

Carpal Tunnel Syndrome

What is it?

Carpal tunnel syndrome is a very common condition which affects patients of any age but is most common in females over the age of 40 years. Carpal tunnel syndrome occurs when the median nerve is compressed at the level of the wrist. The nerve passes through a tight tunnel at this site, of which the roof is made up of the transverse carpal ligament (which is divided in surgery), and the base is made up of an arch of carpal bones. Also, through this tunnel travels nine other tendons to the fingers and thumb. When there is buildup of pressure in this tunnel the nerve becomes compressed and can cause symptoms of carpal tunnel syndrome.

What are the symptoms?

The most common symptoms are pins-and-needles in the thumb, index finger and middle finger. This commonly occurs at night and can wake the patient from sleep. Often patients describe having to shake their hands to gain relief from these symptoms. This can also occur at any time during the day and is also associated with periods of heavy work. Other conditions which predispose someone to carpal tunnel are pregnancy, thyroid disease, rheumatoid arthritis, and wrist injuries. Sometimes in severe cases the small muscles in the thumb can become weak and this causes reduction in grip strength. Numbness of the thumb and fingers may also cause patients to drop objects.

Clinical examination

There may be a reduction in the sensation over the thumb, index finger and middle finger of the affected hand. A Tinel's test is often performed, where the nerves are tapped in the carpal tunnel and this causing tingling in the fingers. Other tests may include a modified Phalen's test or modified Durkan's compression test, which places direct pressure over the carpal tunnel with bending the wrist forward and may then reproduce the pins-and-needles in the thumb, index finger and middle finger.

What investigations are required?

Nerve conduction studies are frequently performed, which record the speed of the conduction through the nerve at the level of the wrist. This can be compared to the other hand or to normal population data. This test takes about 20 minutes to complete and is slightly uncomfortable to perform.

What are the treatment options?

There are two main treatment options for carpal tunnel syndrome. These include:

Non-operative Treatment

Non-operative treatment includes wrist splints worn at nighttime if the symptoms are predominately nocturnal. A steroid injection into the carpal tunnel could be considered, which may improve the symptoms. This may give transient effect however and the majority of patients who have troublesome symptoms progress to surgical treatment. A pregnant woman in the last trimester may experience carpal tunnel syndrome and these symptoms normally resolve following delivery of the baby.

Operative Treatment

Most patients with troublesome carpal tunnel symptoms progress to surgical treatment. The surgery is usually performed as a day-case procedure and can be performed with either a local or general anaesthetic. The procedure usually takes about 10 minutes to perform. A tight tourniquet is placed around the upper arm to ensure a bloodless field and the surgery can be performed through an open 3cm incision over the carpal tunnel. Care is taken not to injure the sensory nerves to the palm. At the base of the wound a thick band of tissue called the transverse carpal ligament is released and allows the contents of the carpal tunnel (and most importantly the median nerve) to be decompressed. The contents of the carpal tunnel are then inspected to ensure adequate release and a neurolysis (or freeing) of the nerve is performed if required. The skin is sutured using interrupted sutures and dressings are then applied. With carpal tunnel syndrome, the surgery can be performed through one or two incisions in the palm.

Post Operative Rehabilitation

The patient is fit to go home soon after the operation. The anaesthetic will wear off after approximately 6-8 hours and simple analgesia usually controls the pain (which is started before the local anaesthetic wears off). The hand should be kept elevated but there are no limitations on finger movements and are in fact actively encouraged. The bandage dressings are usually removed after 48 hours and the sticky dressing over the wound is usually left for about 10 days. The sticky dressing and sutures are usually removed after 10-14 days.

Most patients notice an improvement in their symptoms within the first few days, but some patients have ongoing symptoms for up to three months following surgery. Patients are advised to keep the wound dry until the sutures are removed. The patient may return to driving once the sutures have been removed. Heavy manual work or professions which require frequent handwashing will require at least 2 weeks off work to allow the wound to heal. Some patients may require a longer period off work, and this should be discussed with your surgeon prior to the procedure.

Possible complications

Overall, greater than 95% of patients are happy with the results of the surgery, however complications do occur sometimes.

Some complications specifically related to hand surgery include infection (less than 1% chance), neuroma (less than 1% chance) which is a damaged nerve that becomes painful on reattempts to regenerate, numbness, chronic regional pain syndrome or reflex sympathetic dystrophy (1-2% chance) which is a reaction to surgery which can cause painful or stiff hands. Specific complications related to carpal tunnel syndrome include failure to completely resolve the symptoms (less than 5% chance) and this is more frequent in patients who have had longstanding carpal tunnel syndrome with severe damage to the nerves or wrist pain which usually resolves by 12 weeks following surgery.