CQ HAND + UPPER LIMB
SPECIALIST ORTHOPAEDIC SURGEON

PATIENT INFORMATION — IN DEPTH

Complex Regional Pain Syndrome (CRPS)

In CRPS a limb can become intensely painful, swollen and sensitive out of proportion to the original injury.

What you're feeling

You are likely experiencing pain that feels much stronger than it should be for your injury. This is a hallmark of Complex Regional Pain Syndrome, or CRPS. It is a multifactorial condition, meaning many different factors contribute to how your body reacts. The pain is highly debilitating and can significantly limit your daily life. You may notice that simple touches, like clothing brushing against your skin, feel uncomfortable or even painful.

The pain often flares up at night or after you have been active during the day. You might also feel it most strongly when you first wake up. These changes in pain are linked to altered pain mechanisms in your nerves. Your doctor will look at your history and physical exam to confirm this diagnosis. It is important to recognize these signs early. Prompt treatment helps minimize permanent loss of function, though some patients may still experience lasting impairment despite treatment.

Daily tasks become difficult because of this heightened sensitivity. You might struggle with reaching behind your back to fasten a bra. Tucking in a shirt can feel like a chore. Lifting objects or sleeping on the affected side may cause sharp discomfort. These functional limitations are real and measurable. Tools like the Hamilton Inventory help your care team understand how these symptoms affect your daily life and mental well-being.

While the pain is intense, there are ways to manage it. High-intensity laser therapy has shown conclusive evidence of pain reduction, even after just a few sessions. For chronic cases, stronger options like ketamine may be considered. In some settings, steroids like prednisolone are used as a treatment option. An active approach to your care can help lower the risk of the condition worsening. Remember, CRPS is a diagnosis of exclusion. Your doctor will rule out other causes, such as glomus tumors, before confirming CRPS. Early recognition is your best path to recovery.

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

What's actually happening

Your body's pain system is sending mixed signals. In Complex Regional Pain Syndrome (CRPS), the nerves that carry sensation become overly sensitive. This is not just in your mind. Tests show that your pain processing works differently than in people without this condition. The signals are amplified, making normal touch or movement feel painful.

This reaction often starts after an injury or surgery. Your doctor may notice this if you are female, older, or do manual labor. It can also happen if you had prior nerve issues or severe pain before the procedure. Even after common surgeries like carpal tunnel release or rotator cuff repair, a small number of people develop these symptoms. For example, about 0.33% of patients develop CRPS after cubital tunnel surgery. After rotator cuff repair, hand lesions related to CRPS appear in 19.4% of cases.

The cause is complex and involves many factors. Researchers are still studying how genetics and psychology play a role. However, we know that early action helps. Prompt treatment can reduce the risk of permanent loss of function. While some patients may still face long-term challenges, catching it early gives you the best chance to recover fully.

Your doctor diagnoses this based on your history and physical exam. There is no single blood test or scan that confirms it. We look for specific patterns of pain, swelling, and skin changes. If left untreated, the altered pain mechanisms can lead to lasting stiffness and weakness.

Treatment focuses on calming the nervous system. Options include medications like prednisolone or ketamine for severe cases. High-intensity laser therapy has also shown strong evidence for reducing pain. An active approach to rehabilitation is key. Moving your limb gently and consistently helps retrain your brain and nerves. This prevents the condition from becoming chronic and disabling.

What we can do about it

Early recognition and prompt treatment of CRPS are important to minimize permanent loss of function. You may still experience permanent impairment and disability, but acting quickly gives you the best chance for recovery. Your doctor will rely on a clinical diagnosis based on your history and physical examination. To track your progress, we use the Hamilton Inventory to assess your symptoms, functional limitations, and psychosocial impacts. This helps us see how the condition affects your daily life.

Self-management and physiotherapy form the foundation of your care. An active treatment approach seems to lower the incidence of CRPS-1. We aim to keep you moving safely to prevent stiffness and weakness. While the methodological quality of non-pharmacological treatment approaches for upper limb CRPS is overall poor, staying active remains a key part of your routine. You should give these conservative measures time to work. Consistency is vital for reducing pain and improving your ability to use your hand or limb.

Medical management offers additional options if self-care is not enough. Prednisolone has potential as a treatment option for CRPS, particularly in resource-limited settings where more specialized interventions may be unavailable. High-intensity laser therapy (HILT) offers conclusive evidence of pain reduction in CRPS-I,

even after the third treatment session. For patients with chronic or refractory CRPS, strong consideration should be given for the use of ketamine. Quantitative sensory testing outcomes indicate altered pain mechanisms in complex regional pain syndrome compared to controls. This confirms that your pain signals are being processed differently by your nervous system.

If symptoms are severe and persist despite the above, a doctor may refer you for specialist assessment. In some specific conditions, a procedure may occasionally be considered. For example, a large percentage of patients diagnosed with and treated for CRPS type 1 can have full resolution of their symptoms with carpal tunnel release. Similarly, the positive outcome for a patient with Dupuytren's contracture and CRPS-I after collagenase clostridium histolyticum (CCH) injection is encouraging. Your doctor will discuss whether such interventions are appropriate for your specific situation.

What to expect

Your doctor will diagnose complex regional pain syndrome based on your history and physical exam. Early recognition and prompt treatment are important to minimize permanent loss of function. However, you may still experience permanent impairment and disability despite early care.

A more active treatment approach appears to lower the incidence of this condition. For many, symptoms can resolve fully. A large percentage of patients diagnosed with and treated for complex regional pain syndrome type 1 can have full resolution of their symptoms with carpal tunnel release. Some patients also see positive outcomes with collagenase injections for hand conditions.

If left alone or if treatment is delayed, the outlook changes. The condition is multifactorial, meaning many factors contribute to its development. Quantitative sensory testing shows that pain mechanisms are altered compared to those without the condition. This suggests the pain is real and rooted in how your nerves process signals.

High-intensity laser therapy offers conclusive evidence of pain reduction, even after the third treatment session. Prednisolone is a potential treatment option, particularly where specialized interventions are unavailable. For chronic or refractory cases, strong consideration should be given for the use of ketamine.

Risk varies by procedure and personal factors. The incidence following isolated cubital tunnel surgery is approximately 0.33% at 1 year. Female sex is a significant predictor of developing the condition following treatment of Dupuytren contracture. Release of more than one digit is also a significant predictor. Elderly patients have higher risks after distal radius fracture surgery. Female patients and manual laborers also have higher risks after this same surgery. CRPS-related hand lesions developed in 19.4% of patients following arthroscopic rotator cuff repair.

The reported incidence is influenced by the choice of diagnostic criteria, study location, and fracture management. The Hamilton Inventory can be relied upon to assess your symptoms, functional limitations, and psychosocial impacts. Your care team will use this to track your progress.

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

Recovery is not always linear. While some achieve full resolution, others face long-term challenges. Your doctor will tailor your plan to your specific risks and symptoms. Stay engaged with your treatment to give yourself the best chance at recovery.

When to see someone

See your GP if you have persistent pain that does not improve with rest. Ask for a specialist review if you notice weakness, instability, or if your joint locks or gives way. Seek care if symptoms interfere with your sleep or work. Contact your doctor immediately if you experience a sudden worsening of pain. Early recognition is important to minimize permanent loss of function in Complex Regional Pain Syndrome (CRPS). Although CRPS is a clinical diagnosis based on your history and physical examination, it is a diagnosis of exclusion. Prompt treatment can help, but some patients may still experience permanent impairment despite early care.

In more depth

This section steps up to a more detailed, student-level explanation. It isn't needed to manage CRPS, but if you're curious about *why* the pain is so out of proportion and why the treatment seems back-to-front, read on.

A PAIN SYSTEM STUCK IN OVERDRIVE

CRPS usually follows an injury (sometimes a significant one, sometimes something minor), but the nervous system's response becomes exaggerated and self-sustaining, far outlasting and outweighing the original injury. The pain is real; the problem is the *processing*, not ongoing damage.

NEUROINFLAMMATION AND SENSITISATION

After the trigger, nerves and immune cells release inflammatory signals (substances such as **substance P** and others) that make the nerves hyper-excitable. This sensitises the system: first in the limb (peripheral sensitisation), then in the spinal cord and brain (**central sensitisation**; see how pain works). The result is the hallmark of CRPS: **hyperalgesia** (things hurt far more than they should) and **allodynia** (light touch, clothing or a breeze become painful).

THE AUTONOMIC FEATURES

The body's automatic ("autonomic") nervous system misbehaves too, which is why the limb can show swelling, changes in colour and temperature, abnormal sweating, and later changes in skin, nails and hair. There is growing evidence of an **autoimmune component** in some people, adding to the inflammation.

WHY EARLY MOVEMENT IS THE TREATMENT

Because CRPS is a *sensitised, stuck* nervous system rather than an injury that needs protecting, the counter-intuitive but evidence-based approach is to calm and retrain the system (early, graded movement, desensitisation, and techniques like mirror therapy) rather than resting and guarding the limb, which tends to make it worse.

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