

Distal Humerus Fracture

What you're feeling

You will likely feel deep pain in your elbow and upper arm. This discomfort often radiates down your forearm or up toward your shoulder. The pain is usually most intense right after the injury and may flare up when you try to move the joint. You might notice that the area feels stiff, especially when you first wake up in the morning.

Simple daily tasks can become difficult or impossible. You may struggle to lift even light objects, such as a cup of tea or a mobile phone. Reaching for items on a high shelf or bending your elbow to bring food to your mouth can be painful and limited. You might find it hard to rest your arm comfortably on a table or in your lap without feeling significant pressure or ache.

At night, the pain may worsen, making it hard to find a comfortable sleeping position. You might wake up frequently because any slight movement causes a sharp pang. Swelling and bruising around the elbow are common, which can add to the feeling of tightness and discomfort.

It is important to know that recovery varies. For older adults, the risk of serious health complications is higher, particularly if you have other medical conditions or had difficulty walking before the injury. Younger patients with complex fractures may face challenges with healing and stiffness. Your surgeon will discuss the best treatment plan for you, whether that involves surgery to repair the bone or, in some cases for older patients with severe bone thinning, replacing the joint.

Malunion, where the bone heals in an incorrect position, is a known risk. This can lead to ongoing pain or reduced movement. If the bone does not heal properly (nonunion), further treatment may be needed. Your care team will monitor your progress closely to manage these risks and help you regain function.

What's actually happening

Your elbow is a hinge joint that relies on the smooth meeting of two bone ends. When you fracture the distal humerus, you are breaking the lower end of your upper arm bone where it meets the forearm bones. This area includes the capitellum and trochlea, which act like the rounded knobs on a hinge. These knobs must glide perfectly against each other to allow your arm to bend and straighten.

A fracture here often means the smooth surface is cracked or pushed out of place. In some cases, a piece of bone shears off the back of the joint. This can happen alongside an elbow dislocation, where the joint surfaces are forced out of their normal alignment. The break disrupts the 'triangle of stability' that keeps your elbow steady. Without this stability, the joint becomes loose and painful.

If the broken pieces do not heal in their exact original positions, it is called a malunion. This misalignment changes how the joint moves. It can lead to stiffness, pain, or further damage to the cartilage over time. Your surgeon aims to restore the anatomic axis and the articular surface to ensure a stable elbow that allows for early motion.

In complex cases, the bone may be too shattered to fix with plates and screws alone. This is known as comminution. If the joint surface is severely damaged or the bone quality is poor, particularly in older patients, your surgeon may discuss replacing the damaged part of the joint. This involves removing the broken bone ends and fitting a new surface. This approach helps restore function when reconstruction is not possible.

The goal is always to create a stable joint that lets you move your arm again. Early mobilisation is key to preventing stiffness. However, healing varies. Some patients experience complications like heterotopic ossification, where extra bone forms in the soft tissue around the joint. Others may have ulnar nerve dysfunction, though there is no single consensus on how to define or diagnose this specific nerve issue. Understanding these risks helps you and your surgeon choose the best path for your recovery.

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.

In the early stages, your priority is to protect the elbow and manage pain. We may advise you to rest the arm and use a splint to keep it stable while the bone begins to heal. Physiotherapy plays a key role in restoring movement and strength. Our therapists will guide you through gentle exercises to prevent stiffness and rebuild the muscles around the joint. This process takes time, and consistency is important for your recovery.

If pain persists, we may discuss medical management options. These can include pain relief medications or anti-inflammatory drugs to reduce swelling and discomfort. In some cases, we might consider injections, such as cortisone, to calm inflammation within the joint. These treatments aim to provide relief and improve function, allowing you to continue with your daily activities and rehabilitation. The duration of benefit varies from person to person.

Surgery is considered when conservative care has not provided sufficient improvement or when the fracture is too complex for non-surgical treatment. We use internal fixation, which involves realigning the bone fragments

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and holding them in place with plates and screws, to promote healing. For severe fractures that cannot be repaired, we may recommend joint replacement. This procedure removes the damaged parts of the joint and replaces them with artificial components to restore function and reduce pain.

What to expect

Your outlook depends largely on your age, bone health, and the specific pattern of your fracture. For most people, open reduction and internal fixation (ORIF) – where your surgeon realigns the bone fragments and secures them with plates and screws – leads to good functional outcomes. This is true for both younger adults and older patients. If your fracture is too complex to repair with plates, your surgeon may recommend a hemiarthroplasty (partial joint replacement) or, in select cases, a total elbow arthroplasty (full joint replacement). These options are designed to restore stability and allow you to use your arm again.

Recovery is a gradual process. The goal is to restore the natural alignment of your elbow so you can move it freely. Early motion is critical to prevent stiffness. While many patients regain a full range of motion, some may experience persistent stiffness or discomfort. Malunion, where the bone heals in an incorrect position, is a known risk. This can limit movement and cause long-term pain. Your surgeon will aim to avoid this by ensuring precise alignment during surgery.

It is important to be realistic about the challenges. In older adults, the risk of serious complications and even mortality within one to two years after this injury is substantial. This risk is closely linked to your overall health and how well you could walk before the injury. Smoking and poor bone quality, which can be identified through CT scans, also increase the risk of mechanical failure, such as screws loosening or plates breaking. If you have severe arthritis alongside your fracture, your surgeon might discuss total elbow replacement, though this carries a higher complication rate if done as a salvage procedure later on.

Without treatment, the elbow often becomes stiff, weak, and painful. You may lose the ability to lift objects or perform daily tasks. With careful management, most patients achieve satisfactory outcomes. However, outcomes can vary. Some people return to their previous level of activity, while others may have lasting limitations. Your surgeon will tailor the plan to your specific needs, balancing the desire for full function with the risks associated with your individual health profile.

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 elbow locks or gives way. Seek urgent care if symptoms interfere with your sleep or work, or if you experience a sudden worsening of pain. Older adults with these fractures face higher risks of complications and mortality, especially if you have other health conditions or struggled to walk before the injury. Early assessment helps your surgeon choose the best treatment to restore stability and function.

In more depth

This section goes further than you need for your own treatment decisions. A distal humerus fracture is worth the extra reading because it sits at an awkward junction: it is one of the more complication-prone fractures in the upper limb, the standard surgical exposure involves deliberately breaking a second bone, and in older patients the case for operating at all is less settled than you might assume.

THE COMPLICATION RATE IS HIGHER THAN THE REPUTATION

The largest pooled analysis of intra-articular distal humeral fractures treated by open reduction and internal fixation gathered **2,362** patients, and its conclusion was blunt: complications and reoperations are **more frequent than previously understood** [1].

That is a useful corrective. These fractures are usually presented as difficult but solvable, and the technical result on an X-ray is often excellent. The gap between a good radiograph and a good elbow is wider here than almost anywhere else in the limb, and the literature had been under-reporting it.

THE EXPOSURE HAS ITS OWN COST

To see the joint surface properly, the usual approach detaches the olecranon by cutting across it – an olecranon osteotomy – and repairs it at the end. It is an elegant solution to a real problem of access, and it is not free.

Pooling **1,700** osteotomies, **447** complications were reported. Wound infection occurred in **4.2%** and problems with the osteotomy uniting in **3.7%** [2]. So a decision to use this exposure is a decision to accept a small but definite chance of a second problem at a site that was intact before surgery. The authors' framing is the right one: the risk must be part of the decision to perform the osteotomy, not a footnote to it.

For what it is worth, the choice between posterior exposures appears to matter less than the decision to use one. A meta-analysis of **1,258** patients with complete intra-articular (AO/OTA type C) fractures compared olecranon osteotomy against triceps-reflecting, triceps-splitting and triceps-sparing approaches and found comparable overall outcomes, with most measures showing no statistically significant difference [3].

IN OLDER PATIENTS THE QUESTION IS GENUINELY OPEN

There is a strong instinct that a displaced intra-articular fracture must be fixed. In older adults that instinct is not well supported by comparative data.

A systematic review of **1,838** older patients compared surgical and non-surgical management and found that **each** of the treatment modalities studied produced a reasonable level of elbow function [4]. The authors are careful about why that is not a recommendation to stop operating: the included studies were largely non-comparative and carried considerable risk of bias. It is an absence of evidence for superiority rather than evidence of equivalence.

Still, the practical implication holds. For a frail patient with low functional demand, a plan built around comfort and early movement rather than anatomical reconstruction is a defensible choice supported by outcomes that are not obviously worse – and it avoids every complication described above.

WHAT THIS MEANS FOR YOU

Three things follow. Expect the recovery to be about **motion**, not bone healing – the bone is the easy part. Ask specifically what exposure is planned and what it commits you to. And if you are older, or have limited demands on the arm, ask directly whether non-operative treatment is reasonable in your case, because the honest answer may be yes.

REFERENCES

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