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What is carpal tunnel

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syndrome?

Carpal tunnel syndrome occurs when the median nerve, which runs from the forearm into the palm of the hand, becomes pressed or squeezed at the wrist. The median nerve controls sensations to the palm side of the thumb and fingers (although not the little finger), as well as impulses to some small muscles in the hand that allow the fingers and thumb to move. The carpal tunnel - a narrow, rigid passageway of ligament and bones at the base of the hand - houses the median nerve and tendons. Sometimes, thickening from irritated tendons or other swelling narrows the tunnel and causes the median nerve to be compressed.

The result may be **pain, or numbness in the hand and wrist, radiating up the arm.** Although painful sensations may indicate other conditions, carpal tunnel syndrome is the most common and widely known of the entrapment neuropathies in which the body's peripheral nerves are compressed or traumatized.

What are the symptoms of carpal tunnel syndrome?

Symptoms usually start gradually, with frequent burning, tingling, or itching numbness in the palm of the hand and the fingers, especially the thumb and the index and middle fingers. Some carpal tunnel sufferers say their fingers feel useless and swollen, even though little or no swelling is apparent. The symptoms often first appear in one or both hands during the night, since many people sleep with flexed wrists. A person with carpal tunnel syndrome may wake up feeling the need to "shake out" the hand or wrist. As symptoms worsen, people might feel tingling during the day. Decreased grip strength may make it difficult to form a fist, grasp small objects, or perform other manual tasks. In chronic and/or untreated cases, the muscle

at the base of the thumb may waste away. Some people are unable to tell between hot and cold by touch.

What are the causes of carpal tunnel syndrome?

Carpal tunnel syndrome is often the result of a combination of factors that increase pressure on the median nerve and tendons in the carpal tunnel, rather than a problem with the nerve itself. Most likely the disorder is due to a **congenital predisposition** - the carpal tunnel is simply smaller in some people than in others. Other contributing factors **include trauma or injury to the wrist** that cause swelling, such as sprain or fracture; **overactivity of the pituitary gland; hypothyroidism; rheumatoid arthritis; mechanical problems in the wrist joint; work stress; repeated use of vibrating hand tools; fluid retention during pregnancy or menopause; or the development of a cyst or tumor in the canal.** **In some cases no cause can be identified**

Who is at risk of developing carpal tunnel syndrome?

Women are three times more likely than men to develop Carpal Tunnel Syndrome.

Persons with diabetes or other metabolic disorders that directly affect the body's nerves and make them more susceptible to compression are also at high risk. Carpal tunnel syndrome usually occurs only in adults.

The risk of developing carpal tunnel syndrome is not confined to people in a single industry or job, but is especially common in those performing **assembly line work** - manufacturing, sewing, finishing, cleaning, and meat, poultry, or fish packing. In fact, carpal tunnel syndrome is three times more common among assemblers than among data-entry personnel.

How is carpal tunnel syndrome diagnosed?

History, examination and sometimes special tests are used, such as a **nerve conduction study** where electrodes are placed on the hand and wrist and an electrical sensation applied.

How is carpal tunnel syndrome treated?

Treatments for carpal tunnel syndrome should begin as early as possible, under a doctor's direction. Underlying causes such as diabetes or arthritis should be treated first. Initial treatment generally involves **resting the affected hand and wrist for at least 2 weeks**, avoiding activities that may worsen symptoms, and **immobilizing the wrist in a splint** to avoid further damage from twisting or bending. If there is inflammation, applying cool packs can help reduce swelling.

Non-surgical treatments

Drugs - In special circumstances, various drugs can ease the pain and swelling associated with carpal tunnel syndrome. **Nonsteroidal anti-inflammatory drugs**, such as aspirin, ibuprofen, and other nonprescription pain relievers, may ease symptoms that have been present for a short time or have been caused by strenuous activity.

Orally administered **diuretics** ("water pills") can decrease swelling.

Corticosteroids (such as prednisone) or the drug lidocaine can be injected directly into the wrist or taken by mouth (in the case of prednisone) to relieve pressure on the median nerve and provide **immediate, temporary relief** to persons with mild or intermittent symptoms.

Additionally, some studies show that **vitamin B⁶** (pyridoxine) supplements may ease the symptoms of carpal tunnel syndrome.

Exercise - Stretching and strengthening exercises can be helpful in people whose symptoms have abated. These exercises may be supervised by a **physiotherapist**, who is trained to use exercises to treat physical impairments, or an **occupational therapist**, who is trained in evaluating people with physical impairments and helping them build skills to improve their health and well-being.

Alternative therapies - Acupuncture and chiropractic care have benefited some patients but their effectiveness remains unproved. An exception is yoga, which has been shown to reduce pain and improve grip strength among patients with carpal tunnel syndrome.

Surgery - Carpal tunnel release is one of the most common surgical procedures. Generally recommended if symptoms last for 6 months, surgery involves cutting the band of tissue around the wrist to reduce pressure on the median nerve. Surgery is done under local anesthesia and does not require an overnight hospital stay. Many patients require surgery on both hands.

Although symptoms may be relieved immediately after surgery, full recovery from carpal tunnel surgery can take months. Some patients may have infection, nerve damage, stiffness, and pain at the scar. Occasionally the wrist loses strength because the carpal ligament is cut. Patients should undergo physiotherapy after surgery to restore wrist strength. Some patients may need to adjust job duties or even change jobs after recovery from surgery.

Recurrence of carpal tunnel syndrome following treatment is rare. The majority of patients recover completely.

How can carpal tunnel syndrome be prevented?

At the workplace, workers can do on-the-job conditioning, perform stretching exercises, take frequent rest breaks, wear splints to keep wrists straight, and use correct posture and wrist position. Wearing fingerless gloves can help keep hands warm and flexible. Workstations, tools and tool handles, and tasks can be redesigned to enable the worker's wrist to maintain a natural position during work. Jobs can be rotated among workers. **However, research has not conclusively shown that these workplace changes prevent the occurrence of carpal tunnel syndrome.**