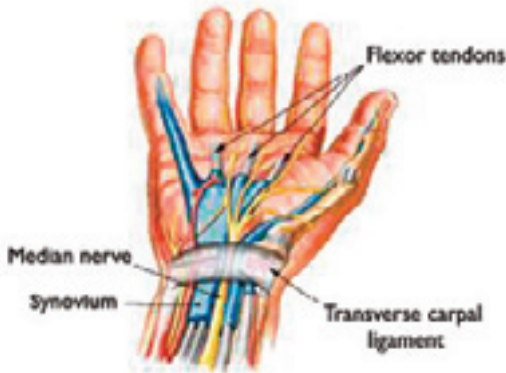


# Carpal Tunnel Syndrome



Carpal tunnel syndrome is caused by pressure on the median nerve traveling through the carpal tunnel.

Carpal tunnel syndrome is a common source of hand numbness and pain. It is more common in women than men.

## Anatomy

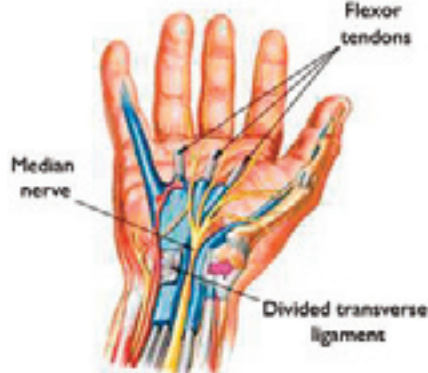
The carpal tunnel is a narrow, tunnel-like structure in the wrist. The bottom and sides of this tunnel are formed by wrist (carpal) bones. The top of the tunnel is covered by a strong band of connective tissue called the transverse carpal ligament. The median nerve travels from the forearm into the hand through this tunnel in the wrist. This nerve is responsible for thumb, index, and middle finger sensation. The tendons that bend the fingers and thumb also travel through the carpal tunnel.

## Cause

Carpal tunnel syndrome occurs when the tissues surrounding the tendons in the wrist swell and places pressure on the median nerve. Swelling occurs as a result; which leads to crowding of the nerve causing pain and numbness.

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.



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

- 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

- 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
- Sleeping with wrists curled
- Weakness or clumsiness leading to dropping objects or difficulty with fine motor skills

## Doctor Examination

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.

## Tests for Carpal Tunnel Syndrome

Electrophysiological tests. Electrical testing of median nerve function is often done to help confirm the diagnosis and clarify the best treatment option in your case.

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## 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
- Medications: NSAIDS, Vitamin B6
- Activity changes
- Steroid injections

## Surgical Treatment

Surgery may be considered if you do not gain relief from nonsurgical treatments. The decision whether to have surgery is based mostly on the severity of your symptoms.

- In more severe cases, surgery is considered sooner because other nonsurgical treatment options are unlikely to help.
- In very severe, long-standing cases with constant numbness and wasting of your thumb muscles, surgery may be recommended to prevent irreversible damage.

## Surgical Technique

- Carpal tunnel surgery is done on an outpatient basis under local anesthesia.
- During surgery, a cut is made in your palm. The roof (transverse carpal ligament) of the carpal tunnel is divided. 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.

## Recovery

Right after surgery, you will be instructed to frequently elevate your hand above your heart and move your fingers. This reduces swelling and prevents stiffness. Some pain, swelling, and stiffness can be expected after surgery. You may need to wear your wrist brace following surgery if instructed by your doctor. Your doctor will determine when you should return to work and whether there should be any restrictions on your work activities.

You may also experience the following effects following surgery:

- Minor soreness in the palm of your hand
- Weakness of pinch and grip may persist for up to 6 months.
- Driving, self-care activities, and light lifting and gripping may be permitted soon after surgery.

## Complications

The most common risks from carpal tunnel surgery include:

- Bleeding
- Infection
- Nerve injury

These complications are very rare; most patients do not experience any of the above effects.

## Long-term outcomes

Most patients' symptoms improve after surgery, but recovery may be gradual. On average, grip and pinch strength return by about 2 months after surgery. Complete recovery may take up to a year. If significant pain and weakness continue for more than 2 months, your physician may instruct you to work with a hand therapist.

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.

Carpal tunnel syndrome can occasionally recur and may require additional surgery.

*Adapted from American Academy of Orthopaedic Surgeons. For more information, see [orthoinfo.aaos.org](http://orthoinfo.aaos.org)*

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