

# Nervus ulnaris

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## Ulnar nerve

### Location of the ulnar nerve

The ulnar nerve is one of five nerve branches of the brachial plexus. This nerve bundle sends sensory information and helps you move your shoulders, arms and hands.

The brachial plexus starts as nerve roots in the cervical spine in the neck. The nerves then go behind the clavicle, through the axilla and down the arm.

The ulnar nerve starts at the brachial plexus arising from C8 and T1. It moves down the front of the upper arm near the axillary and brachial arteries. It continues down through the cubital fossa in an area also known as "the funny bone". It then moves beneath the muscles on the medial part of the forearm, along the median nerve and the ulnar bone. It divides into smaller branches and enters the palm from the medial side through the Guyon's canal (ulnar tunnel).

### Branches on the forearm

- **Rami musculares** - for m. flexor carpi ulnaris and for the ulnar half of m. flexor digitorum profundus (*part of the muscle for the 4th and 5th fingers*).
- **Ramus cutaneus palmaris**
- **Ramus dorsalis n. ulnaris** - departs in the distal third of the forearm, turns around the ulna to the dorsal side of the forearm, pierces the fascia, *innervates*: the skin of the ulnar half of the back of the hand and the skin 5th, 4th and ulnar halves of the 3rd finger (*with the exception of the nail joint - innervated from the median nerve*)
- **Ramus palmaris n. ulnaris** - innervates the skin of the ulnar half of the carpal region and extends to the hypothenar and the palm
- **Ramus superficialis** - runs along the hypothenar muscles, runs under and innervates m. palmaris brevis, the final branches innervate the skin of the ulnar part of the palm, the 5th finger and the ulnar half of the 4th. finger - *n. digitalis palmaris communis IV* and 3rd finger *nn. digitales palmares proprii'*
- **Ramus profundus** - pierces the beginnings of the hypothenar muscles into the middle palmar space, it runs in an arc together with the arterial arcus palmaris profundus taken to the fascia interossea palmaris, branches for the hypothenar muscles, for mm. lumbricales (III. , IV.), for all mm. interossei, for m. adductor pollicis and for caput profundum m. flexoris pollicis brevis

## Functions

- Motor functions:
  - Innervates flexor carpi ulnaris and medial half of flexor digitorum profundus
  - Intrinsic muscles of the hand (apart from the thenar muscles and two lateral lumbricals)
- Sensory functions:
  - Medial one and half fingers
  - medial half of palm area.

## Ulnar nerve palsy

### Damage at the Elbow

- **Cause:** Trauma at the level of the medial epicondyle (e.g. isolated medial epicondyle fracture, supracondylar fracture). It can also be compressed in the cubital tunnel.
- **Motor functions:**
  - Flexion of the wrist is accompanied by abduction (due to paralysis of flexor carpi ulnaris and medial half of flexor digitorum profundus).
  - Abduction and adduction of the fingers cannot occur (due to paralysis of the interossei).
  - Movement of the 4th and 5th digits is impaired (due to paralysis of the medial two lumbricals and hypothenar muscles).
  - Adduction of the thumb is impaired, and the patient will have a positive Froment's sign.
  - Froment's sign (testing adductor pollicis)-
    - A positive test is when the patient is unable to adduct the thumb when asked to pinch a piece of paper as it is pulled away. Instead, they flex the thumb at the interphalangeal joint to try to maintain a hold on the paper.

### Damage at the Wrist

- **Causes:** Lacerations to the anterior wrist.

- **Motor functions:**
  - Intrinsic muscles of the hand are affected.
  - Abduction and adduction of the fingers cannot occur (due to paralysis of the interossei).
  - Movement of the 4th and 5th digits is impaired (due to paralysis of the medial two lumbricals and hypothenar muscles).
  - The patient will have a positive Froment's sign due to impaired adduction of the thumb.
- **Sensory functions:** Sensory loss over palmar side of medial one and a half fingers.

## Links

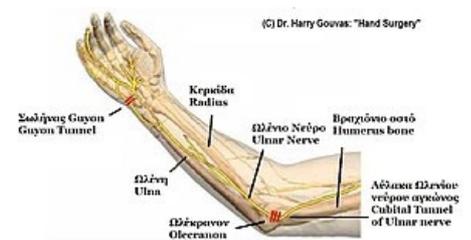
### Related Articles

- Ulnar nerve palsy
- The Ulnar Nerve - Course - Motor - Sensory - TeachMeAnatomy

### References

- PETROVICKÝ, Pavel. *Anatomy with topographic and clinical applications*. Osveta edition. 2002. 542 pp. ISBN 80-8063-048-8.
- The Ulnar Nerve - Course - Motor - Sensory - TeachMeAnatomy. Accessed on 20/04/2024.
- Cleveland Clinic. "Ulnar Nerve: Anatomy, Function & Common Conditions." *Cleveland Clinic*, 22 July 2021, <https://my.clevelandclinic.org/health/body/21664-ulnar-nerve>

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