

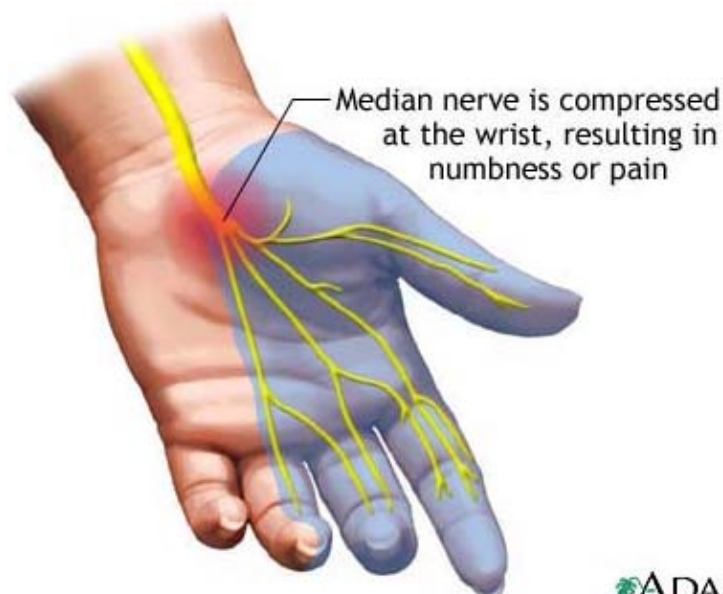
Carpal Tunnel Syndrome

What is Carpal Tunnel Syndrome?

CTS is the most common condition affecting the hand in the western world. It affects 10% of the working and non working population. CTS is caused by compression of the median nerve at the wrist. Compression of a nerve causes decreased blood flow, which reduces nutrient and oxygen supply to the nerve causing disturbances in nerve conduction.

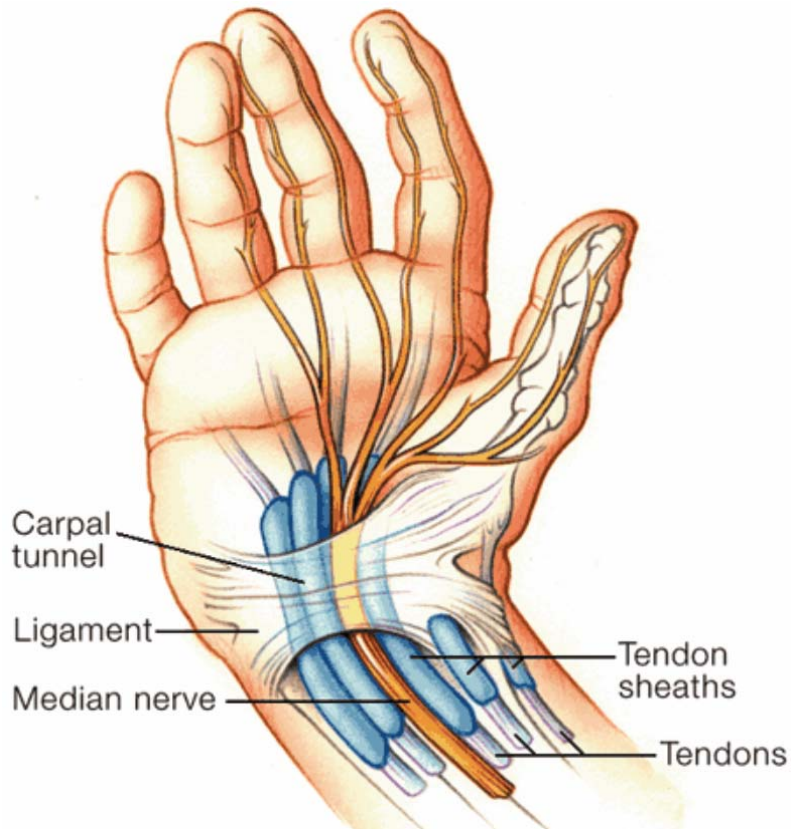
The carpal tunnel is a channel formed by bone and a tough ligamentous structure, (transverse ligament) that sits at the wrist at the heel of the hand. Through this rigid tunnel passes nine tendons that bend the fingers, connective tissue, arteries, veins, and the median nerve. The median nerve gives sensation and muscle control to the palm side of the thumb, index finger, middle finger and one half of the ring finger. The median nerve activates the small muscles of the thumb to oppose the thumb to the other fingers.

When swelling develops in the carpal tunnel or when the carpal tunnel becomes compressed, pressure is placed on the median nerve which leads to pain, numbness and pins and needles mostly at night causing waking. If compression on the nerve is prolonged symptoms can progress to include numbness during the day, muscle wasting causing loss of function such as clumsiness and weakness of grip and pinch that may be irreversible.



Peninsula Hand Therapy

Jane Aarons M.A.A.O.T., M.A.H.T.A.
Occupational Therapist, Hand Therapist



Causes

- The 3 major predisposing factors to the development of CTS are being female, middle aged and obese.
- Systemic disorders- diabetes, rheumatoid arthritis, hypothyroidism
- Tenosynovitis- thickening of the synovium (covering of the tendons) caused by over use/ friction of the tendons
- Odema- increased fluid within the carpal tunnel e.g.; pregnancy, tissue injury
- Fractures, dislocation of the wrist- displaced bones disrupt the carpal tunnel
- Abnormal structure protruding into the carpal tunnel- ganglion, bony spur, abnormal muscle belly, displaced fracture

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What are the symptoms?

Numbness and tingling: pins and needles in the hand especially at night. May also progress to during the day while holding phone or book, using a computer mouse or driving .

Pain: in the fingers, wrist and forearm.

Weakness: of grasp and pinch

Sensory loss: transient or constant numbness in the fingers.

Muscle Wasting: This is seen in the small muscles around the thumb in cases of prolonged compression. This can be irreversible.

Management of CTS

The goal is to decrease pressure on the median nerve. If diagnosed early it can prevent irreversible nerve damage over time.

Wrist splint - A custom thermoplastic wrist support made by your Hand Therapist is a critical part of conservative management. The splint maintains the wrist in a neutral position. This allows the greatest space in the carpal tunnel preventing compression of the nerve (A bent wrist will significantly narrow the carpal tunnel and compress the nerve). These splints are usually worn over night to relieve symptoms and allow for uninterrupted sleep. Generally commercial braces are not suitable as they do not support your wrist in the most ideal position for best relief.

Tendon and nerve gliding exercises - There are specific exercises that your Hand Therapist will prescribe for reducing compression on the nerve.

Anti inflammatory medication and diuretics

Modify hand activity and work environments if repetition is unavoidable, keep the wrist straight or slightly flexed when hands are in motion. Maintain good posture and discontinue if activity causes pain. Avoid high salt intake which causes water retention and smoking which reduces blood flow

Cortisone injection or iontophoresis

Neck assessment - your Hand Therapist can refer you to a physiotherapist who can assess your neck to determine if there is compression of the same nerve at a higher level.

Surgical treatment - Your Hand Therapist will advise you if your symptoms require referral to a plastic surgeon.