

Ulnar Nerve

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MARTIN-GRUBER anastomosis - nerve anomaly consisting of median to ulnar nerve communication (crossover).

The UN is composed of contributions from C7, C8, and T1 and is the terminal continuation of the medial cord of the brachial plexus.

The UN enters the medial part of the arm by traveling in a groove between the coracobrachialis and triceps. The nerve initially travels into the arm with the axillary artery but diverges posteriorly and medially from the brachial artery.

The UN pierces the medial intermuscular septum near the midpoint of the arm and then travels along the anterior aspect of the medial head of the triceps. In some cases, the UN will run within the triceps muscle.

As the UN approaches the postcondylar groove, it may traverse a thickened fascial structure known as the arcade of Struthers approximately 8 cm proximal to the elbow. The nerve enters the postcondylar groove posterior to the medial epicondyle and then gives off articular branches to the elbow. The UN courses between the medial epicondyle and olecranon within the cubital tunnel, the most common site of entrapment.

CUBITAL TUNNEL

The roof of the cubital tunnel is formed by the cubital tunnel retinaculum or arcuate ligament of Osborne, which extends from the tip of the olecranon to the medial epicondyle. The fibers of the retinaculum are oriented in transverse fashion and become taut with elbow flexion.

The floor is formed by the capsule of the elbow joint and the medial collateral ligament.

The walls are formed by the medial epicondyle and olecranon.

The distal extent of the retinaculum fuses with the common aponeurosis of the flexor carpi ulnaris (FCU) muscle, also referred to as Osborne's fascia, another common site of entrapment.[83,85,86] The UN enters the forearm between the ulnar and humeral heads of the FCU and provides muscular branches for innervation of this muscle. Approximately 3 cm distal to the cubital tunnel, the UN pierces the flexor pronator aponeurosis, another potential site of entrapment.[86,87] The UN continues down the forearm and gives off muscular branches to the ulnar half of the FDP muscle. The palmar cutaneous branch of the UN originates approximately 16 cm proximal to the ulnar styloid and provides sensation to the distal ulnar aspect of the forearm.[88] In the distal part of the forearm, the dorsal cutaneous branch of the UN passes medial to the FCU and enters the dorsal ulnar portion of the hand.

The UN enters the hand through Guyon's canal, which is a fibro-osseous tunnel between the pisiform and hook of the hamate. The floor of this canal is the pisohamate ligament, and the roof is the superficial volar carpal ligament. Guyon's canal is another potential site of entrapment, and within the canal the UN divides into a superficial and a deep branch. The superficial branch of the UN innervates the palmaris brevis muscle and continues to the fourth and fifth fingers as a sensory nerve. The deep or motor branch of the UN innervates the hypothenar muscles, the interosseous muscles, and the third and fourth lumbricals and ends by supplying the adductor pollicis and medial head of the flexor pollicis brevis.

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