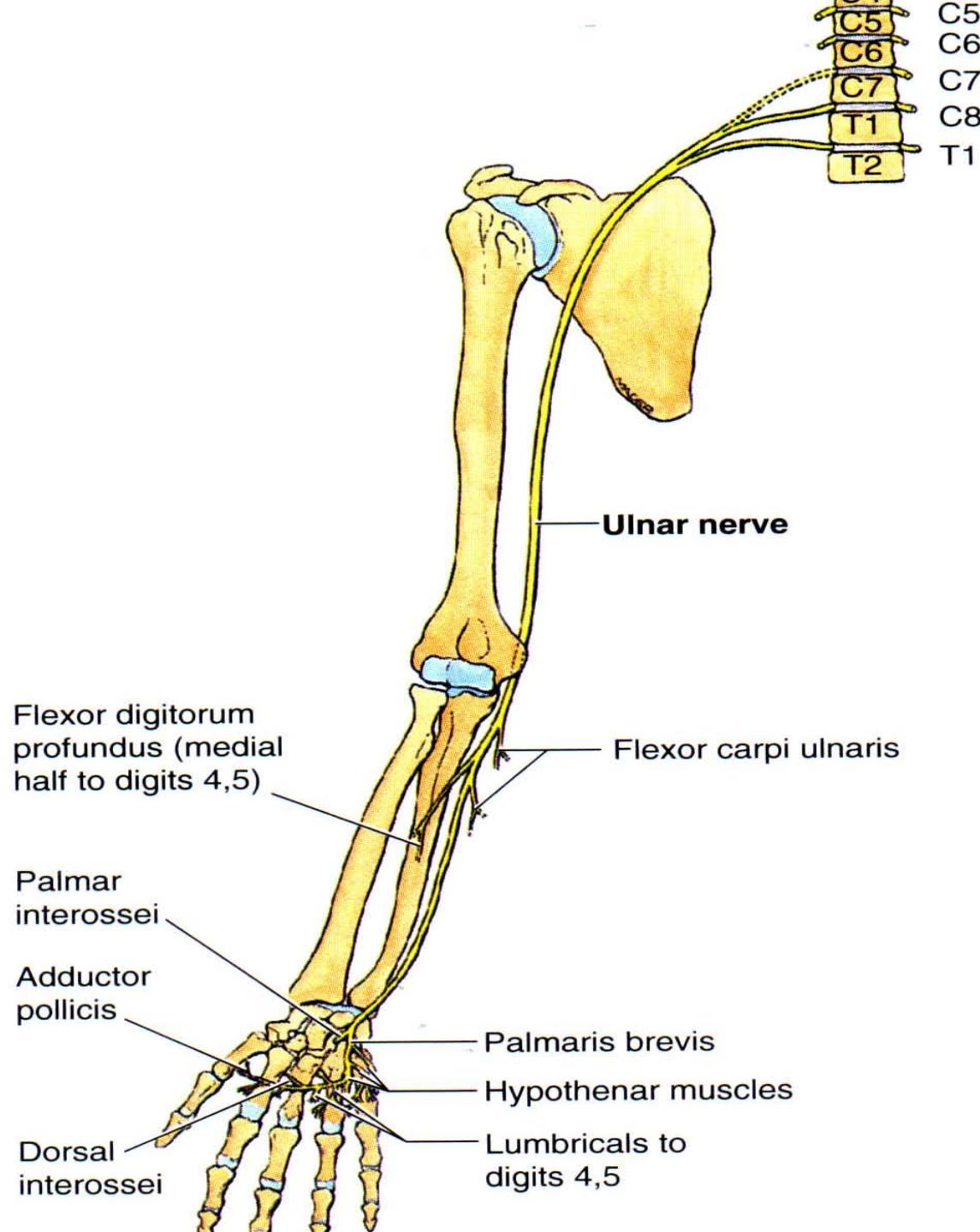
(E) Inability to oppose thumb



(F) Ape hand

Wasting of thenar eminence

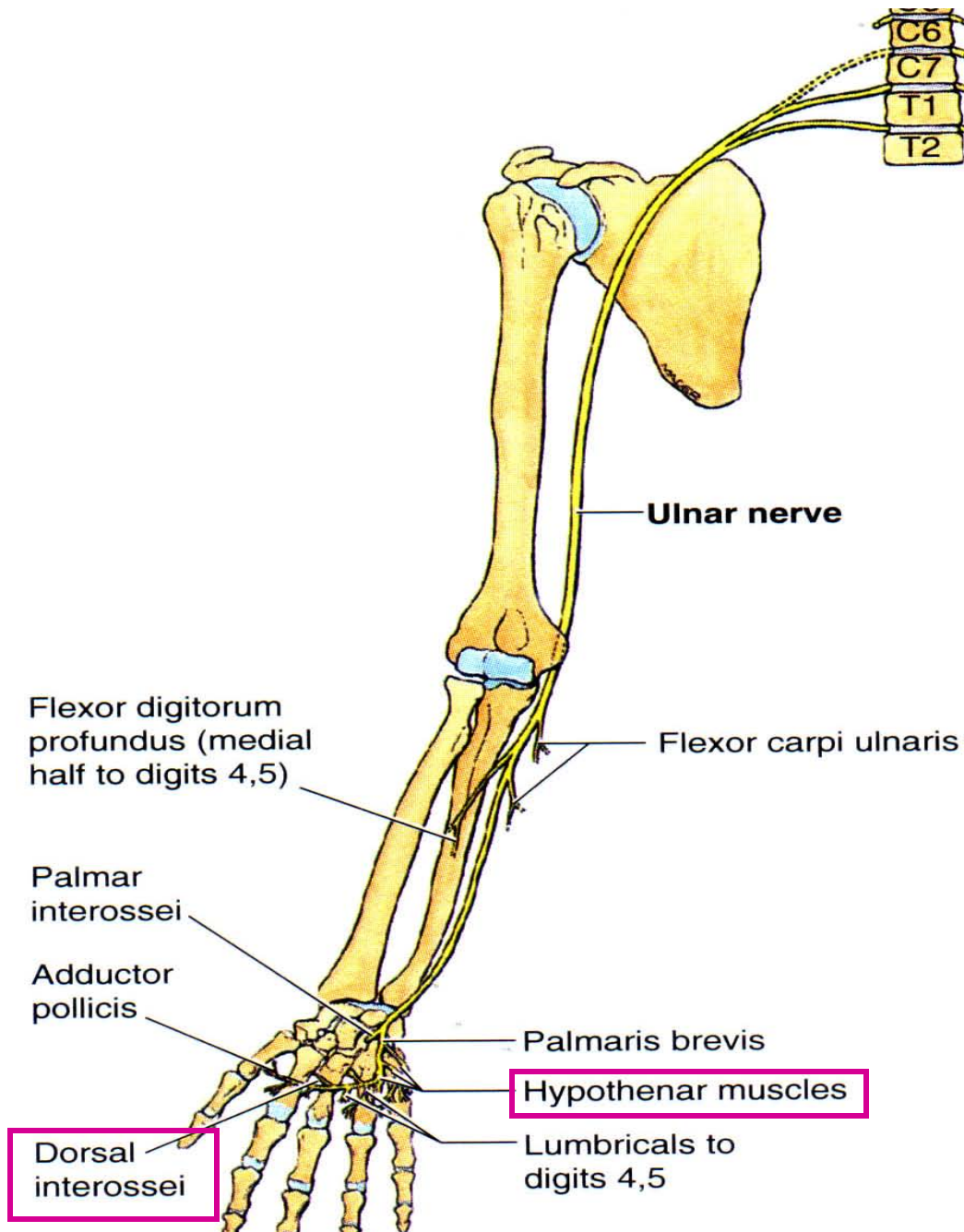
- ◆ Atrophy of thenar muscles: unable to abduct
- ◆ Weakness of thumb opposition
- ◆ only flexion and extension



Ulnar nerve

- ◆ Mainly C7-T1
- ◆ Sensory fibers: cutaneous and articular branches
- ◆ Motor fibers
 - ◆ Flexors of wrist and fingers
 - ◆ Intrinsic hand muscles

Ulnar nerve: motor functions



Flexion of wrist (ulnar side)

◆ Flexor carpi ulnaris

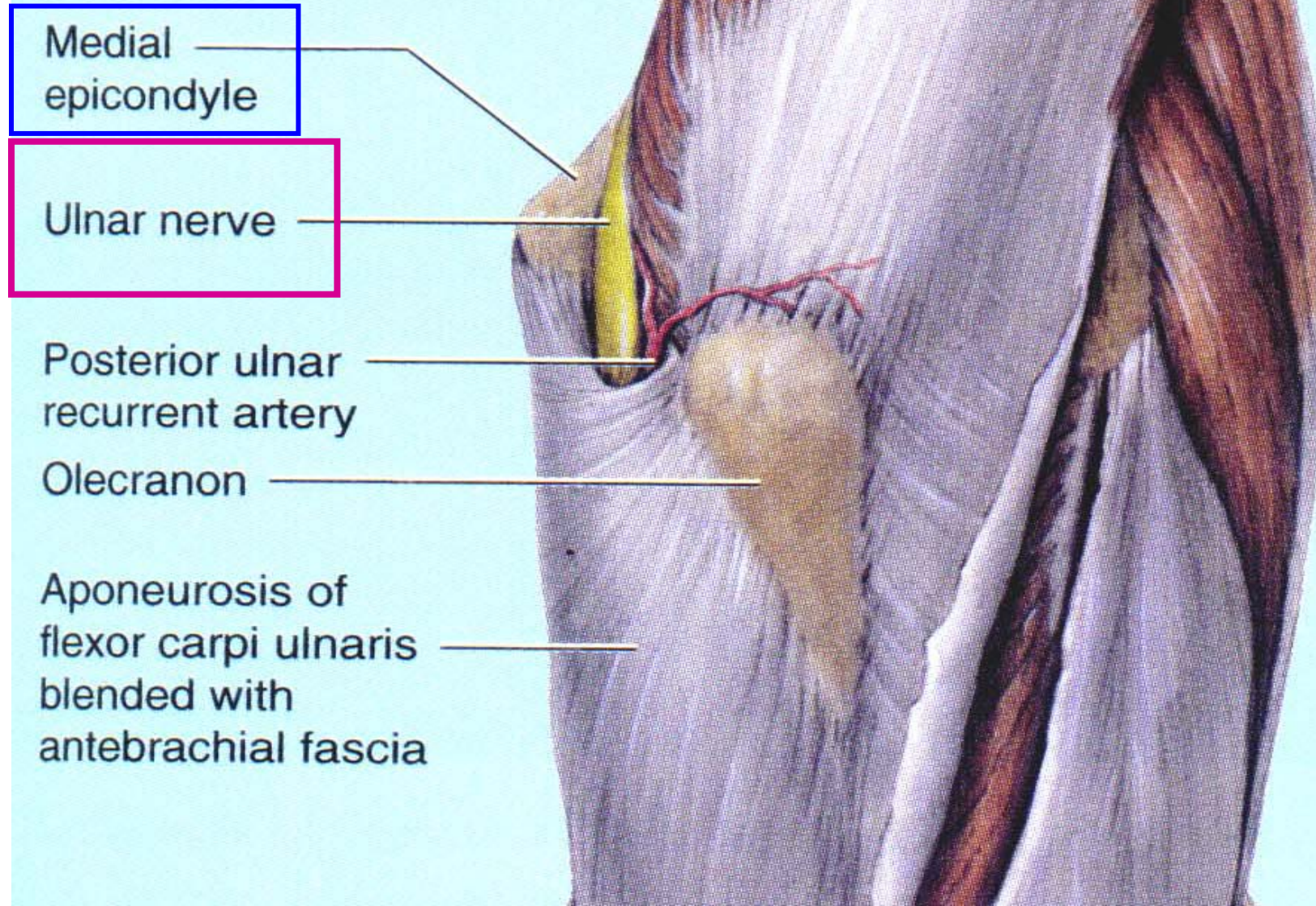
Flexion of 4th, 5th fingers

◆ Flexor digitorum profundus (FPF)

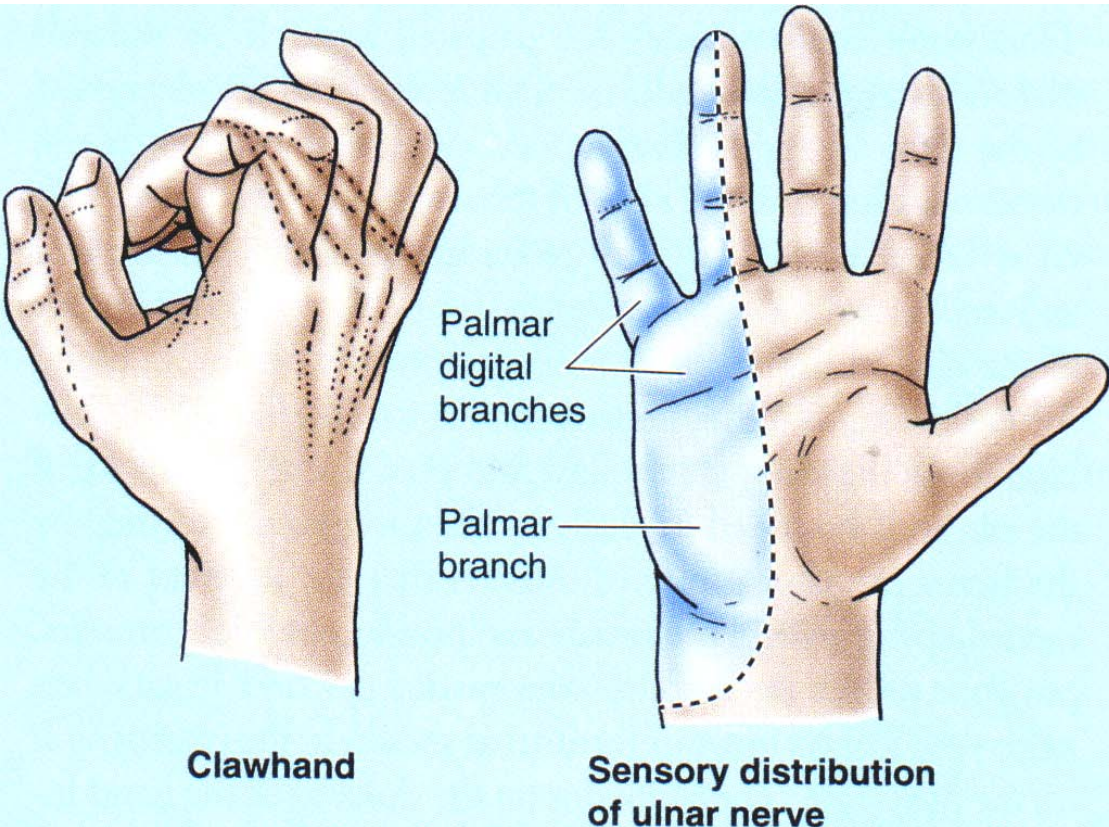
Abduction of index finger

◆ 1st dorsal interosseous

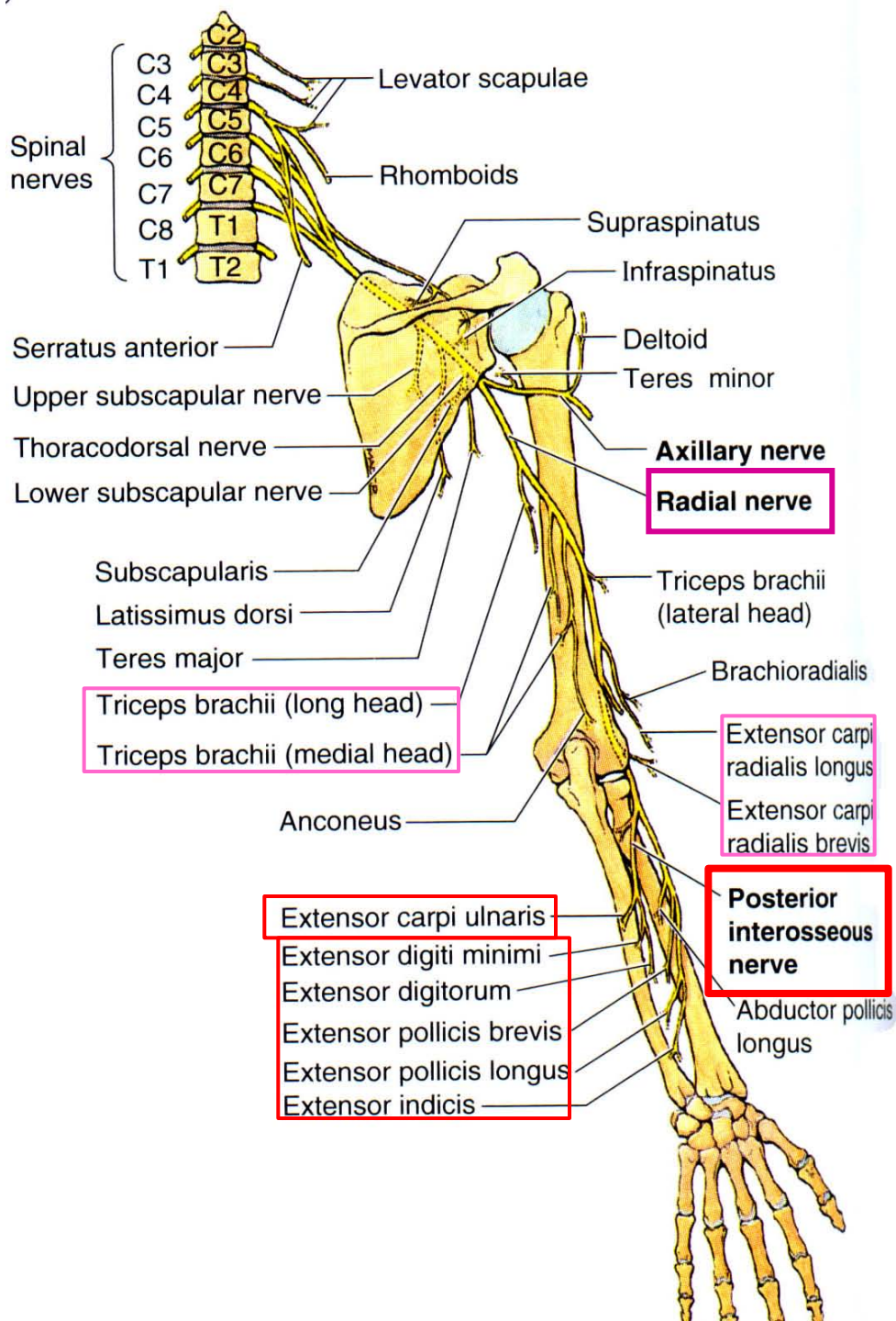
Ulnar nerve lesion



Ulnar nerve palsy



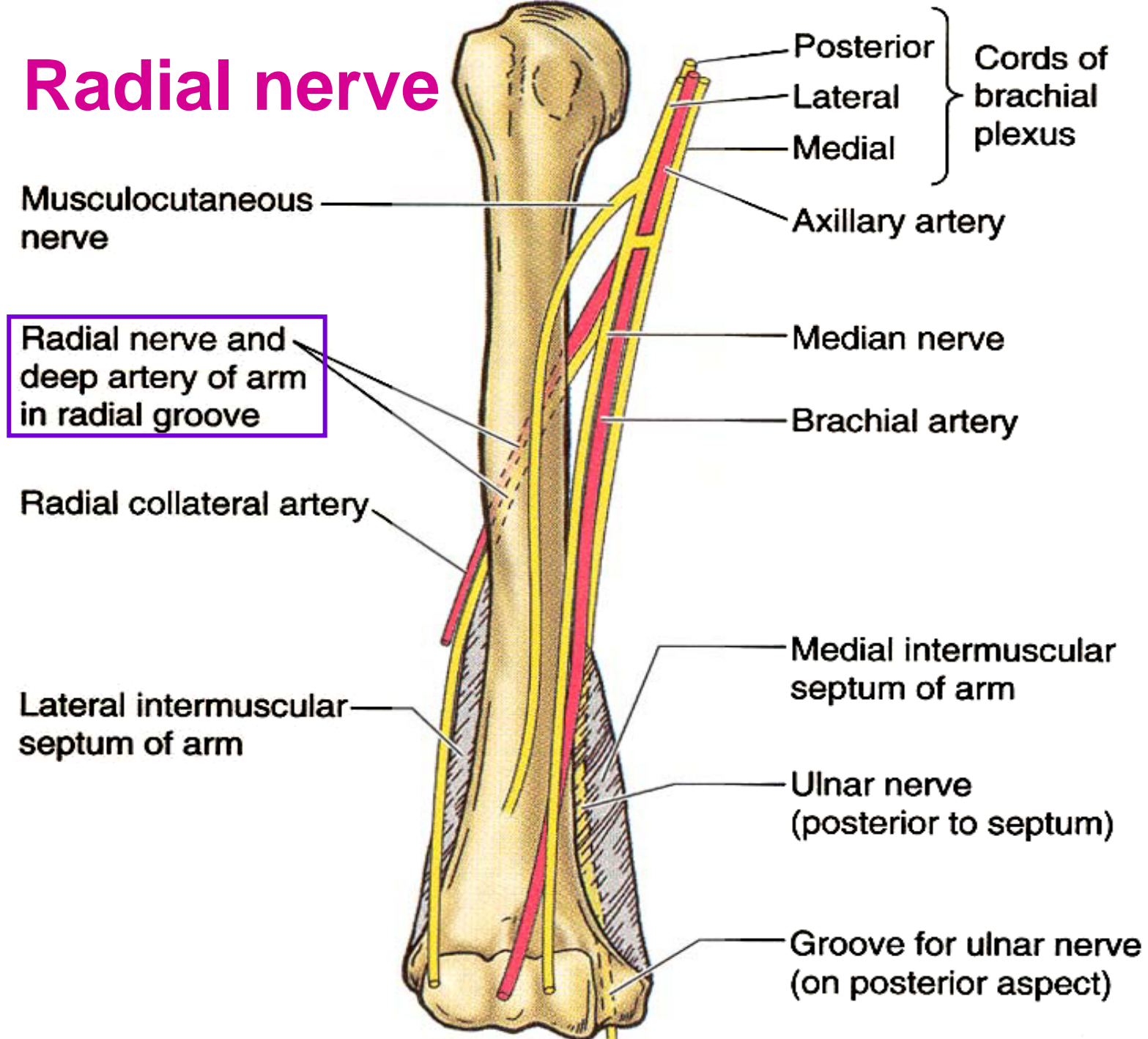
- ◆ Lesion at the elbow: “clawhand”
- ◆ Atrophy of hypothenar muscle
- ◆ Weakness: flexor of 4th, 5th fingers
- ◆ Reduced sensation: 4th, 5th fingers



Radial nerve

- ◆ from post. Cord
 - ◆ vs. axillary nerve lesion
- ◆ for muscles of posterior compartment
- ◆ Elbow extension
 - ◆ Triceps brachii
- ◆ Wrist extension
- ◆ Finger extension

Radial nerve



Posterior }
Lateral } Cords of
Medial } brachial
plexus

Musculocutaneous
nerve

Radial nerve and
deep artery of arm
in radial groove

Radial collateral artery

Lateral intermuscular
septum of arm

Axillary artery

Median nerve

Brachial artery

Medial intermuscular
septum of arm

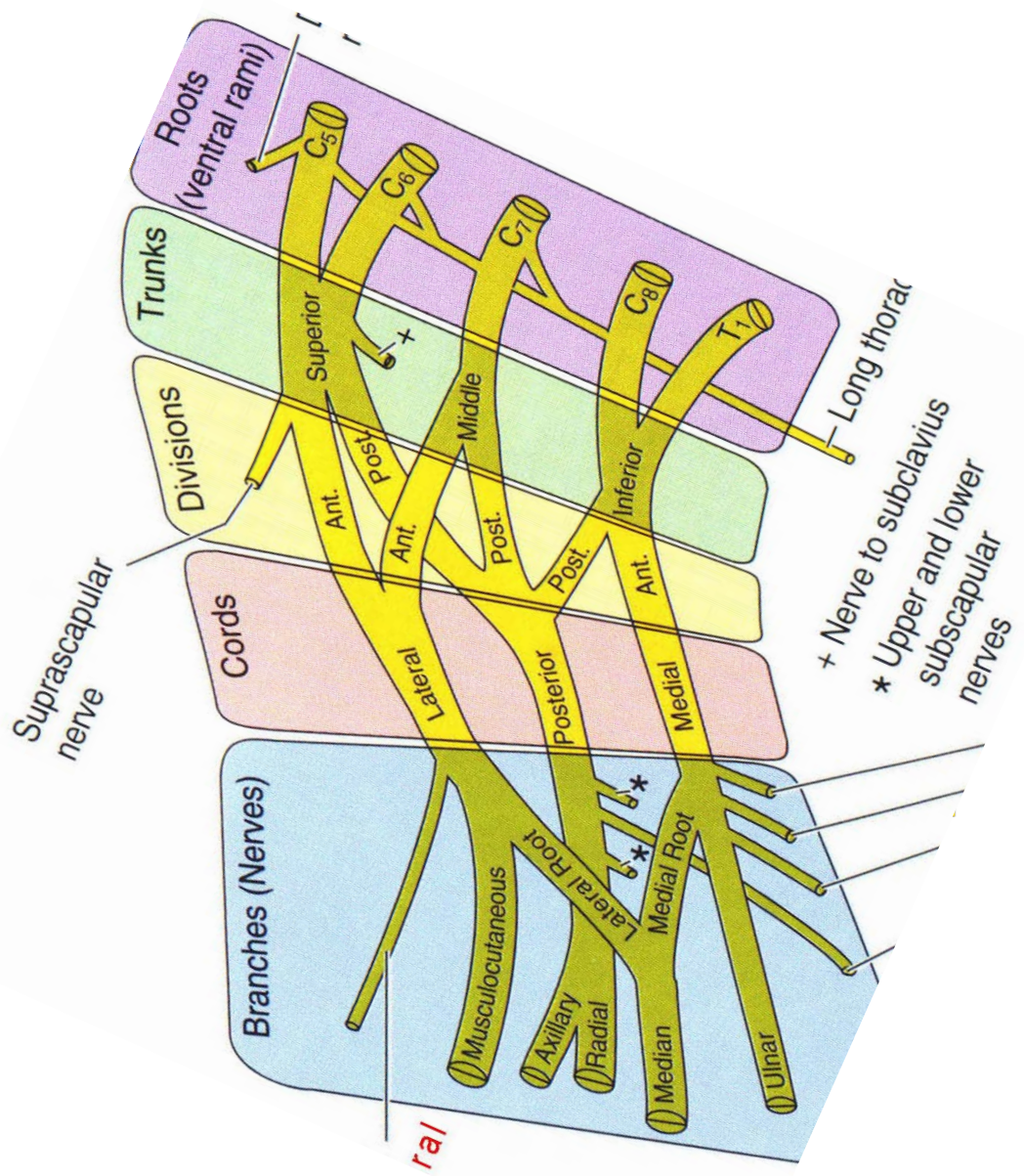
Ulnar nerve
(posterior to septum)

Groove for ulnar nerve
(on posterior aspect)

Radial nerve palsy

Saturday night palsy, Honeymoon palsy





Nerves in upper limb

◆ Brachial plexus

- ◆ Musculocutaneous nerve
- ◆ Median nerve
- ◆ Ulnar nerve
- ◆ Radial nerve
- ◆ Axillary nerve

◆ Functional innervation

- ◆ motor and sensory
- ◆ deficits on nerve injury

