

Iatrogenic Acute Carpal Tunnel Syndrome

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J Hand Microsurg 2016;8:111–112.

Carpal tunnel syndrome (CTS) is a condition in which there is median nerve entrapment within the carpal tunnel. The carpal tunnel is a small space in which nine tendons and the median nerve pass. Some authors consider it a closed space as it can behave as a closed compartment, and the median nerve may be affected by increased intracompartmental pressure.¹

Chronic CTS is the common form and can be treated conservatively or surgically. Conservative treatment is in the form of splinting, anti-inflammatory medication, and steroid injections (blind or ultrasound guided), while surgical is in the form of decompression (open or endoscopic).²

On the other hand, acute CTS is rare. It is characterized by rapid progressive symptoms that arise in a matter of hours. It is mainly caused by fractures and/or dislocations around the wrist joint and less commonly caused by non-traumatic causes such as bleeding due to a bleeding disorder or from anticoagulant therapy. Acute CTS is a surgical emergency and requires urgent decompression to prevent undesired complications.³

We present a case in which a patient suffered from iatrogenic acute CTS following a steroid injection to relieve the symptoms of moderate CTS. The patient was a 43 year-old right-handed female dental nurse. She was complaining of tingling and numbness affecting the radial three digits for the last 12 months. Her symptoms progressed over the last 2 months, with increasing nocturnal pain, tingling, and numbness not responding to splints and anti-inflammatory medication. A nerve conduction study was organized and it showed mild-to-moderate CTS. The patient was injected 1 mL of 40-mg methylprednisolone + 1 mL (0.25%) levobupivacaine into the carpal tunnel. The patient returned 24 hours later with worsening symptoms. She was referred to the accident & emergency department with worsening pain, numbness, and global hand weakness not responding to simple measures such as elevation and splintage. On examination, the patient was in severe pain at rest, paresthesia over the median nerve distribution, and weakness of the abductor pollicis brevis (Medical Research Council grade 3). Passive

movement of the thumb, index, and middle fingers resulted in excruciating pain. There were no signs of infection at presentation. The clinical picture was consistent with acute CTS and urgent decompression was performed through an extended approach into the distal forearm. Intraoperatively, the median nerve sheath was swollen with chalky white powder deposits. There were no signs of nerve damage or infection. Serous fluid oozing from the nerve sheath was sent for Gram stain, culture, and sensitivity testing. No organisms were seen or grown from it. The patient had immediate relief of her median nerve symptoms postoperatively. The following day the patient was able to actively move the wrist, thumb, and fingers with minimal pain. The patient was followed up 2 weeks later. She had regained full muscle power strength and had normal sensation at that stage.

Steroid injections are frequently used in treating CTS. Steroid injection for CTS has been described in the literature as a safe procedure with minimal risks. Iatrogenic median nerve injury following injection is a rare but well-recognized complication. It is reported to occur due to intraneural injection of the corticosteroid, which leads to immediate nerve pain and residual nerve damage.⁴

Our patient did not experience tingling, numbness, or pain during the injection, which clinically rules out intraneural injection. All of the symptoms of acute CTS started 24 hours postinjection. As there were no signs of nerve damage intraoperatively and a full neurologic function had been regained, we believe that the cause of acute CTS in this case was injection into the nerve sheath (perineural) causing severe nerve compression and increased compartment pressure.

This case highlights the importance of suspecting acute CTS following steroid injection in the carpal tunnel. It also emphasizes the importance of counseling the patients before injecting the carpal tunnel about the possibility of developing an acute CTS, which entails an urgent decompression to relieve symptoms and prevent the consequences of permanent nerve damage.

received
April 8, 2016
accepted
May 30, 2016
published online
July 1, 2016

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DOI <http://dx.doi.org/10.1055/s-0036-1585059>.
ISSN 0974-3227.

Conflict of Interest

None.

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