

# Acute carpal tunnel syndrome complicating infective tenosynovitis at the wrist: A case report

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## CASE REPORT

### ABSTRACT

Acute carpal tunnel syndrome is an uncommon condition. When present, it usually follows a carpal injury or fracture of the lower end of the radius. We describe a case of infection of the tenosynovium causing an acute carpal tunnel syndrome. To the best of our knowledge it is the first case to be reported in the English literature.

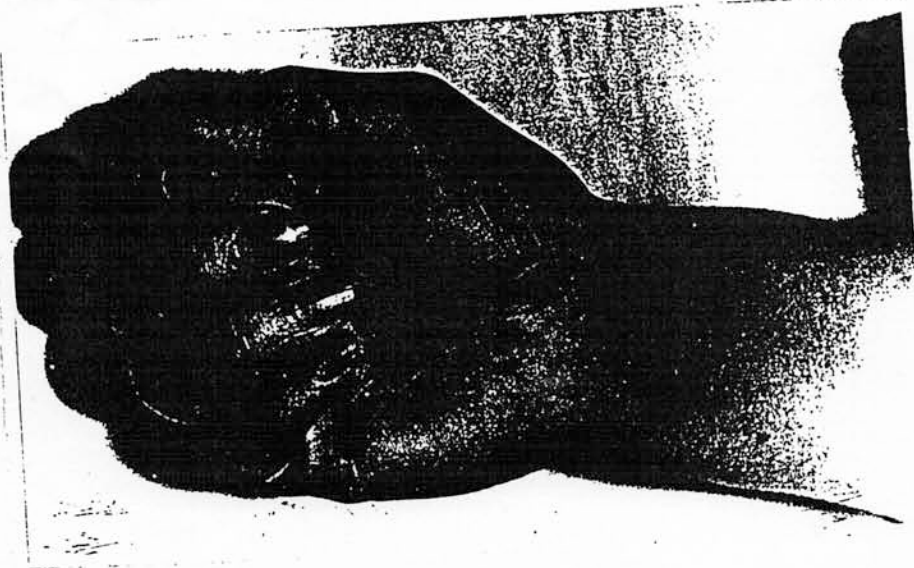
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### INTRODUCTION

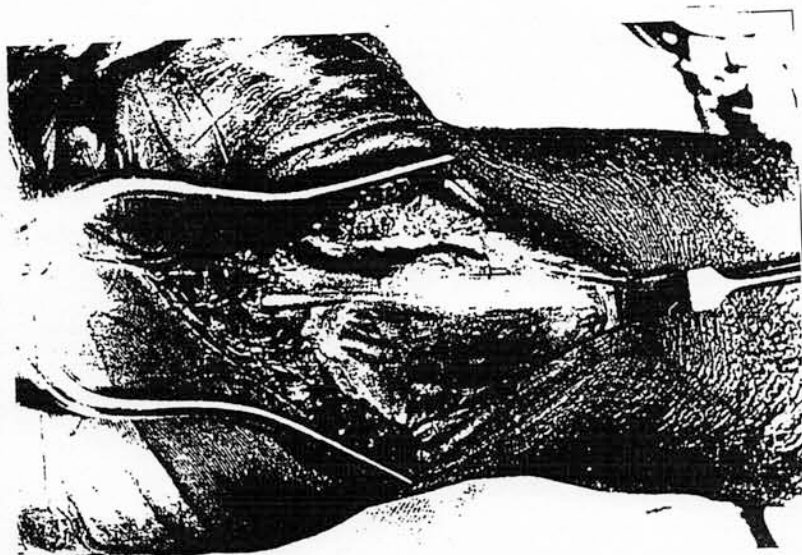
Carpal tunnel syndrome is a common compressive neuropathy of the median nerve as it passes between the transverse carpal ligament and the carpal bones. An acute carpal tunnel syndrome is uncommon and is a potentially devastating entity associated with a great variety of conditions including spontaneous haemorrhage (Howie 1984), tendon rupture, thrombosis of a persistent median artery (Maxwell 1973), median nerve abscess (Gaur 1994) and fracture dislocation (Olerud 1984, Ford 1986). To the author's knowledge there are no known reports of infectious tenosynovitis causing an acute onset of carpal tunnel syndrome.

A 56-year-old woman presented acutely to the emergency department with severe pain around the right wrist. She noticed this pain 6 hours prior to her admission and it was not preceded by any injury or unusual exertion. She consulted her general practitioner who gave her analgesics, but as the pain became worse she was referred to the acute orthopaedic service with a differential diagnosis of deep infection or compartment syndrome. She reported some fullness in the volar aspect of the wrist and also complained of a tingly feeling in the middle 3 fingers.

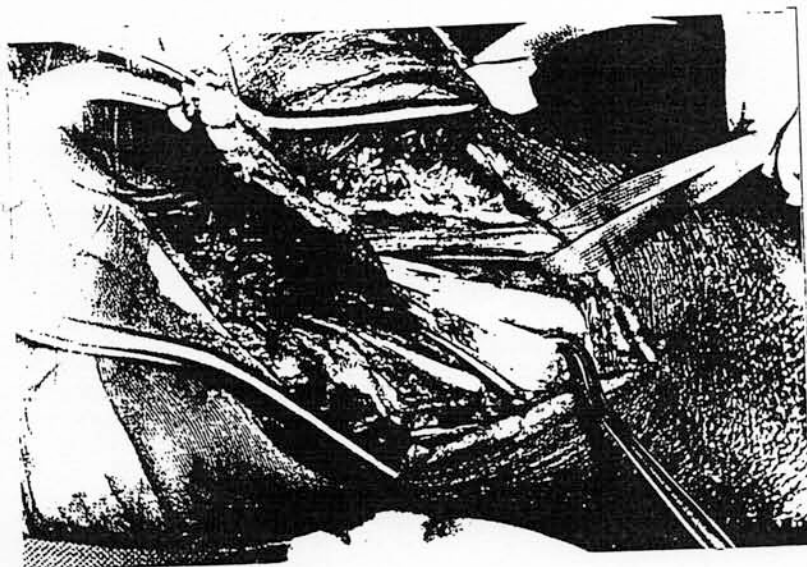
Her temperature on admission was 37.6°C, pulse was 84/minute and the blood pressure was 130/85. On initial examination there was some swelling and tenderness around the wrist. Wrist movements and active finger flexion were limited due to pain. Sensation in the distribution of the median nerve was intact. Elicitation of Tinel's sign by percussion over the wrist produced tingling and pain in the radial 3 fingers. Maximal flexion of the wrist for 30 seconds also produced these symptoms (Phalen's test). Radiographs did not reveal any bone changes. Her white blood cell count was  $12.1 \times 10^9/L$  (N= 10.3) and the erythrocyte sedimentation rate was 6mm/hour. The rheumatoid latex test was negative. She was admitted for pain relief, elevation of the hand and observation. She was started on diclofenac 100mg twice a day and the wrist was held in a resting splint.



**Figure 1** Fullness in the volar aspect of the wrist.



**Figure 2** The exposed median nerve found to be tenting over a swelling.



**Figure 3** The thickened congested tenosynovium of the flexor tendon.

During the night the patient suffered increasing pain in the wrist and needed analgesia with morphine. 12 hours after admission she complained of severe pain, and profound hypoaesthesia in the distribution of the median nerve was noted. Her fingers were held in flexion (Fig. 1) and any attempt at passive or active movement to extend the fingers produced severe pain at the wrist. There was swelling around the volar aspect of the wrist. This was poorly circumscribed, felt cystic and was tender on palpation. The muscles of the forearm were normal to palpation. With these findings a diagnosis of acute tenosynovitis with median nerve compression was made.

Decompression of the carpal tunnel was carried out under general anaesthesia about 14 hours after admission. Through a classical incision, the flexor tendons were exposed both proximal and distal to carpal tunnel. The median nerve was found to be tenting over the swelling caused by the tenosynovium (Fig. 2). The thickened congested synovium of the flexor tendon was dissected carefully and at one place there was pannus formation on the deep flexor tendon (Fig. 3). After the release of the carpal tunnel and excision of the tenosynovium, the median nerve was found to be adequately decompressed. Internal neurolysis was not performed. Clear fluid was drained from the sheath and was sent for culture and sensitivity. Histology of the excised tissue showed synovial tissue containing an acute inflammatory cell infiltrate with fibrinous material on the synovial surface and was diagnosed to be acute on chronic synovitis. There were no granuloma lesions present. When cultured, the fluid grew a coagulase negative staphylococcus.

In the recovery room, the patient reported that her pain had resolved and 2 days later there was normal sensation in her fingers. She was given a course of flucloxacillin 1g IV, 6 hourly for 5 days. Two months later the patient had no residual symptoms and had resumed her work.

## DISCUSSION

The syndrome of acute compression of the median nerve is rare (Szabo 1992) and typically, it is a sequela of trauma, with a rapid and intense development of

symptoms (Bauman 1981 and Olerud 1984). McClain and Wissinger (1976) described one case of acute carpal tunnel syndrome resulting from acute rheumatoid tenosynovitis. Jones and Scheker (1988) reported acute carpal tunnel syndrome caused by acute tenosynovitis in a patient after only 2 days of repeated hand motion. Lewis et al. (1993) reported acute carpal tunnel syndrome following rock climbing in a 25-year-old man and this patient responded well to conservative treatment. Kerr (1992) analysed flexor synovium in carpal tunnel syndrome in 625 cases. Of these 96% did not reveal any inflammation, 4% showed chronic inflammation and in only one case revealed evidence of acute inflammation. None of his cases presented acutely. In the present case report, acute carpal tunnel syndrome was induced by infective tenosynovitis.

It is important to draw the distinction between the classical signs of an acute compartment syndrome and the classical signs of an acute carpal tunnel syndrome. An acute compartment syndrome is described by the 4 Ss — Severe pain (out of proportion to the clinical situation), Stretch pain, Sensory abnormalities, Swollen and tense muscles (Pai 1995). In the latter, the first 3 signs may be present but the forearm muscles are not swollen or tense. In addition, a vague swelling may be present around the volar aspect of the wrist.

Early recognition of acute carpal tunnel syndrome is essential as delayed operation can cause irreversible intraneural fibrosis (Ford 1986, Bauman 1981). It is well known that infection can increase the pressures within compartments. It appears that the swelling of infectious tenosynovitis at the wrist could, if left untreated, ultimately lead to ischaemic damage to the medial nerve in the carpal tunnel.

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