



Carpal Tunnel Syndrome

What is Carpal Tunnel Syndrome?

The carpal tunnel is created by the hand bones and a thick ligament, known as the transverse carpal ligament, and accommodates both the median nerve and the tendons responsible for finger movement.

Carpal tunnel syndrome arises from the compression of the median nerve at the wrist level. This compression can result in altered sensation in the thumb, index, middle, and half of the ring finger, as well as muscle weakness in the thumb.

What Causes Carpal Tunnel Syndrome?

There are various factors that can contribute to the development of carpal tunnel syndrome. The carpal tunnel may become narrower due to conditions such as **arthritis** or a **fracture**. On the other hand, the contents of the tunnel may increase in size due to inflammation caused by **overuse, inflammatory arthritis**, or the presence of lesions such as **ganglions**. General **fluid retention** in the body can also play a role in the swelling of the contents within the carpal tunnel.

Certain individuals may also be more susceptible to carpal tunnel syndrome. The median **nerve can become more sensitive** to compression in people with **diabetes** or thyroid problems. If the nerve is **compressed higher up**, such as in the neck, it can also contribute to carpal tunnel syndrome. Additionally, people with **peripheral neuropathy** or a **family history** of the condition may also be at a higher risk.

How does it present?

Carpal tunnel syndrome can present with nighttime tingling, "pins and needles" sensations, and numbness on the radial (thumb) side of the hand. These symptoms can also occur during the day, particularly during manual activities, driving, or holding a phone or book. The numbness may cause difficulty in picking up small objects or fastening buttons.

In more severe cases of carpal tunnel syndrome, weakness may occur, resulting in a loss of grip strength and difficulty in holding objects. Muscle loss may also occur over time. It is important to seek medical attention if these symptoms persist or worsen.

What can be done?

To manage carpal tunnel syndrome, it is advisable to avoid activities that trigger pins and needles, and to find alternative ways of performing such tasks. Wearing a wrist splint at night or during periods of heavy activity can help reduce symptoms by providing support and minimizing pressure on the median nerve. In addition, taking anti-inflammatory medication may help to alleviate symptoms.

For more severe cases of carpal tunnel syndrome, a steroid injection directly into the carpal tunnel may be recommended. This procedure can provide longer-lasting relief of pain and discomfort. It is important to consult with a medical professional to determine the most appropriate treatment plan based on individual needs and symptoms.

When is surgery needed?

Non-surgical treatments for carpal tunnel syndrome may not always be effective. In cases where symptoms in the hand prevent individuals from completing everyday activities such as getting dressed, preparing meals, driving, or sleeping comfortably, or from participating in enjoyable activities such as fishing, cycling, or reading a book, further intervention may be necessary.

If there is a persistent change in sensation in the hand that does not return to normal, it may indicate that permanent nerve damage is occurring. In such cases, individuals may prefer to seek a **definitive cure** for the condition. It is important to discuss treatment options with a medical professional to determine the best course of action based on individual needs and symptoms.

How does surgery work?

The surgical procedure for carpal tunnel syndrome is typically performed under local anesthesia, which involves a nerve block, and sedation using a "twilight" anesthetic. This type of surgery is usually done as a day case procedure in a hospital setting. However, it is important to note that individuals undergoing the procedure should not drive afterwards, and it is recommended that they have someone with them on the night following the surgery.

In most cases, antibiotics are not necessary during the surgery. It is important to follow any specific instructions or precautions provided by the medical team before and after the procedure to ensure the best possible outcome.

What do we do in surgery?

There are two main approaches to performing the carpal tunnel surgery: an **open procedure**, which involves making an incision in the palm, and a keyhole technique known as arthroscopic surgery, which is assisted by a camera.

The **keyhole technique** offers a significant advantage in that individuals can return to moderately heavy activity within 2-3 weeks after surgery, which is a faster recovery time than with the open procedure. However, it is important to note that there is no significant difference in the recovery time between the two techniques at the three-month post-surgery mark. The choice of technique may depend on individual circumstances and should be discussed with a medical professional.

After the surgery

During the hospital stay after carpal tunnel surgery, a large bandage will be applied to the hand, and it is important to keep the hand elevated higher than the heart to limit swelling. If you experience pain, it is recommended to ask for painkillers and to move your fingers regularly to promote circulation.

If the bandage feels too tight, it can be removed. Typically, individuals can leave the hospital within 2-3 hours after surgery.

Once at home, it is important to continue elevating the arm until the swelling in the fingers subsides. It is also important to move your fingers, making a full fist and straightening your fingers out fully about 10-20 times a day. The wound should be kept dry, covered, and clean, and the bulky bandage can be removed 2 days after surgery.

If you are taking blood thinning medication, it can be resumed 2 days after surgery. An appointment is usually arranged with a practice nurse for a follow-up at about 1-2 weeks after surgery.

The Recovery

- After 1-2 weeks, the wound typically heals, and any sutures are removed.
- **Self-care** activities, such as washing, dressing, and eating with the operated hand, can usually be resumed around 5 days after surgery.
- **Driving** can be resumed when you can control a steering wheel with your operated hand and are not taking strong pain relief (usually 5-10 days post-surgery).
- Moderate activities, like lifting a pot or pouring a full kettle, can usually be achieved by **4-6 weeks**.
- Scarring in the palm where the ligament has been divided may be thick and tender for several months (3-6).
- Heavy manual activities may take 3-6 months to resume.

- Activities like **golf, fishing, or cycling** can usually be resumed around 3-4 months post-surgery, but it can take up to 6 months.

What can go wrong?

- Infection after the surgery is rare, occurring in only about 1% of cases, and is usually not severe.
- There may be persistent pain due to scarring or other preexisting joint problems in the area that were not apparent at the time of surgery.
- Numbness next to the scar is a common side effect, and the scar may remain sensitive for an extended period due to damage to small skin nerves.
- There is a small risk of further nerve damage during surgery (around 0.5%).
- In extremely rare cases (around one in a thousand), a severe pain reaction known as complex regional pain syndrome (CRPS) can occur, which can be disabling for years.
- Occasionally, the initial surgery may not provide relief, and a second procedure may be required.
- As with any surgical procedure, anesthesia carries its own risks, including nausea and complications affecting the heart and lungs. Please consult with your anesthesiologist before the operation.

What can you expect the final outcome to be?

Pins and needles typically improve immediately after carpal tunnel surgery. However, it may take several months for numbness to completely resolve. Unfortunately, loss of muscle mass and strength in the affected hand is a rare outcome that often does not recover.