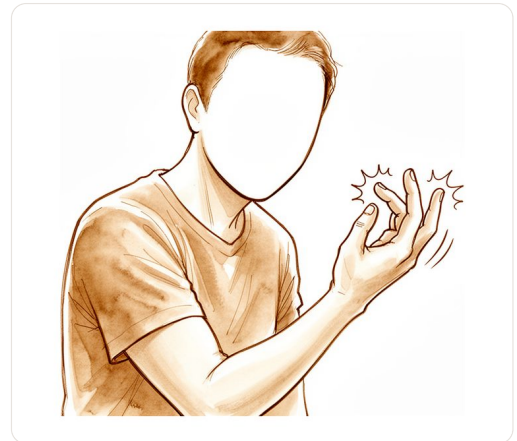


Cubital Tunnel Syndrome

Cubital tunnel syndrome: pressure on the ulnar nerve at the inner elbow.

Kieran Hirpara © ⓘ ⓘ 4.0



What you're feeling

You may notice aching pain in your elbow or the upper part of your forearm. Pain is not always the main issue. More often, you will feel worsening numbness in your hand. This numbness follows the ulnar nerve path, affecting your little finger and the ulnar side of your ring finger. You might also feel strange sensations, like tingling or burning, in these fingers.

Your symptoms often get worse when you keep your elbow bent for a long time. This includes holding a phone to your ear, reading a book, or sleeping with your arms curled up. Bending your elbow shrinks the space around the nerve and stretches it, which increases pressure. You may find that straightening your arm helps relieve the discomfort.

As the condition progresses, you might feel weak in your hand. Tasks that require grip strength become difficult. You may struggle to open jars, shake hands firmly, or type without dropping things. In later stages, you might notice your hand muscles shrinking, particularly on the palm side near your little finger. This can make your hand look different and feel less coordinated.

Men with this condition are more likely to experience muscle wasting than women. However, anyone can develop weakness in the small muscles of the hand. If you have had carpal tunnel syndrome in the past, you are at higher risk for this condition. The two conditions often appear together.

You might also feel a snapping or popping sensation in your elbow. This happens when the nerve slips out of place as you bend your arm. This movement can cause extra pain or numbness. If you press along the inside of your elbow, you may feel tenderness or a shock-like sensation down to your fingers.

These symptoms can interfere with daily life. Simple actions like turning a doorknob or holding a cup may become frustrating. If you ignore these signs, the numbness and weakness can become permanent. Early attention to these changes helps protect your hand function.

What's actually happening

The ulnar nerve runs from your neck down to your hand. It passes behind the bony bump on the inside of your elbow. This area is called the cubital tunnel. The nerve sits here in a shallow groove. It is close to the skin and has little padding. This makes it easy to irritate or compress.

Think of this nerve like an electrical cable running through a narrow, flexible duct. When you bend your elbow, the space in that duct shrinks. The cable gets stretched and squeezed. Straightening your arm opens the space and relieves the pressure. Bending it beyond 90 degrees significantly reduces the room available. This dynamic change is a key reason why symptoms often worsen with certain movements.

The nerve supplies feeling to your little finger and half of your ring finger. It also controls small muscles in your hand. When the nerve is compressed, you may feel numbness or tingling in those fingers. You might notice weakness in your grip or difficulty moving your hand muscles. Pain is not always the main issue. Some people report an ache near the elbow or forearm instead.

Sometimes the nerve slips out of its groove when you bend your arm. This is called subluxation. It can feel like a snap or pop. This movement adds extra strain to the nerve. Over time, repeated compression or stretching can damage the nerve's protective covering. This leads to the sensory and motor symptoms you experience.

We understand that this can be confusing. Your surgeon will examine your elbow and hand to locate the exact spot of pressure. Imaging tests like ultrasound or MRI can show if the nerve is swollen or displaced. These tools help us confirm that the cubital tunnel is the source of your symptoms. Understanding this mechanism helps guide the most effective treatment plan for you.

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. We see cubital tunnel syndrome as the second most common nerve entrapment in the arm, affecting about 21 people per 100,000 each year. 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. We begin with a detailed assessment to confirm the diagnosis. For long-standing or degenerative issues, we typically start with non-operative care. This includes changing your activities, physiotherapy, splinting, and sometimes injections. We consider surgery only if these steps do not provide enough improvement. For structural problems or acute injuries, we may recommend surgery right away.

Self-management focuses on protecting the nerve. You might adjust your daily habits to avoid bending your elbow for long periods or leaning on it. Physiotherapy aims to keep the nerve moving smoothly and strengthen the surrounding muscles. We often suggest splinting to keep your arm straight while you sleep, which reduces pressure on the nerve. This conservative approach gives your body time to heal. Many patients find relief through these simple changes alone. If pain persists, we discuss medical management options.

Medical management targets your symptoms directly. We may recommend anti-inflammatory medications to reduce swelling around the nerve. In some cases, we offer injections. Cortisone injections can calm inflammation and provide short-term pain relief. Hyaluronic acid or PRP (platelet-rich plasma) injections are other options we may discuss to support tissue health. These treatments aim to reduce discomfort and improve function while you continue with therapy. They do not fix the underlying compression but can make daily life more manageable.

Surgery is considered when conservative care has reached its limit. If your symptoms are worsening, or if you notice muscle weakness or numbness that affects your hand, we discuss operative options. The goal of surgery is to relieve pressure on the ulnar nerve. This allows the nerve to heal and function normally again. We review the evidence with you to ensure the decision is right for your specific situation. Outcomes vary, but many patients experience significant relief. For example, in situ decompression has a reported success rate of 65.3% to 94.1%. Transposition techniques show success rates between 77.7% and 94%. We weigh these figures against your personal goals and health status. Our aim is to help you regain comfort and use of your hand.

What to expect

Your outlook depends largely on how severe your symptoms are before treatment. Most people find that pain and function improve after surgery. This relief often extends beyond just the elbow, helping with hand symptoms too. If you have had previous surgery or persistent issues, the results can be less predictable. However, the majority of patients still experience significant symptom relief even in these complex cases.

Recovery is a process of nerve healing, which takes time. In the first few months, you may notice gradual changes in strength and sensation. For athletes who throw or play overhead sports, about 85% can return to their activity after surgery, with 72% reaching their previous performance level. For those who already compete at a high overhead level, 92% return to sport, and 62% resume their prior standard. These numbers show that while full recovery is common, it is not guaranteed for everyone.

If you have severe, long-standing compression with muscle wasting or dense numbness, surgery aims to stop further damage and improve symptoms. It will not necessarily restore normal strength or sensation completely. You should expect arrest of progression rather than a perfect return to pre-injury status. Nonsmokers tend to have better outcomes than smokers, so avoiding tobacco supports your healing.

Without treatment, symptoms often persist or worsen. The nerve remains compressed, leading to continued weakness and numbness. Early intervention generally offers a clearer path to improvement. If you undergo revision surgery for recurrent symptoms, about 77% of patients see some motor or sensory improvement, though only 23% achieve complete recovery. This highlights the importance of timely care.

Complications are generally uncommon. Short-term issues occur in roughly 3.6% to 9.6% of cases, depending on the technique used. Infection rates are low, affecting about 2.17% of cases in large studies. Secondary surgery is needed in about 5.7% of patients overall, with higher rates for those who have had prior elbow trauma or require nerve transposition. Your surgeon will discuss which approach suits your specific anatomy and severity, balancing the likelihood of relief against these small risks.

When to see someone

Ask for a specialist review if you notice worsening numbness in your ring and little fingers, or if your hand feels weak. Symptoms often worsen when your elbow is bent for long periods. See your GP if you experience aching pain in the elbow or forearm that does not improve with rest. Seek urgent care if you notice muscle wasting in your hand or sudden weakness. Early assessment helps prevent permanent nerve damage. Your surgeon can examine your sensation and strength to determine the best next steps for your care.

In more depth

This section goes further than you need for your own treatment decisions. Cubital tunnel syndrome is worth the extra reading because the surgical debate has now largely been settled in favour of doing less – and the finding runs against a strong intuition that a nerve which slips out of place must be put somewhere safer.

THE SIMPLEST OPERATION PERFORMS AS WELL AS THE MOST INVOLVED

There are two broad approaches. **Simple decompression** opens the roof of the tunnel and leaves the nerve where it lies. **Transposition** moves the nerve to the front of the elbow, either under the skin or beneath muscle, so it no longer sits in a groove that stretches when the elbow bends. Transposition is the larger operation and the more mechanically satisfying idea.

Pooling **906** patients, there was **no statistically significant difference** in clinical outcome between simple decompression and either form of transposition – a trend favoured transposition, but it did not reach significance [1]. Comparing the two forms of transposition against each other across **352** patients, the evidence was **insufficient to identify an optimum technique** [2].

Medial epicondylectomy – removing the bony ridge the nerve runs behind – has not resolved the question either: a review of **886** patients found the literature of limited methodological quality, not permitting firm conclusions about its efficacy against simple decompression [3].

AND WHERE THE NERVE IS ALREADY UNSTABLE, THE EXTRA SURGERY COSTS SOMETHING

This is the finding that most changes practice, because it addresses the one situation where transposition seems obviously indicated: the nerve that already subluxes over the bony prominence as the elbow bends.

Across **768** patients, decompressed and transposed groups showed **similar symptomatic improvement**, with **higher complication rates in the transposed group** [4]. The authors are careful about the limitations – few studies report instability at all, and the designs are biased – but the direction is the opposite of the intuition. Moving an unstable nerve did not produce better symptom relief, and it produced more problems.

KEYHOLE VERSUS OPEN IS NOT THE IMPORTANT QUESTION

Where a decompression is being done, the choice of technique attracts more attention than it deserves. Across **981** patients, endoscopic and open cubital tunnel release showed **similar outcomes, similar complication profiles and similar reoperation rates** [5].

CQ HAND + UPPER LIMB

Dr Kieran Hirpara – Specialist Orthopaedic Surgeon
Suite 2, Level 1, Mater Private Hospital Rockhampton, 31 Ward Street, The Range, QLD 4700
Phone 07 4863 6556 · office@cqupperlimb.com.au · cqupperlimb.com.au

WHY REVISION SURGERY IS A DIFFERENT PROPOSITION

If a first operation does not settle the symptoms, expectations for a second should be set carefully. A review of **192** patients undergoing revision surgery for refractory cubital tunnel syndrome found **average functional outcomes**, with transposition the most common index procedure, and variability across studies preventing any determination of an optimal revision procedure [6].

That is a meaningful difference from carpal tunnel release, where a second look often finds an incomplete release to correct. Here, persistent symptoms more often reflect the state of the nerve itself before the first operation – how long it was compressed, and how much muscle wasting had already occurred – than a technical failure that can be undone. It is the strongest argument for not deferring treatment once weakness or wasting appears.

REFERENCES

1. Macadam SA, Gandhi R, Bezuhly M, Lefaivre KA. Simple decompression versus anterior subcutaneous and submuscular transposition of the ulnar nerve for cubital tunnel syndrome: a meta-analysis. *J Hand Surg Am.* 2008;33(8):1314.e1-1314.e12.
2. Liu C, Chen C, Xu J, Wang H, Ke X, Zhuang Z, et al. Anterior subcutaneous versus submuscular transposition of the ulnar nerve for cubital tunnel syndrome: a systematic review and meta-analysis. *PLoS One.* 2015;10(6):e0130843.
3. O'Grady EE, Vanat Q, Power DM, Tan S. A systematic review of medial epicondylectomy as a surgical treatment for cubital tunnel syndrome. *J Hand Surg Eur Vol.* 2017;42(9):941-5.
4. Clark DM, Piscoya AS, Dunn JC, Nesti LJ. The impact of pre-existing ulnar nerve instability on the surgical treatment of cubital tunnel syndrome: a systematic review. *J Shoulder Elbow Surg.* 2020;29(11):2339-46.
5. Aldekhayel S, Govshievich A, Lee J, Tahiri Y, Luc M. Endoscopic versus open cubital tunnel release: a systematic review and meta-analysis. *Hand (N Y).* 2016;11(1):36-44.
6. Kholinne E, Alsharidah MM, Almutair O, Aljasser S, Alhothali W, Kwak J, et al. Revision surgery for refractory cubital tunnel syndrome: a systematic review. *Orthop Traumatol Surg Res.* 2019;105(5):867-76.