

Ulnar Nerve Entrapment

Anatomy:

Ulnar Nerve: C8, T1 [C7 borrowed fibres]

Nerve supply: Motor: Forearm, - Flexor carpi ulnaris, ulnar side of FDP
: Hand - All interossei, Adductor pollicis and
Deep head of flexor digitorum brevis,
2 medial lumbricals

Sensory - ulnar 1 1/2 digits both sides

Normally in 16% ulnar nerve subluxation

Martin Gruber anastomoses [10% of population]:

Ulnar intrinsic muscles receives from median nerve or from Anterior interosseous nerve

Sites for entrapment of ulnar nerve at elbow

1. Struther's Arcade
2. Medial Intermuscular septum
3. Retinaculum
4. Osborne fascia [Driscoll fascia]: Between two heads of FCU]
5. osteophytes
6. FDS aponeuroses

Other causes: Cubitus valgus; OA elbow; Supracondylar fracture

Arcade of Struthers:

Fascial structure extends from the medial head of the triceps to the medial intermuscular septum located 8 cm proximal to the Medial humeral epicondyle.

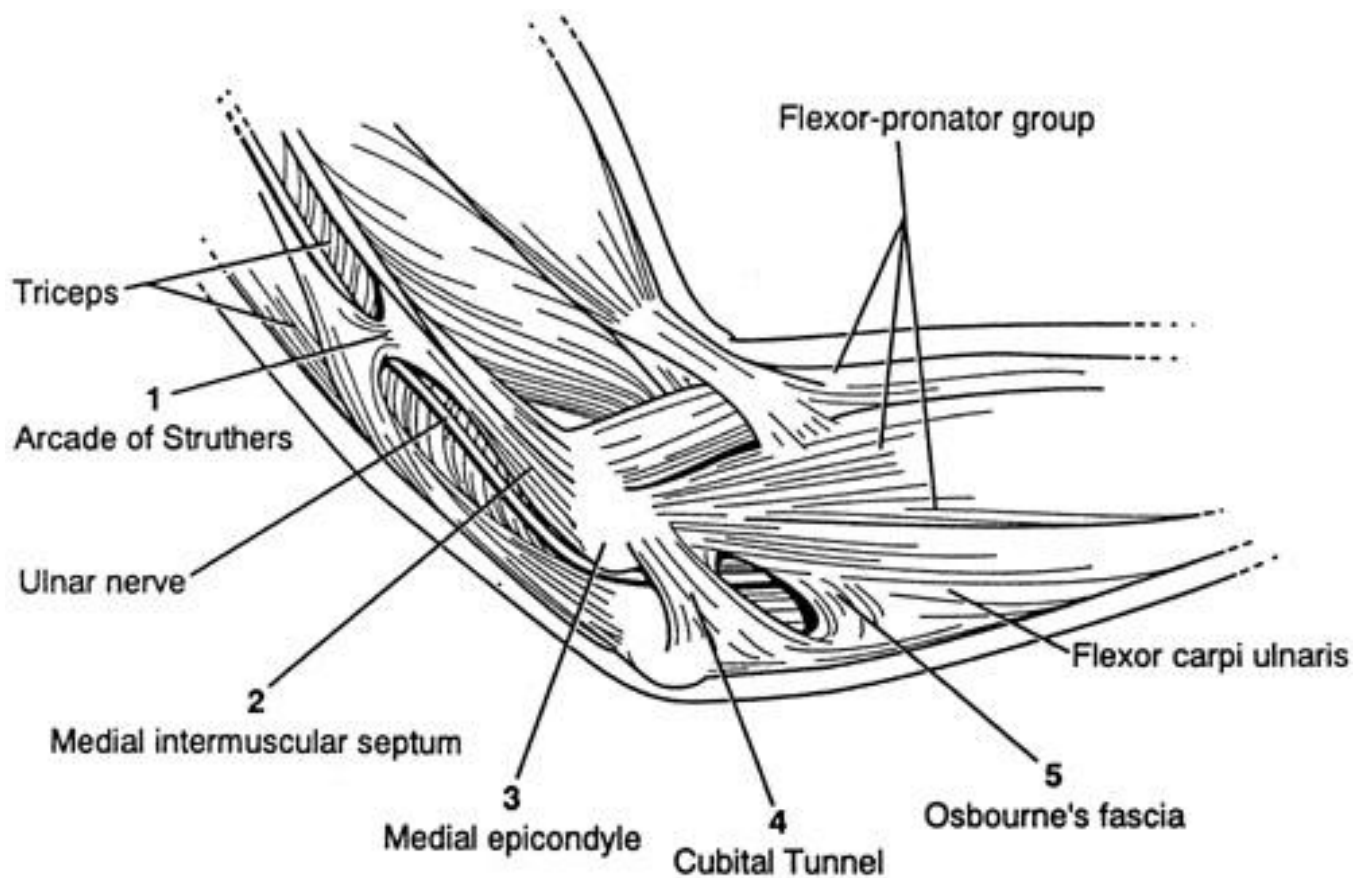
Present in 70%

Ligament of Struther

From bony or cartilage spur 5 cm above the medial epicondyle to the medial epicondyle

1%

Can get primary compression of the **Median nerve and brachial artery**



Differential diagnosis

- 1.cervical radiculopathy
- 2.thoracic outlet syndrome
- 3.spinal cord pathology
- 4.cervical spondylosis
- 5.pancoast tumour
- 6.amyotrophic lateral sclerosis (MND)
- 7.localised peripheral neuropathy

Cubital tunnel syndrome

Cubital tunnel: is a fibro-osseous tunnel

Formed by: Retinaculum of the tunnel and distally by Osborne ligament
 Medial epicondyle and FCU
 Elbow joint with MCL

Retinaculum is 4 mm wide. It extends from medial epicondyle to the tip of the olecranon and distally merges with Osborne aponeurosis between two heads of FCU

Symptoms of ulnar neuropathy

Vague dull aching forearm, intermittent paraesthesia, ulnar side of hand
Numbness in the little and ring finger
Clumsiness in the hand

Signs

Wasting and muscle weakness [small muscles of the hand]
Decreased sensation in the little finger and medial aspect of middle finger
Tinel's test, behind medial epicondyle
Wartenberg's sign: little finger remain abducted due to Extensor digiti minimi
Froment's sign: due to weakness in adductor pollicis

Ulnar paradox – More proximal the lesion, less is the claw. This is due to paralysis of flexor digitorum profundus which reduces flexion of the interphalangeal joint.

Investigation

NCS: Reduced nerve conduction velocity
Increased latency
A reduction in sensory nerve action potential [a sensitive indicator]
EMG evidence of denervation or reinnervation

Management

Conservative

Avoidance of repetitive bending of elbow
Elbow extension block night splint.
Local cortisone at elbow is contra-indicated
Anti-inflammatory drugs

Surgery: Progressive symptoms or refractory to medical treatment.

Anterior Transposition

The three methods of anterior transposition—subcutaneous, intramuscular, and submuscular. Subcutaneous transposition is commonly employed and is described below.

Skin incision: Center the incision between the olecranon and the medial epicondyle, and extend it along the axes of the humerus proximally and ulna 8–10 cm distally.

Extend the exposure to adequately visualize the ulnar nerve along its course from the arcade of Struthers to well into the interval between the heads of the FCU

Decompress the nerve in the cubital tunnel; lift the retinaculum and divide it.

Trace the nerve into the FCU muscle. Divide the origin of the arch of the FCU

Continue decompression of the nerve between the heads of the FCU (do not damage the multiple muscular branches in this area), releasing Osborne's fascia, the fascia of the two heads of the FCU, and the pronator aponeurosis.

Trace the nerve approximately 8 cm proximally.

Release the arcade of Struthers.

Excise the distal 8 cm of the intermuscular septum of the arm to prevent secondary impingement on the nerve after anterior transposition.

Take care not to damage any of the vessels associated with the nerve. Multiple vascular leashes exist near the insertion of the septum into the medial epicondyle

May need to divide small branches arising from the nerve to the joint; branches to the FCU must be preserved.

Once nerve is fully decompressed, couple of subcutaneous stitches applied to prevent subluxation of the nerve.

Post-operative improvement: Improvement in pain occurs first than sensation. Motor recovery is last to occur.

There are some study shows that there is no difference with decompression and anterior transposition. However, most surgeons refer anterior subcutaneous transposition

Guyon's canal

Space between the pisiform and hook of the hamate

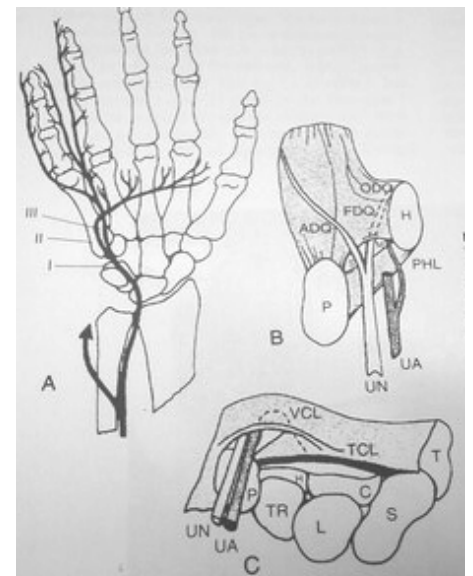
Contents: Ulnar nerve artery [nerve is medial]

Boundaries:

Superficial:	Palmar carpal ligament
Floor:	Pisohamate ligament
Ulnar side	Pisiform
Radial side	Hook of the hamate

Gelberman 3 zones:

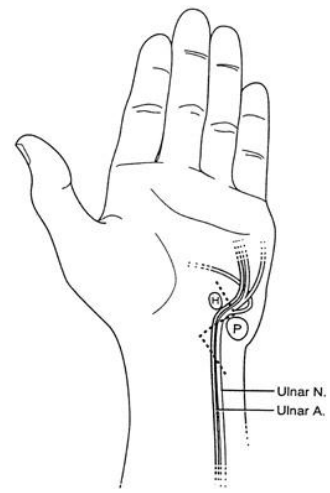
I: Proximal: Before bifurcation of ulnar Nerve
II: Deep motor
III: Superficial sensory branch
[Thrombosis in Zone III]



Symptoms and signs

1. Tinel's sign at the wrist
2. Dorsal carpal branch of the ulnar nerve is spared
3. Claw is more pronounced
4. FDP and FCU is spared

Non-op treatment: is similar to Cubital tunnel syndrome



Surgical: Treatment for ulnar nerve entrapment at Guyon's canal decompression of motor and sensory branches with or without- excision of pisiform/ hook of hamate