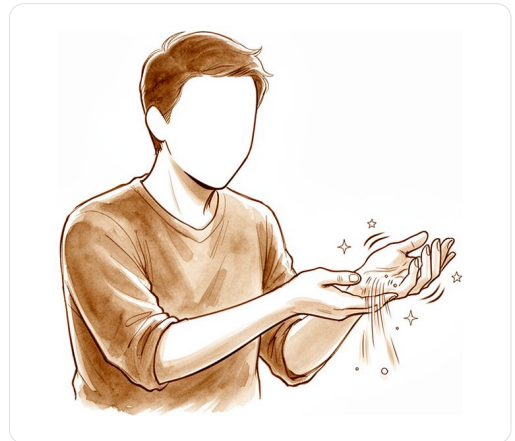


Carpal Tunnel Syndrome

The median nerve passes through the carpal tunnel at the front of the wrist, alongside nine flexor tendons.

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What you're feeling

You may notice tingling or numbness in your thumb, index finger, and middle finger. This happens because the median nerve is being squeezed in your wrist. You might also feel pain that travels up your arm. If you have had issues with the ulnar nerve at your elbow, you are at a higher risk of developing these symptoms, especially within the first two years.

Your symptoms often flare up at night or when you first wake up. Many people find that shaking their hands helps relieve the discomfort. During the day, tasks that require fine motor skills can become difficult. You might struggle to grip objects firmly or feel like your hand is clumsy. Simple actions, like holding a coffee cup or turning a key, may feel awkward or weak.

It is important to note that pain alone, without tingling or numbness, is not typical for this condition. If you experience sudden worsening of numbness over just a few hours, this requires urgent attention. In some cases, carpal tunnel syndrome can be an early sign of a broader health issue, such as systemic amyloidosis. Your surgeon may use ultrasound to look closely at the nerve and find the cause of the compression. This is especially helpful if your symptoms do not follow the usual pattern.

While surgery is safe and effective, with 97% of patients getting complete or partial relief, it may not remove all symptoms if you are older or have advanced disease. For many, the surgery is still justified because it improves daily function and satisfaction. If you have symptoms in both your wrist and elbow, treating both at the same time can help you return to work faster.

What's actually happening

Your wrist contains a narrow passageway called the carpal tunnel. Inside this tight space, a major nerve called the median nerve travels alongside several tendons. Think of this tunnel like a crowded hallway where the

median nerve is a sensitive rope. When the space shrinks or the contents swell, that rope gets squeezed. This pressure disrupts the signals your brain receives from your hand, leading to the numbness and tingling you feel.

Several everyday actions can worsen this squeeze. Bending your wrist away from your hand or twisting your forearm can stretch and distort the nerve. Using hand-held tools that vibrate, or having conditions like diabetes or obesity, can also impair how the nerve functions. Even simple movements, like holding a phone or typing, can increase pressure in the tunnel if your wrist is not in a neutral position. The ligament that forms the roof of this tunnel can thicken, further reducing the available volume for the nerve.

This compression causes the specific symptoms you experience. The degree of swelling and displacement inside the tunnel directly correlates with how severe your pain and numbness feel. While we often focus on the wrist, it is worth noting that some patients also have similar compression in the elbow, which can complicate recovery. Your surgeon will look at the whole picture to understand why your symptoms are happening.

In many cases, nonsurgical methods can help by keeping your wrist straight, which opens up the tunnel slightly and reduces pressure on the nerve. However, if the squeeze is severe or persistent, surgery may be needed to cut the roof of the tunnel. This creates more room for the nerve to rest. For most patients, this simple release provides complete or partial relief, allowing you to return to your daily activities without the constant discomfort of nerve compression.

What we can do about it

Dr Kieran Hirpara, an upper-limb surgeon at Mater Private Hospital Rockhampton, starts with the least invasive options that suit your condition. Patients are generally referred to our clinic by their GP; if a physiotherapist has suggested you see us, you will still need a referral from your GP in order to be eligible for the Medicare rebate. A clinic assessment (history, examination, and imaging where needed) establishes the diagnosis. For degenerative or long-standing problems we usually try non-operative care – activity change, physiotherapy or hand therapy, splinting, and injections – and consider surgery when that has not given enough improvement. For structural or acute problems, surgery may be recommended straight away, without a preceding non-operative trial.

We start with self-management and physiotherapy. You can try changing daily activities to reduce strain on your wrist. Physiotherapy aims to keep your hand and wrist moving smoothly. This approach is effective for mild to moderate symptoms. Nonsurgical methods are often underused, but they carry slight complications compared to surgical risks. We also consider lymphatic drainage techniques as a beneficial adjunct for pain management and nerve decompression, though their effects on functional recovery remain inconclusive. Give conservative care a fair chance before moving to stronger treatments.

If symptoms persist, we discuss medical management. This includes pain medication and anti-inflammatories to reduce swelling. We may offer injections into the carpal tunnel. Cortisone injections can provide significant relief for many patients. While the evidence does not specify exact duration for all injection types, they are a standard bridge to help you manage symptoms while conservative care works. We do not routinely recommend a 2-week course of hand therapy after release, as studies have failed to show benefit in that specific timeframe.

For complex cases, we use high-resolution magnetic resonance imaging or ultrasound to evaluate the nerve. Ultrasound is a valid and accurate diagnostic tool that correlates with severity.

Surgery is considered when conservative care has reached its limit. Carpal tunnel decompression surgery is safe and effective. It involves releasing the tight band of tissue pressing on the nerve. Most patients experience complete or partial relief, with 97% of patients reporting improvement. Even patients with end-stage disease do not have worse long-term outcomes compared with the general population. We present this as a shared decision, ensuring you understand the benefits and the fact that many patients will still have residual symptoms after surgical treatment.

What to expect

Your symptoms may improve without surgery, especially if they are mild or moderate. However, carpal tunnel syndrome often acts like a steadily progressive condition rather than one that resolves on its own. If you do not undergo surgery, the numbness and tingling can persist or worsen over time. For many patients, conservative treatments like splinting or injections provide relief, but about one-third of patients experience long-term benefit from corticosteroid injections, particularly if they respond well initially.

When you choose decompression surgery, the outlook is generally positive. Ninety-seven percent of patients experience complete or partial relief from their symptoms. The procedure is considered safe and effective. If you have diabetes, your long-term improvement will be similar to that of patients without diabetes. Even if you have end-stage disease, your long-term outcomes are comparable to the general population. You can expect significant pain reduction and an improvement in your quality of life.

Recovery feels different depending on the severity of your condition before surgery. If your symptoms were mild or moderate, you will likely see a faster resolution of daytime numbness and tingling. If you had severe carpal tunnel syndrome, the recovery may be more prolonged. Some patients find that numbness takes longer to resolve and may not be completely gone one year after surgery. At an average follow-up of 4.5 years, 28% of hands still had persistent symptoms after the Agee Endoscopic Technique.

The long-term outcome is favourable for most people. The rate of recurrence is 2.5%, and the rate of persistent symptoms is 3.75%. Routine follow-up visits may not be necessary, as a telephone clinic can safely identify any early complications. If you have bilateral symptoms, staged release can significantly reduce pain and improve your life quality in the long term. Your surgeon will help you understand which path offers the best chance for lasting relief based on your specific nerve health.

When to see someone

See your GP if you have persistent numbness or tingling in your thumb, index, and middle fingers that does not improve with rest. Ask for a specialist review if you notice weakness in your hand or if symptoms wake you at night. Seek urgent care if numbness worsens suddenly over hours, especially after an injury. Your surgeon may use ultrasound to check for nerve compression. Early treatment helps prevent long-term damage. If you have

diabetes, your symptoms may improve after release just as they do for others. Do not ignore autonomic signs like sweating changes, as this can lead to persistent issues.

In more depth

This section goes further than you need for your own treatment decisions. Carpal tunnel syndrome is worth the extra reading because it is the most reliably successful operation in hand surgery, which makes the three situations where it behaves differently the ones actually worth understanding.

DIABETES CHANGES LESS THAN YOU WOULD EXPECT

Patients with diabetes are frequently told their result will be worse, and it is a reasonable thing to assume: diabetes damages nerves, and this is a nerve operation.

The evidence does not support it. Pooling **2,869** patients, there was **no significant difference** in improvement across essentially all outcomes after carpal tunnel release between diabetic and non-diabetic patients – the single exception being sensory conduction velocity, an electrical measurement rather than something you would notice [1].

The honest framing is that diabetes may affect the nerve's baseline, but it does not appear to stop decompression from working. The authors' own conclusion is that better diabetic neuropathy care is what deserves attention, not withholding an operation that helps.

KEYHOLE VERSUS OPEN IS A QUESTION ABOUT THE FIRST WEEKS, NOT THE RESULT

The two approaches have been compared repeatedly. Pooling randomised trials across **1,596** patients, endoscopic and open release were **similar in relief of symptoms** – but endoscopic release produced better recovery of function and **earlier return to work**, and was safer across the measured complications [2].

That is the right way to hold the comparison. If you are choosing between them, you are choosing how the recovery goes, not whether the numbness resolves. Both get you to the same destination; one arrives at work sooner. Set against that, open release requires no special equipment and gives direct sight of the nerve, which is why it remains entirely reasonable – particularly in revision cases or unusual anatomy.

THE NERVE THAT STILL HURTS AFTERWARDS MAY NOT BE THE ONE THAT WAS RELEASED

This is the finding most worth carrying away. In a cohort of **7,867** patients undergoing surgery for nerve compression, approximately **3%** underwent decompression of a **different** nerve in the same arm within a year [3].

Three percent is small in absolute terms and large in what it implies. Nerve compression is frequently not a single-site problem: the same person can have median nerve compression at the wrist and ulnar nerve compression at the elbow, and the symptoms overlap enough that one can mask the other. When the hand is still not right after a technically successful release, the question is not always “did the operation fail” – sometimes it is “was there a second site all along”. The authors specifically note that patients with both carpal and cubital tunnel syndrome may benefit from simultaneous decompression [3].

WHY THE OPERATION WORKS SO WELL

The mechanics are unusually simple, which is much of the explanation. The carpal tunnel is a closed space with a rigid floor of carpal bones and a tough transverse carpal ligament as its roof. Pressure inside it rises, the median nerve is the softest structure present, and it suffers. Dividing the ligament converts a closed compartment into an open one and the pressure falls immediately.

That is why relief of night pain is often nearly instant while numbness takes months: the compression stops the day of surgery, but the nerve then has to repair itself, and nerve recovers slowly and from the top down. Persistent numbness at six weeks is usually a nerve healing on schedule rather than an operation that did not work.

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