

Trauma to Median Nerve

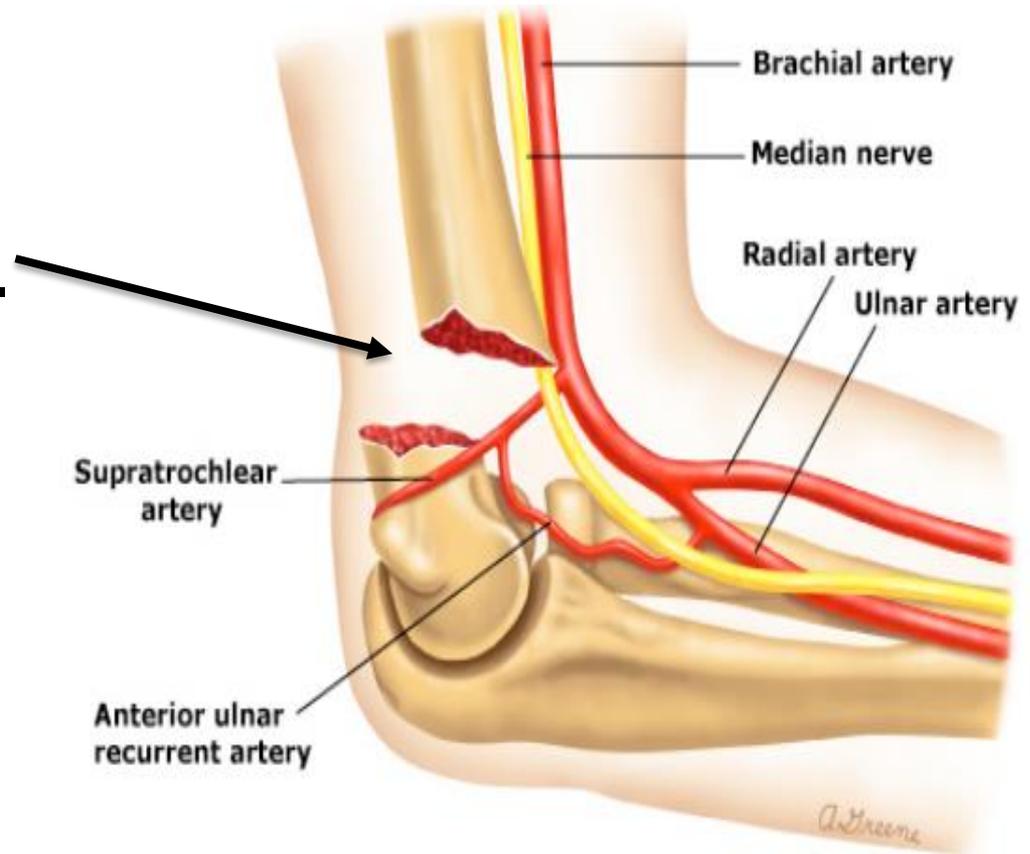
Lesions of the median nerve usually occur in two places:

A-At the Elbow

B-At the Wrist

A-at the Elbow: the median nerve is injured **occasionally** in the elbow region in

supracondylar
fractures of
the humerus



Motor loss

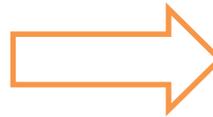
Muscles affected at the forearm

1-The pronator muscles of the forearm are paralyzed



The forearm is kept in the supine position

2- The flexor carpi radialis is paralyzed



Wrist flexion is weak



no loss of flexion at the wrist joint because the flexor carpi ulnaris which is supplied by the ulnar nerve is not affected. Flexor carpi ulnaris will flexor the wrist joint

3- The flexor superficialis muscle is paralyzed

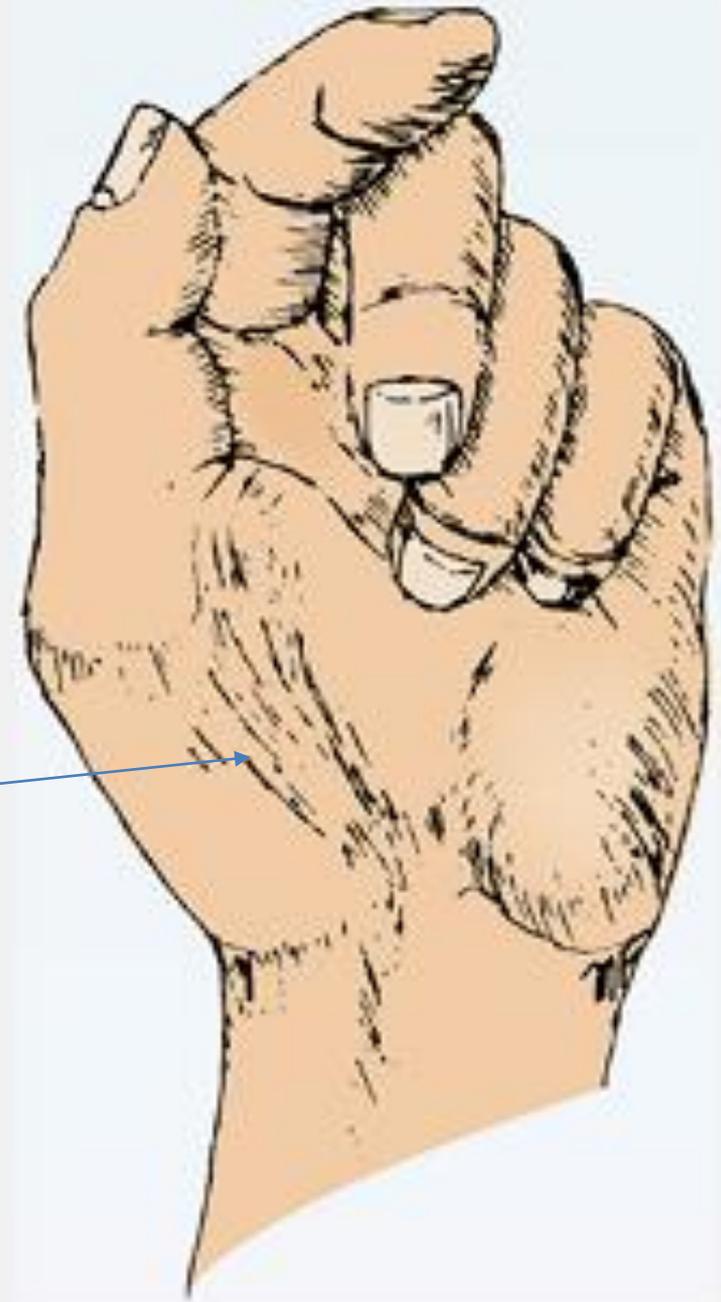
➤ *No flexion is possible at the interphalangeal joints of the index and middle fingers, When the patient tries to make a fist, the index and to a lesser extent the middle fingers tend to remain straight, whereas the ring and little fingers flex*



"Hand of benediction"
(a) Median nerve injury

-4- Flexion of the terminal phalanx of the thumb is lost because of paralysis of the flexor pollicis longus.

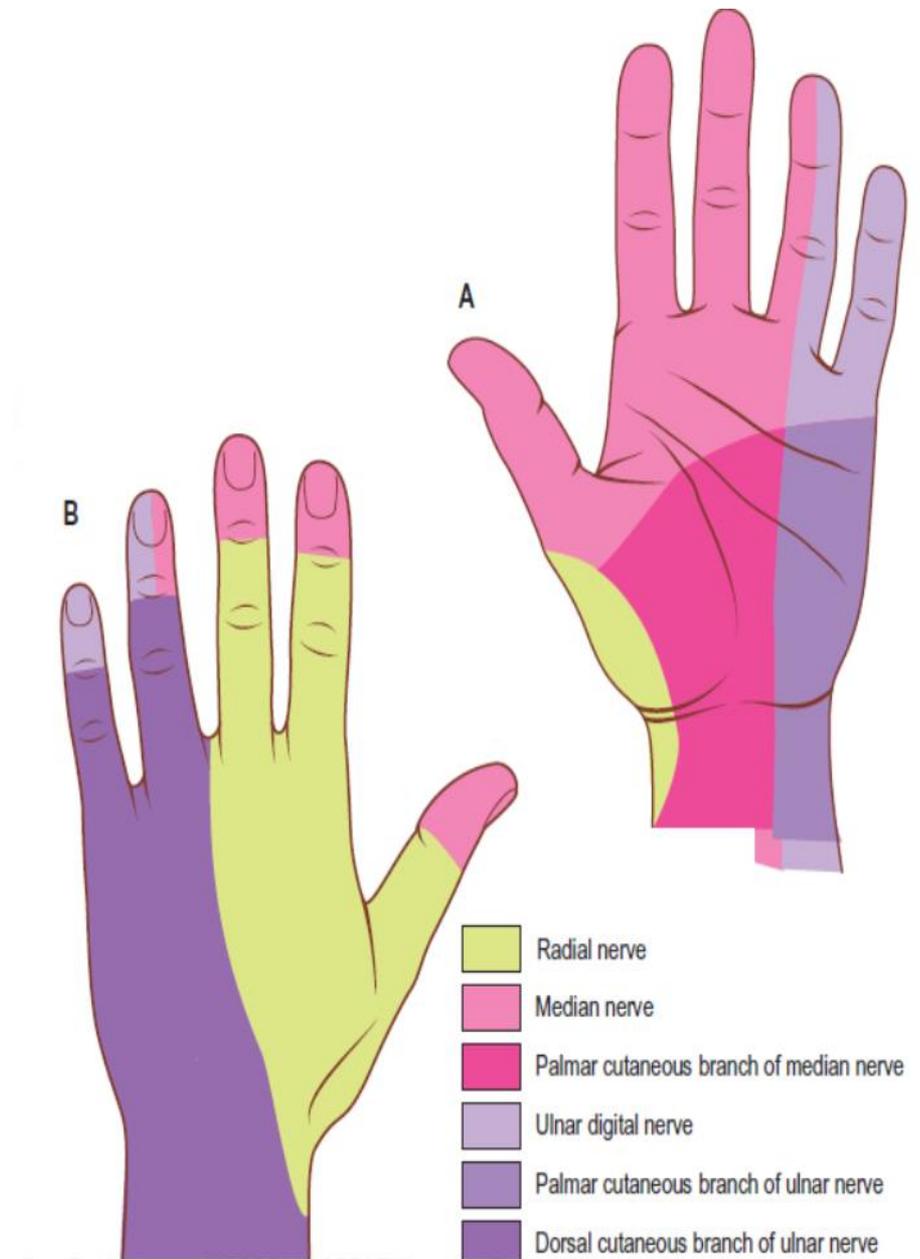
- ***The muscles of the thenar eminence are paralyzed and wasted so that the eminence is flattened.***
- ***The thumb is laterally rotated and adducted.***
- ***Opposition movement of the thumb is impossible***
- ***The hand looks flattened and apelike***



Sensory

Skin sensation is lost on **the lateral half or less of the palm of the hand and the palmar aspect of the lateral three and a half fingers.** Sensory loss also occurs on the skin of the **distal part of the dorsal surfaces of the lateral three and a half fingers.**

The area of total anesthesia is considerably less because of the overlap of adjacent nerves.



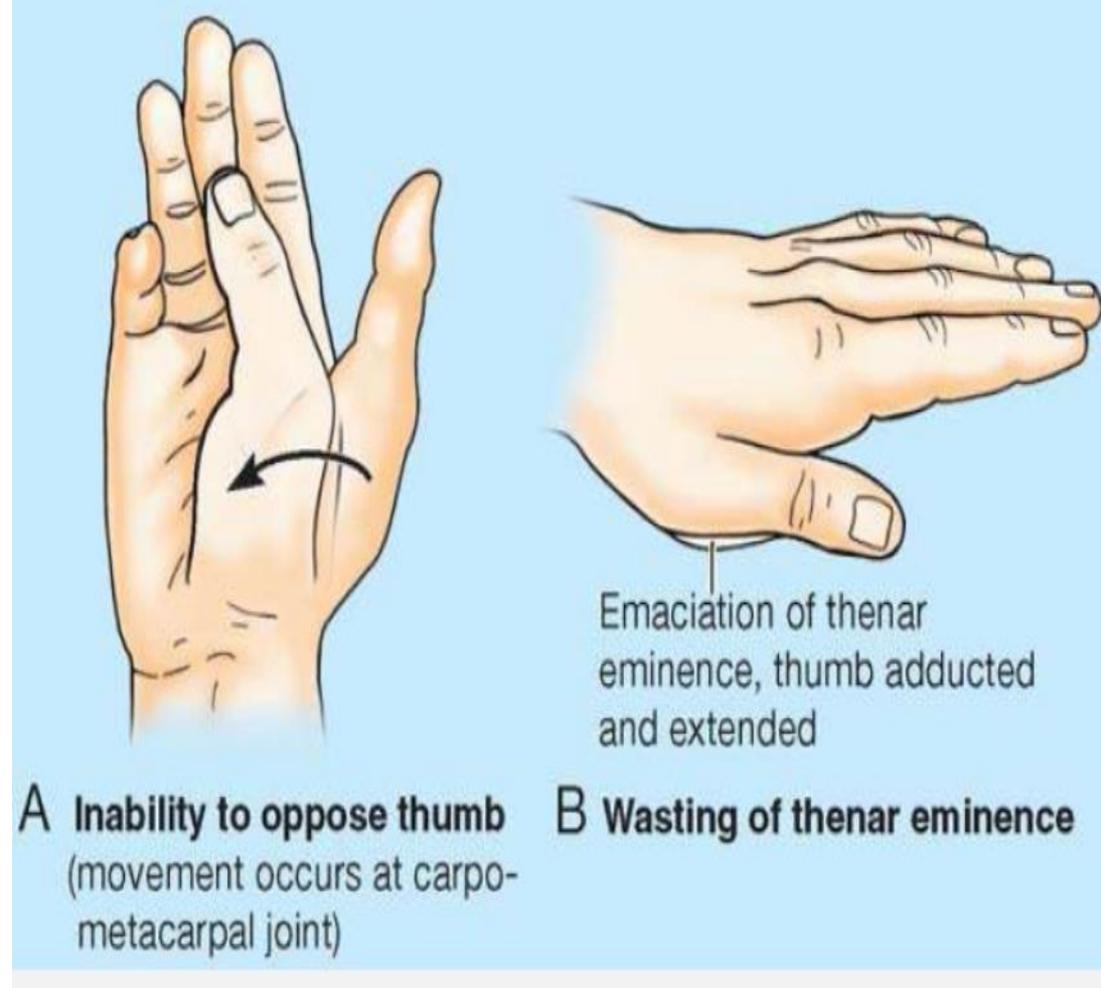
Injuries to the Median Nerve at the Wrist

•Motor:

- *The muscles of the thenar eminence are paralyzed and wasted so that the eminence becomes flattened.*
- The thumb is laterally rotated and adducted.
- The hand looks flattened and apelike.
- **Opposition movement of the thumb is impossible.**
- The first two lumbricals are paralyzed, which can be recognized clinically when the patient is asked to make a fist slowly, and the index and middle fingers tend to lag behind the ring and little fingers.

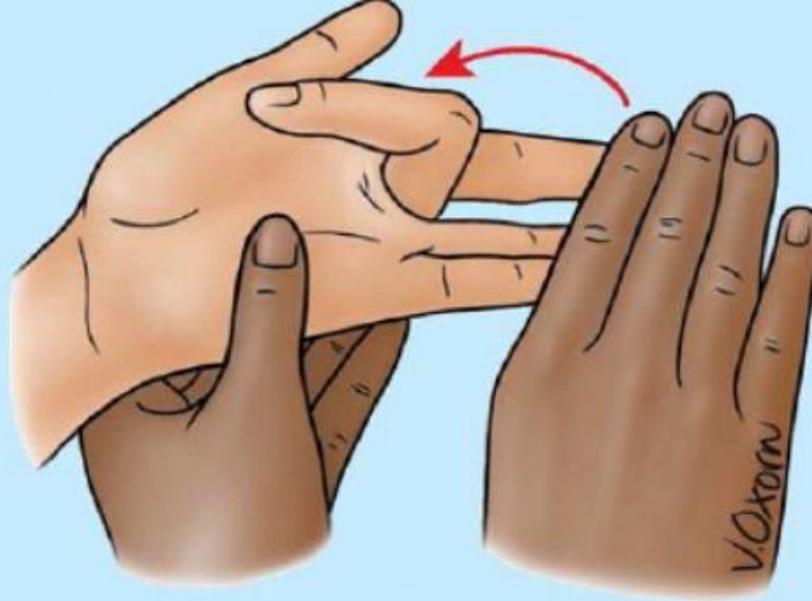
•Sensory, changes:

- These changes are identical to those found in the elbow lesions.

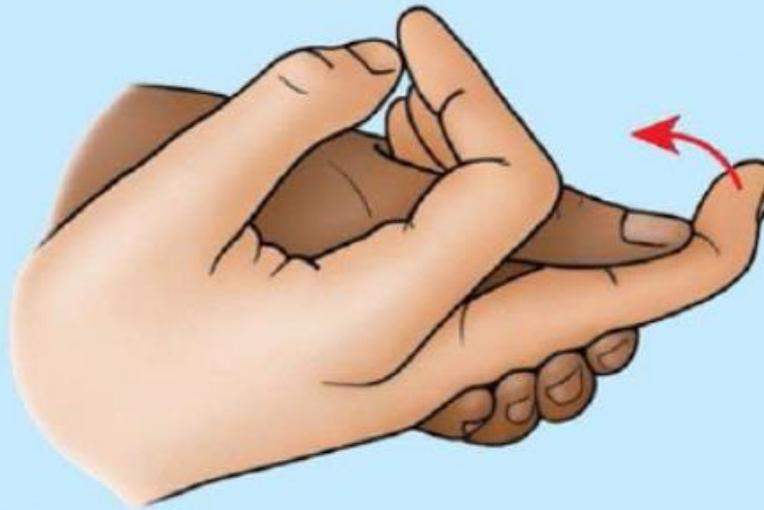


The long flexor muscles of the wrist and fingers are preserved and flexion at wrist joint is not affected

the most serious disability of all in median nerve injuries is ***the loss of the ability to oppose the thumb to the other fingers and the loss of sensation over the lateral fingers.*** The delicate pincer like action of the hand is no longer possible



**A Flexor digitorum superficialis (FDS)
muscle test**



**B Flexor digitorum profundus (FDP)
muscle test**

Examination of the Hand, Tests

O.K. Sign

- the O.K. sign is used to check for paralysis of the anterior interosseous nerve due to entrapment or compression injury.

Examination of the Hand, Tests

O.K. Sign

(Test for Anterior
Interosseous Nerve
Injury)



Patient with paralysis of the
anterior interosseous nerve
will be unable to make the
O.K. sign.

Injuries to the Radial Nerve

In the Axilla

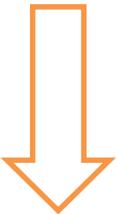
In the axilla the nerve can be injured by

A- The pressure of the upper end of a badly fitting crutch pressing up into the armpit (***'crutch palsy'***)

B- by a drunkard falling asleep with one arm over the back of a chair (***'Saturday night palsy'***) 

C- It can also be badly damaged in the axilla by fractures and dislocations of the proximal end of the humerus.

The clinical findings in injury to the radial nerve in the axilla are as follows



Motor

The triceps and the long extensors of the wrist are paralyzed



The patient is unable to extend

The elbow joint

The wrist joint

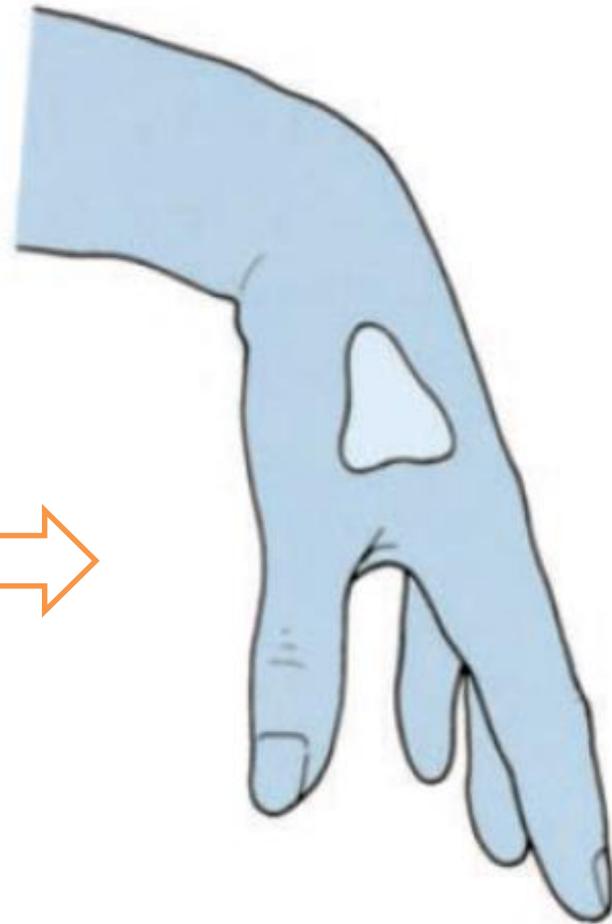
The fingers (MP) joints



Wristdrop (or flexion of the wrist occurs as a result of the action of the unopposed flexor muscles of the wrist)



The brachioradialis and supinator muscles are also paralyzed, **but supination is still performed well by the biceps brachii**

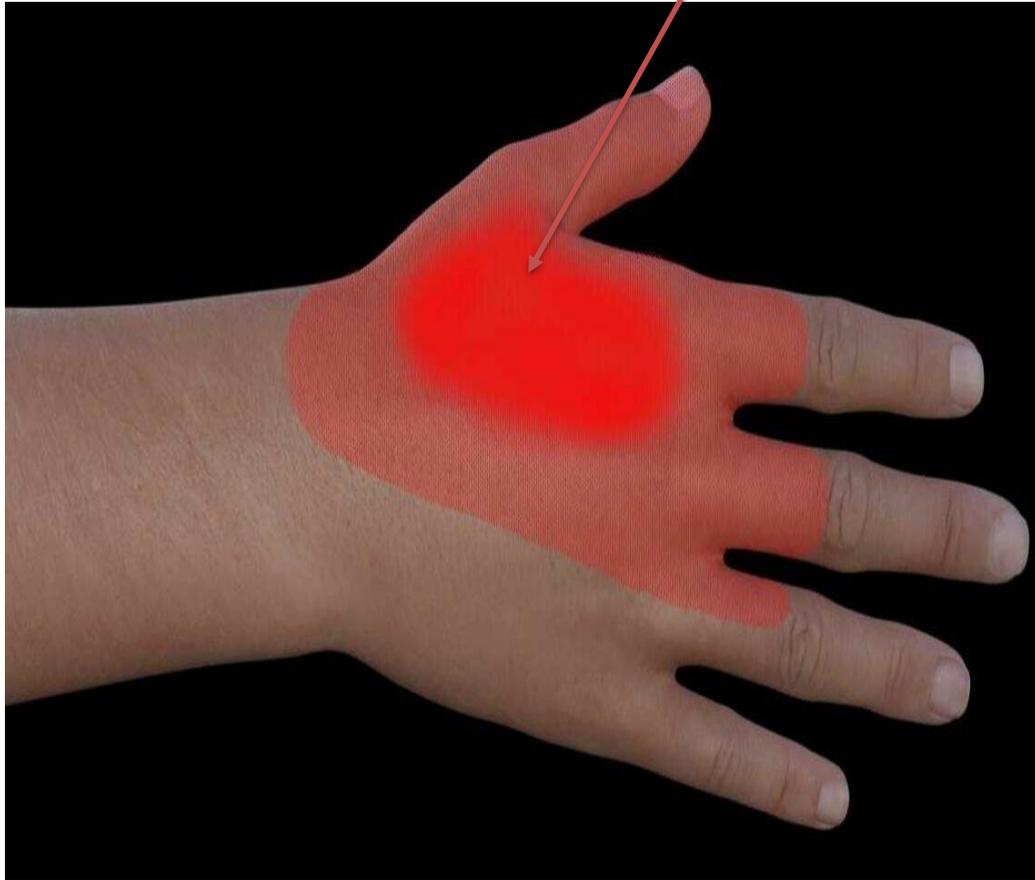


Wristdrop is very disabling because one is unable to flex the fingers strongly for the purpose of **firmly gripping an object with the wrist fully flexed**. (Try it on yourself.)

Sensory

The area of total anesthesia is **relatively small** because of the overlap of sensory innervation by adjacent nerves.

(First dorsal web space)



Read only

Nerve overlap means that division of the radial nerve produces only a small area of anaesthesia of the dorsum of the hand between the 1st and 2nd metacarpals

Injuries to the Radial Nerve in the Spiral Groove

In the spiral groove of the humerus, the radial nerve can be injured at the time of **fracture of the shaft of the humerus**

Motor

Most the nerve supply to Triceps muscle is usually preserved and therefore the elbow extension is preserved while **at wrist and the fingers it is lost and wrist drop occurs**

Sensory

The area of total anesthesia is relatively small because of the overlap of sensory innervation by adjacent nerves

Injuries to the Deep Branch (Posterior interosseous) nerve of the Radial Nerve

- ❑ It can be damaged in fractures of the proximal end of the radius or during dislocation of the radial head.



Damage to the posterior interosseous nerve, however, leaves

extensor carpi radialis

longus intact,

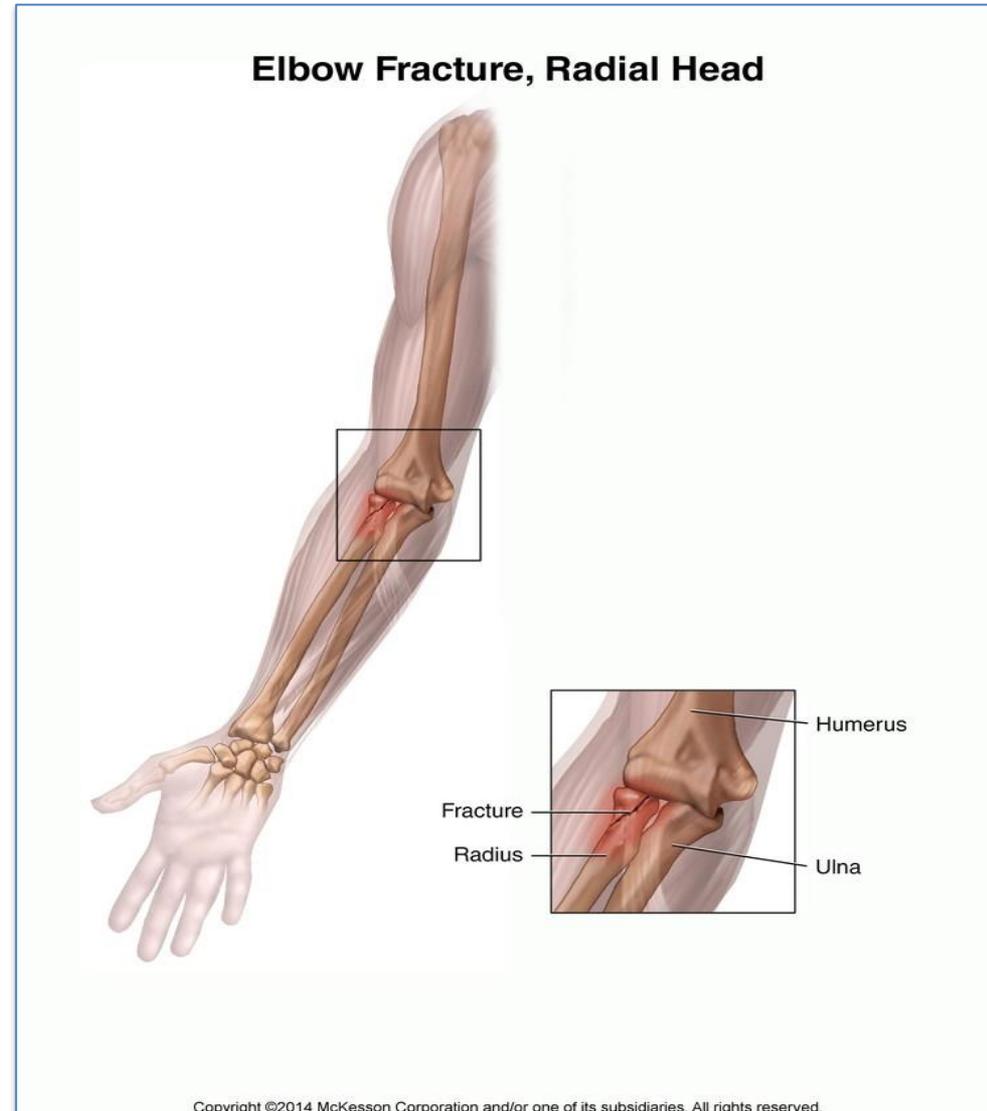
as it is supplied from the radial nerve above its division; **this muscle alone is sufficiently powerful to maintain extension of the wrist.**



Wrist drop will not occur



- ❑ *No sensory loss occurs because this is a motor nerve.*



Examination of the Hand, Tests

Hitch Hike Sign

(Test for radial nerve or posterior interosseous nerve injury)



Patient with radial nerve or posterior interosseous nerve injury may be unable to perform the "**hitch hike**" sign.

Injuries to the Superficial Radial Nerve

- Division of the superficial radial nerve, which is sensory, as in a stab wound.
- results in a variable small area of anesthesia over the dorsum of the hand and the dorsal surface of the roots of the lateral three and a half fingers.

