

Carpal Tunnel Syndrome

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Carpal tunnel syndrome (CTS) is a problem that affects the wrist and hands and is a common source of hand numbness and pain. It is more common in women than men. CTS can make simple tasks hard to do, but can be treated and your symptoms can be controlled. Carpal tunnel syndrome occurs when the tissues surrounding the flexor tendons in the wrist swell and put pressure on the median nerve. These tissues are called the synovium. The synovium lubricates the tendons and makes it easier to move the fingers. This swelling of the synovium narrows the confined space of the carpal tunnel, and over time, crowds the nerve.

Cause

Carpal tunnel syndrome is often the result of pressure on the median nerve and tendons in the carpal tunnel. Many things contribute to the development of carpal tunnel syndrome:

- Heredity is the most important factor - carpal tunnels are smaller in some people, and this trait can run in families.
- Hand use over time can play a role.
- Hormonal changes related to pregnancy can play a role.
- Age — the disease occurs more frequently in older people.
- Medical conditions, including diabetes, rheumatoid arthritis, and thyroid gland imbalance can play a role.

Symptoms

Symptoms usually start gradually and first appear in one or both hands during the night. The most common symptoms of carpal tunnel syndrome include:

- Numbness, tingling, and pain in the hand
- An electric shock-like feeling mostly in the thumb, index, and long fingers
- Strange sensations and pain traveling up the arm toward the shoulder
- Weakened grip

Symptoms can also keep you awake at night and occur during your daily routines, such as driving or holding a book.

Anatomy

Median Nerve

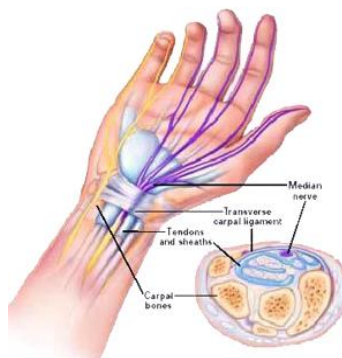
A major nerve that carries messages between the hand and the brain

Tendon Sheath

A protective outer covering that lets the tendon move easily

Carpal Bones

A U-shaped group of bones at the base of the palm. These bones form the hard floor and sides of the carpal tunnel



Flexor Tendons

These tendons slide back and forth as the fingers move

Transverse carpal ligament

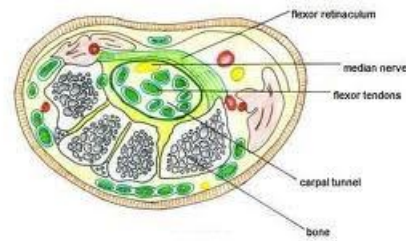
A tough ligament that lies across the arch of carpal bones and forms the roof of the carpal tunnel

Carpal Bones

The **carpal bones** are the eight small bones that sit between the distal ends of the radius and ulna and the five metacarpals.

With CTS, the tendon sheath may thicken and enlarge. This reduces the amount of space inside the carpal tunnel. As a result, the median nerve may be compressed, which can lead to tingling, numbness, or other symptoms.

The ligament is cut during surgery. When it heals, there is more room for the nerve and tendons.



Diagnosis

To determine whether you have carpal tunnel syndrome, your doctor will discuss your symptoms and medical history. He or she will also examine your hand and perform a number of physical tests, such as:

- X-ray of the wrist
- Obtain nerve conduction studies – test commonly used to evaluate the function, especially the ability of electrical conduction, of the motor and sensory nerves of the human body
- Obtain Electromyography (**EMG**) - a technique for evaluating and recording the electrical activity produced by skeletal muscles
- Hold your hand in certain positions to test for numbness or tingling in your hands
- Pressing down on the median nerve in the wrist to see if it causes any numbness or tingling

Treatment

For most people, carpal tunnel syndrome will progressively worsen without some form of treatment. It may, however, be modified or stopped in the early stages. For example, if symptoms are clearly related to an activity or occupation, the condition may not progress if the occupation or activity is stopped or modified.

Nonsurgical Treatment: If diagnosed and treated early, carpal tunnel syndrome can be relieved without surgery. In cases where the diagnosis is uncertain or the condition is mild to moderate, your doctor will always try simple treatment measures first.

Bracing or splinting: A brace or splint worn at night keeps the wrist in a neutral position and prevents the nightly irritation to the median nerve that occurs when wrists are curled during sleep. Splints can also be worn during activities that aggravate symptoms.

Medications: Simple medications can help relieve pain. These medications include anti-inflammatory drugs (NSAIDs), such as ibuprofen.

Activity changes: Changing patterns of hand use to avoid positions and activities that aggravate the symptoms may be helpful. If work requirements cause symptoms, changing or modifying jobs may slow or stop progression of the disease.

Steroid injections: A corticosteroid injection will often provide relief, but symptoms may come back.

Carpal Tunnel Release

In most cases, carpal tunnel surgery is done on an outpatient basis under local anesthesia.

During surgery, a cut is made in your palm and the ligament. This increases the size of the tunnel and decreases pressure on the nerve. Once the skin is closed, the ligament begins to heal and grow across the division. The new growth heals the ligament, and allows more space for the nerve and flexor tendons.

Preparing for Surgery

Your hospital or surgery center will contact you with specific details about your appointment. You will likely be asked to arrive at the hospital an hour or two before your surgery. Do not eat or drink anything after midnight the night before your surgery.

Before surgery begins, you will receive either a general anesthetic that will put you to sleep or a local anesthetic that will numb your arm. The anesthesiologist will help you decide which method would be best for you.

After Your Surgery

Beginning Your Recovery

After surgery, you will spend a few hours resting before you go home. You may be instructed to:

- Elevate your hand above your heart to help reduce swelling
- Limit hand and wrist use as instructed
- Take pain medications as directed
- Avoid significant discomfort.

Minor soreness in the palm is common for several months after surgery. Weakness of pinch and grip may persist for up to 6 months.

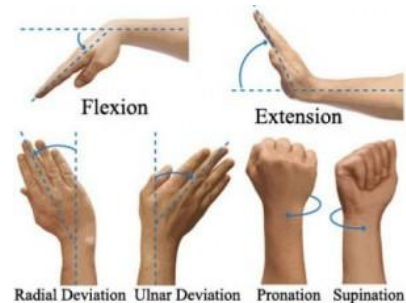
The hand can be used lightly beginning on the day after surgery but not all ordinary activities may be possible. It will be important to perform range of motion exercises on the fingers to prevent adhesions from forming, as instructed by your doctor. However, you should avoid flexing the fingers and wrist at the same time for at least three weeks.

Home Care

You will need to keep the dressings and bandages dry. You may shower by placing a plastic bag over the hand. The physician will typically remove the sutures in three weeks.

Exercise and Therapy

A removable splint may be needed to perform some types of activity. Patients may wear the splint intermittently during the day for heavy activities and continuously at night for up to 3 weeks. The patient should also begin progressive strengthening exercises after six to 12 weeks. Discuss when you can safely begin range of motion and strengthening exercises with your doctor.



Frequently Asked Questions

Will my wrist recover completely?

In long-standing carpal tunnel syndrome, with severe loss of feeling and/or muscle wasting around the base of your thumb, recovery is slower and might not be complete.

Will Carpal Tunnel Syndrome reoccur?

Carpal tunnel syndrome can occasionally recur and may require additional surgery

What are the risks with carpal tunnel release surgery?

The most common risks from surgery for carpal tunnel syndrome include:

- Bleeding
- Infection
- Nerve injury

How long is the recovery period?

Recovery is usually between 2 and 4 weeks.

When can I go back to work?

You can usually return to work one to two weeks after surgery. Discuss when you can safely return to work with your doctor