

## Carpal Tunnel Syndrome

### DEFINITION

Carpal Tunnel Syndrome is the most common nerve compression syndrome with characteristic symptoms and signs due to pressure on one of the main nerves of the hand, the median nerve, at the wrist.

### PATHOLOGY

Most commonly there is no specific cause identified, known as idiopathic. The tunnel in the syndrome is formed by a tough ligament (transverse carpal ligament or flexor retinaculum) and by the curved carpal bones. The ligament helps keep the structures (9 tendons and 1 nerve) that pass under it in place and provide protection for the nerve. It can arise due to swelling of the contents of the canal or thickening of the ligament.

- Age – may occur at any age but increases with age.
- Genetic – female > male.
- Degenerative – arthritis (Osteoarthritis or inflammatory).
- Hormonal – pregnancy, postmenopausal, thyroid problems, growth hormone.
- Trauma – wrist and scaphoid fractures, dislocations.
- Fluid retention – pregnancy, kidney problems.
- Neck Problems – double crush phenomenon.
- Medical Conditions – obesity, diabetes, high cholesterol.
- Toxic – smoking (poor circulation), alcohol.
- Postural – prolonged position of wrist in flexion or extension.
- Work – controversial.

### SYMPTOMS

- Numbness and tingling in the thumb, index, middle and half of ring finger on the palm side especially with activities that require prolonged positions of wrist flexion or extension.
- Waking from sleep with tingling in the hand, sometimes pain, often relieved by shaking the hand with it hanging over the side of the bed.
- Difficulty with fine motor activities, for example doing up buttons, due to loss of sensation.
- Weakness of the hand, due to loss of muscle power in the muscles at the base of the thumb.
- May develop pain radiating up into the forearm.

### SIGNS

- Decreased sensation on testing with “monofilaments” in the distribution of the median nerve.
- Decreased muscle power in the thumb.

- Reproduction of symptoms with pressure over the nerve or flexing the wrist.
- Electric shock like sensation when tapping over the nerve.



(Note wasting of thumb muscles)

### INVESTIGATIONS

- Often none required, as is a clinical diagnosis.
- May perform nerve conduction study (NCS) or electromyography (EMG) to test how the nerve is working if symptoms are not typical or to give a guide as to severity.

### NON-OPERATIVE TREATMENT

- Treat the underlying cause.
- Steroid injections have the best results if the symptoms are intermittent and have been present for less than a year. The literature suggests about 80% success rate in relieving symptoms. They may however recur.
- Splinting avoids the positions that reproduce the symptoms. They hold the wrist in a position of slight wrist extension and are made out of a lightweight plastic material. Also can be worn at night.

### OPERATIVE TREATMENT

- Open or endoscopic carpal tunnel release.
- My preference is to perform a mini open carpal tunnel release. The incision is usually less than 2cm in length – it is done as a day procedure often under local anaesthetic.
- A soft dressing is used post operatively and the hand can be used for light activities from day 1. The sutures are removed at 2 weeks post op and heavy lifting is avoided for 6 weeks.



**(Wound at 2 weeks)**



**(Wound at 2 months)**

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