

OrthoInfo Basics

Carpal Tunnel Syndrome

Carpal tunnel syndrome is a common cause of hand pain and numbness.

In carpal tunnel syndrome, the major nerve to the hand is squeezed as it travels through the wrist.

Fortunately, when carpal tunnel syndrome is diagnosed early on, hand pain and numbness can be relieved with simple treatments.

What is carpal tunnel syndrome?

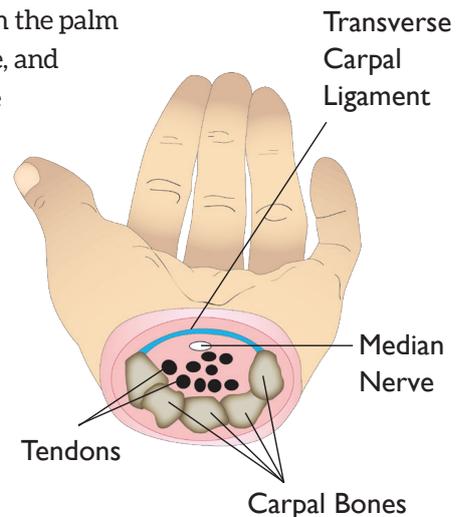
Understanding your wrist can help you better understand carpal tunnel syndrome.

Anatomy. The carpal tunnel is a narrow passageway in your wrist, about an inch wide. The bottom and sides of this tunnel are formed by wrist (carpal) bones. The top of the tunnel is covered by a strong band of connective tissue called the transverse carpal ligament.

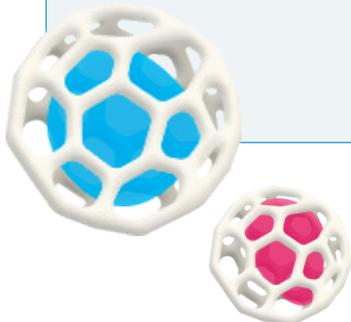
The median nerve is one of the main nerves of your hand. It controls feeling in the palm side of your thumb, index, middle, and ring fingers. Along with the nine tendons that bend your fingers, the median nerve travels from your forearm into your hand through the narrow carpal tunnel.

How it happens. Carpal tunnel syndrome occurs when the tissues surrounding the tendons in your 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 your fingers.

This swelling of the synovium narrows the small space of the carpal tunnel and, over time, crowds the nerve. This can result in hand pain, numbness, tingling, and weakness.



Nine tendons and the median nerve travel through the carpal tunnel.



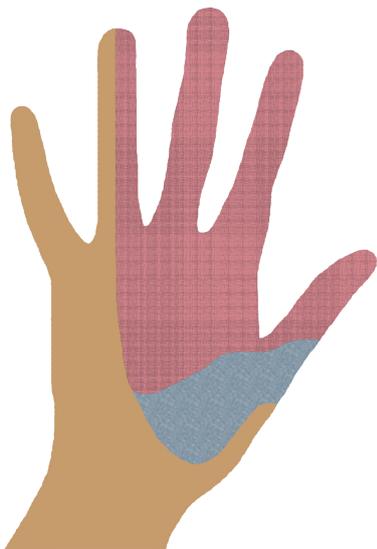
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What causes carpal tunnel syndrome?

In most cases, the exact cause of carpal tunnel syndrome is not known.

Many things contribute to the development of the disease. Studies show that women and older people are more likely to develop carpal tunnel syndrome. There are also several other factors that can cause crowding in the carpal tunnel.

- **Heredity.** Carpal tunnels are simply smaller in some people. This trait can run in families.
- **Hand use.** Repeating the same hand motions over a prolonged period of time can aggravate the tendons and cause swelling.
- **Pregnancy.** Hormonal changes during pregnancy can cause water retention and swelling.
- **Health conditions.** Diabetes, rheumatoid arthritis, and thyroid gland imbalance are medical conditions that can cause increased swelling.



When the median nerve is compressed, pain and numbness can radiate from your thumb to your ring finger.

Is it better to get diagnosed early?

Because the disease usually worsens over time, the sooner you start treatment, the better.

After discussing your medical history, your doctor will ask you about your symptoms. Did they begin gradually and come and go? Are they worse at night? Do they occur when you are holding something, like a book or a phone? These are all common signs of carpal tunnel syndrome.

Physical tests. Your doctor will try to bring about your symptoms. He or she may bend and hold your wrists in different positions to test for tingling or numbness in your hands. Pressing down or tapping along the median nerve may also recreate your symptoms.

Electrophysiological tests. These types of tests, such as a nerve conduction study, measure how severe the pressure is on your median nerve. Results from these tests will help your doctor develop an individual treatment plan for you.

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What are common treatments?

When treated early on, carpal tunnel symptoms can be relieved with simple measures.

Bracing or splinting. A brace or splint worn at night will keep your wrist in a neutral position. This prevents the nightly irritation to the median nerve that occurs when you curl your wrists during sleep. It can also help to wear a splint during activities that aggravate your symptoms.

Nonsteroidal anti-inflammatory medicines. Drugs like aspirin and ibuprofen reduce pain and swelling.

Activity changes. Symptoms often occur when your hand and wrist are in the same position for too long. If your job or hobby activities aggravate your symptoms, changing these activities may slow or stop progression of the disease.

Steroid injections. Cortisone is a powerful anti-inflammatory medicine that is injected into your carpal tunnel. While these injections often provide relief, painful symptoms may come back.

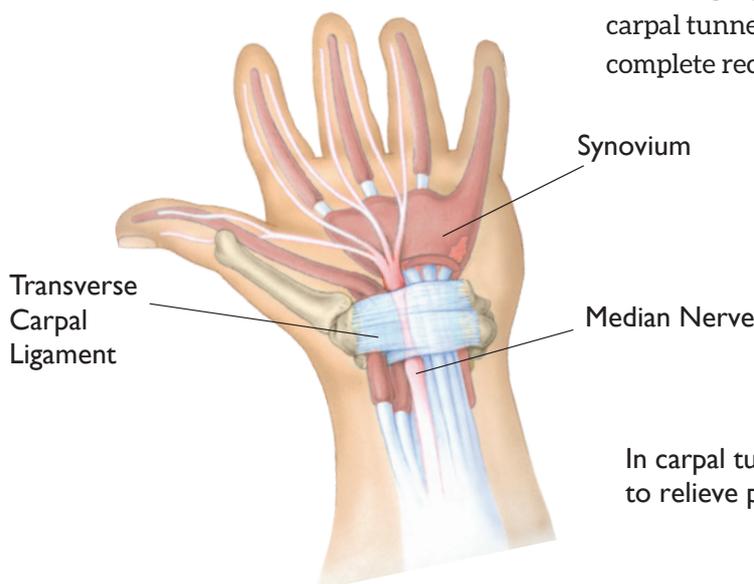
Surgery. In very severe, long-standing cases, surgery may be recommended to prevent irreversible damage. Your doctor may also consider surgery if your symptoms have persisted through nonsurgical treatments.

Procedure. The goal of carpal tunnel syndrome surgery is to make more room for the median nerve and tendons. There are different surgical techniques for doing this, but all involve cutting the transverse carpal ligament to open up the carpal tunnel. When the ligament heals, there will be more room for the nerve and tendons.

Carpal tunnel surgery can be done under general anesthesia where you are put to sleep, or under local anesthesia where you are given medication to numb your arm. Most people are able to go home a few hours after the procedure.

Recovery. You can expect some pain, swelling, and stiffness after surgery. Minor soreness in your palm may last for several months, and a complete recovery may take up to a year.

Most patients' symptoms significantly improve after surgery. People with severe, long-standing carpal tunnel syndrome may not have a complete recovery.



In carpal tunnel surgery, the ligament is cut to relieve pressure on the median nerve.

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For more information

For more information about carpal tunnel syndrome, visit *OrthoInfo* at www.orthoinfo.org.

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