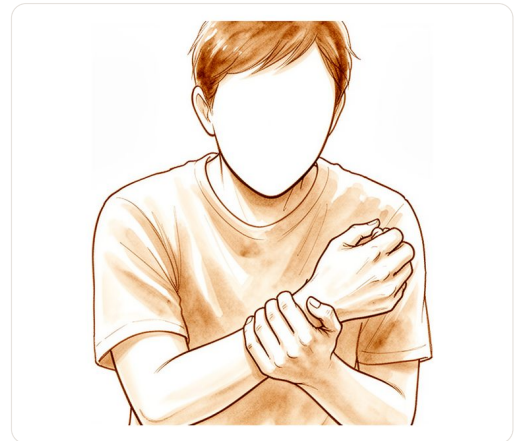


Wrist Ligament Injuries

The scapholunate ligament holds the scaphoid and lunate bones together. When it tears, those two bones drift apart and the wrist starts to wear unevenly.

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What you're feeling

You may notice pain and stiffness in your wrist, often making everyday tasks difficult. Simple actions like turning a doorknob or lifting a cup can feel awkward or painful. If you have a chronic ligament injury, you might experience ongoing discomfort that affects your daily routine. In some cases, specific movements cause a snapping sensation as the bones shift slightly out of place. This can be irritating and unpredictable.

Nerve symptoms are also common. You might feel tingling, numbness, or weakness in your hand or fingers. This often happens if the nerve running down your arm is irritated or compressed. While this is more frequently discussed in elbow contexts, similar nerve compression can occur in the wrist, leading to sensations that travel into your fingers. You may find it hard to grip things firmly, and your hand might feel less responsive than usual.

Pain can flare up after activity or when you wake up in the morning. Night-time discomfort is possible, especially if you sleep on that side. If you have a complex injury like a lunate fracture-dislocation, the pain may be more severe and persistent. You might also notice swelling or a feeling of instability, as if the wrist could give way. These symptoms can vary depending on which ligaments are affected, such as the scapholunate or lunotriquetral ligaments.

It is important to know that imaging tests like MRI scans do not always show every injury. A negative result does not rule out damage to the triangular fibrocartilage complex (TFCC) or other key ligaments. This means your symptoms are valid even if scans appear normal. Your surgeon will look at the full picture, including how your wrist moves and where it hurts, to understand what is happening. We aim to address these symptoms through targeted treatment, whether that involves therapy to improve control or surgical repair to stabilise the joint.

What's actually happening

Your wrist is a complex hinge made of eight small bones and a network of tough ligaments. These ligaments act like strong ropes that hold the bones together and keep your wrist stable when you move. In a healthy wrist, these ropes are tight and intact. When you suffer a ligament injury, one or more of these ropes can stretch, tear, or completely rupture. This damage disrupts the delicate balance of your wrist joint.

The most common areas for this damage are the triangular fibrocartilage complex (TFCC), the scapholunate (SL) ligament, and the lunotriquetral (LT) ligament. You can think of the TFCC as a shock absorber or gasket between your forearm bones and your wrist. The SL and LT ligaments are the primary ropes connecting the main wrist bones. When these structures are injured, the bones may shift out of their normal alignment. This misalignment causes pain, weakness, and a feeling of instability or clicking when you try to use your hand.

Diagnosing this damage can be tricky. A standard MRI scan might come back as negative, meaning it shows no obvious tears. However, a negative result does not rule out clinically relevant injuries to the TFCC, SL ligament, or LT ligament. The damage might be subtle or dynamic, only appearing when your wrist is under stress. To get a clear picture, your surgeon may use advanced imaging like four-dimensional computed tomography (4DCT). This scan captures movement over time, allowing us to see how your wrist bones move and interact in real-time. This helps identify instability that static images might miss.

Early and accurate diagnosis is crucial. Without proper treatment, the misaligned bones can rub against each other abnormally. This wear-and-tear can lead to arthritis, causing long-term pain and stiffness. In some cases, we may use direct arthroscopic evaluation, which involves looking inside the joint with a tiny camera. This allows for a precise assessment and often immediate repair. For chronic tears, arthroscopic dorsal capsuloligamentous repair has shown encouraging results. In studies of 36 patients, this approach provided pain relief, restored grip strength, and had a low incidence of postoperative wrist stiffness. Notably, all professional athletes in that series returned to their preinjury sports levels.

If the damage is severe and arthritis has already set in, more complex options like radioscapholunate arthrodesis (fusing bones) may be considered. This procedure uses compression screws and local bone graft to join the bones together. In reported series, this method achieved a 100% union rate at a mean follow-up of 12 months, with no complications. The goal is always to restore stability and function, preventing further joint damage and helping you return to your daily activities safely.

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 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.

Physiotherapy aims to restore movement and strengthen the muscles around your wrist. You may use a splint to rest the joint. We advise giving this approach a fair trial before considering other steps.

Medical management focuses on controlling pain and swelling. Your surgeon may recommend anti-inflammatory medication or a cortisone injection to reduce inflammation. These treatments help manage symptoms but do not repair torn ligaments. The effect of injections is temporary, typically lasting weeks to months, depending on your individual response.

Surgery is considered when conservative care has reached its limit or when the injury is severe. We discuss the specific surgical option with you if it is appropriate for your case. For example, in cases of chronic ligament tears, arthroscopic repair has shown encouraging results with low rates of stiffness. In selected cases where the joint is preserved, fusion procedures have achieved a 100% union rate at a mean follow-up of 12 months. We present these figures to help you make a shared decision about your care.

What to expect

Your wrist ligaments act like strong bands holding the small bones of your hand together. When these are injured, you may feel pain, weakness, or a sense of instability. The outlook depends on the specific ligament involved and the severity of the tear. For many people, targeted treatment leads to significant improvement.

In cases of chronic scapholunate ligament tears, arthroscopic repair often provides pain relief and helps restore grip strength. Postoperative wrist stiffness is uncommon in these procedures. For professional athletes undergoing this repair, all returned to their preinjury sports levels. If you have dorsal radiotriquetral ligament snapping wrist syndrome, debridement of thickened scar tissue can lead to complete resolution of symptoms.

For palmar midcarpal instability, surgical intervention using your own tissue (autograft) has shown lasting symptom relief and improved outcomes at an average of 34 months after surgery. Ulnar collateral ligament reconstruction also demonstrates low complication and revision rates at medium-term follow-up, with good patient-reported outcomes.

If you have scapholunate dissociation, anatomical reconstruction of the anterior and posterior ligaments has resulted in no patients requiring secondary surgery or treatment related to carpal stabilization. In appropriately selected patients with a preserved midcarpal joint, radioscapolunate arthrodesis (joining bones) achieved a 100% union rate with no complications at a mean follow-up of 12 months.

It is important to note that imaging is not always definitive. A negative MRI result is unable to rule out clinically relevant injury to the triangular fibrocartilage complex (TFCC), the scapholunate (SL) ligament, or the lunotriquetral (LT) ligament. This means symptoms may persist even if scans appear normal, and clinical assessment remains crucial.

Without treatment, symptoms may persist or worsen, leading to ongoing instability or pain. While some minor injuries may settle with rest, significant ligament tears often require intervention to restore function. Your

surgeon will discuss the most appropriate path for your specific injury, balancing the potential for recovery against the risks of leaving the issue untreated.

When to see someone

Seek urgent care if you notice sudden numbness or weakness in your hand, as this may signal nerve injury. Go to an emergency department if your wrist is visibly deformed or you suspect a fracture-dislocation, as these complex injuries require immediate stabilization. Ask for a specialist review if you experience persistent pain, weakness, or instability that does not improve with rest. You should also seek help if your wrist locks, gives way, or causes symptoms that interfere with sleep or work. These signs suggest mechanical issues that need professional assessment to prevent further damage.

In more depth

This section goes further than you need for your own treatment decisions. Carpal ligament injuries are worth the extra reading because they include the wrist injury most often missed in an emergency department – one where the bones have visibly dislocated and the X-ray can still be read as normal.

THE PERILUNATE DISLOCATION AND WHY IT IS MISSED

The carpus is a ring of ligaments around the lunate. A high-energy fall can rupture that ring sequentially, so the rest of the carpus dislocates around a lunate that stays in place – or, further along the same spectrum, the lunate itself is extruded forwards.

It is missed because of how it appears on a standard film. On the front-facing view the bones remain roughly in their normal outline and simply lose their orderly arcs; the dislocation is obvious only on the side view, where the lunate tips out of line with the radius and capitate. In a swollen, painful wrist after a fall, with attention on excluding a distal radius fracture, that side view can be under-scrutinised.

The consequence of missing it is serious and time-dependent: the carpus stays dislocated, the ligaments scar in the wrong position, and the blood supply to the lunate is at risk.

OPERATIVE TREATMENT, AND THE QUESTION OF THE NERVE

Where an acute perilunate injury is treated surgically, the technique comparison across **880** patients found closed techniques may produce a smaller post-operative scapholunate gap and better wrist flexion-extension and functional scores than open surgery – though the authors are careful to note these findings may reflect **different cohorts in terms of injury severity**, leaving the causal relationship uncertain [1].

That caveat is important. Less severe injuries are more amenable to closed treatment, so a comparison of this kind partly measures which injuries were selected rather than which technique is better.

A second question is what to do about the median nerve, which runs immediately in front of the displaced lunate and is often compressed acutely. There is a **lack of consensus**, arising from few studies with small

samples, with the authors proposing carpal tunnel release **only where median nerve symptoms are present at the time of surgery** [2] – rather than routinely.

THE INSTABILITY THAT IS NOT FROM AN INJURY AT ALL

Not every unstable wrist has been damaged. Palmar midcarpal instability occurs in people with generally lax ligaments, where the carpus clunks as the wrist moves from a neutral position into ulnar deviation, often without any injury preceding it.

The evidence for treating it non-operatively is limited to case reports and expert opinion, but **proprioceptive awareness and neuromuscular rehabilitation show promise** on the basis of analogous evidence in other joints, and are recommended as the first approach [3].

That reasoning by analogy is worth flagging as exactly that. It is, however, mechanically coherent: where ligaments are constitutionally lax, the muscles crossing the joint are the only remaining means of controlling it, and training their timing is the available intervention. This also explains why surgery is approached cautiously here – tightening ligaments in someone whose tissue is lax everywhere tends not to hold.

THE REST OF THE PICTURE

Scapholunate ligament injury, the commonest and most consequential of the carpal ligament problems, is covered on its own page, as is the arthritic pattern that follows an untreated one. Lunotriquetral injury – the equivalent tear on the little-finger side – produces ulnar-sided pain and a clunk, and is discussed alongside the other causes of pain in that region.

REFERENCES

1. Lee C, Lee BG, Kim J, Yoon HS, Han K, Choi W. Complications and outcomes of operative treatment for acute perilunate injuries: a systematic review. J Hand Surg Eur Vol. 2023;48(7):625-9.
2. Dvorsky JL, Green A, Fowler J. A review of perilunate dislocations and concomitant acute carpal tunnel syndrome. J Hand Surg Glob Online. 2025;7(5):100797.
3. Harwood C, Turner L. Conservative management of midcarpal instability. J Hand Surg Eur Vol. 2015;41(1):102-9.