

Patient information from the BMJ Group

Carpal tunnel syndrome

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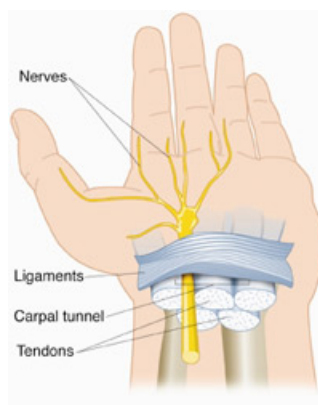
You get carpal tunnel syndrome if one of the main nerves to your hand gets pinched at your wrist. Your hand may tingle or feel numb. You can be in a lot of pain and start to drop things. Getting the right treatment early could help you avoid more serious symptoms.

We've brought together the best research about carpal tunnel syndrome and weighed up the evidence about how to treat it. You can use our information to talk to your doctor and decide which treatments are best for you.

What is carpal tunnel syndrome?

Carpal tunnel syndrome is caused by pressure on a nerve in your wrist. It can be painful. At first, your hand may start to tingle or feel numb at night. You might find you drop things as your grip becomes weaker.

Your carpal tunnel is a narrow gap running through the bones and ligaments in your wrist. A nerve that gives you feeling in your hand (the median nerve) passes through this tunnel. So do the tendons (cords of tissue) that bend your fingers and wrist.



The median nerve passes through your carpal tunnel.

Your carpal tunnel is quite narrow and rigid. It's easy for the nerve inside the tunnel to get squeezed. This interferes with the messages that the nerve is sending to your brain. You might feel unusual sensations of numbness, tingling, burning, or pain in your thumb,

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fingers, and palm of your hand.^[1] Your symptoms could be worse at night or when you wake up. Many people sleep with their wrist bent and pressing on the nerve.^[2]

Carpal tunnel syndrome: why me?

It's not easy to say exactly what causes carpal tunnel syndrome.^[3] But certain things make you more likely to get it. These things are called risk factors. They include:^[3] ^[4]

- Having had a small carpal tunnel since you were born
- Getting an injury to your wrist that causes swelling, such as a fracture or sprain
- Regularly doing things that put a lot of pressure on the wrist and where you repeat a movement. There are many activities like this. Examples include using power tools, cleaning, sewing, and working on an assembly line
- Having fluid retention (extra fluid in your body) during pregnancy or the menopause
- Having a cyst (a swelling full of fluid) or tumour (a growth) in your carpal tunnel
- Having certain medical conditions, such as diabetes or rheumatoid arthritis^[1]
- Being overweight (or losing weight quickly) may cause swelling around the median nerve.

What are the symptoms of carpal tunnel syndrome?

You will probably feel numbness, tingling, burning, or aching pains in your wrist, hand, and fingers. You might drop things as your grip becomes weaker. Your symptoms may come and go, but will probably get worse over time.

The main symptoms include:^[5]

- A dull ache in your hand, wrist, or arm
- Tingling, pins and needles, or numbness in your hand
- A weak or clumsy hand
- Dry skin, swelling, or colour changes in your fingers and hand.

You may find your symptoms are worse after certain activities, such as painting, knitting, or driving. You might find that repetitive movements of your hand and wrist, or holding your arm or hand in one position, bring on your symptoms.^[5] You may wake up at night

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because your hand tingles or your wrist aches. Shaking your hand or changing its position often makes it feel better.

If carpal tunnel syndrome affects both of your hands, your dominant hand (the right one if you are right-handed) is usually affected first and more severely. Some people can't feel whether things are hot or cold. If the nerve damage becomes severe, you may lose the feeling in your hand. You might not be able to use that hand much any more.

Your doctor will need to examine your wrist and hand to find out if you have carpal tunnel syndrome. Tapping or putting pressure on the nerve at your wrist might make your fingers tingle (this is called **Tinel's sign**).^[5] Pressing the backs of your hands together and pointing your fingers down for a minute may cause tingling or numbness in your fingers (**Phalen's test**).

Your doctor may also recommend some other tests that measure the electrical activity of your nerves and muscles to confirm whether you have carpal tunnel syndrome and, if so, how bad it is.^[6] These tests will show how severe the damage to your median nerve is. Your treatment will depend on whether your condition is mild, moderate, or severe.

How common is carpal tunnel syndrome?

About 3 in 100 people may have carpal tunnel syndrome.^[7] Women are more likely to have it than men. One survey found 7 in 100 women have carpal tunnel syndrome compared with 1 in 100 men.^[8]

Men are more likely to get carpal tunnel syndrome as they get older.^[9] ^[10] But women are more likely to have it between the ages of 45 and 54.

More than half of all pregnant women get symptoms of carpal tunnel syndrome.^[11] ^[12]

What treatments work for carpal tunnel syndrome?

You should begin treatment for your carpal tunnel syndrome as early as possible. Wearing a special splint on the affected wrist might improve your symptoms. But if damage to the nerve in your hand is already severe, you may need an operation straight away.

Key points about treating carpal tunnel syndrome

- If your carpal tunnel syndrome is mild or moderate, your symptoms might improve after wearing a splint that keeps your wrist from bending.
- If you have severe carpal tunnel syndrome, you may need an operation straight away to prevent more permanent nerve damage.
- About 9 in 10 people who have surgery to release their carpal tunnel are better a year later. But we don't know how long the benefits last.

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- A corticosteroid injection into your wrist may reduce your pain and swelling.

Which treatments work best? We've looked at the research and given a rating for each treatment according to how well it works.

For help in deciding what treatment is best for you, see [How to make the best decisions about treatment](#).

Treatment Group 1

Treatments for carpal tunnel syndrome

Treatments that are likely to work

- [Corticosteroid injections](#)

Treatments that need further study

- [Wrist splints](#)
- [Nonsteroidal anti-inflammatory drugs](#)
- [Vitamin B-6 \(pyridoxine\)](#)
- [Ultrasound](#)
- [Acupuncture](#)
- [Massage](#)

Treatments that work, but whose harms may outweigh benefits

- [Carpal ligament surgery](#)

Treatments that are unlikely to work

- [Exercises](#)
- [Nerve surgery for carpal tunnel syndrome \(internal neurolysis\)](#)
- [Diuretic medicines](#)

What will happen to me?

Your symptoms may go away, especially if you are young and haven't had carpal tunnel syndrome for long.^[13] If the nerve damage at your wrist is severe, your symptoms are likely to get worse without treatment.

More than one-third of people with carpal tunnel syndrome recover completely within six months without treatment.^[14] Your symptoms are more likely to go away if you got them when you were pregnant or if you are young and you haven't had carpal tunnel syndrome for long.^[15] Most pregnant women find the symptoms go after they've given birth, although some still have symptoms a year later.^[11] Your symptoms are less likely to go away without treatment if you have pain in both wrists and the damage to your nerve is more severe.^[15]

In some people, carpal tunnel syndrome returns, or gets worse with time.^[13] This can happen quickly, or your symptoms may stay the same for a long time. If your symptoms become severe, carpal tunnel syndrome will probably get worse faster. If you don't get treatment, your symptoms could become serious. Some people who have severe carpal tunnel syndrome permanently lose most of the use of their hand.

Treatments:

Corticosteroid injections

In this section

If your symptoms are severe, a steroid injection into your carpal tunnel will probably make your hand, arm, and wrist feel less painful and swollen.^{[16] [17] [18] [19] [20]} The full name for these medicines is **corticosteroids**.

We don't know whether having steroid injections or [surgery](#) works better for carpal tunnel syndrome. Different studies give different results.

Steroid injections work well to relieve pain in the short term (within about three months of having the injection).^[21] However, the effects may wear off for some people. In one study, people who'd had steroid injections had good pain relief after 10 weeks, but after one year they had as much pain as people who'd been given a dummy (placebo) injection. About 75 in 100 people who'd had injections chose to have surgery within a year.^[22]

Another study compared people who had injections with people who had surgery. In this study, 95 in 100 people said they had a big improvement in the first few months after the injection, but the numbers of people who still had a big improvement from the injection after one year dropped to 70 in 100. About 75 in 100 people had a big improvement from surgery which lasted the whole year.^[21]

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One study looked at having a second injection two weeks after the first. It found that two injections didn't work better than one. ^[23]

There is a small risk that your tendon might rupture or the nerve could be hit by mistake when steroids are injected into your carpal tunnel. ^[24] ^[25]

The steroid injection is often combined with a **local anaesthetic**, so the injection should be painless.

Some research has shown that taking steroid tablets may ease the pain and swelling in your hand, arm, and wrist after a couple of weeks. ^[26] ^[27] ^[28] ^[29] Doctors don't often use tablets to treat carpal tunnel syndrome, because injections probably work better. ^[16] ^[29] ^[30] Also, there may be serious side effects if you take steroid tablets for a long time. ^[31]

Wrist splints

In this section

Your doctor may suggest that you wear a splint to keep your wrist from bending. This is often suggested as a first treatment.

One study (a **randomised controlled trial**) found that wearing a splint at night improved symptoms after two weeks. ^[32] And the benefits continued for four weeks. A summary of the research (called a **systematic review**) found that wearing a wrist splint at night can make it easier for you to move your hand or wrist. ^[33]

Research shows that splints do not work as well as **surgery**. ^[21] ^[34]

We don't know whether some splint designs work better than others, or whether wrist splints work better if they are worn all the time, just during the day, or just at night. ^[33] You might find it easiest to wear your splints at night and only during the day when you're relaxing, in front of the television, for example.

You can buy wrist splints that support your wrist at a natural, slight angle. Or you can ask your doctor to have a splint custom-made to keep your wrist in a straight, neutral position.

Some people feel pins and needles in their hand for a short while when they take off their splint. ^[32]

Nonsteroidal anti-inflammatory drugs

In this section

Nonsteroidal anti-inflammatory drugs (NSAIDs) are painkillers that also reduce inflammation. They include drugs like ibuprofen (which you can buy over the counter)

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and naproxen (which you can get only with a prescription). But there hasn't been enough research to say if an NSAID will make your hand hurt less if you have carpal tunnel syndrome. Summaries of the research have found these drugs probably won't work any better than a dummy treatment (a placebo).^[18] ^[26]

But you may find that taking an NSAID helps if you also have a lot of pain and swelling in your fingers caused by tendon problems (doctors call this **tendonitis**).

NSAIDs have side effects, including nausea and diarrhoea. Taking high doses of some NSAIDs every day for a long time can increase your risk of a heart attack or a stroke. This isn't likely to be a problem if you take NSAIDs for a short time to treat pain.

Vitamin B-6 (pyridoxine)

In this section

Some people try taking a daily dose of vitamin B-6 (pyridoxine) to relieve their numbness, tingling, and pain from carpal tunnel syndrome. You can buy this vitamin supplement from chemists or health food shops. But there hasn't been enough research to tell us if vitamin B-6 can really help.

Two small studies (randomised controlled trials) showed that taking vitamin B-6 for up to 12 weeks didn't work any better than taking a dummy treatment (a placebo).^[35] ^[36] But these studies weren't very good quality, so the results may not be reliable. The studies didn't mention whether the people who took vitamin B-6 to treat their carpal tunnel syndrome had any side effects. We know that numbness, tingling, and not being able to walk properly were common side effects in people who took part in studies of vitamin B-6 at higher doses (200 milligrams).^[37] Doses up to 10 milligrams a day are considered safe.^[32]

Ultrasound

In this section

Physiotherapists sometimes use ultrasound (heat from sound waves) to treat carpal tunnel syndrome. There hasn't been enough good research to say whether ultrasound can heal your wrist.^[38]

One study (a randomised controlled trial) of 45 people found that those who had ultrasound were more likely to get better or recover completely after six months.^[39] But this study wasn't high quality and was not a fair test of whether the treatment worked or not.

Acupuncture

In this section

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Some people try acupuncture for carpal tunnel syndrome. But there hasn't been much good research to say whether it works.^[40] We found one study, which showed acupuncture didn't work any better than sham acupuncture for carpal tunnel syndrome.^[41]

Acupuncture is a traditional Chinese treatment. It's a type of complementary or alternative medicine. If you have acupuncture, a trained acupuncturist puts sterile needles into your skin.

Traditional acupuncturists believe that acupuncture improves the flow of energy around the body. Some modern doctors think that putting needles in the skin helps the body release natural chemicals that block pain and make you feel relaxed.^[42]

Massage

In this section

Some people try massage therapy for carpal tunnel syndrome. But there hasn't been any good research to say whether it works.

Massage involves rubbing and stroking the skin and flesh over the affected area, to try to ease muscle tension.

In this section

Carpal ligament surgery

In this section

There's a good chance that having surgery to release the pressure on the nerve inside your carpal tunnel will cure your carpal tunnel syndrome.

In studies, about 8 in 10 people said they were better three months after the operation. This compares with about 5 in 10 people who had [wrist splints](#) instead of an operation.

After a year, about 9 in 10 people who had surgery said they were better. The improvement lasted for at least 18 months.^[34]

A summary of the research (called a [systematic review](#)) found that surgery relieves symptoms of carpal tunnel syndrome better than splinting, but it wasn't clear whether surgery works better than steroid injections.^[21]

One study comparing steroid injections with surgery found people were more likely to have a big improvement three months later with injections. But after six months, the effects of the injections had worn off for some people. Surgery was as good as injections after six months, and better than injections after 12 months.^[43]

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Another study found that surgery worked better than a combination of physiotherapy and [ultrasound](#).^[44] However, people improved with either treatment, and the extra benefit from surgery was small.

But all operations have some risks. You'll need to think about whether you want to have the operation straight away or whether you want to try other treatments first. Your doctor can help you make this decision.

Surgery involves cutting free your carpal ligament (band of tissue) from your median nerve. The operation is usually done under local anaesthetic (which numbs your arm and hand but doesn't send you to sleep). You should be able to go home the same day.

You can have open or keyhole surgery for this operation. In open surgery, the surgeon makes a cut in your wrist up to 5 centimetres (2 inches) long. With keyhole surgery, the surgeon makes a small hole in your wrist and puts in a tube called an endoscope. The surgeon uses a tiny camera and instruments on the end of the tube.

We don't know if one of these operations works better than the other. A large summary of the research (a systematic review) found no difference in symptoms after either operation.^[45] But some studies show people who have keyhole surgery can go back to work, get back to normal sooner, and may have less tender scars after surgery.^[45] ^[46]
^[47]

One study looked at what happened five years after surgery for carpal tunnel syndrome. It found that open and keyhole surgery worked equally well.^[48]

Sometimes doctors advise wearing a wrist splint after surgery. But research shows this probably won't speed up your recovery.^[46] ^[49] ^[50] ^[51] ^[52] The splint may cause more temporary pain and make your scar tender. You should be able to return to work sooner if you don't wear a splint after your operation.

Many people complain of side effects after surgery, but most are mild and don't last long.
^[53]

- Keyhole surgery may cause more temporary nerve problems such as numbness and tingling, but you might get more problems from your wound from open surgery.
- It's possible the pain from your scar or stiffness at your wrist may end up being worse than your symptoms of carpal tunnel syndrome. Your wrist may also lose strength because your carpal ligament is cut. But these serious side effects are rare.

There's not enough research to tell us whether you might get other problems from the surgery later on. We also don't know if your carpal tunnel syndrome might come back several years after surgery. If you need another operation, this might not be so successful, and the risk of having problems because of it is greater.^[54]

Exercises

In this section

There are exercises you can try to relieve the trapped nerve in your wrist. You stretch your fingers and wrist in different positions, to see if doing this can release the pressure on your nerve. The exercises are known as nerve and tendon gliding exercises. But the research we've looked at suggests these exercises probably don't help with carpal tunnel syndrome.

One study (a [randomised controlled trial](#)) looked at people who did these exercises five times a day for four weeks.^[37] They also wore a wrist splint during the day and night. The people who exercised their fingers and wrist could pinch harder after eight weeks. But their other symptoms were just as severe as those of people who hadn't done any exercises.

Another small study found little difference between people who did exercises and people who didn't.^[55] A third study found that exercises had no effect on symptoms, or on how well people with carpal tunnel syndrome could move their wrists.^[56]

We don't know if nerve and tendon gliding exercises could harm you, because the research doesn't tell us. But there may be a risk that some exercises could make your condition worse. It's important to discuss exercises with a [physiotherapist](#) or another health professional.^[54]

Internal neurolysis

In this section

Some of the tissue around your nerve can also be cut when you have surgery for carpal tunnel syndrome. This is to try to free up the nerve more than by just cutting the carpal ligament. Doctors call this procedure **internal neurolysis**. This procedure isn't done very often nowadays.

The research shows this extra surgery is unlikely to help. After a year, people who had this additional surgery had symptoms similar to those of people who had just the basic operation.^[57] ^[58] The complications from both kinds of operations were similar.^[57]

Diuretic medicines

In this section

Some people get fluid retention (their body holds onto extra fluid) when they are pregnant or starting the [menopause](#). This might cause or worsen carpal tunnel syndrome. Swelling around your carpal tunnel may put pressure on the nerve to your hand. So your doctor might advise trying a diuretic drug (water pill) to stop your body holding onto extra fluid.

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But taking a diuretic drug probably won't improve your carpal tunnel syndrome. Two studies (**randomised controlled trials**) show people who took a diuretic for four weeks felt no better than those who took a dummy treatment (a **placebo**) or an anti-inflammatory painkiller. ^[59] ^[60]

Some people in the studies said they felt sick or had stomach pain when taking a diuretic, but the side effects weren't serious.

Further informations:

Glossary:

menopause

When a woman stops having periods, it is called the menopause. This usually happens around the age of 50.

cysts

A cyst is a sac or cavity that develops under your skin and is filled with fluid. Cysts are benign, which means that they are not cancerous.

diabetes

Diabetes is a condition that causes too much sugar (glucose) to circulate in the blood. It happens when the body stops making a hormone called insulin (type 1 diabetes) or when insulin stops working (type 2 diabetes).

rheumatoid arthritis

If you have rheumatoid arthritis, your joints get painful, swollen, and stiff. Rheumatoid arthritis is caused by inflammation inside your joints. It happens when your immune system attacks the lining of your joints.

local anaesthetic

A local anaesthetic is a painkiller that's used to numb one part of your body. You usually get local anaesthetics as injections.

randomised controlled trials

Randomised controlled trials are medical studies designed to test whether a treatment works. Patients are split into groups. One group is given the treatment being tested (for example, an antidepressant drug) while another group (called the comparison or control group) is given an alternative treatment. This could be a different type of drug or a dummy treatment (a placebo). Researchers then compare the effects of the different treatments.

systematic reviews

A systematic review is a thorough look through published research on a particular topic. Only studies that have been carried out to a high standard are included. A systematic review may or may not include a meta-analysis, which is when the results from individual studies are put together.

NSAIDs

NSAID stands for nonsteroidal anti-inflammatory drug. NSAIDs help with pain, inflammation and fever. They are called 'nonsteroidal' because they don't contain any steroids. Aspirin and ibuprofen are both NSAIDs.

inflammation

Inflammation is when your skin or some other part of your body becomes red, swollen, hot, and sore. Inflammation happens because your body is trying to protect you from germs, from something that's in your body and could harm you (like a splinter) or from things that cause allergies (these things are called allergens). Inflammation is one of the ways in which your body heals an infection or an injury.

placebo

A placebo is a 'pretend' or dummy treatment that contains no active substances. A placebo is often given to half the people taking part in medical research trials, for comparison with the 'real' treatment. It is made to look and taste identical to the drug treatment being tested, so that people in the studies do not know if they are getting the placebo or the 'real' treatment. Researchers often talk about the 'placebo effect'. This is where patients feel better after having a placebo treatment because they expect to feel better. Tests may indicate that they actually are better. In the same way, people can also get side effects after having a placebo treatment. Drug treatments can also have a 'placebo effect'. This is why, to get a true picture of how well a drug works, it is important to compare it against a placebo treatment.

heart attack

Doctors call a heart attack an acute myocardial infarction (or acute MI). This is the name for the damage that occurs to the heart muscle if it isn't getting enough blood and oxygen because a branch of the coronary arteries is blocked. During a heart attack, you may have pain or heaviness over your chest, and pain, numbness or tingling in your jaw and left arm.

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stroke

You have a stroke when the blood supply to a part of your brain is cut off. This damages your brain and can cause symptoms like weakness or numbness on one side of your body. You may also find it hard to speak if you've had a stroke.

randomised controlled trials

Randomised controlled trials are medical studies designed to test whether a treatment works. Patients are split into groups. One group is given the treatment being tested (for example, an antidepressant drug) while another group (called the comparison or control group) is given an alternative treatment. This could be a different type of drug or a dummy treatment (a placebo). Researchers then compare the effects of the different treatments.

ultrasound

Ultrasound is a tool doctors use to create images of the inside of your body. An ultrasound machine sends out high-frequency sound waves, which are directed at an area of your body. The waves reflect off parts of your body to create a picture. Ultrasound is often used to see a developing baby inside a woman's womb.

physiotherapist

A physiotherapist is a health professional who is trained to use physical activity and exercises to help people's bodies heal.

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