



من طلب العلا سهر الليالي

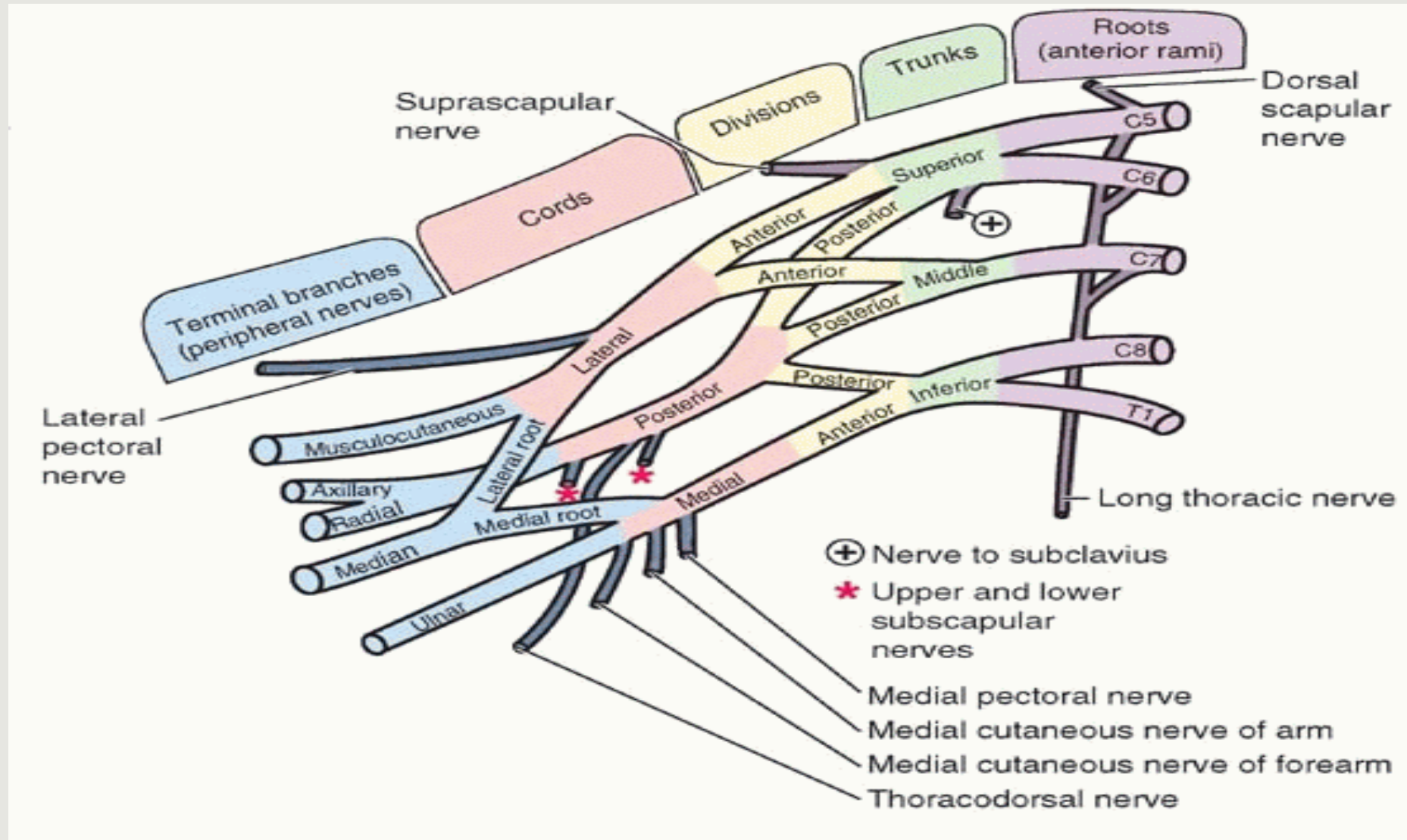
Musculoskeletal Block  
**ANATOMY**  
team 435



C O L O R C O D E S

- IMPORTANT NOTES
- EXTRA NOTES
- DEFINITION

# Brachial plexus for revision



# Axillary Nerve

**Origin:** (C 5 & 6).

Posterior cord of **brachial plexus**.

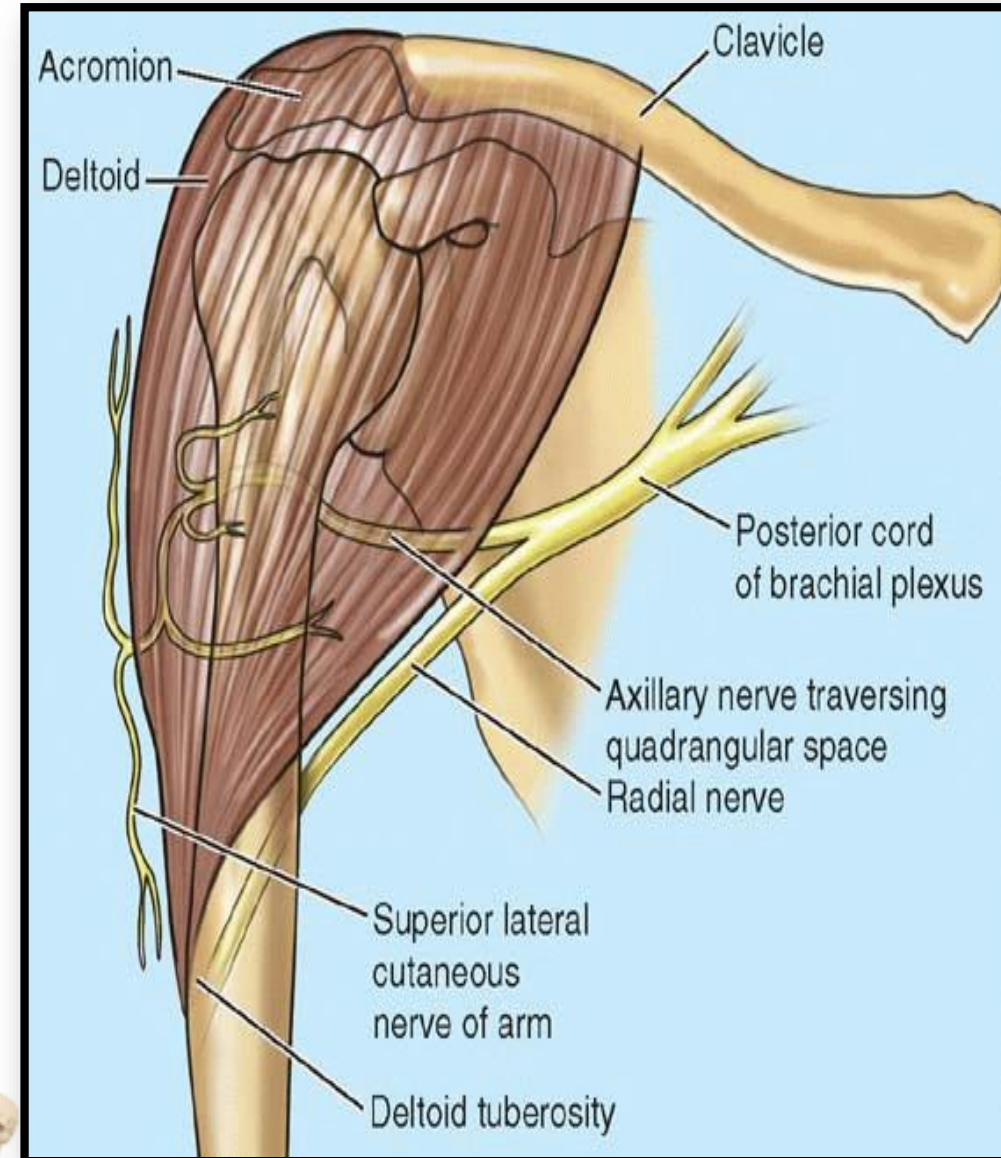
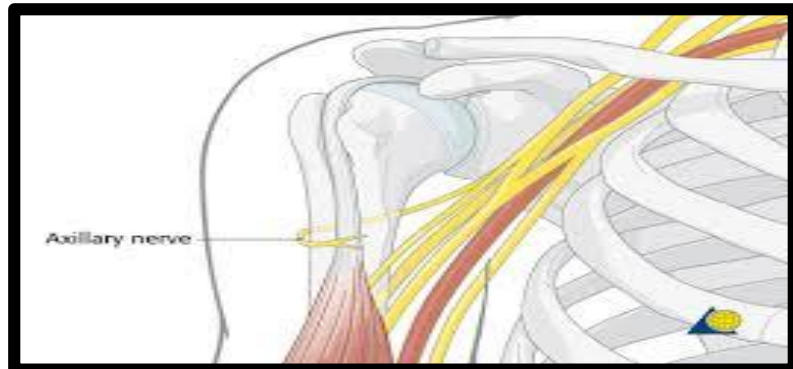
**Course:**

It passes inferiorly and laterally along the posterior wall of the axilla, then it exit the axilla. Then, it passes posteriorly **around the surgical neck of the humerus**. It is accompanied by the **posterior circumflex humeral vessels**.

**Branches:**

**Motor:** to the **deltoid and Teres minor muscles**.

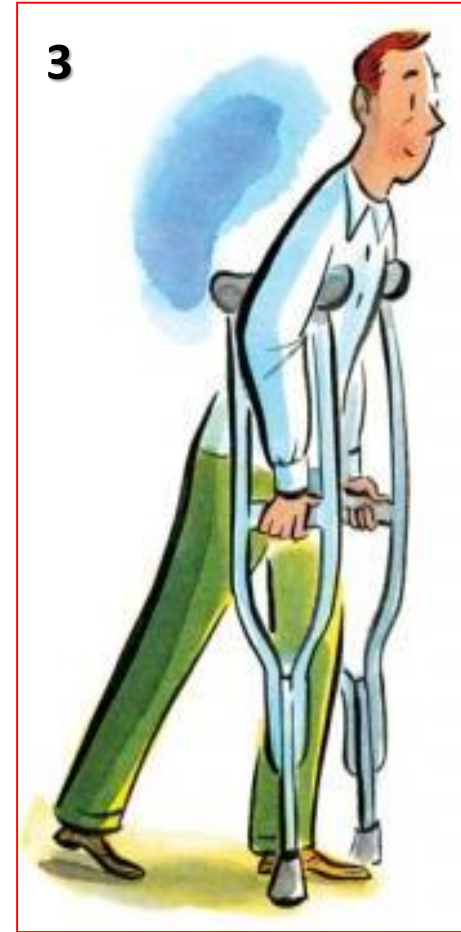
**Sensory:** **superior lateral cutaneous nerve of arm** that loops around the posterior margin of the deltoid muscle to innervate the skin over that region.



# Axillary nerve lesions

The axillary nerve is commonly injured due to:

1. Fracture of surgical neck of the humerus.
2. Downward dislocation of the shoulder joint.
3. Compression from the incorrect use of **crutches** (عكازات)



# Axillary nerve lesions

## Affects:

### Motor:

Paralysis of the deltoid and teres minor muscles.

**Impaired abduction of the shoulder (20,30-90°).**

The paralyzed deltoid wastes rapidly.

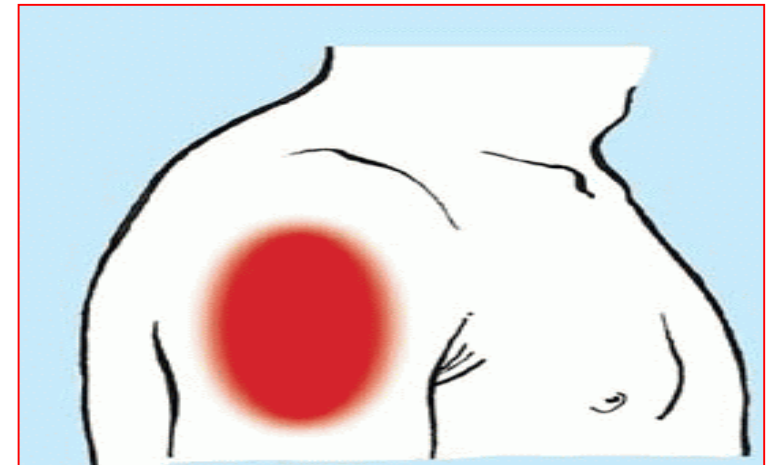
As the deltoid atrophies, the rounded

contour of the shoulder is lost and becomes

flattened compared to the uninjured side.

### Sensory:

Loss of sensation over the lateral side of the proximal part of the arm.



# Median nerve

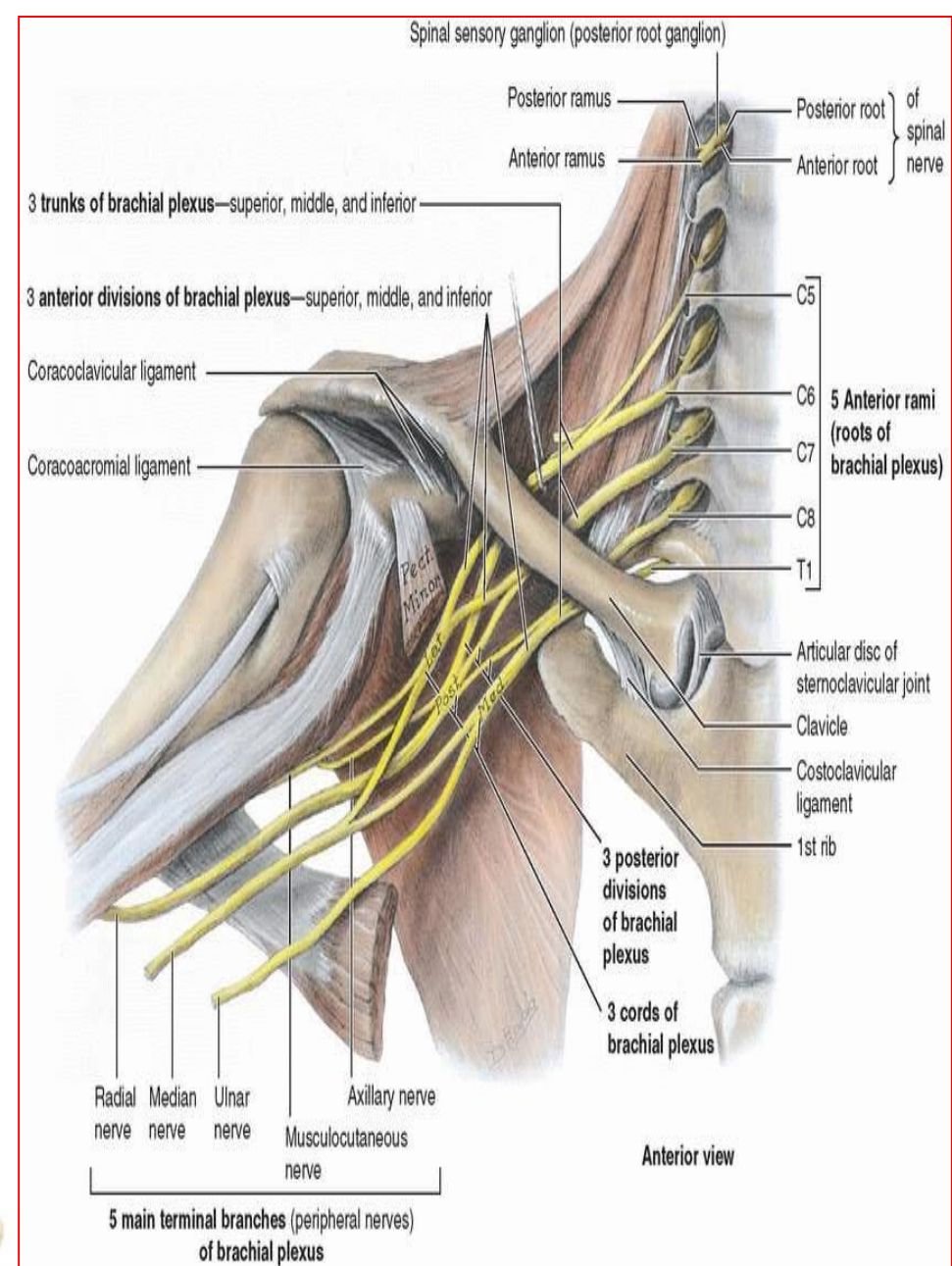
## Root value:

**(C5, 6, 7, 8, and T1)**

The median nerve is formed **anterior to the third part of the axillary artery** by the **union of lateral and medial roots**.

The lateral root (C5,6&7), arises from the lateral cord of the brachial plexus.

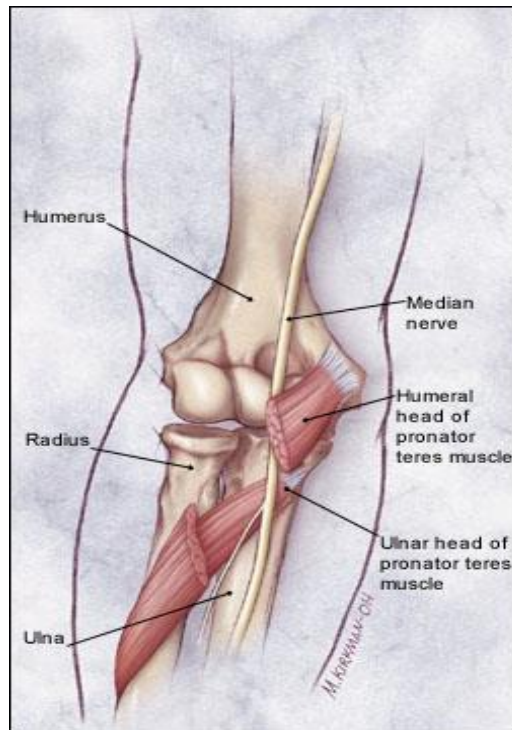
The medial root (C8&T1), arises from the medial cord of brachial plexus.



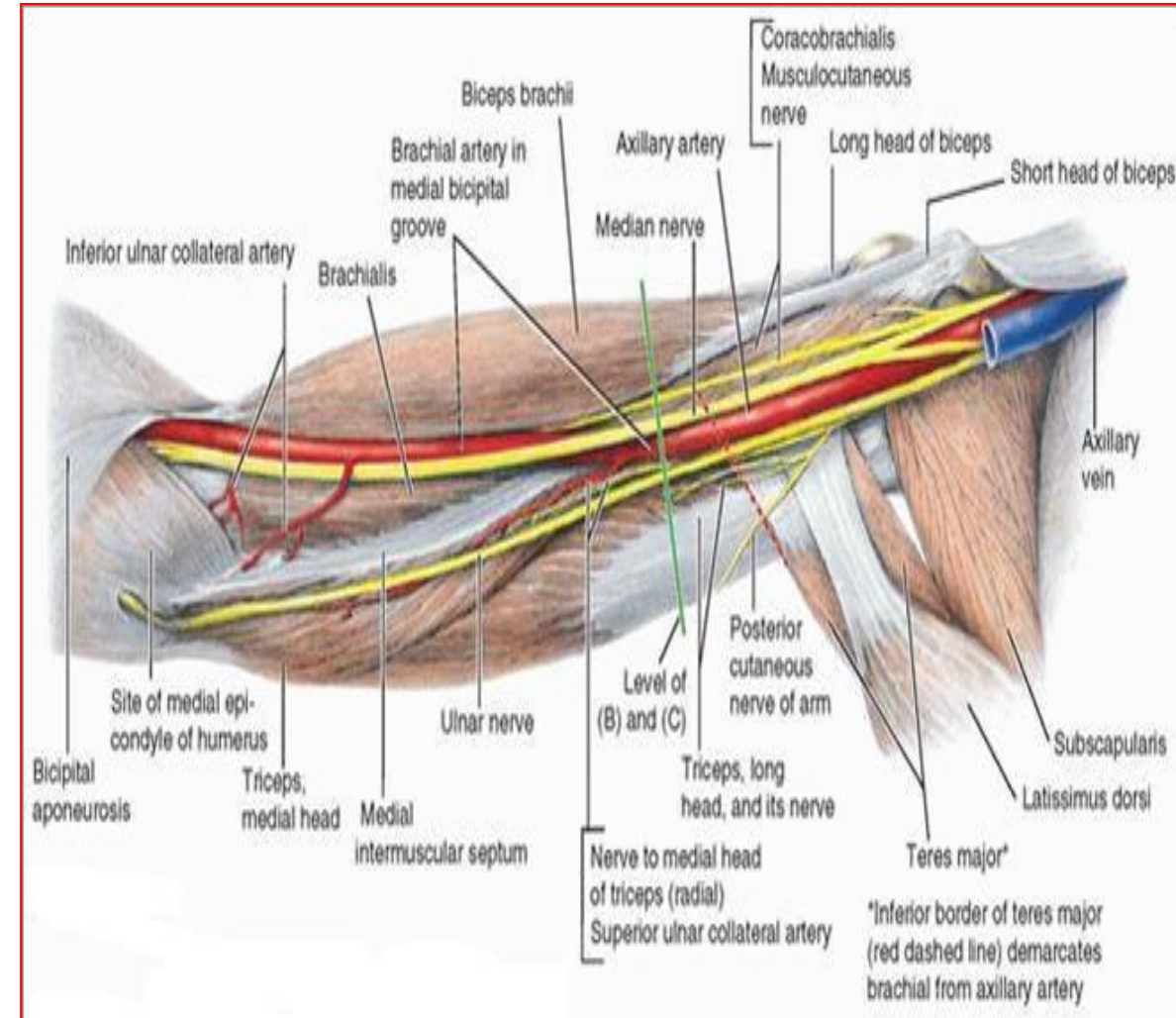
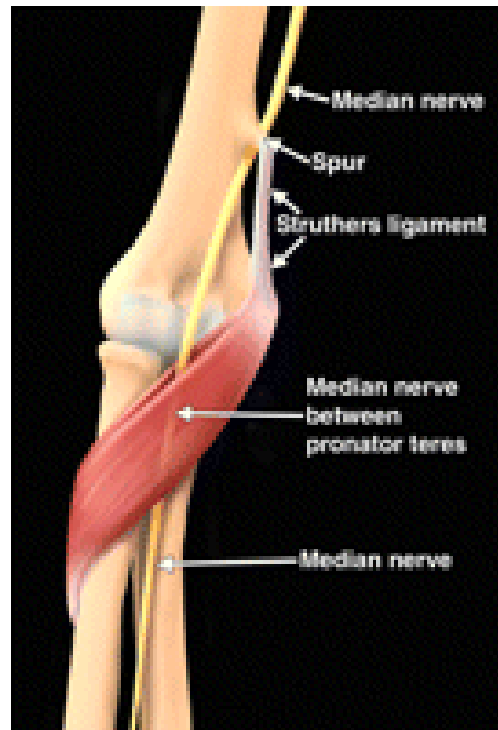


# Median nerve in the arm

The median nerve has **no major branches in the arm**, but a branch to one of the muscles of the forearm, the **pronator teres** muscle, may originate from the nerve immediately proximal to the elbow joint.



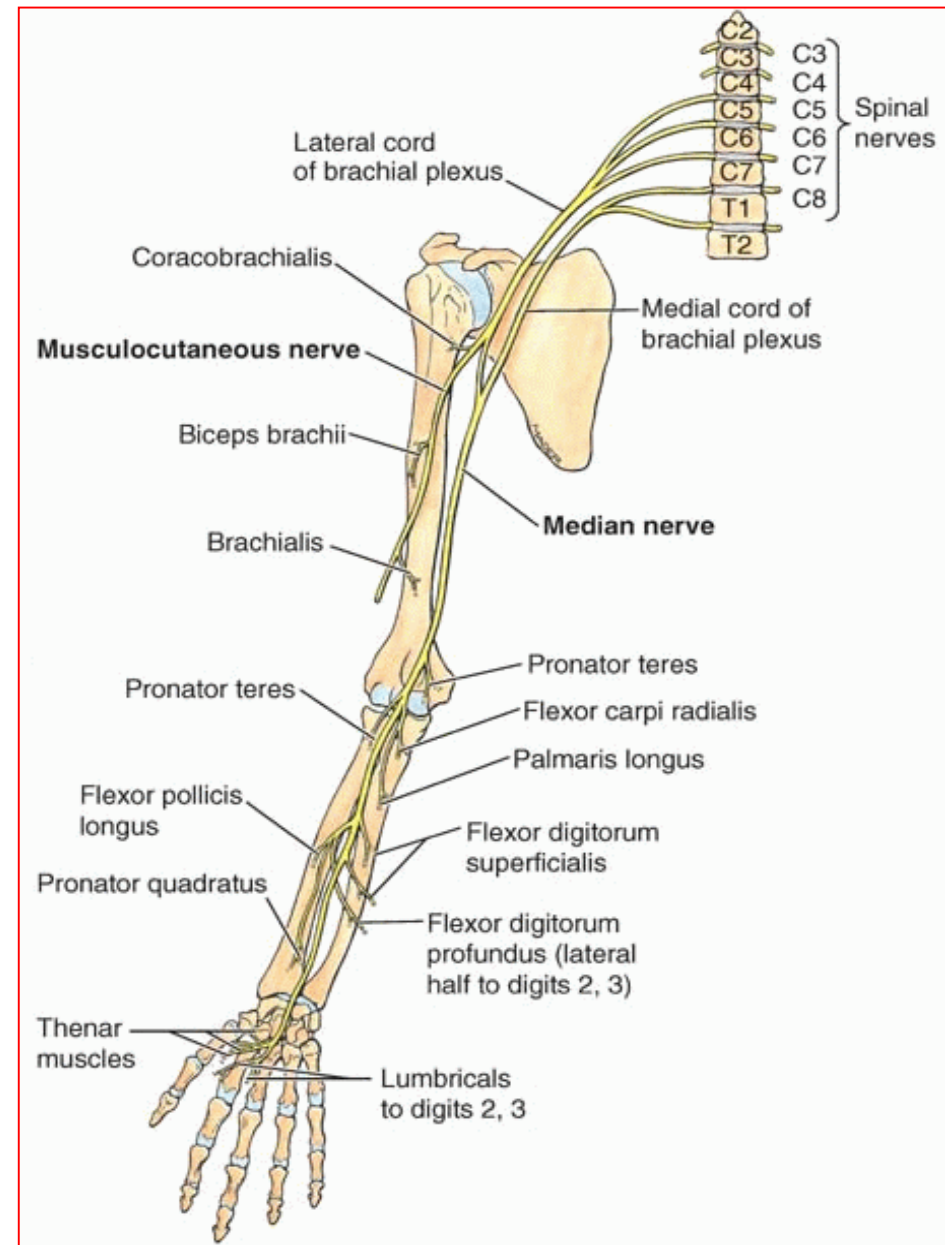
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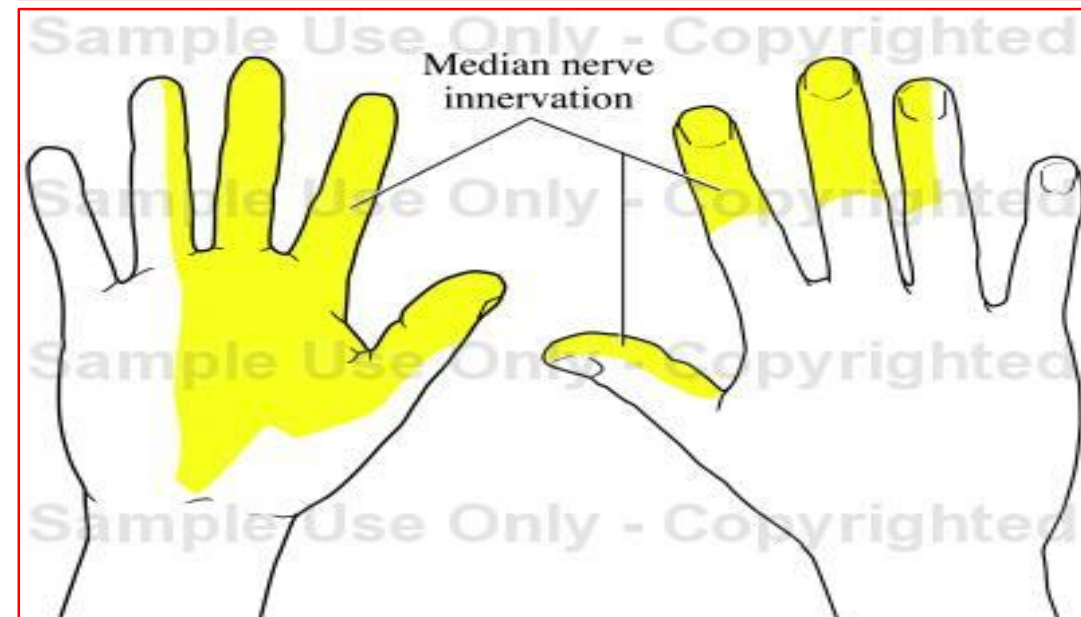
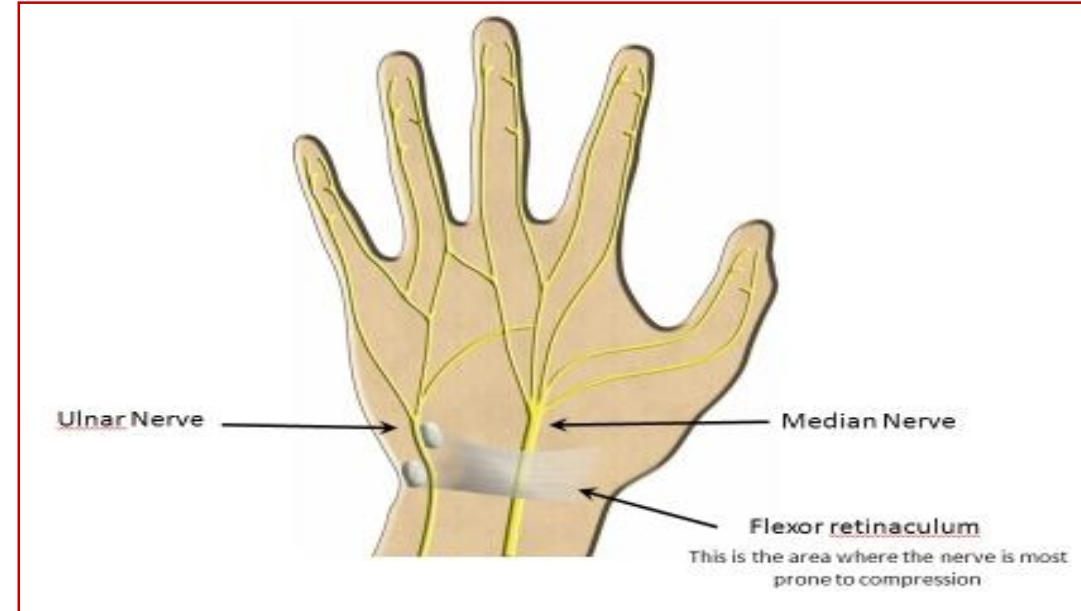
# Median nerve in the forearm

Median nerve passes into the forearm anterior to elbow joint, between the 2 heads of pronator teres. Its branches innervate **most of the muscles** in the anterior compartment of the forearm, (6.5 muscles). (Except the flexor carpi ulnaris, and medial half of the flexor digitorum profundus, which are supplied by the **ulnar nerve** ).



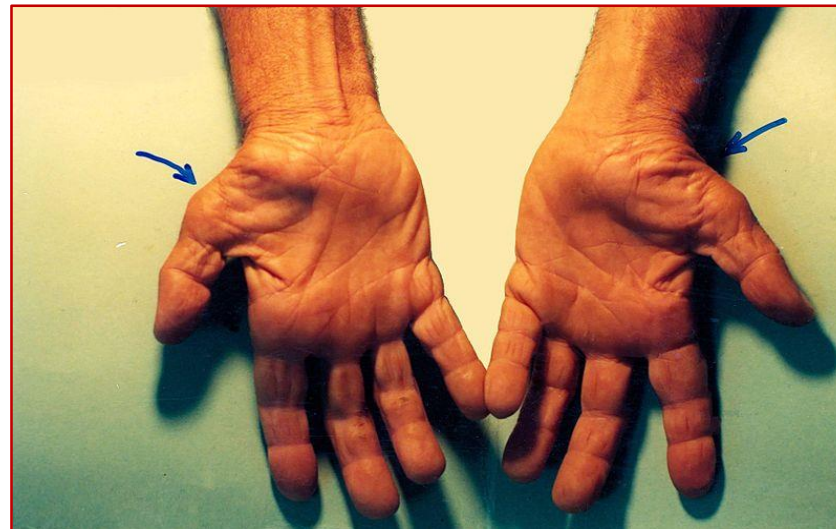
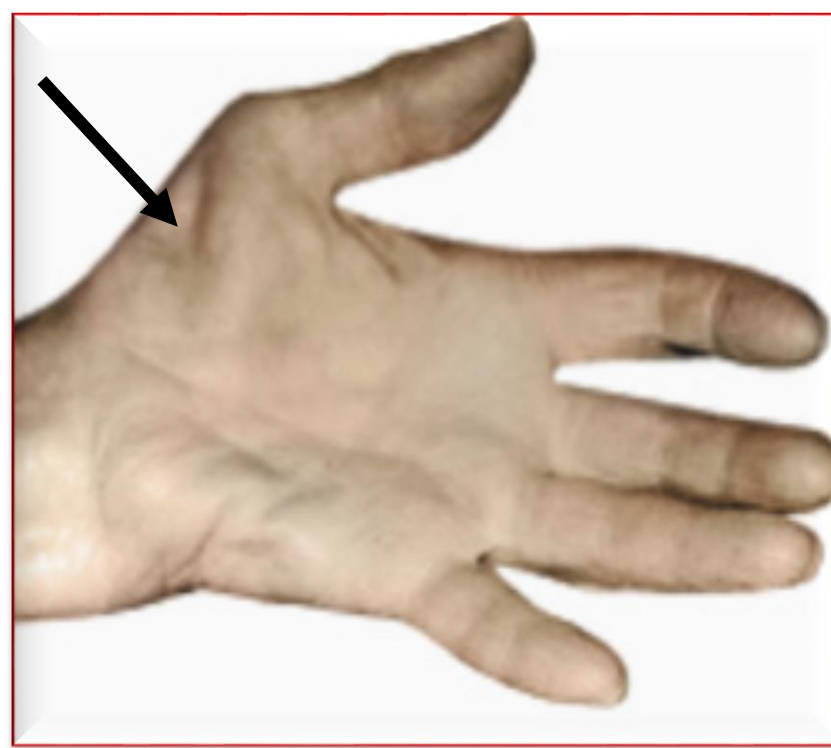
# Median Nerve in the Hand

- The median nerve continues into the hand by passing deep to the **flexor retinaculum**.
- **It innervates:**
  - **The 3 thenar eminence muscles** associated with the thumb.
  - **Lateral 2 lumbrical muscles** associated with movement of the index and middle fingers.
  - **Skin** over the palmar surface of the lateral three and one-half fingers (digits).
  - **The lateral 2/3<sup>rd</sup>** of the palm of the hand.



# Median Nerve Lesion:

- Injury of median nerve at different levels cause different syndromes.
- In the arm and forearm the median nerve is usually not injured by trauma because of its relatively deep position.
- Median nerve can be damaged:
  - In the elbow region.
  - At the wrist above the flexor retinaculum.
  - In the carpal tunnel.

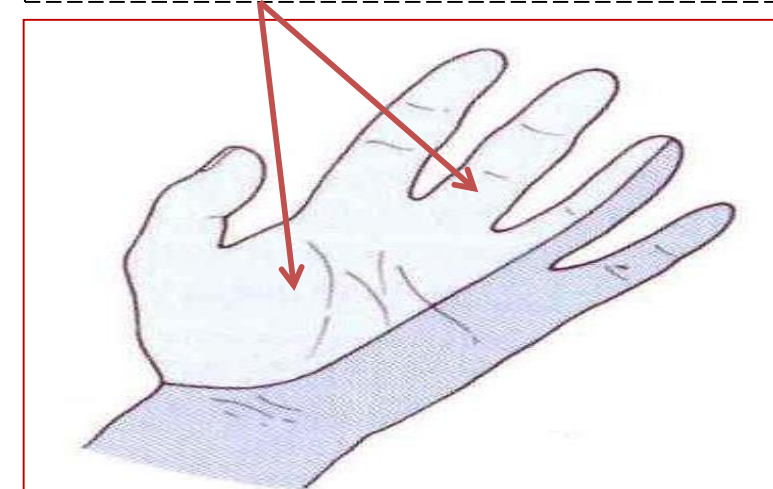


- The most serious disability of median nerve injuries is:

➤ Loss of opposition of the thumb.

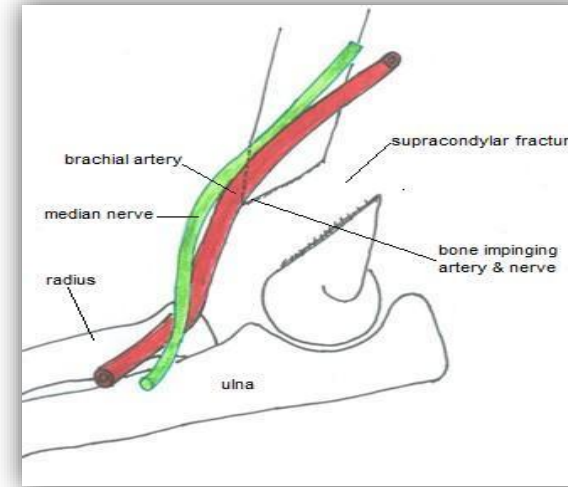
The delicate pincer-like action is not possible.

➤ Loss of sensation from lateral  $3\frac{1}{2}$  fingers & lateral  $\frac{2}{3}$  of the palm.



# Median Nerve Lesion in the Elbow Region:

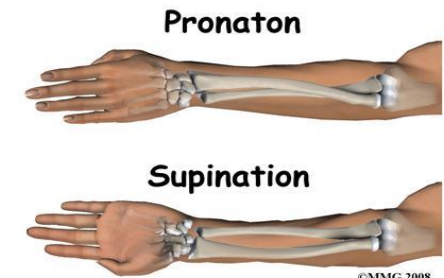
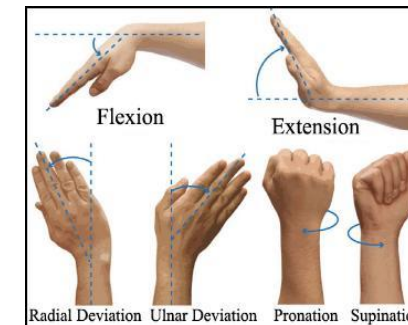
- Damaged in **supracondylar fracture** of humerus.
- ➔ ▪ **Muscles affected are :**
  - 1- **Pronator muscles** of the forearm.
  - 2- All long flexors of the wrist and fingers
- (Except the flexor carpi ulnaris, and medial half of the flexor digitorum profundus )



## Effects

### A) Motor Effects :

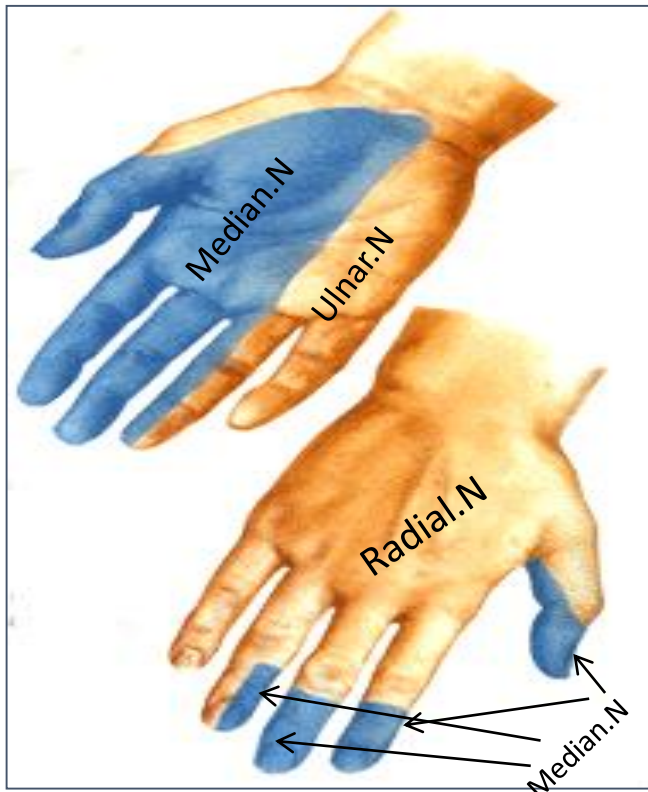
1. **Loss of pronation**. Hand is kept in supine position.
2. Wrist shows **weak flexion**, and ulnar deviation.
3. **No flexion** possible on the interphalangeal joints of the index and middle fingers.
4. **Weak** flexion of ring and little finger.



Continued in the next slide



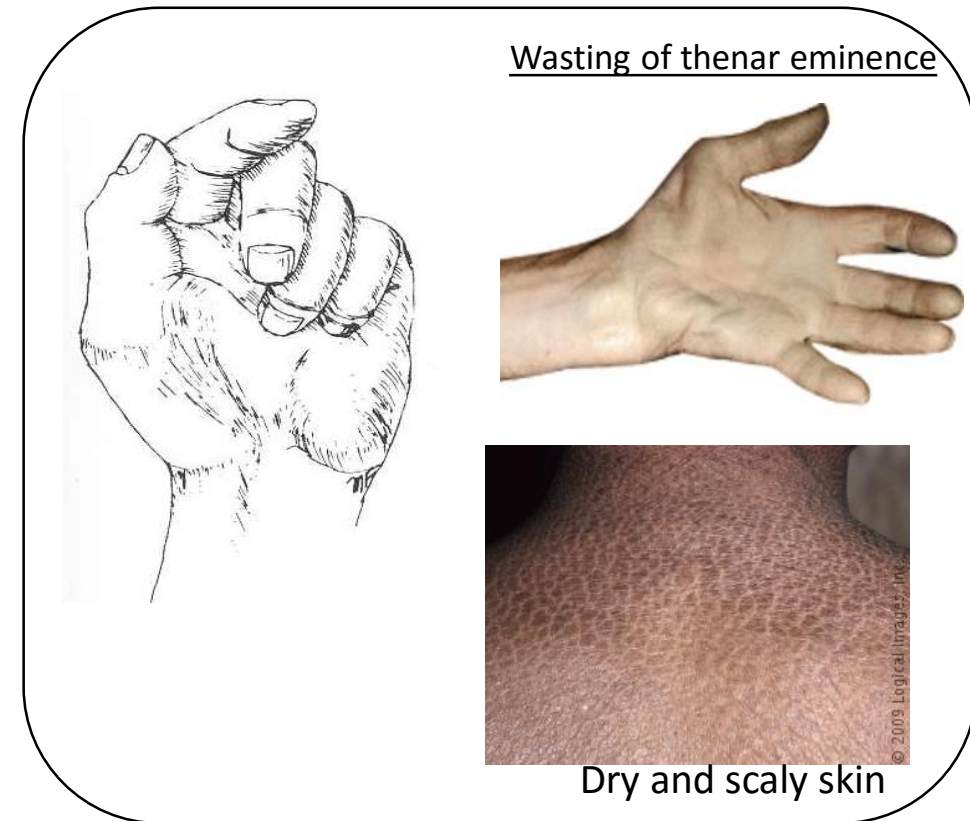
5. **Thumb** is adducted and laterally rotated, with **loss of flexion** of terminal phalanx and **loss of opposition**
6. **Wasting** of thenar eminence.
7. Hand looks **flattened** and **“apelike”**, and presents an inability to flex the three most radial digits when asked to make a fist.



\*these are in sensation state

## B) Sensory Effects:

- **Loss of sensation** from:
  - The radial 2/3<sup>rd</sup> of the palm.
  - Palmer aspect of the lateral 3½ fingers.
  - Distal part of the dorsal surface of the lateral 3½ fingers .



- ✓ **Trophic Changes:**
- Dry and scaly skin.
  - Easily cracking nails.
  - Atrophy of the pulp of the fingers.

# Median Nerve Lesion at the Wrist

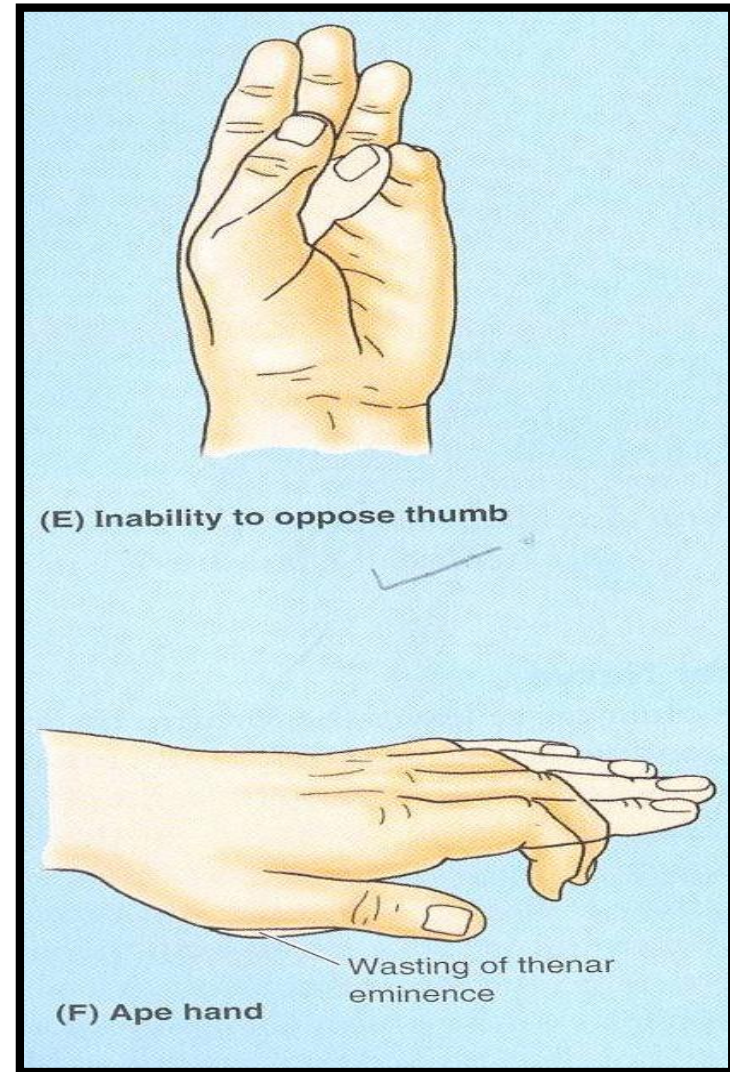
## Motor:



Opposition and abduction of thumb are lost, and thumb and lateral two fingers are arrested in adduction and hyperextension position. "**Apelike hand**"

Thenar muscles are paralyzed and atrophy in time so that the thenar eminence becomes flattened

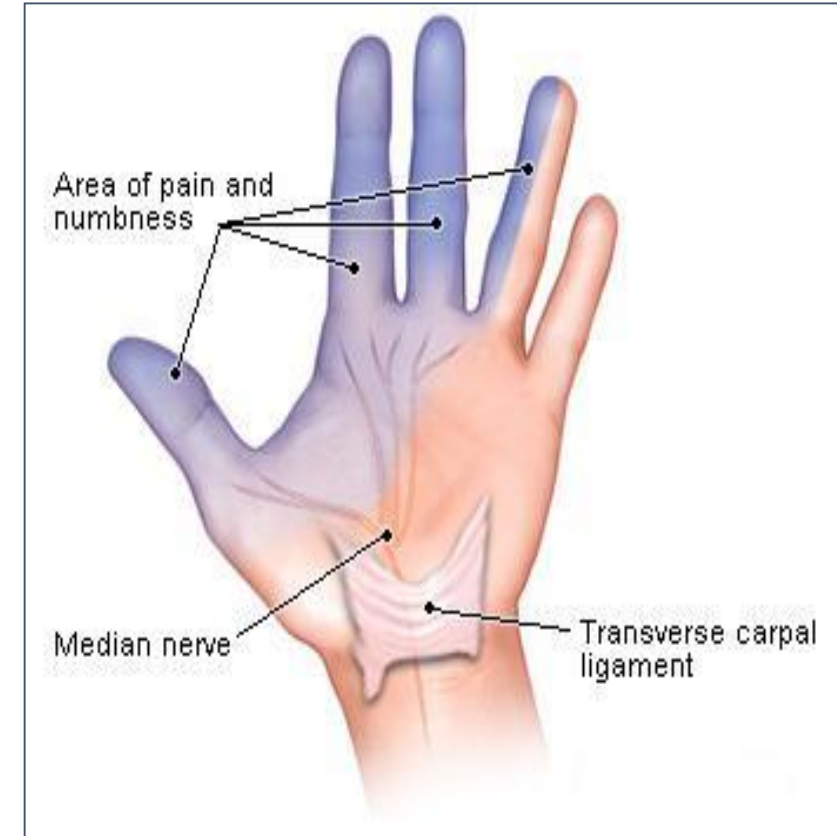
Often injured by penetrating wounds (stab wounds or broken glass) of the forearm.



Sensory & trophic changes are the same as in the elbow region injuries

# Carpal Tunnel Syndrome

- The commonest neurological problem associated with the median nerve is compression beneath the flexor retinaculum at the wrist.
- **Motor:** Weak motor function of thumb, index & middle finger.
- **Sensory:** Burning pain or 'pins and needles' along the distribution of median nerve to lateral 3½ fingers.
- **NB.** No sensory changes over the palm as the **palmer cutaneous branch** is given before the median nerve enters the carpal tunnel.





**Video: axillary nerve link**

<https://www.youtube.com/watch?v=LJE0AExecow>

**Video: median nerve Link**

<https://www.youtube.com/watch?v=N-ZmJzPrrbc>



**Application: Essential anatomy 5  
you can have it for free, ask**

[https://twitter.com/Med\\_435](https://twitter.com/Med_435)



**Quiz:**

<https://www.onlineexambuilder.com/axillary-and-median-nerves/exam-50689>



# SUMMARY 😊

## Axillary Nerve

Origin:

Posterior cord  
Spinal segments:  
C5, & C6

Motor:

Deltoid, teres minor

Sensory:

Skin over upper lateral part of arm

## Median Nerve

Origin:

Medial and lateral cords  
Spinal segments: (C5, C6, C7, C8 & T1)

Motor:

All muscles in the anterior compartment of the forearm (except flexor carpi ulnaris and medial half of flexor digitorum profundus), three thenar muscles of the thumb and two lateral lumbrical muscles.

Sensory:

Skin over the palmar surface of the lateral three and one-half digits and over the lateral 2/3rds of the palm of the hand.

# DON'T FORGET

- **Opponens muscle** : take muscles supply from median nerve .
- **Apelike hand** : injury of median nerve " important"
- **Dislocation** : head leave the glenoid cavity .
- **Branches** : in **Axillary Nerve** will supply 2 muscles and skin.
- Teres minor is responsible for lateral rotation if it injured the body is not affected due to the presence of another muscle which do the same job .
- superior lateral cutaneous nerve of the arm if it affected the sensation of the skin will be lost .
- **Median Nerve Lesion at the Elbow Region (Hand cannot do flexion ) + Median Nerve Lesion at the Wrist (Here I can do supination and flexion of the wrist )**.

هذا العمل إجتهد من طلاب و طالبات  
إن أصبنا فمن الله وإن أخطانا فمن أنفسنا و من الشيطان

### TEAM MEMBERS:

#### Group (2) Leader:

Fahad AlAbdullatif

#### Group(2) members:

Faisal AlJammaz

Faisal AlYahya

Saad AlMotairi

Hassan AlShammasi

Abdulwahab

AlMansour

Talal AlEbewani

Abdullah AlMushawah

Ibrahim AlSuhaim

Fahad AlHomaid

Khaled Al Jedia

### TRAM LEADERS:

Ghaida Aljamili

Elham Alzahrani

Abdullah Alfuraih

Boudor Julaidan

•For questions and suggestions  
you can contact us on  
[Anatomy435@gmail.com](mailto:Anatomy435@gmail.com)

### Editing Team (boys):

Rawhdan Al Nahdi

Abdulwahab Sanari

