



VOLAR ULNAR APPROACH TO THE DISTAL RADIUS AND CARPUS



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We report a technique to approach the distal radius and carpus through the floor of Guyon's canal and the carpal tunnel.

TECHNIQUE

Step 1: Incision

Just to the radial side of FCU tendon, obliquely across the wrist, over the carpal tunnel in the line of the ring finger. and then curves just distal to the thenar crease (Fig. 1). To preserve the palmar cutaneous branch of the median nerve and the palmar cutaneous nerve of the ulnar nerve.^{1,2,3}



Fig 1

Step 2: Release Ulnar N-V Bundle

The ulnar neurovascular bundle is identified in the forearm just deep to the FCU tendon. The ulnar neurovascular bundle is released from the forearm to the palm by dividing:

- the antebrachial fascia of the forearm.
- the volar carpal ligament (roof of Guyon's canal) (Fig 2)
- the palmar aponeurosis which overlies the superficial palmar arch.



Fig 2

Step 3: Release flexor retinaculum

The hook of the hamate is easily palpated and is a good landmark to the ulnar border of the flexor retinaculum which is divided.

Step 4: Expose the distal radius

- The flexor tendons are separated from the ulnar N-V bundle and FCU. Flex the wrist to allow the flexor tendons and median nerve to be delivered from the carpal tunnel.
- With the aid of Hohmann retractors the pronator quadratus and carpus are exposed. (Fig 3)
- The pronator quadratus is divided and reflected to exposure the distal radius. (Fig 4 and 5). The carpus can be exposed by dividing the volar wrist capsule.



Fig 3



Fig 4



Fig 5

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Step 5: Extensibility

Proximally the exposure can be extended between FCU and the finger flexor tendons to the elbow. Distally the exposure can be extended to the superficial palmar arch at the distal aspect of the outstretched thumb.

46 of 53 patients who had this surgical approach were independently reviewed.

RESULTS

Average pain score (VAS 0-10) - 2.0. Average satisfaction level (VAS 0-10) - 8.0. Grip strength was 73%. Flexion-extension arc - 84% and forearm rotation - 98% of the opposite side respectively.

Complications included two infections. There were no complications related to the surgical approach such as neurovascular structures or flexor tendons.

Why release the ulnar N-V bundle?

- Guyon's canal is released as it provides a safe "door-way" to the ulnar aspect of the flexor retinaculum.
- The ulnar neurovascular bundle is close to the line of the ring finger and can be injured if it is not identified during exposure of the flexor retinaculum*.

Why release the ulnar border of the flexor retinaculum?

- To prevent bowstringing and injury to the palmar cutaneous branch and the motor branch of the median nerve.^{1,2,8,9,10}
- Release of the flexor retinaculum greatly enhances the exposure.

CONCLUSION

The volar-ulnar approach to the distal radius is a universal extensile approach to the volar aspect of the distal radius and carpus. This approach decompresses the ulnar and median nerves at the level of the wrist, and provides excellent exposure of the flexor tendons, distal radius, distal radio-ulnar joint and carpus. It is a safe approach which avoids injury to the palmar cutaneous branch of the median nerve and the recurrent motor branch of the median nerve.

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Indications for Volar Ulnar Approach

Guyon's canal decompression	2
Carpal tunnel	
Decompression	16
Excision of space-occupying lesion	5
Neurolysis	5
Flexor tendon repair or reconstruction	1
Tenolysis	3
Infective tenosynovectomy	2
Carpus	
Perilunate dislocation (decompression of carpal tunnel and repair of volar ligament)	5
Distal radius	
ORIF of Barton's fracture	7
Distal radio-ulnar joint	
Volar dislocation of distal ulnar	1
Forearm	
Faciotomy, distal ulnar fracture	2
Removal of foreign body	1
Total	53

Table 1

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