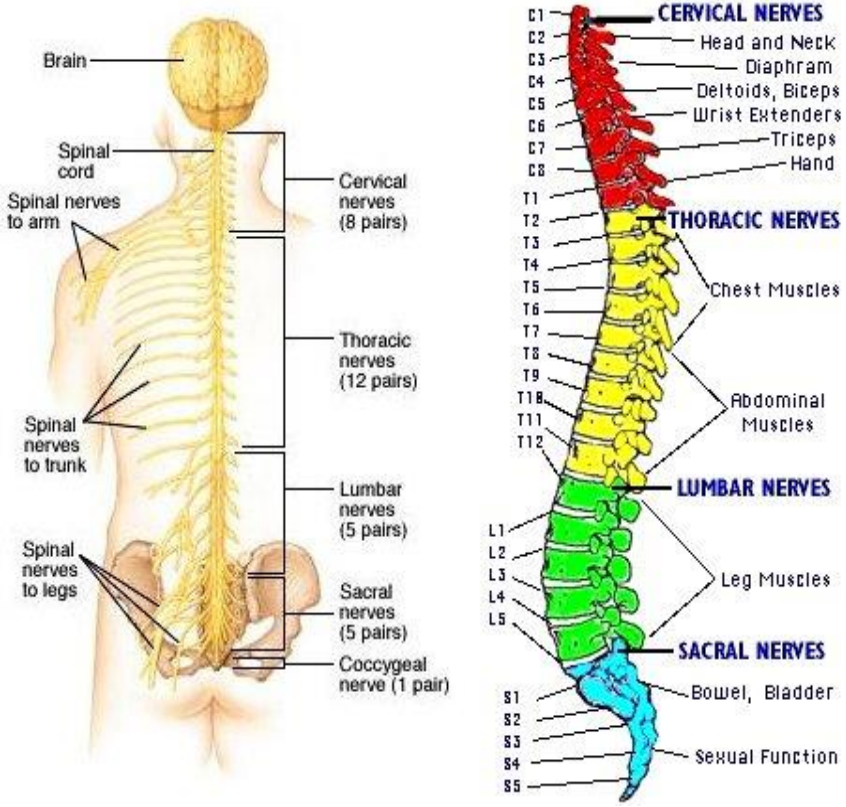
BRACHIAL PLEXUS

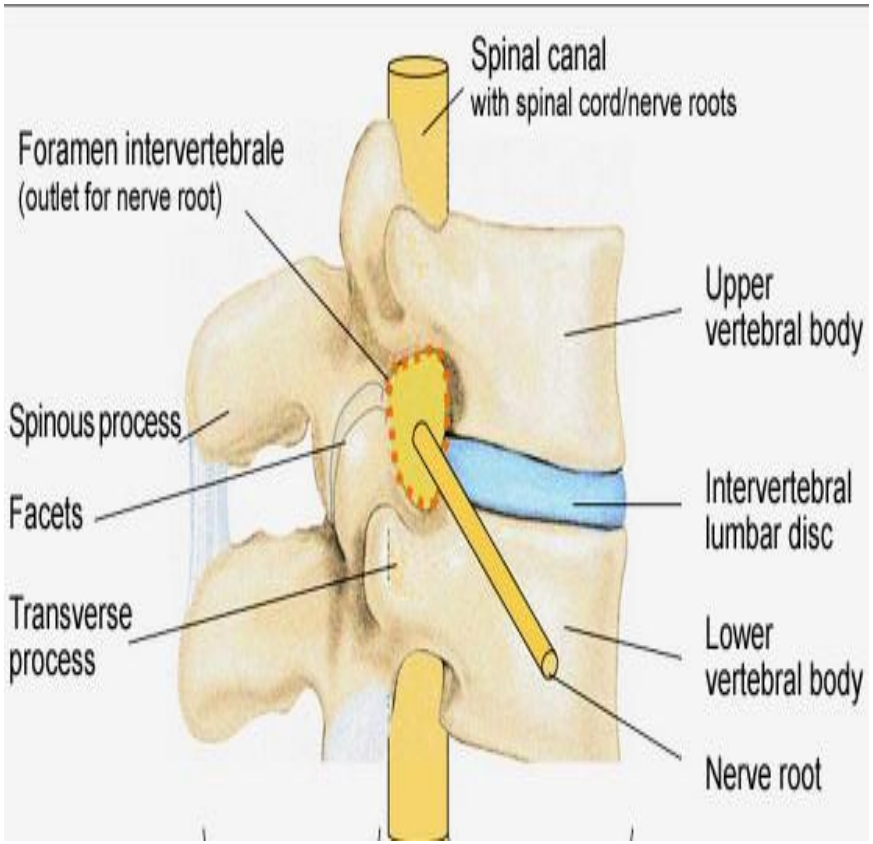
BASRA UNIVERSITY/ COLLEGE OF MEDICINE
DEPARTMENT OF HUMAN ANATOMY

DR.SAMER AL-NUSSAIRI

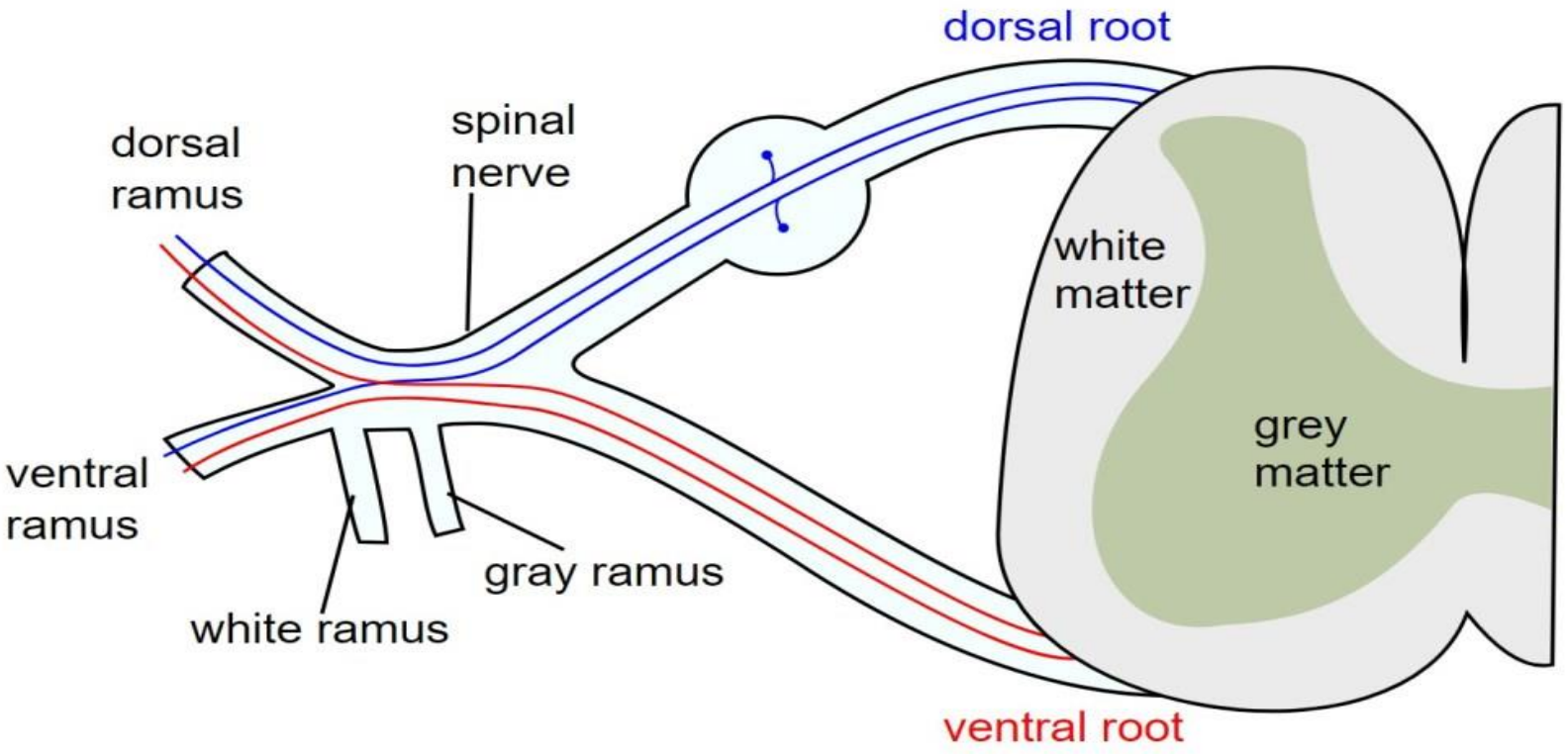
THE SPINAL NERVES

31 pairs of nerves spring from the spinal cord and are transmitted through the intervertebral foramina.



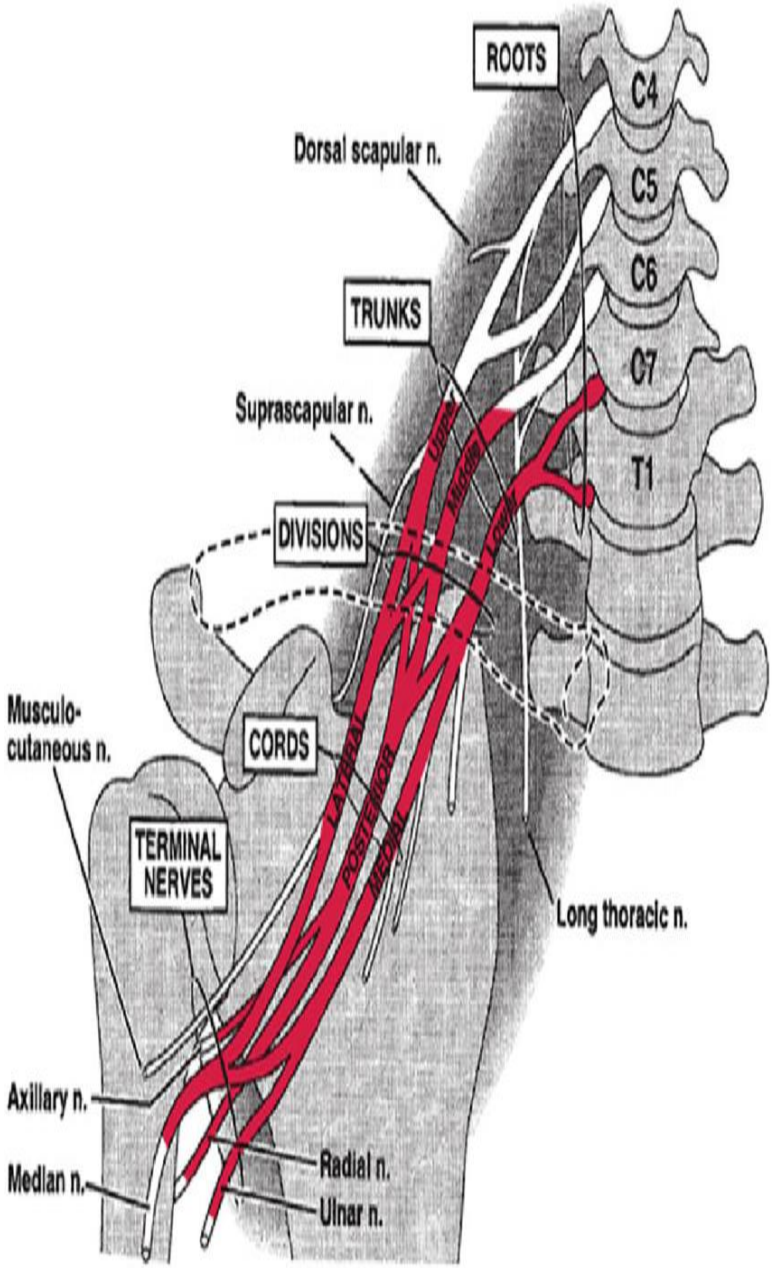


All plexuses arising from the ventral rami of spinal nerves contain sensory, motor, and autonomic fibers.



BRACHIAL PLEXUS

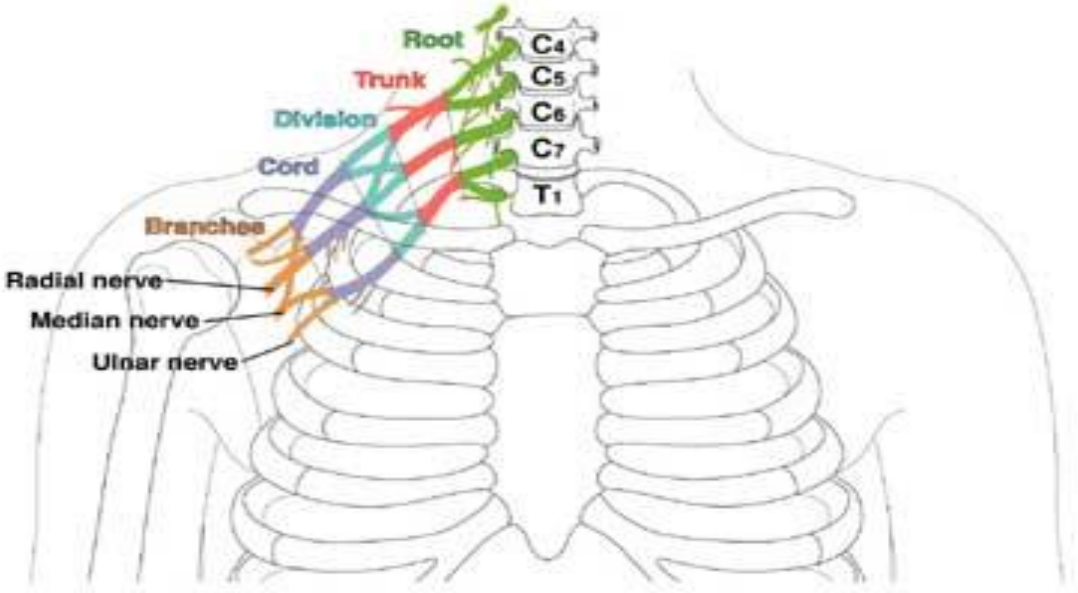
- A major nerve network supplying the upper limb (UL).
- Originates in neck, passes laterally and inferiorly over first rib to enter axilla.
- Most of its branches are given in axilla.
- The brachial plexus divided into four major parts: **ROOTS, TRUNKS, DIVISIONS, CORDS, TERMINAL NERVES**



BRACHIAL PLEXUS

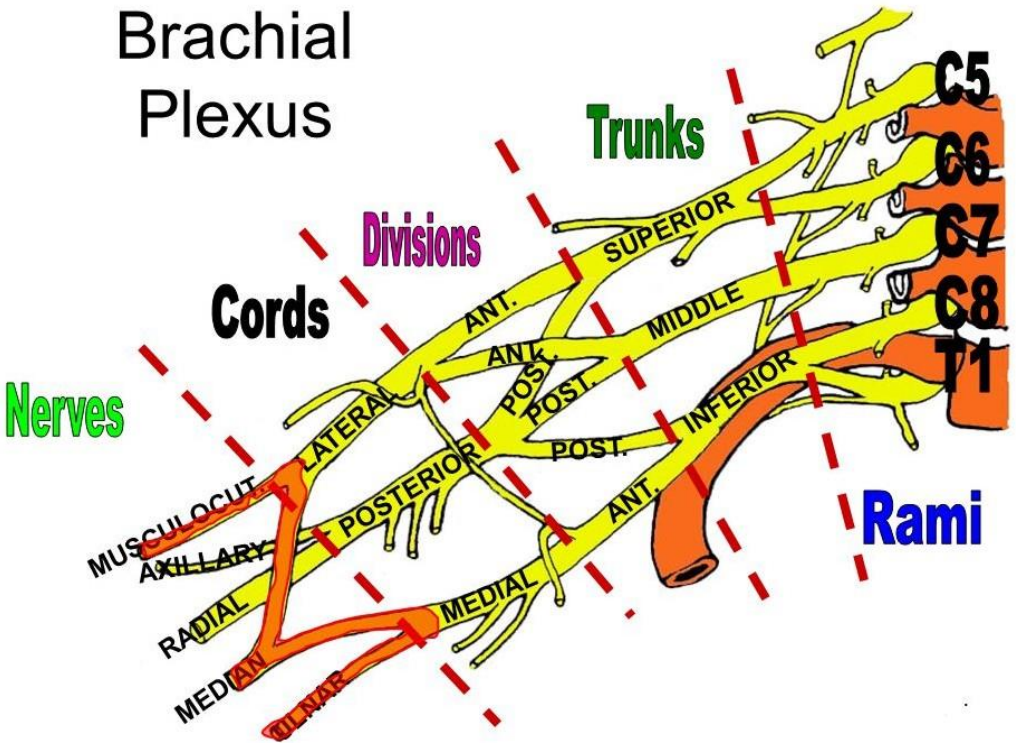
- The nerves entering the upper limb at the root of the neck, and form a complicated plexus called the ***Brachial plexus***.

- The roots, trunks & divisions of the brachial plexus present in posterior triangle of the neck, whereas the cords and most of the branches of the plexus lie in the axilla.



BRACHIAL PLEXUS

The brachial plexus is formed in the posterior triangle of the neck by the union of the anterior rami of the **5th, 6th, 7th, and 8th** cervical and the **1st** thoracic spinal nerves.

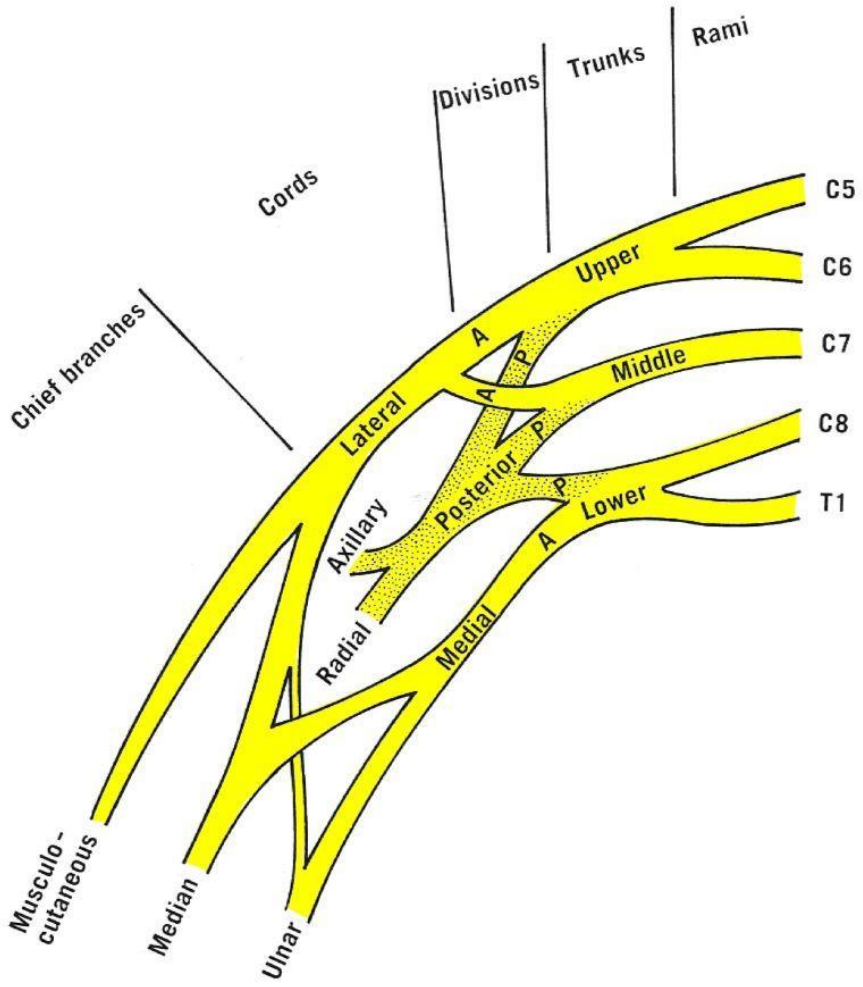


BRACHIAL PLEXUS

-The roots of C5 and C6 unite to form the ***upper trunk.***

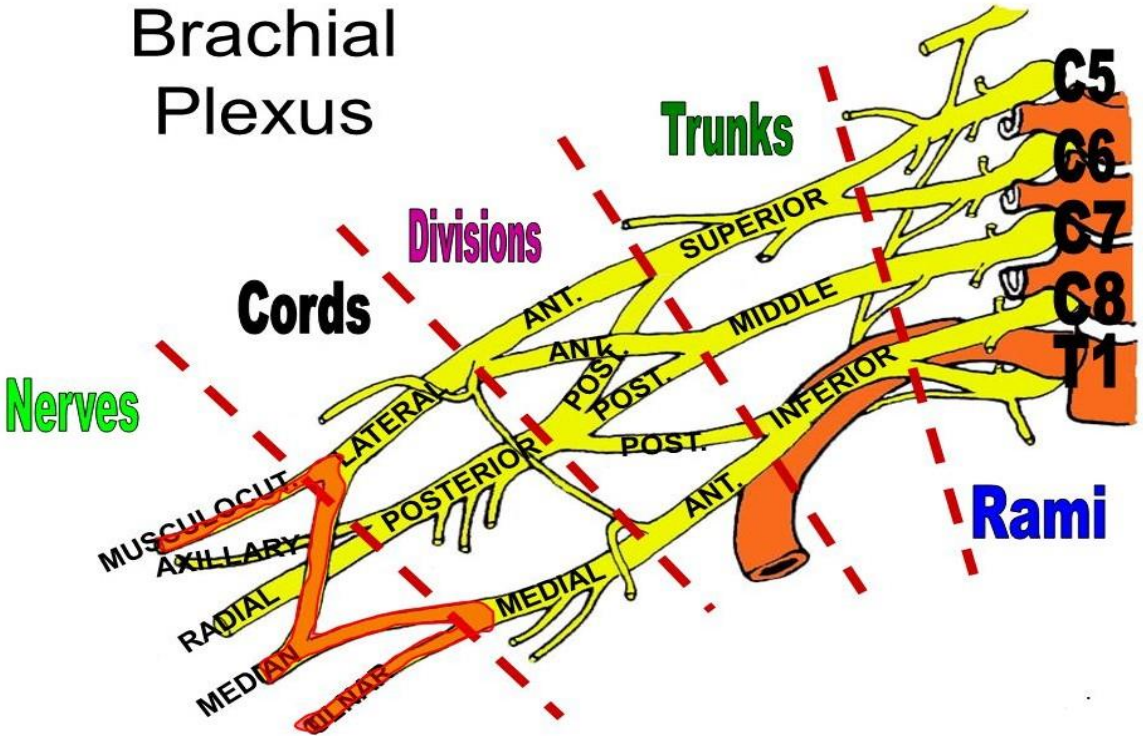
- The root of C7 continues as the ***middle trunk.***

- The roots of C8 and T1 unite to form the ***lower trunk***.



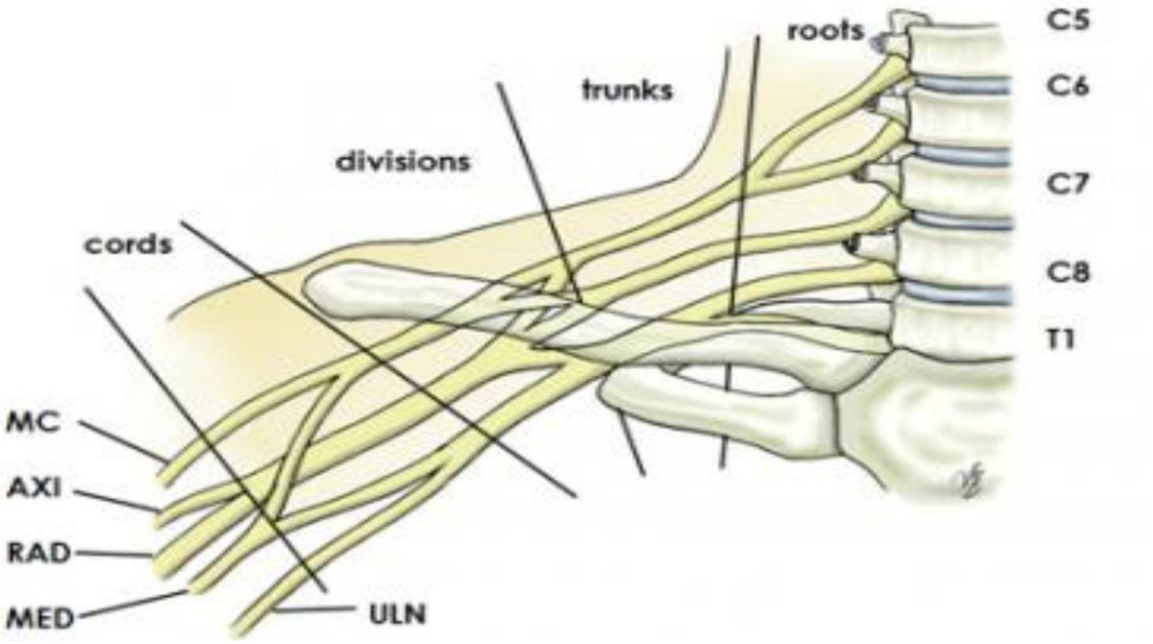
BRACHIAL PLEXUS

Each trunk then divides into ***anterior division*** and ***posterior division***. The anterior division of the upper and middle trunks unite to form the **lateral cord**, the anterior division of the lower trunk continues as the **medial cord**, and the posterior divisions of all three trunks join to form the **posterior cord.**



BRACHIAL PLEXUS

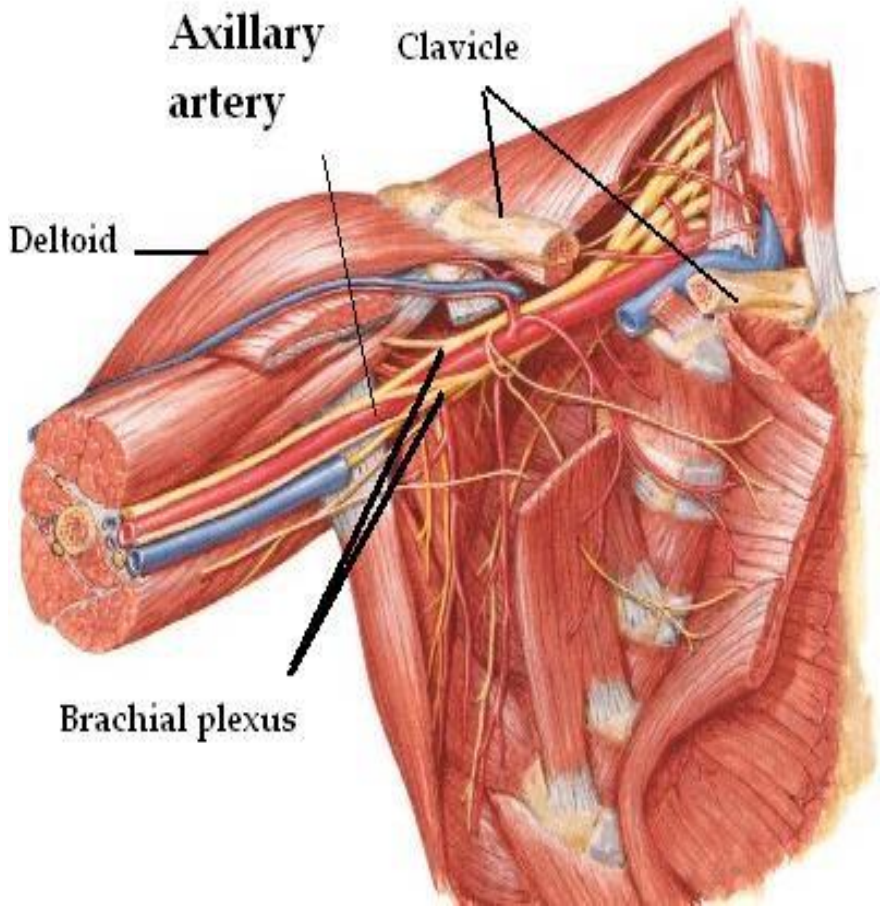
The roots, trunks, and divisions are in the posterior triangle of the neck. The cords become arranged around the axillary artery in the axilla. Here, the brachial plexus and the axillary artery and vein are enclosed in the axillary sheath.



BRACHIAL PLEXUS

Cords of the Brachial Plexus:

All three cords of the brachial plexus lie above & lateral to the first part of the axillary artery. ***The medial cord*** crosses behind the artery to reach the medial side of the second part of the artery. ***The posterior cord*** lies behind the second part of the artery. ***The lateral cord*** lies on the lateral side of the second part of the artery.



BRANCHES OF THE DIFFERENT PARTS OF THE BRACHIAL PLEXUS

Root branches:

1 Dorsal scapular n (C5):

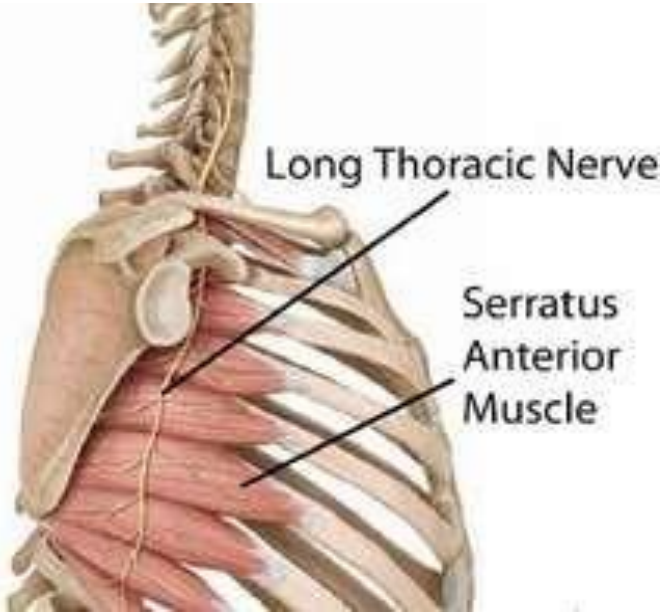
Pierces middle scalene muscle & continues deep to the levator scapulae & the rhomboids supplying them (LS, R major & R minor)

2- Nerve to subclavus (C5&6):

Small nerve supplies the muscle

3- Long thoracic n (C5, 6 & 7):

- Leave the lateral surface of scalene muscles. Descends behind the axillary artery. Lies on side of serratus m supplying its degitations

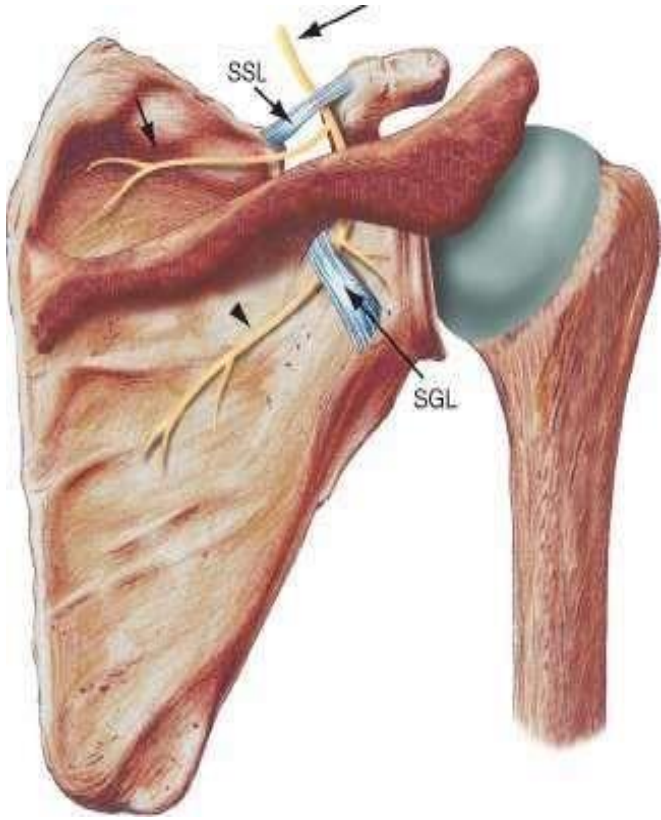


BRANCHES OF THE DIFFERENT PARTS OF THE PLEXUS

Trunk branches:

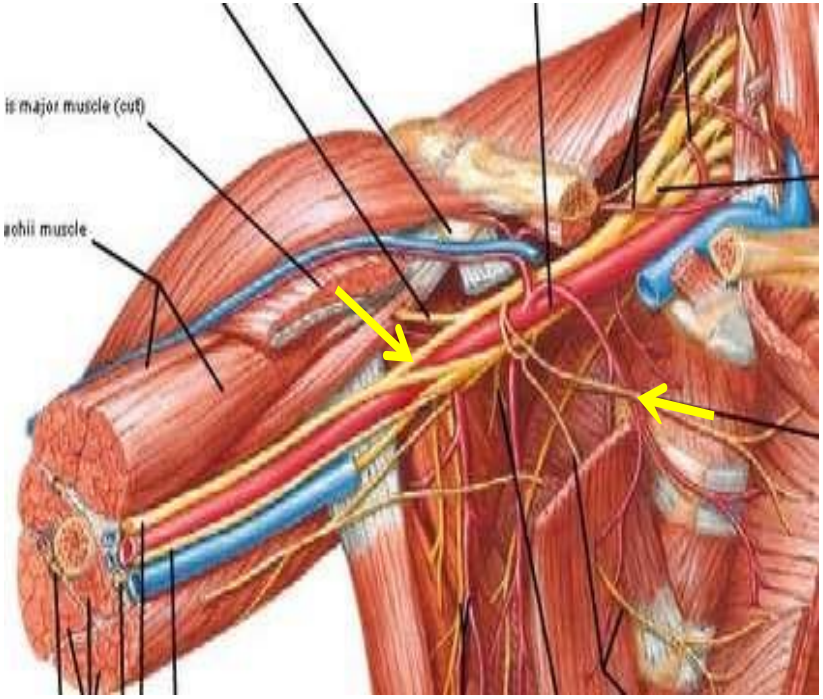
Suprascapular n (C5 & 6):

- Arises from the upper trunk.
- Passes in the posterior cervical triangle.
- Enters the scapular region below the transverse scapular ligament to supply supraspinatus & infraspinatus muscles.
- Gives sensory branches to the shoulder joint.



BRANCHES OF THE DIFFERENT PARTS OF THE BRACHIAL PLEXUS

Cords branches:



Lateral cord branches:

1- Lateral pectoral n (C5-7):

- Pierces the clavipectoral fascia.
- Enters the deep surface of pectoralis major to supply it.

2- Lateral head of median n (C5-7):

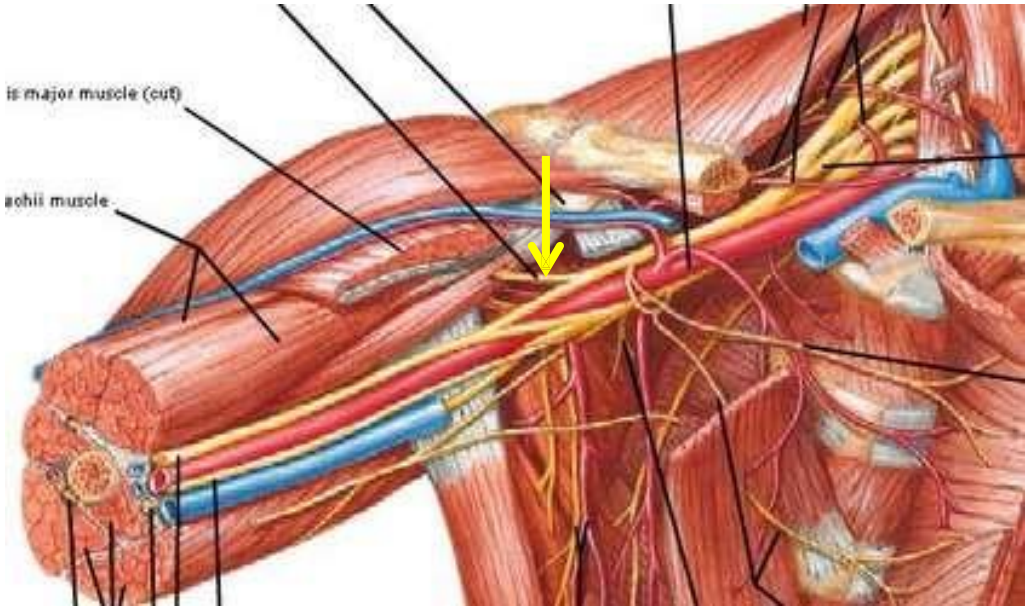
Leaves the lateral cord & goes medially to join the medial head in front of the axillary artery forming the median nerve.

BRANCHES OF THE DIFFERENT PARTS OF THE BRACHIAL PLEXUS

3- Musculocutaneous n (C5-7):

- Pierces coracobrachialis and enters the arm to supply muscles of the anterior compartment of arm.

- Continues as the lateral cutaneous nerve of the forearm.



BRANCHES OF THE DIFFERENT PARTS OF THE BRACHIAL PLEXUS

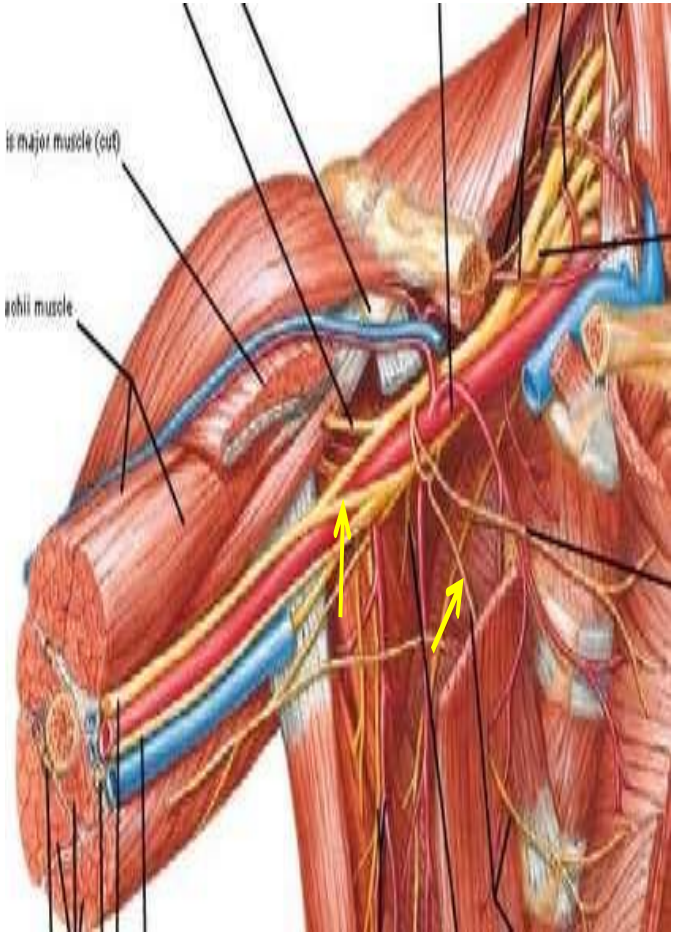
Medial cord branches:

1- Medial pectoral n (C8 &T1):

- Enters the deep surface of pectoralis minor to supply it.
- Leaves the minor muscle & enters pectoralis major supplying it too.

2- Medial head of median n (C8 &T1):

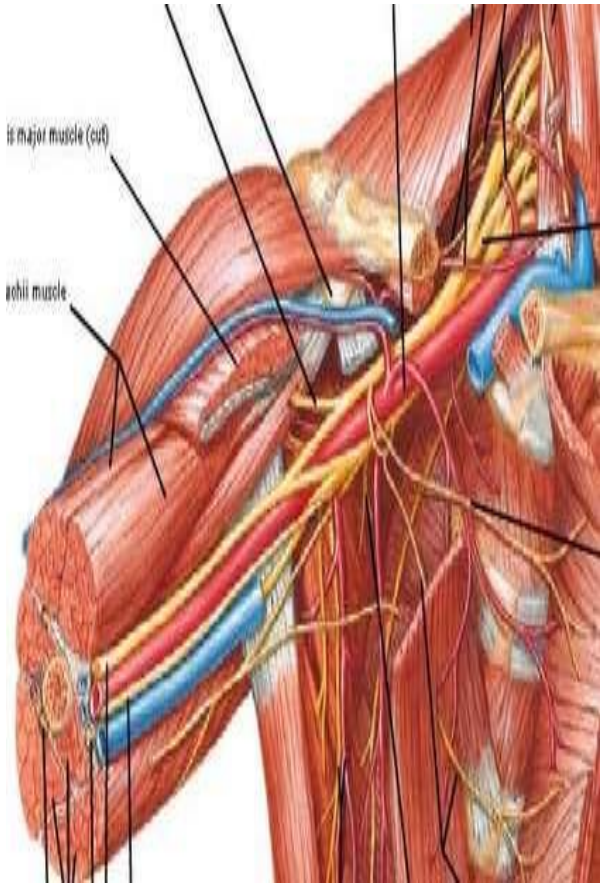
-Leaves the medial cord & goes laterally to join the lateral head in front of the axillary artery forming the median nerve.



BRANCHES OF THE DIFFERENT PARTS OF THE BRACHIAL PLEXUS

3- Medial cutaneous n of arm (C8 &T1):

- Smallest branch of BP, lies medial to the axillary vein.
- Descends in the arm & supplies the lower ½ of medial skin of the arm.



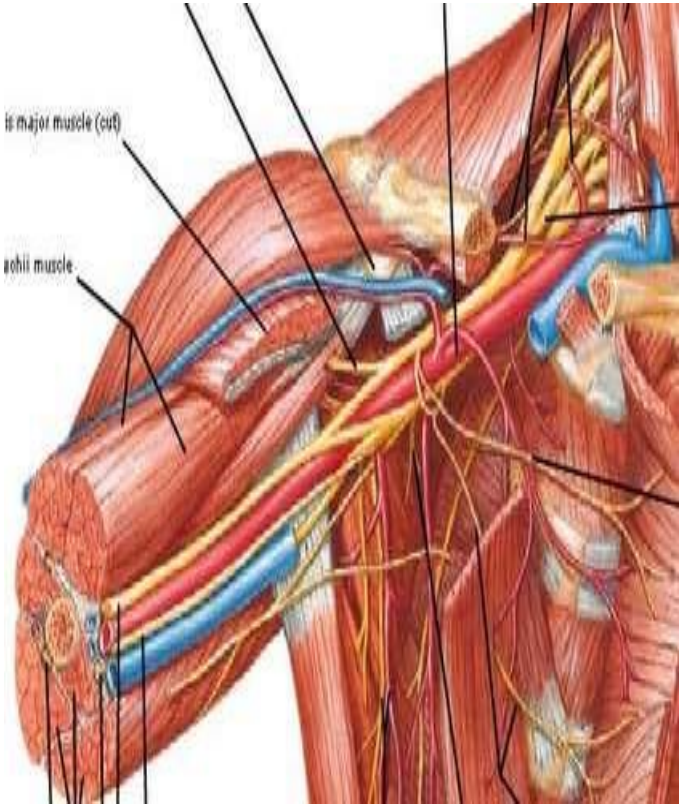
4- Medial cutaneous n of forearm (C8 &T1):

- Lies between the axillary vessels.
- Accompany brachial artery.
- Pierces arm fascia with basilic vein.
- Supplies the forearm skin.

BRANCHES OF THE DIFFERENT PARTS OF THE BRACHIAL PLEXUS

5- Ulnar n (C8 &T1):

- The continuation of the medial cord.
- Receives C7 fibers from the lateral cord.
- It’s the main nerve of the hand
- It’s injury causes ***claw hand.***



BRANCHES OF THE DIFFERENT PARTS OF THE BRACHIAL PLEXUS

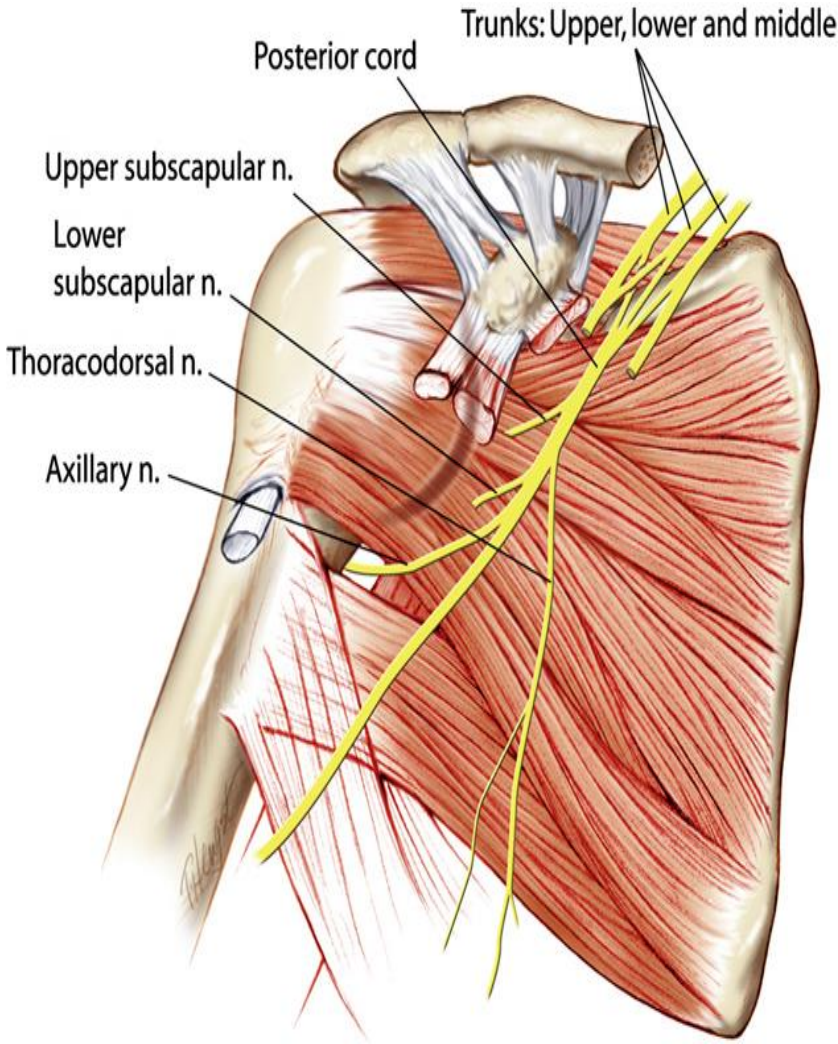
Posterior cord branches:

1- Upper subscapular nerves (C5-C6): pierce the upper part of subscapularis supplying it.

2- Lower **scapular nerves (C5,C6):** supplies the lower part of subscapularis & teres major.

3- Thoracodorsal nerve (C6-8):

- Descends on the subscapular muscle.
- Enters latissimus dorsi near its insertion supplying it.



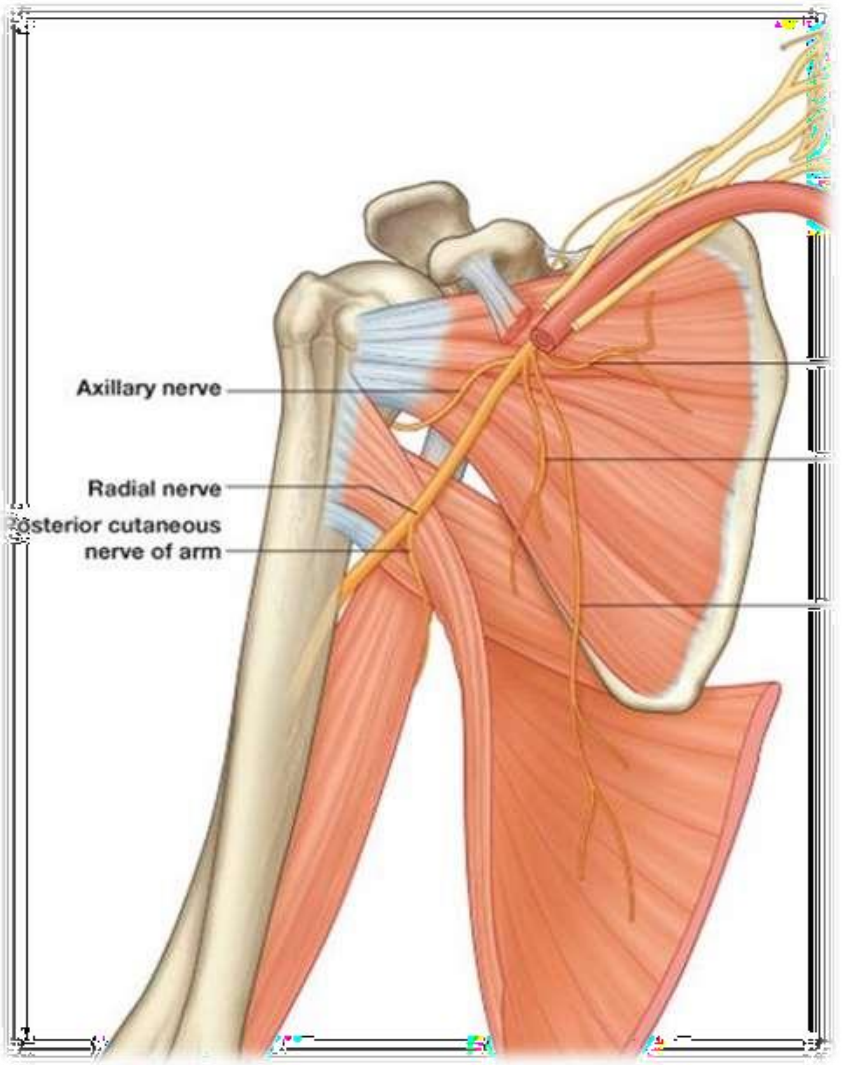
BRANCHES OF THE DIFFERENT PARTS OF THE BRACHIAL PLEXUS

4- Axillary nerve (C5 & 6):

- Leaves the axilla through the quadrangular space.
- Supplies deltoid & Teres minor M.
- Sensory to:

1- Shoulder joint.

2- Upper lateral cutaneous n of the arm.



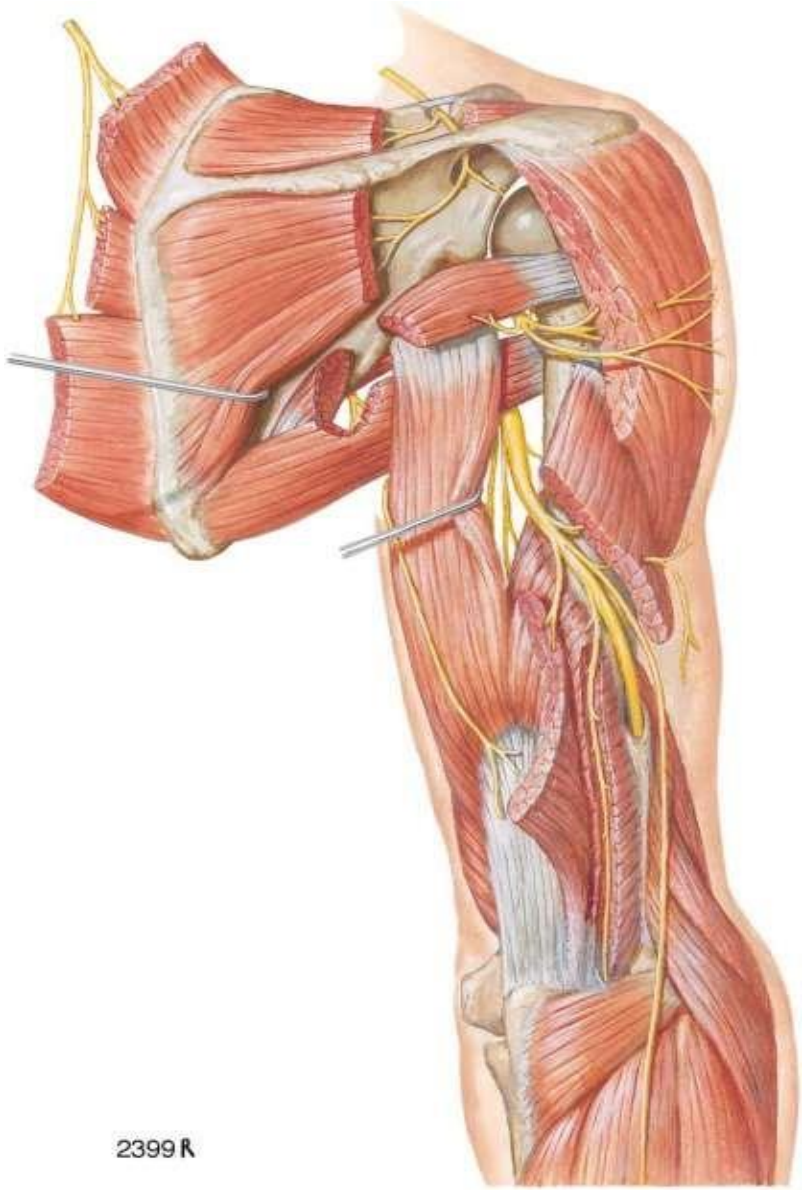
BRANCHES OF THE DIFFERENT PARTS OF THE BRACHIAL PLEXUS

5- Radial n (C5 – T1):

- Leaves the axilla through triangular interval.

- It's supply extensor compartments of the UL.

- Supplies most of the skin of the back of the UL.



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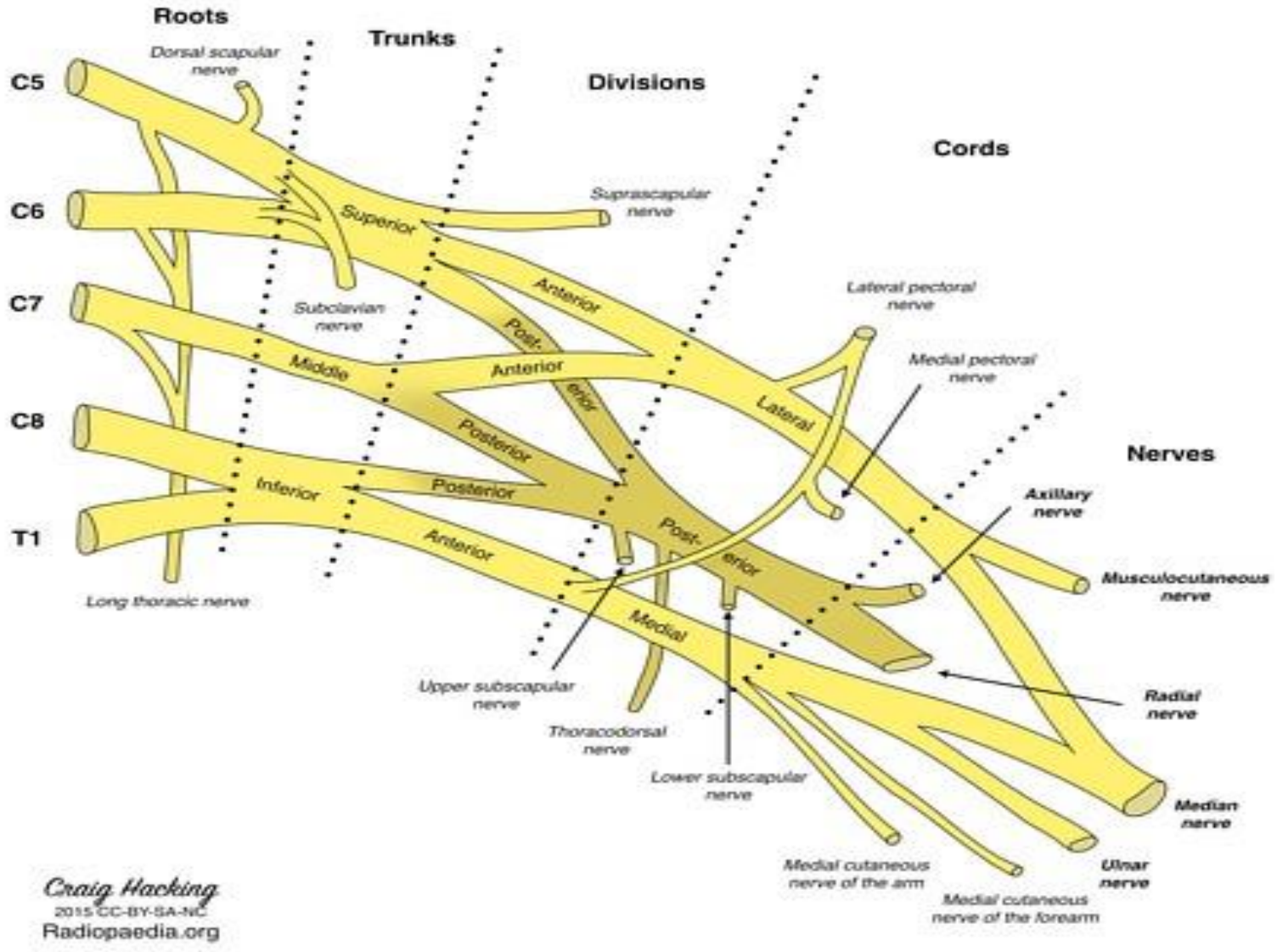
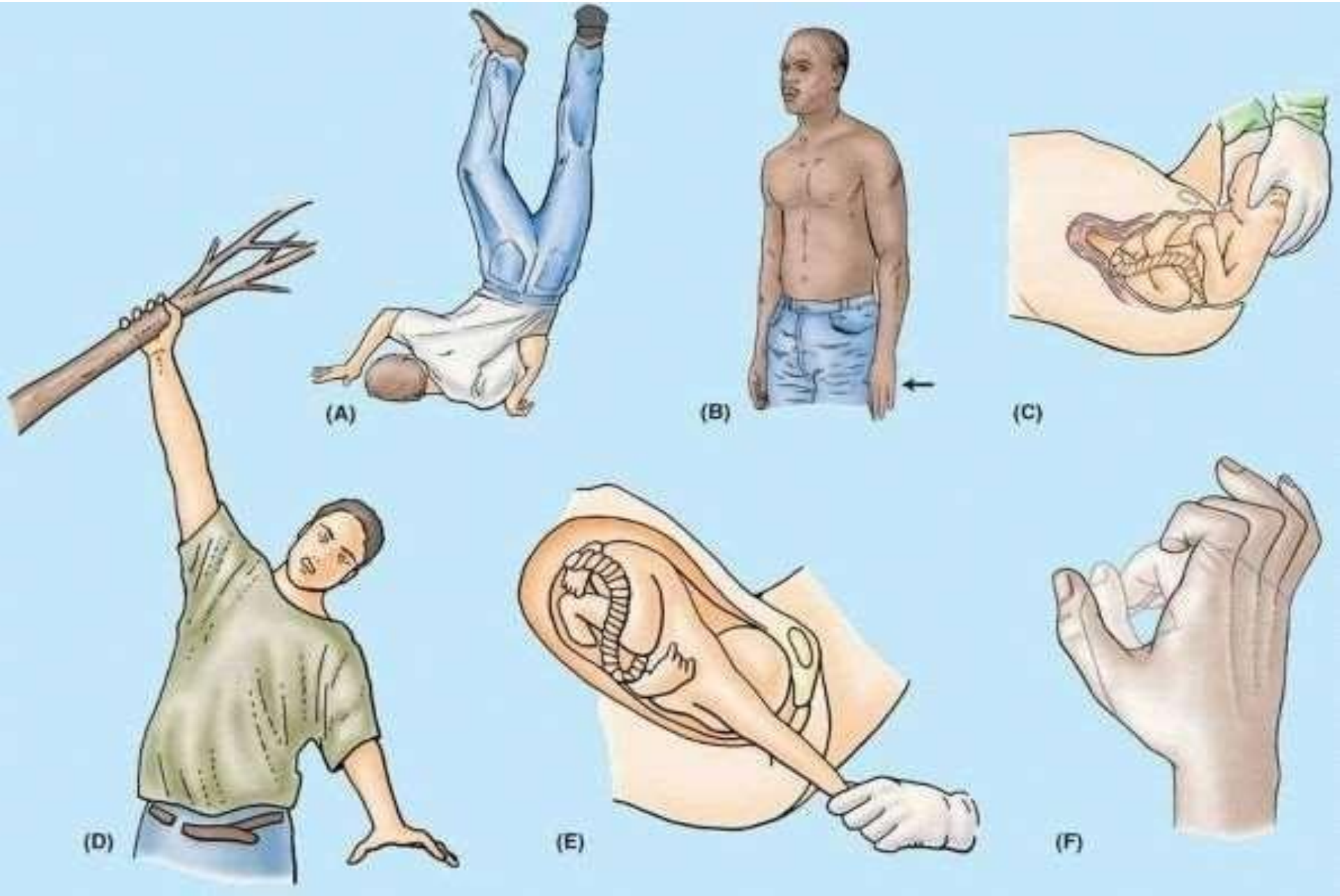


BRACHIAL PLEXUS INJURIES



BRACHIAL PLEXUS INJURIES

Types:

1) Complete lesions involving all the roots of the plexus are rare: as in road traffic accidents (RTA).

2) Incomplete injuries are common and usually caused by traction or pressure: as in motorcycle accidents.

- Individual nerves can be divided by stab wounds.

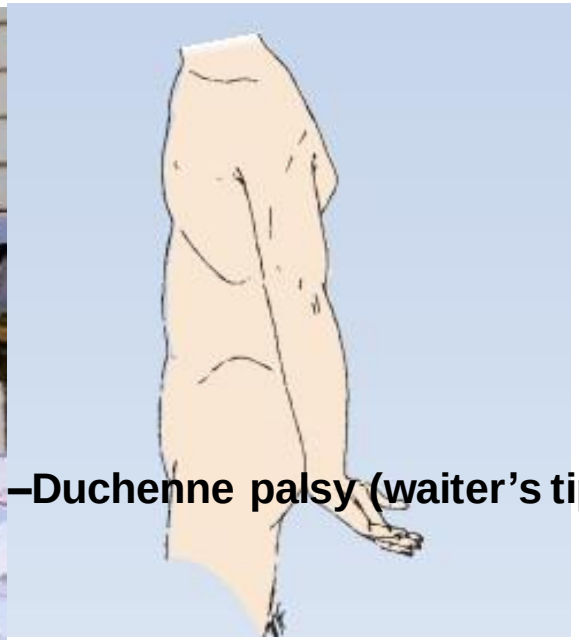
BRACHIAL PLEXUS INJURIES

1. Upper Brachial Plexus injury (C5 and C6 roots):

This lead to loss of functions of all nerves arise from these roots as axillary nerve, musculocutaneous nerve, lateral pectoral nerve etc and this will lead to paralysis of the muscles supplied by these affected nerves as supraspinatous, infraspinatous, deltoid, biceps brachii, subclavius, teres minor muscles.

BRACHIAL PLEXUS INJURIES

This will lead to deformity of the upper limb called ***waiter tip deformity*** (arm adduction and internal rotation and forearm pronation), in addition there will be loss of sensation down the lateral side of the arm, This is known as ***Erb's palsy.***



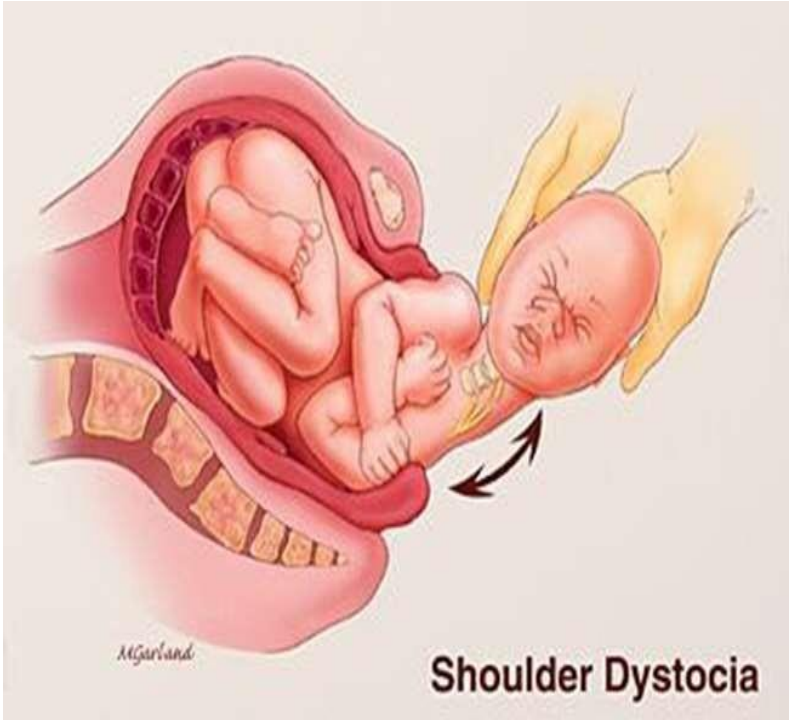
–Duchenne palsy (waiter's tip)

BRACHIAL PLEXUS INJURIES

This type of injury resulting from excessive traction or even tearing of C5 and C6 roots of the plexus.

Example of this type of injury:

- Excessive displacement of the head to the opposite side and depression of the shoulder on the same side as in infants during a difficult delivery.
- in adults after a blow to or fall on the shoulder.



BRACHIAL PLEXUS INJURIES

2. Lower Brachial Plexus injury (C7, C8, and T1 roots): this will affects the ulnar and median nerve fibers that supply all the small muscles of the hand, so this will lead to a hand deformity called ***Claw hand*** (hyperextension of metacarpophalangeal joints and flexion of interphalangeal joints). In addition, there will be loss of sensation along the medial side of the arm.

BRACHIAL PLEXUS INJURIES

3. Complete Brachial Plexus injury (C5, C6, C7, C8, and T1 roots):

Whole upper limb will be paralyzed with loss of sensation.


Thank You!