

GUYON'S CANAL RELEASE

General	Ulnar nerve entrapment at the wrist needs to be carefully distinguished from the more common proximal causes (thoracic outlet and cubital tunnel syndromes); this can and should be done by careful clinical examination backed up by nerve conduction studies.
Pointers	Sparing of dorsal cutaneous branch involvement Sparing of FCU/FDP little and ring Positive tap test
Aetiology	Anomalous muscles/ossicles Space-occupying lesions Ganglia/lipoma Ulnar artery anomaly Inflammatory arthritis Trauma # hamate/# wrist Vibration (cyclists/work)
Anatomy	As with so much of what we do in hand surgery the anatomy of this area is vital to the planning and execution of surgery. Guyon (French Urologist) described this space in 1861. It contains and transmits the ulnar nerve and artery + venae comitantes (which retain their relationship from forearm distally). It is about 3.5cm long. There are 3 potential "zones" for compression within the canal: Zone 1 – proximal, mixed nerve (before bifurcation) Zone 2 – disto-radial, motor weakness only Zone 3 – disto-ulnar, sensory symptoms
Investigations	Neurophysiology Ultrasound MRI
Landmarks	FCU Pisiform bone Deep fascia of forearm and volar carpal ligament (proximal extent and roof) Palmaris brevis (roof) Hamate bone 1 –1.5 cm radio-distal to pisiform (disto-radial boundary) Transverse carpal ligament and PISO-hamate ligament (floor) Fibrous arcade of origin of hypothenar muscles (exit)
Relations	Ulnar nerve and vessels palmar (superficial) to median nerve Vertical proximity of ulnar vessels to median nerve Ulnar nerve usually deeper and radial to vessels Single nerve but 2 group fascicles Palmar cutaneous branch of ulnar nerve (radial to main trunk) in 15%
Set-up	Axillary block and tourniquet control

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Surgery

Incision starts 2-3cm proximal to pisiform along radial border of FCU.

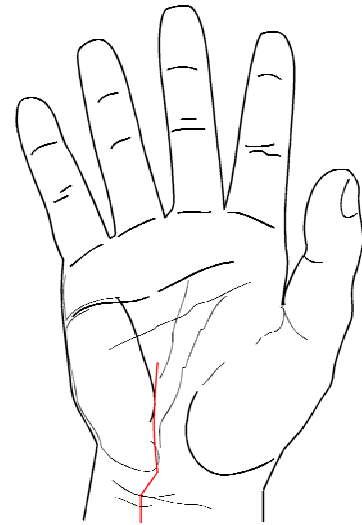
Zig-zag over wrist creases staying ulnar to line of palmar branch of ulnar nerve. Then straight and/or curving radially if compression in Zone 2.

Cutaneous nerve sparing initial dissection

Palmaris brevis, palmar aponeurosis and superficial volar carpal ligament in same plane with transverse carpal ligament DEEP to these and dorsal to contents of Guyon's canal

Deeper dissection: origins of abductor digiti minimi and then flexor digiti minimi from piso-hamate ligament and then forming arch curving radially with sensory division of ulnar nerve travelling superficially and deep (motor) division passing ulnar to hook of hamate (arrowed) before passing through opponens digiti minimi into deep spaces of palm.

Progressive release of structures: volar carpal ligament, palmaris brevis, fibrous arcade of ADM, FDM (often radial most muscle fibres of origin as well) and follow motor branch down into muscle tunnel between these former 2 muscles and ODM



Closure

Close skin only
Gauze, wool, bandage

Beware

Branch to ADM
Superficial branch of nerve may pass intramuscular
Follow deep branch

Rehabilitation

Elevate hand 2-3 days
Encourage early use of hand
Mobilise nerve

Complications

Nerve injury
Nerve adhesions
Failure to improve
Recurrence of cause



Right Guyon's canal; distal to left, showing from above; the ulnar artery, the sensory branch (retracted), the main motor branch and the branch to ADM