

A CASE OF ULNAR NERVE COMPRESSION AT THE WRIST

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SYNOPSIS

Ulnar Nerve compression at the wrist, though documented in Western countries, is not a frequent finding in this part of the world. A case of bilateral ulnar nerve compression at the wrist is presented. The anatomy of the distal part of the ulnar nerve is reviewed while the aetiology and pathogenesis of the clinical features of this syndrome are briefly discussed.

Peripheral nerve entrapment (compression) and traction syndromes are well recognized in certain anatomical sites. Commonly affected nerves are the median nerve in front of the wrist, the ulnar nerve behind the elbow, the lateral cutaneous nerve of the thigh behind the inguinal ligament, the peroneal nerve at the knee and the posterior tibial nerve behind the ankle (Apley, 1972). A less commonly documented situation is the ulnar carpal tunnel at the wrist. This is a case report of a patient presenting with bilateral ulnar carpal tunnel syndrome.

CLINICAL REPORT

N. H., a 25-year-old Malay female first presented about two years ago, complaining of pain in the region of the right pisiform bone radiating proximally into the ulnar aspect of the forearm and distally to the ring and little fingers. A physical examination done then revealed no abnormality apart from tenderness around the pisiform bone. As the pain was hampering her activity as a typist, exploration of the ulnar nerve at the wrist was undertaken. At operation, a tense fibrous band was found compressing the ulnar nerve. Division of this band gave her complete relief of symptoms.

She remained well till one year ago when she began to experience similar pain and tenderness at her left wrist. These symptoms were aggravated by movements of her hand and by external pressure at the radial aspect of the pisiform bone. In addition, she also complained of weakness in her fingers. There was neither a history of preceding trauma nor a past history of any significance.

Furthermore, she did not have any unusual hobby that could account for these complaints.

On clinical examination the patient was found to be a healthy young female. Her cardiovascular, respiratory and central nervous systems and abdomen were normal. Local examination revealed minimal wasting of the hypothenar eminence. Tenderness at the pisiform bone with radiation of pain along the little finger was elicited. The volar aspect of the little finger was hypoaesthetic. Finger movements were full and there was no detectable weakness in the muscles innervated by the ulnar nerve.

Exploration of the ulnar nerve at the left wrist revealed a normal anterior carpal ligament overlying the ulnar nerve (Fig. 1). On dividing this ligament, the ulnar nerve, running down the wrist on the radial side of the pisiform bone, was found coursing anterior to a very tense and sharp proximal edge of the transverse carpal ligament (Fig. 2). This ligament was also divided.

The post-operative course was uneventful and the patient has been symptom-free since the operation.

DISCUSSION

The term Ulnar Tunnel Syndrome was coined by Dupont in 1965. To better appreciate the manifestations of ulnar nerve compression at the wrist, the anatomy of the distal part of the ulnar nerve is reviewed Hayes (1969), Kleiner (1971), Shea (1969), Vanderpool (1968). The dorsal cutaneous branch to the hand is given off some distance proximal to the wrist—hence in order to localise the lesion as being at the wrist, one should ensure that there is intact sensation on the dorsal ulnar aspect of the hand. The ulnar nerve then passes through the ulnar carpal canal of Guyon, which is a triangular space bounded medially by the flexor carpi ulnaris tendon and the pisiform bone, anteriorly by the anterior carpal ligament and posteriorly by the transverse carpal ligament (flexor retinaculum). Distal to

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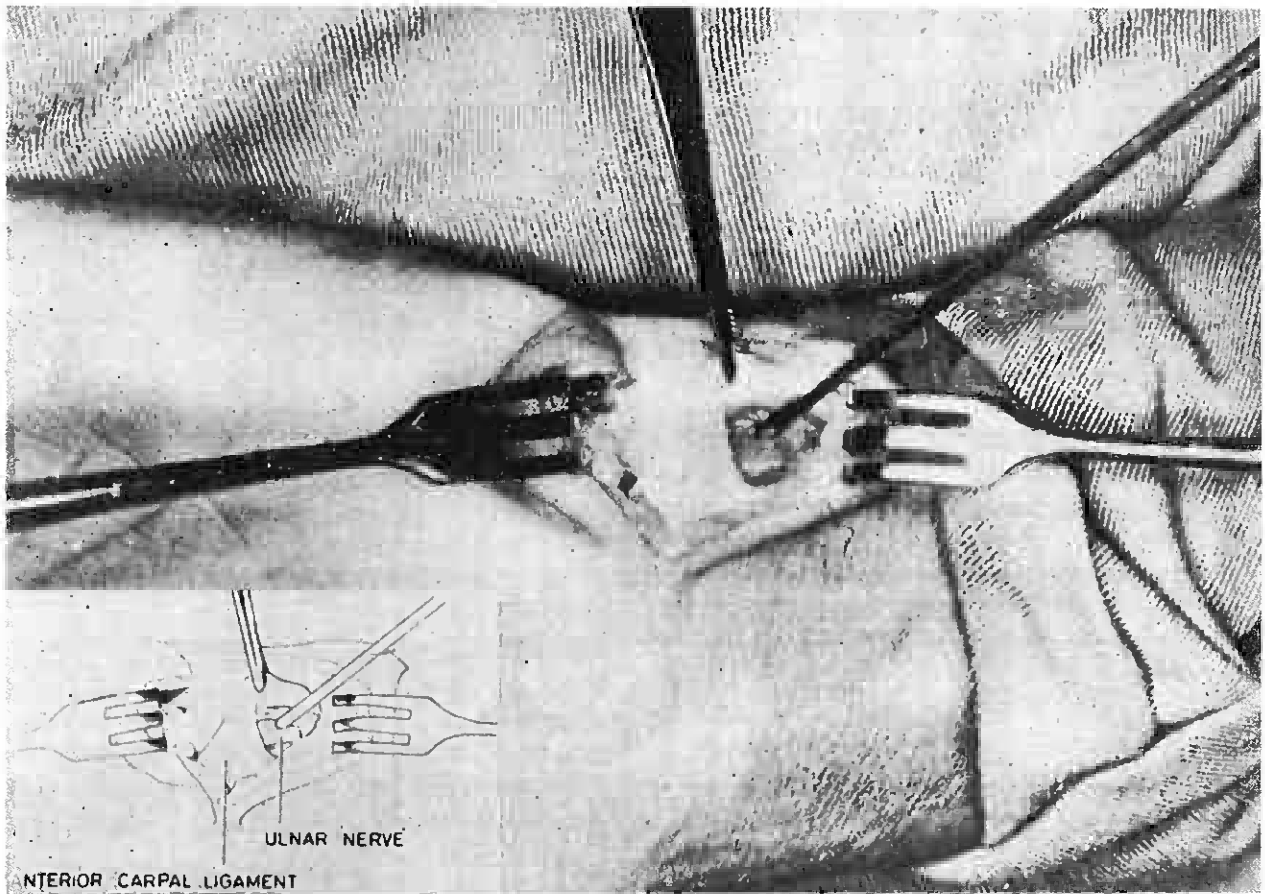
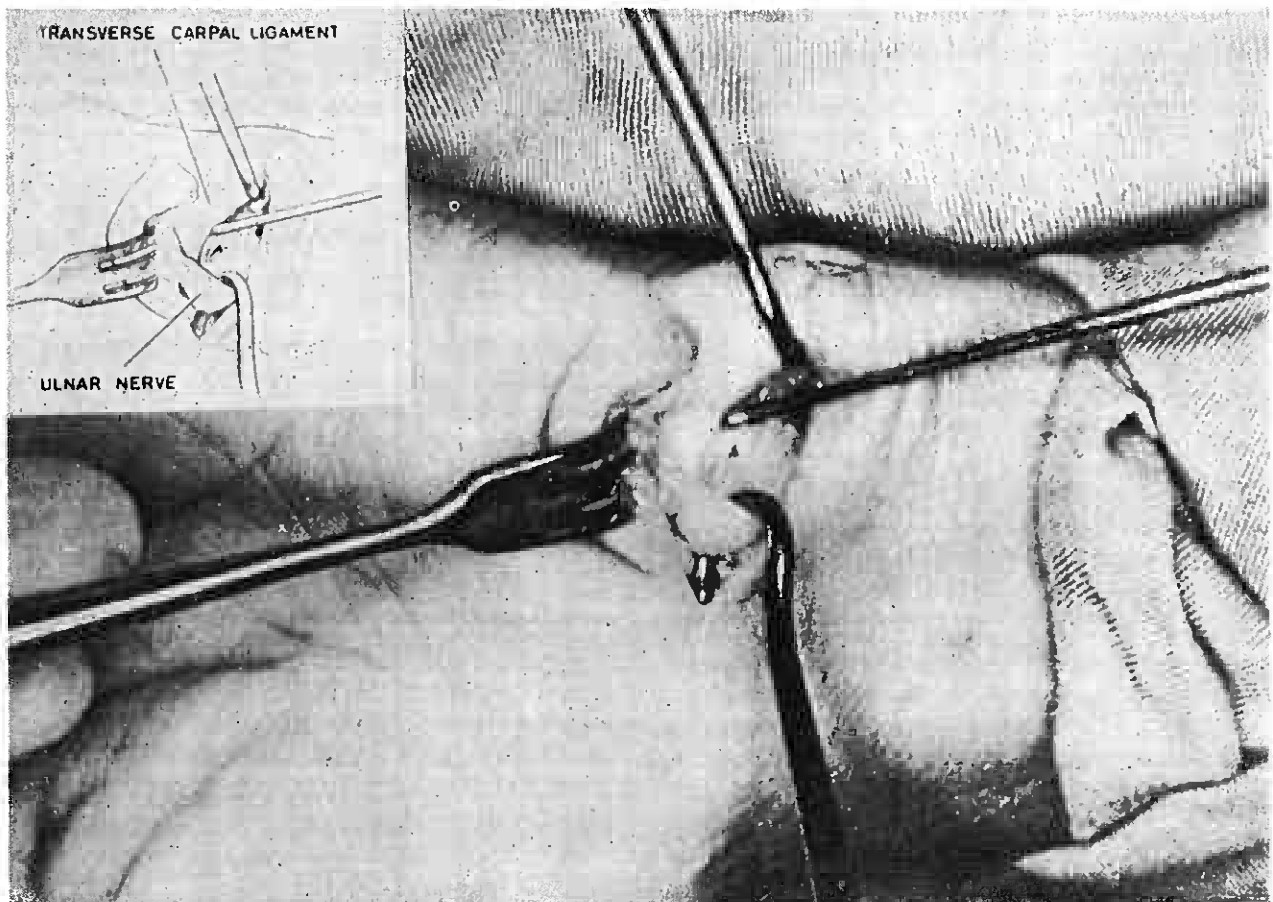


Fig. 1. The anterior carpal ligament loosely overlying the ulnar nerve.

Fig. 2. The Ulnar Nerve running anterior to the tense transverse carpal ligament.



this canal, under cover of the palmaris brevis, the nerve bifurcates into a superficial and deep branch. After supplying the palmaris brevis, the superficial branch continues on subcutaneously to innervate the skin of the little and ring fingers and the ulnar surface of the hypothenar eminence. The deep branch, together with the artery, passes abruptly backwards, lateral to the pisiform bone, through a tunnel bounded proximally and posteriorly by the pisohamate ligament and distally by the origins of the abductor, flexor and opponens digiti minimi. In addition to these three small muscles of the little finger, it also supplies the third and fourth lumbricals, all the interossei, the adductor pollicis and occasionally (Rowntree, 1963), the flexor pollicis brevis.

The aetiology of ulnar carpal tunnel syndrome is protean. Kleiner (1971) in a study of 17 patients found a thickened anterior carpal ligament to be the cause in 7 patients; an abnormally thick palmaris brevis in 3 patients and a thrombosed ulnar artery in 2 patients. Ganglia, accessory muscles, palmar fasciitis and perineural scarring

accounted for the other 5 patients. Vanderpool (1968), with a larger series, had 13 cases of ganglia causing ulnar nerve compression. Next in frequency as a cause was occupational neuritis. This series is more in keeping with Shea's (1969) review (Table I). Gold polishers, oyster openers, cutlery workers and motorcycling are some of the occupations and hobbies known to have led to this syndrome. Other causes incriminated include neurilemmoma, pisiform bursitis, anomalous relationship of nerve to carpal bones, lipoma, haemophilic cyst and rheumatoid arthritis.

In our patient the (L) ulnar nerve was found lying on a tense proximal border of the transverse carpal ligament while the thickened anterior carpal ligament appeared to have been responsible in the right hand. Her occupation as a typist might have contributed to her symptoms in both hands.

Clinically, patients usually presented with complaints of paraesthesia, pain, weakness, clumsiness, coldness and cold intolerance of the fingers.

TABLE I
AETIOLOGY OF ULNAR CARPAL TUNNEL SYNDROME

	Kleiner (1971)	Vanderpool: (1968)	Shea (1969)
Ganglia	2	13	39
Occupational Neuritis	—	3	32
Acute Trauma	—	2	32
Ulnar Artery Disease	2	—	11
Perineural Fibrosis	1	—	6
Aberrant Muscles	1	—	4
Narrow Fibro-osseous Canal	—	1	—
Osteoarthritis of Carpus	—	1	2
Accessory Ossicle at Wrist	—	1	2
Thickened Anterior Carpal Ligament	7	—	—
Thickened Palmaris Brevis	3	—	—
Others	1	—	8
	17	21	136

TABLE II
CLASSIFICATION OF ULNAR CARPAL TUNNEL SYNDROME

	Site of Lesion	Clinical Features
Type-I Syndrome	Proximal to or within canal of Guyon.	Weakness of all muscles supplied by ulnar nerve in the hand. Sensory deficit in the ulnar 2 fingers.
Type-II Syndrome	Distal to the point of emergence of the ulnar nerve from the canal of Guyon.	Sensation in the hand is intact but there is weakness of those muscles innervated by the deep branch of the ulnar nerve.
Type-III Syndrome	Involves the superficial branch of the ulnar nerve.	Sensory deficit in the little and ring fingers. No motor weakness.

Tinel's sign, atrophy and hyperaesthesia are signs that could be elicited. Shea and McClain (1969) classified ulnar nerve compression syndromes in the region of the wrist, to enable the surgeon to evaluate and localise the lesion regardless of the cause (Table II). Whatever the presenting symptom(s) or cause, the general consensus of opinion among authors as regards management is ulnar nerve exploration and decompression.

ACKNOWLEDGEMENT

We wish to thank the Department of Medical Illustration for the photographs and Miss G. L. Cheah for typing the manuscript.

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