

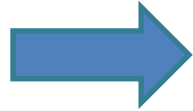
☆ *Anatomy* ☆

Brachial Plexus and Radial Nerve

This Lecture is Done by:

Marwah Bafadel

Brachial Plexus



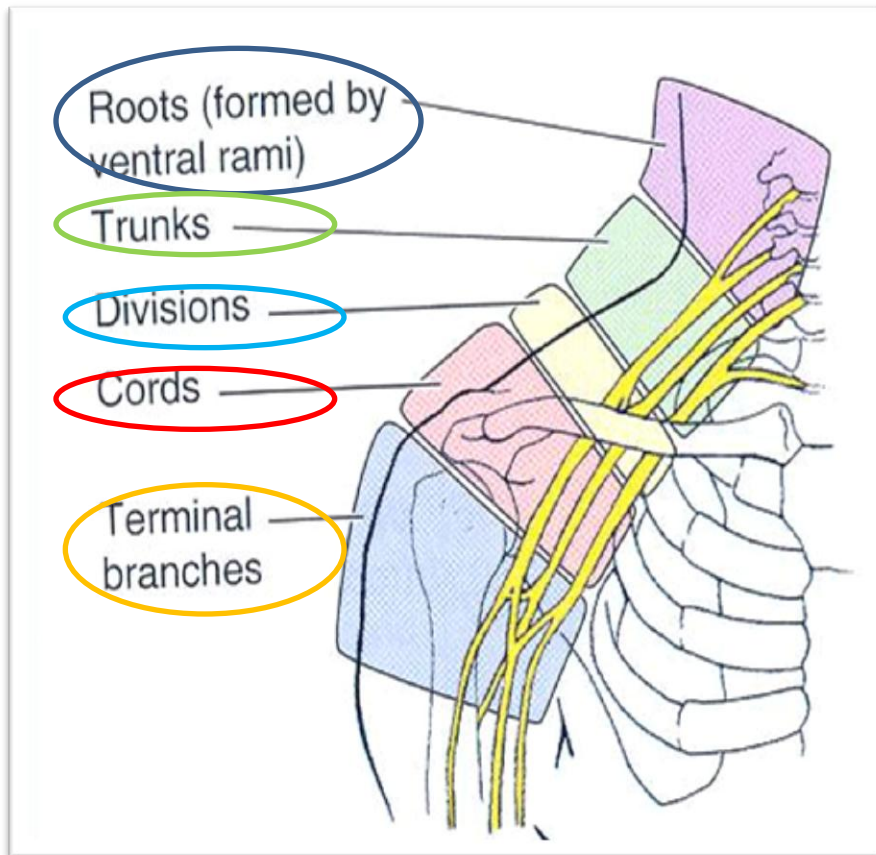
It is the union of the anterior rami of the 5th, 6th, 7th, 8th cervical and the 1st thoracic spinal nerves.

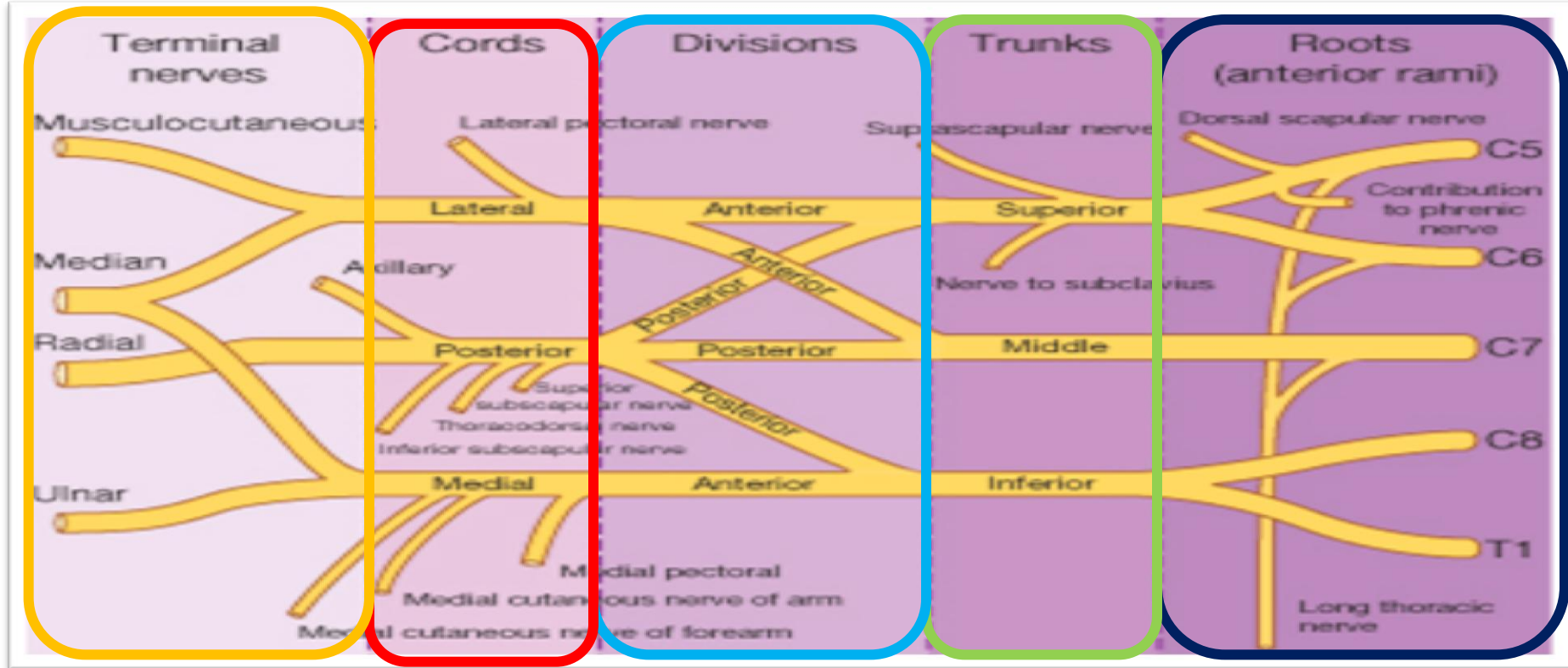
It is formed in the posterior triangle of the neck.



Divided in to:

- Roots
- Trunks
- Divisions
- Cords
- Terminal branches





The Plexus can be divided into 5 stages:

- **Roots:** In the posterior triangle
- **Trunks:** In the posterior triangle
- **Divisions:** Behind the clavicle
- **Cords:** In the axilla
- **Branches:** In the axilla

Upper trunk	Middle trunk	Lower trunk
Union of the roots of C5 & C6	Continuation of the root of C7	Union of the roots of C8 & T1



Posterior cord	Lateral cord	Medial cord
From the three posterior divisions	From the anterior divisions of the upper and middle trunks	It is the continuation of the anterior division of the lower trunk



Upper subscapular n

Lower subscapular n

Thoracodorsal n

Radial n

Axillary n



Lateral pectoral n

Lateral root to median n

Musculocutaneous n



Medial pectoral n.

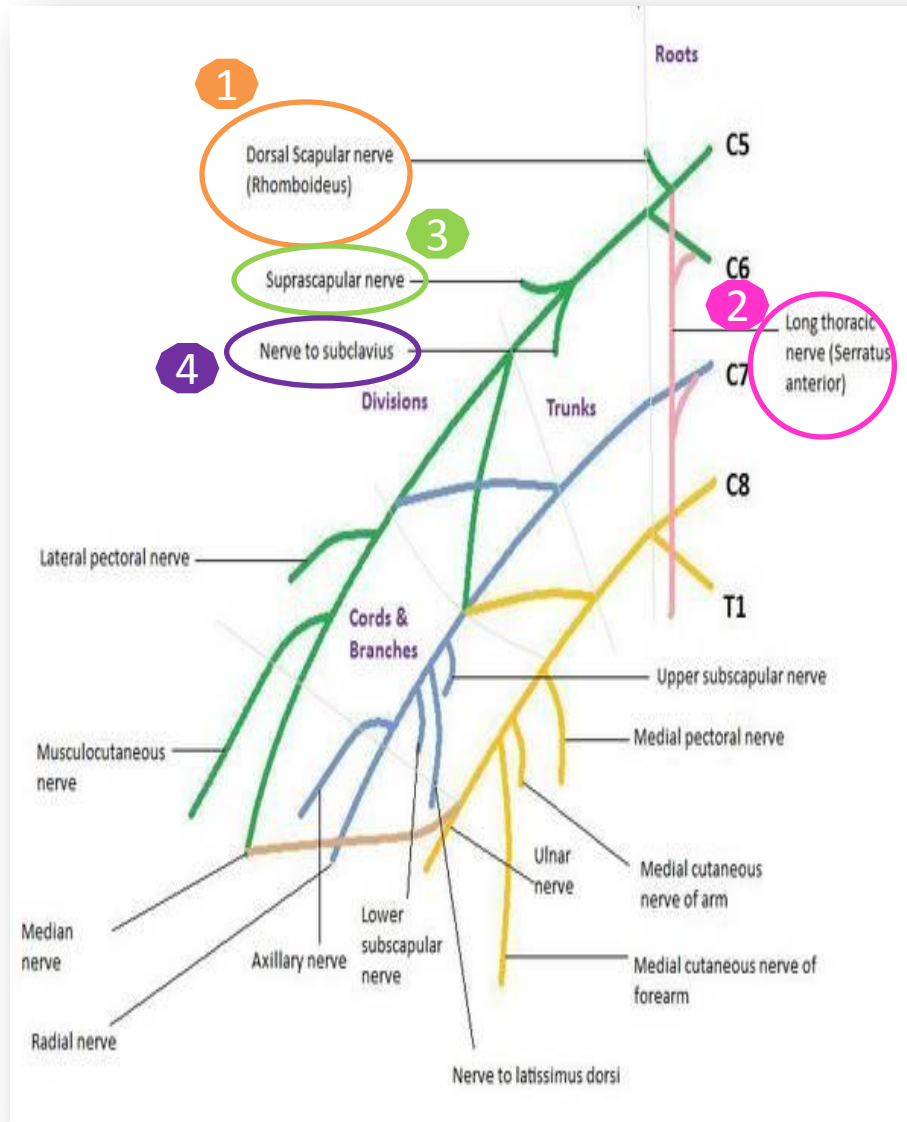
Medial root to median n.

Medial cutaneous n of arm.

Medial cutaneous n of forearm.

Ulnar n

BRANCHES



From Trunk (upper trunk):	From Roots:
Nerve to subclavius 4	C5: Nerve to rhomboids (dorsal scapular nerve) 1
Suprascapular nerve (supplies supraspinatus & infraspinatus) 3	C5,6 & 7: <u>Long thoracic nerve</u> (very important) 2

Brachial Plexus Injuries

-What do we call this characteristic deformity?

Erb-Duchenne Palsy "waiter's or policeman's tip".

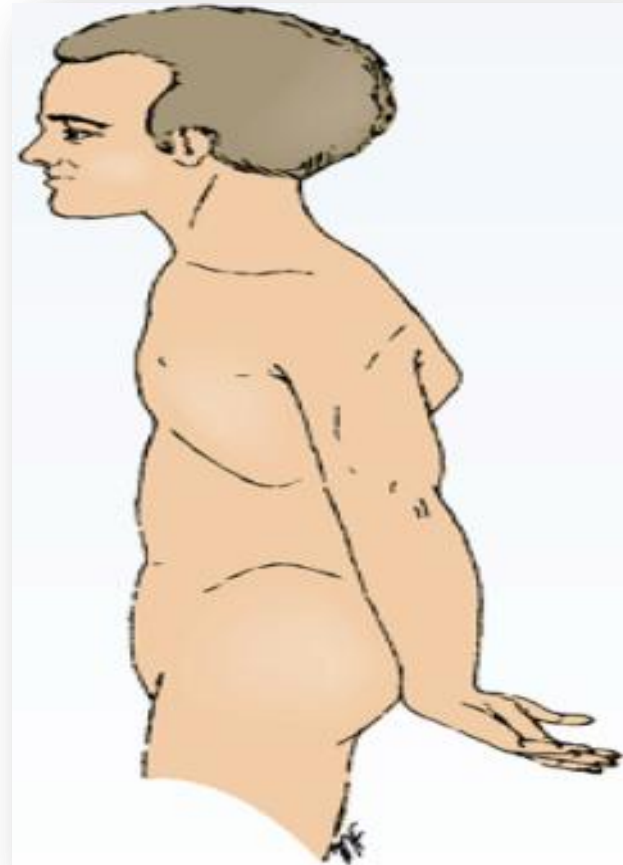
-What is the cause of this lesion?
upper Lesion of the Brachial Plexus.

-What is the cause of upper lesions of brachial plexus?

Excessive displacement of the head to the opposite side and depression of the shoulder on the same side (a blow or fall on shoulder).

-With an injury to the right upper trunk of the brachial plexus (Erb-Duchenne paralysis), the patient's right forearm would be:

- A. abducted
- B. adducted
- C. medially rotated
- D. laterally rotated



Case No.1

Brachial Plexus Injuries

-A Lady with breast cancer undergoes Radical Mastectomy (removal of the breast & axillary lymph nodes) after the operation she complains of difficulty in combing her hair and on examination "Winging of scapula " is seen ..

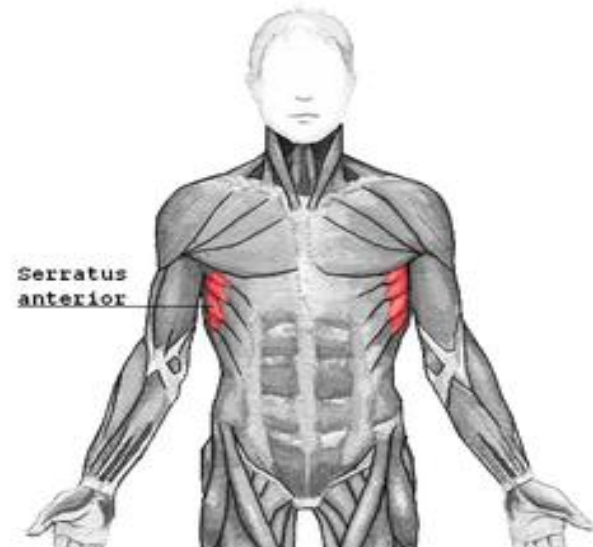
***From this case ..**

-What is the most likely muscle effected?

serratus anterior muscle .

-What is the nerve supply of this muscle?

Long thoracic nerve.



Case No.2

Brachial Plexus Injuries

-What do we call this characteristic deformity?

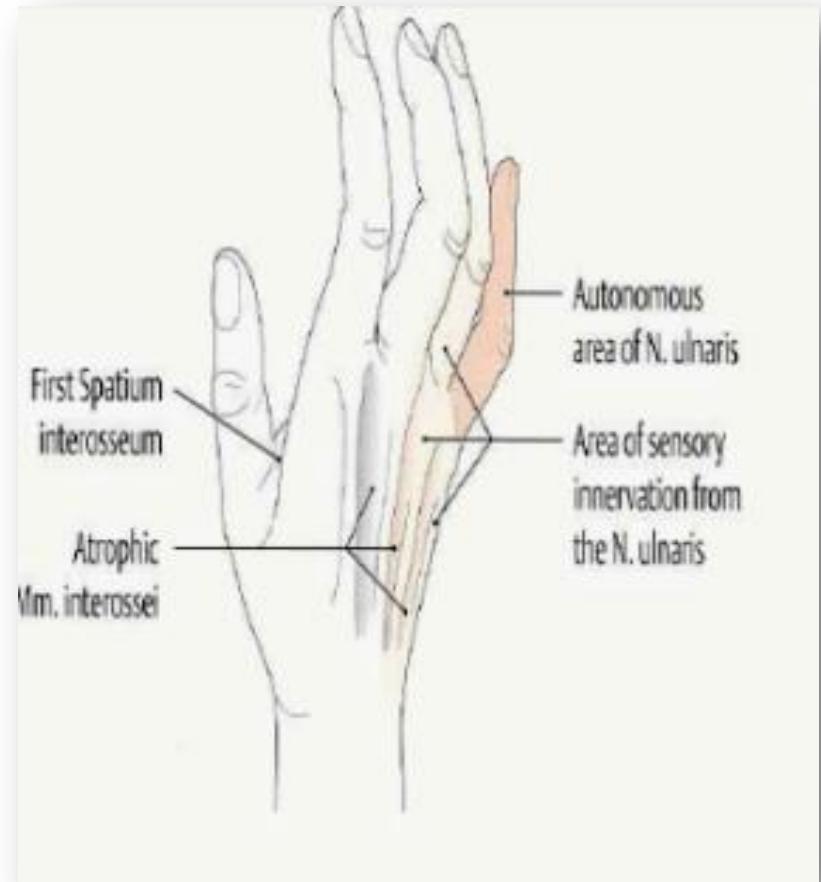
(Klumpke Palsy)

-What is the cause of this lesion?

Lower Lesion of the Brachial Plexus.

-What is the cause of lower lesions of brachial plexus?

a person falling from a height clutching at an object to save himself.

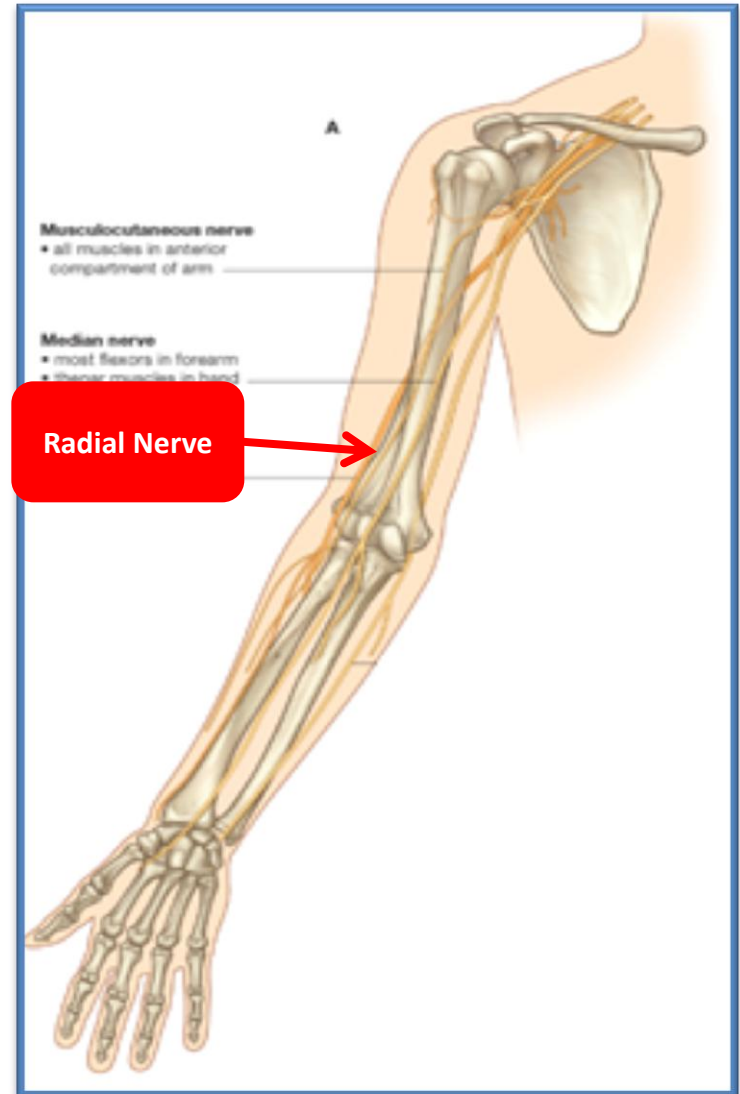


Case No.3

! Radial Nerve (C5, 6, 7, 8, & T1) !

-What is the origin of this nerve?

It is a continuation of the posterior cord of brachial plexus.



-What is the nerve affected?

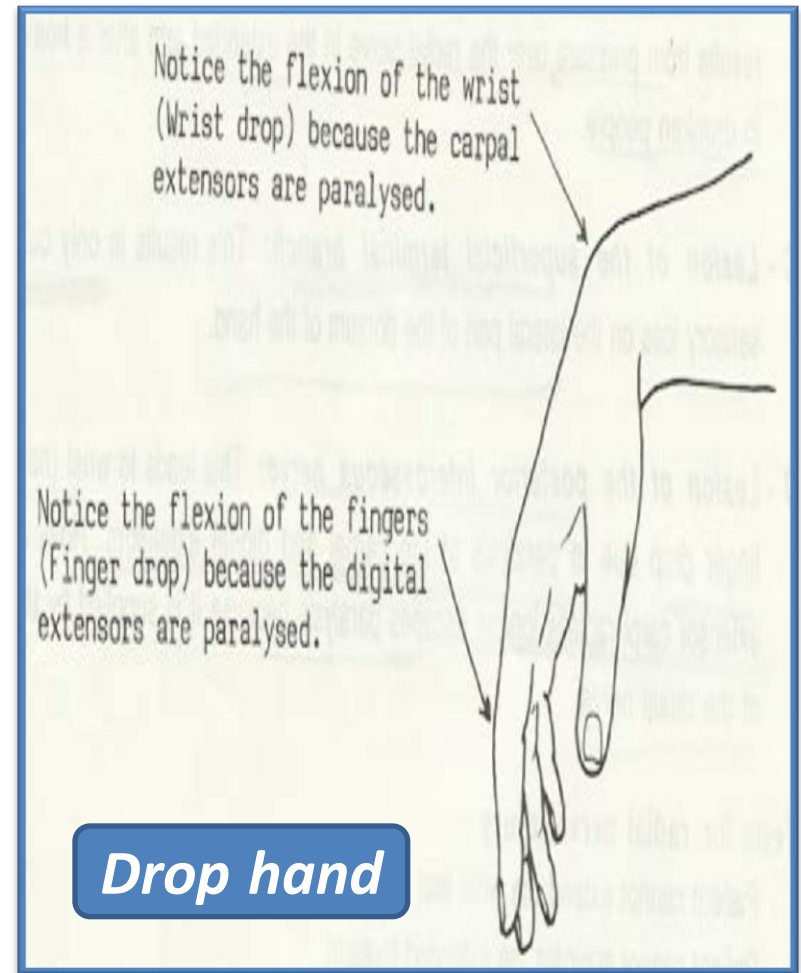
Radial nerve.

-What do we call this characteristic deformity in the hand?

The characteristic deformity is **"hand or wrist drop"** due to paralysis of carpal extensors.

-Which muscles is affected?

1. Loss of extension of elbow due to paralysis of **triceps**
2. Loss of supination due to paralysis of **supinator**.
3. There is loss of extension of wrist and **metacarpophalangeal** joints, but extension of **inter-phalangeal joints** can be done by lumbricals & interossei



Radial nerve Injury

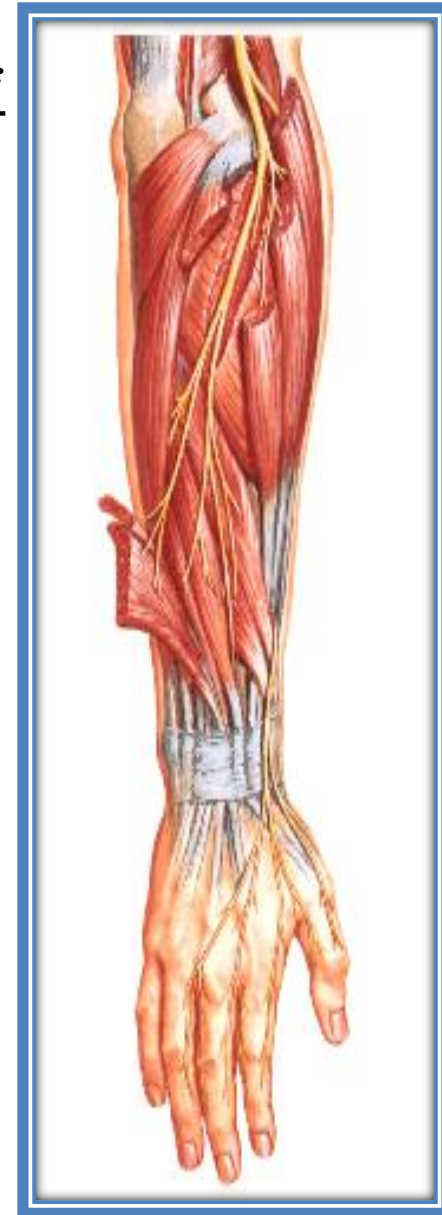
Lesion in forearm

-Lesion of superficial terminal branch:

Only cutaneous sensory loss on lateral part of dorsum of hand

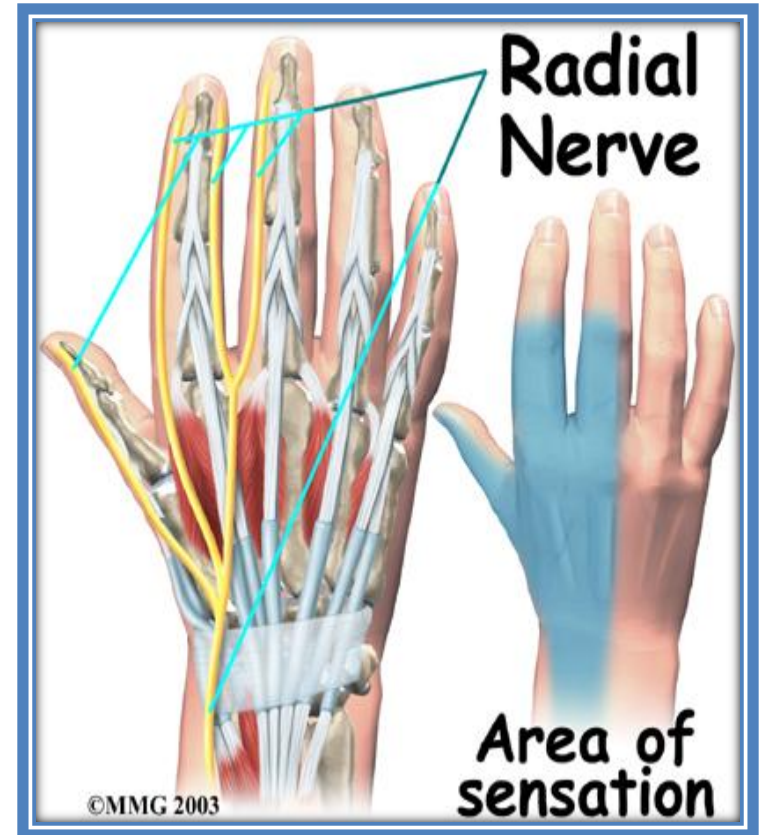
-Lesion of posterior interosseous nerve:

leads to 'hand or wrist drop' & 'finger drop' due to paralysis of carpal & digital extensors.



Radial nerve Injury

-Radial nerve injury will cause loss of cutaneous sensations from the:
**Lateral 2/3 of dorsum of hand +
dorsum of proximal parts of
lateral 3 ½ fingers.**



* Mohammed came to the emergency department with a broken bone after the examination the doctor ask him to do "X-ray" to find out where the fraction is located .

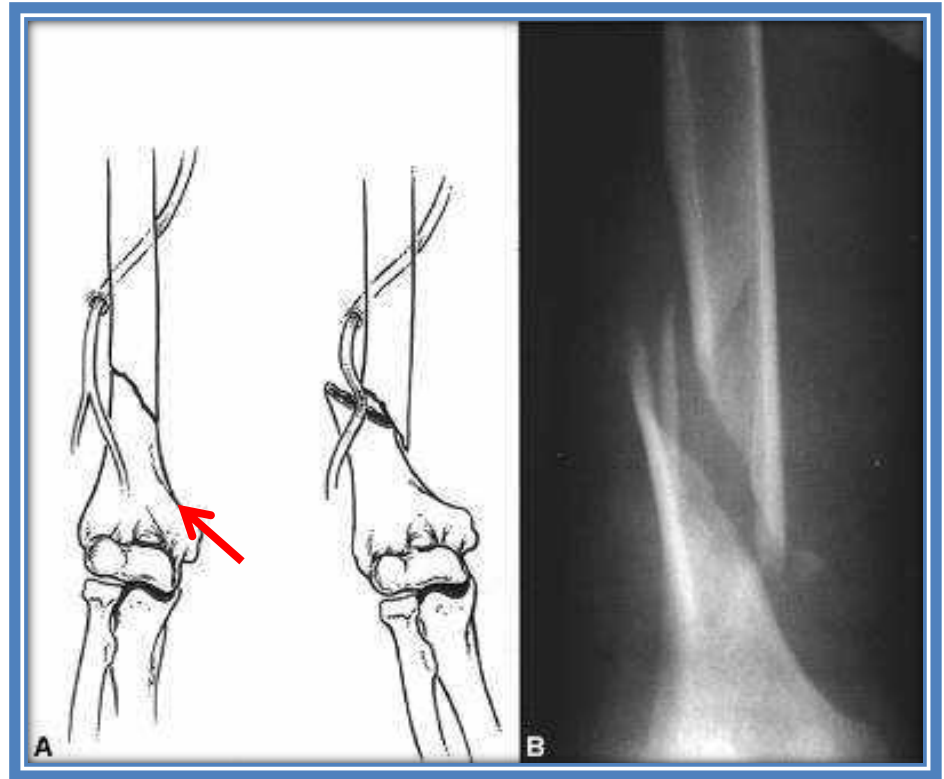
-After seeing the x-ray answer the following :-

What does the x-ray show?
fracture in the middle shaft of humerus

-What is the effected nerve?
Radial nerve

-Notice that triceps escapes paralysis because it receives its innervation higher up than the site of injury**

Lesion of radial nerve in the spiral groove



Case No.1

Case No.2

A 52 years old man was brought to the emergency room after being found in the park where he had apparently lain overnight after a fall. He complained of severe pain in the left arm. Physical examination suggested a broken humerus, which was confirmed radiologically. The patient was able to extend the forearm at the elbow, but supination appeared somewhat weak; the hand grasp was very weak when compared with the uninjured arm. Neurologic examination revealed an inability to extend the wrist ("wrist drop"). Since these findings pointed to apparent nerve damage, the patient was scheduled for a surgical reduction of the fracture.

-The observations that extension at the elbow appeared normal, but supination of the forearm weak, warrants localization of the nerve to the:

- A. posterior division of the brachial plexus
- B. posterior cord of the brachial plexus in the axilla
- C. radial nerve at the distal third of the humerus
- D. radial nerve injury in the vicinity of the head of the radius
- E. radial nerve in the mid-forearm

-In this patient, paralysis of the supinator muscle only slightly affects the ability to supinate due to the unimpaired action of the:

- A. pronator teres
- B. brachioradialis
- C. pronator quadratus
- D. Biceps brachii**
- E. triceps brachii

-The nerve that may be injured in the "anatomical snuff box" is the:

- A. superficial ulnar
- B. posterior interosseous
- C. cephalic
- D. Radial**
- E. deep ulnar

Case No.2

★ Good Luck ★