

Carpal Tunnel Syndrome

What is the condition?

Carpal tunnel syndrome is a common condition that typically causes intermittent tingling and feelings of altered sensation in the thumb, index, middle and ring fingers of the hand. These feelings are often described as 'pins and needles.' Pain is also a feature of the condition and localises to the base of palm and front of wrist area. The pain often radiates from the wrist area up the forearm and can extend as far as the shoulder or neck. Symptoms often occur at night and wake the patient with tingling and numbness. These symptoms are relieved by shaking and moving the hand around. In cases of severe compression numbness may be more troublesome. The muscles at the base of the thumb may shrink and there may be difficulty in pinching between the thumb and fingertips. The ability to manipulate small objects such as buttons may be impaired. Hand writing can be affected.

The carpal tunnel lies at the base of the palm and contains the tendons that bend the finger and thumb as well as the median nerve. The tunnel has a fixed cross-sectional area, and normally the structures within it fit snugly. Any increase in size of the contents, or reduction in size of the tunnel, leads to a rise in pressure, and the nerve is compressed as a result. Swelling from retention of body fluid can cause the condition, for example in women due to hormonal changes including pregnancy, thyroid hormone deficiency. Change in shape of the carpal canal can also cause the problem for example after wrist fracture. Carpal tunnel develops in conditions associated with thickening of synovial membranes around tendons, such as rheumatoid arthritis, and sometimes a ganglion or benign growth of fat takes up space in the carpal

In many cases symptoms resembling carpal tunnel syndrome form part of so-called work-related upper limb disorders, otherwise known as overuse syndrome, or RSI, but great care is needed to establish the true cause of symptoms accurately. In some cases there are simultaneous problems related to problems in the neck. Inappropriate surgical decompression can only make matters worse, and may account for poorer results of the operation when a higher proportion of patients with work-related disorders have been included.

Diagnosis of carpal tunnel is usually made on the basis of the patient's symptoms and signs. However, cases which are not entirely typical benefit from investigation by nerve conduction studies. This test uses electrodes applied to the forearm and hand to deliver a small electrical impulse. The response of the nerve and the small hand muscles to an applied electrical stimulus can be measured.

Non-surgical treatment

In early cases symptomatic treatment may be helpful, including the use of a wrist splint at night. Steroid injection can give a long term response in 10% of

patients but in the majority symptoms return after 3 months or so. Steroid injection is useful where the diagnosis is in doubt, and as a temporising measure when it is not convenient for a patient to undergo early surgery. Physiotherapy does not help the condition.

Surgical treatment

Operative decompression of the median nerve by release of its containing ligament (flexor retinaculum) is undertaken for more severe cases and for cases where conservative treatment has failed to make a difference. The operation is performed under local anaesthetic. A cut of about 3 cm is made in the same area and the ligament over the nerve is divided making more room for the nerve in its tunnel.

Endoscopic carpal tunnel release was first introduced two decades ago and can be safely carried out by surgeons experienced in the technique. However, there is an additional element of risk of nerve damage, which is much reduced in open operation. The early claims regarding the benefits of endoscopic release have not been sustained by the results and the technique is not widely practised these days.

Downtime and recovery

Following surgery for carpal tunnel syndrome the hand / wrist is bandaged and a splint applied for 2 weeks. The thumb and fingers are left free so that you can undertake activities of daily living. The bandage should be kept dry.

- Splint - 2 weeks
- Driving/return to work – 2 ½ weeks. Ensure that you feel you are safely in control of your vehicle before driving.
- Time to full recovery – 1-2 months as the scar is tender initially and grip strength takes some weeks to come back. Function

Full recovery takes one or two months since the scar is often tender at first and strength gradually returns. Function should eventually be normal provided complete release has been carried out.

Untoward effects of surgery are unusual following carpal tunnel release. Occasionally, patients may still have symptoms, either due to initial wrong diagnosis or exceptionally incomplete release of the carpal ligament. Some patients have other diagnoses and these may need to be separately addressed. Patients with other conditions that affect nerve function, such as diabetes, tend to get more severe carpal tunnel syndrome and may not recover fully despite technically successful carpal tunnel release. Recurrent carpal tunnel syndrome is also rare, but does occur.