

Understanding Carpal Tunnel Syndrome

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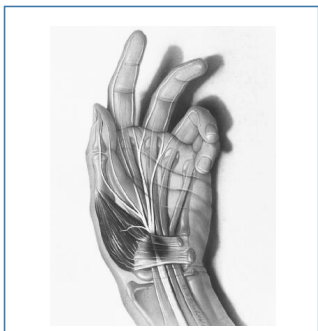
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What is carpal tunnel syndrome?

Carpal tunnel syndrome occurs when the median nerve and supplying blood vessels, which run from the forearm into the hand, become squeezed at the wrist. The median nerve causes sensations to the thumb and the fingers, with the exception of the little finger. Sometimes, thickening from irritated tendons or other swelling narrows the tunnel and causes the median nerve to become compressed. The result may be pain, weakness or numbness in the hand and wrist, that radiates up the arm. Carpal tunnel syndrome is the most common and widely known of the entrapment neuropathies where the peripheral nerves are compressed or traumatized. Carpal tunnel syndrome often results from a combination of factors that increase pressure on the median nerve, tendons and blood vessels in the carpal tunnel. Most likely the disorder is due to a congenital predisposition, in that the tunnel is smaller in some people than others. Other factors include trauma or injury to the wrist, causing swelling, such as a sprain or fracture. Other factors include over activity of the pituitary gland, hypothyroidism, work stress, repeated use of vibrating hand tools and fluid retention during pregnancy.



Who is at risk of developing CTS?

Women are three times more likely than men to develop carpal tunnel syndrome, perhaps because the carpal tunnel may be smaller in women. The dominant hand is usually affected first and produces the most severe pain. Persons with diabetes or other metabolic disorders are at a higher risk of developing carpal tunnel syndrome. The risk of developing carpal tunnel syndrome is not limited to a single industry or job, but it is more common in persons performing assembly line work - manufacturing, meat, poultry or fish packing. It is three times more common among assemblers than data-entry personnel. In 1998 it was estimated that three of every 10,000 workers lost time from work because of carpal tunnel syndrome. Half of these workers missed more than 10 days of work. The average lifetime cost of carpal tunnel syndrome, including medical bills and lost time from work, is estimated to be about \$30,000 for each injured worker.

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How is carpal tunnel syndrome diagnosed?

A physical examination of the hand, arms, shoulders and neck can help determine if the patient's complaints are related to daily activities or to a disorder. The exam can also rule out other painful conditions that mimic carpal tunnel syndrome. The wrist is examined for tenderness, discoloration, warmth and swelling. Each finger is tested for sensation and the muscles at the base of the hand are examined for strength and signs of atrophy. Lab tests can reveal diabetes, arthritis and fractures. I use specific tests in examining my patients for carpal tunnel syndrome. In testing for Tinel's sign, I tap on the median nerve at the patient's wrist. The sign is "present" when tingling in the fingers or a resulting shock-like sensation occurs. The Phalen, or wrist-flexion sign, involves having the patient hold his or her forearms upright by pointing the fingers down and pressing the back of the hand together. The presence of carpal tunnel syndrome is suggested if one or more symptoms, such as tingling or increased numbness, is felt in the fingers within one minute. Often times, I will perform an electrodiagnostic test. The test is comprised of electromyography ("EMG") and a nerve conduction study ("NCS"). In the NCS electrodes are placed on the hand and wrist. Small electric shocks are applied and the speed with which nerves transmit impulses is measured. In EMG, a fine needle is inserted into a muscle and electric activity is viewed on a screen. The activity can determine if the median nerve is damaged, and its severity. Magnetic resonance imaging (MRI) can show the anatomy of the wrist but to date has not been especially useful in diagnosing carpal tunnel syndrome. Early diagnosis and treatment are important to avoid permanent damage to the median nerve

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How is carpal tunnel syndrome treated?

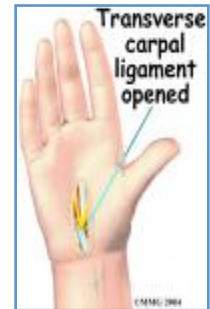
Treatments for carpal tunnel syndrome should begin as soon as possible, under the supervision of a physician. Underlying causes, such as diabetes, should be treated first. In exploring treatment options I elect to initiate treatment by requesting that my patient rest the affected hand and wrist for at least two weeks, avoiding activities that may worsen symptoms. I also suggest using a splint to avoid further damage. If there is inflammation I suggest applying cold packs that can assist in reducing swelling. In certain circumstances, various drugs can ease the pain and swelling associated with carpal tunnel syndrome.

The median nerve extends into the Anti-inflammatory drugs, such as aspirin or ibuprofen may ease symptoms that may have been present for a short time. Corticosteroids, such as Prednisone, are taken orally or an injection directly into the wrist to relieve pressure on the median nerve can provide immediate, temporary relief to persons with mild or moderate symptoms. (*Corticosteroids should not be taken without a doctor's prescription) Some studies have shown that vitamin B supplements may ease the symptoms of carpal tunnel syndrome. Stretching and strengthening exercises can be helpful in people whose symptoms have reduced. I would advise that these exercises be supervised by a physical therapist. Yoga has been shown to reduce pain and improve grip strength among patients with carpal tunnel syndrome.

When is surgery an option?

Carpal tunnel release surgery is one of the most common surgical procedures in the nation. It is generally recommended if symptoms have persisted for at least 6 months. The surgery involves severing the band of tissue around the wrist to reduce pressure on the median nerve. It is performed under local anesthesia and usually does not require an overnight hospital stay. Types of carpal tunnel release surgery are as follows:

1. *Open release surgery*: This is the traditional procedure consisting of making an incision up to 2 inches in the wrist and cutting the carpal ligament to enlarge the carpal tunnel.
2. *Endoscopic surgery*: This procedure may allow faster functional recovery and less postoperative discomfort than traditional open release surgery. The surgeon makes two incisions in the wrist and palm, inserts a camera attached to a tube, observes the tissue on a screen, and cuts the carpal ligament. This procedure minimizes scarring and scar tenderness.



Full recovery from carpal tunnel surgery can take months. Patients should undergo physical therapy after surgery to restore wrist strength.

Can carpal tunnel syndrome be prevented?

In the workplace, workers can minimize their risk of developing carpal tunnel syndrome with on-the-job conditioning, stretching exercises, frequent rest breaks, wearing wrist splints to keep wrists straight and by maintaining correct posture and wrist position. By wearing fingerless gloves, a worker can keep his or her hands warm and flexible. Workstations and tools can be redesigned to enable the worker's wrist to maintain a natural position during work. Employers can rotate workers and develop programs in ergonomics. Unfortunately, research has not definitively shown that these workplace changes prevent the occurrence of carpal tunnel syndrome.

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"Treatments for carpal tunnel syndrome should begin as soon as possible."

Dr. Lee has extensive experience diagnosing entrapment neuropathies such as carpal tunnel syndrome. Due to the nature of the symptoms, an untrained physician can easily misdiagnose carpal tunnel syndrome, leading to an unnecessary surgery.

If you have pain and/or numbness in the wrist or hand and would like to be evaluated please call our office for an appointment.

