

Metacarpal Fracture Fixation

At-a-glance recovery. Pooled from 169 published studies — your own pace will vary.

LIGHT DUTIES desk work, driving, daily tasks	MOST EVERYDAY ACTIVITIES manual work, sport, gym	FINAL OUTCOME PLATEAU pain and strength
1-3 weeks Finger movement starts early. After an intramedullary screw, active movement began within five days and the protective splint was weaned once the stitches were out. When wires are used, the hand is protected for about three weeks before the fingers are moved freely. Desk work and light one-handed tasks are possible during this time.	8-12 weeks The bone is usually healed by about six weeks: 76% had united by week six in one series and union took 5.6 weeks on average in another. Return to full duties, manual work and sport averaged 76 days (median 54). Punching has to wait until healing is complete: in one series 5 of 17 people who had broken a metacarpal punching, and punched again, bent their implant.	6-12 months Grip strength keeps recovering for months after the bone has healed. After intramedullary screw fixation it averaged 104% of the other hand at a mean of ten months.

Why this operation has been suggested

Dr Kieran Hirpara, an upper-limb surgeon at Mater Private Hospital Rockhampton, matches the treatment to your specific injury. A metacarpal fracture is a break in one of the long bones of the hand. This operation holds the broken bone in the right position while it heals. We usually suggest it when a broken hand bone has shifted out of place, has twisted or shortened, involves several bones, or will not stay lined up in a cast. Some breaks run into the joint surface or break into several pieces, and these often need surgery to hold them steady.

Most hand fractures are first treated without surgery, with a splint or cast and hand therapy. Surgery comes next when those steps have not kept the bone in a good position. 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. At your visit we take a history, examine your hand, and arrange imaging if it is needed. Together we then decide whether an operation suits your injury and your goals. The aim is a hand that moves well, feels steady, and lets you use it without pain.

Before the operation

Your surgeon will give you exact instructions, but a few things apply to most people. Stop eating and drinking seven hours before your operation. We ask for seven hours so your surgery can be brought forward if the theatre list runs early. You may need to pause some of your regular medicines before surgery; your surgeon will tell you which ones and for how long. Bring a written list of everything you take, and wear loose, comfortable clothing. Arrange for someone to drive you home afterwards. X-rays of your hand are needed to plan the operation, and sometimes an MRI or ultrasound as well. If you have other medical conditions, you may need blood tests or a review with the anaesthetist.

On the day

You arrive at the hospital's surgical admissions unit, where you are checked in and prepared for theatre. You will meet the anaesthetist, the doctor who looks after your sleep and comfort during the operation. This operation is done under general anaesthetic. You will be fully asleep for the operation. Some patients may also have a regional nerve block for post-operative pain relief; the anaesthetist decides on the day based on your individual circumstances.

You are then taken into the operating theatre, where the operation is performed. Afterwards you wake up in the recovery area, where nurses watch over you while the anaesthetic wears off. Once you are stable, you either move to a ward or go home. Which of these happens depends on the procedure and how your recovery is going.

What the operation involves

There are two ways your surgeon can do this operation, and the choice depends on your fracture. With a closed approach, the bone is lined up without opening the skin. Wires or a screw are then passed in through small puncture wounds to hold it. With an open approach, your surgeon makes one cut over the broken bone so the pieces can be seen and fitted back together. This is used when the break runs into a joint, breaks into several pieces, or will not line up on its own.

Once the bone is lined up, it needs something to hold it steady while it heals. Your surgeon chooses the implant that suits the shape and position of your break. Fine wires can be passed across the bone. A small screw can be placed down the inside of the bone, a technique called intramedullary fixation, which suits some shaft and neck fractures. Small screws can be placed across a long oblique or spiral break, where the fracture line runs around the bone. Or a small plate with screws can hold the pieces together.

Wires left sticking out through the skin are usually removed in the clinic after a few weeks, once the bone is stable. Screws and plates that sit under the skin are usually left in place unless they cause a problem. The cut is closed with stitches, and a dressing goes over the top.

After the operation

You will wake up in the recovery area, where nurses watch over you while the anaesthetic wears off. Your hand will be in a dressing and a splint, and you may have a sling for comfort. Pain medicine will be arranged so you stay comfortable. You can move around as you feel able, and someone should stay with you for the first 24 hours. You may go home the same day or stay one night in hospital after this operation. Both are common, and your team will talk with you about which suits you.

If you had a nerve block, your hand may feel numb or heavy for about 24 hours. This is expected. Call the clinic if you cannot move your fingers once the block has worn off. Call the clinic the same day if you have a fever, spreading redness around the wound, or fluid or pus leaking from it, or if pain keeps getting worse despite your pain medicines. Go to the emergency department if your fingers, hand or thumb turn pale, cold, white, blue or dark.

We leave the dressing on for about 10 days; please do not take it off before then unless we tell you to. We change or remove it when we see you.

Recovery

Your hand will be sore and swollen for the first days and weeks. This is normal and settles gradually as the bone heals. Keeping your hand raised when you are resting helps the swelling go down, and the pain medicine arranged for you eases the discomfort.

Your hand will be protected in a splint made by your hand therapist, Ruby Doolan at Extend Rehabilitation. She directs your therapy and makes any splint you need. You will do regular movement exercises as part of hand therapy. These start early and build up as the bone heals. The aim is to keep your fingers moving while the break settles. You can use your hand for light daily tasks within the limits your therapist sets. You cannot drive while the splint is on, because it stops you gripping the wheel safely. Once the splint is off and your surgeon clears you, driving can resume; see our page on [driving after upper-limb surgery](#).

As movement returns, everyday tasks get easier. You will notice your grip and strength coming back over time. Heavier work, sport and gym activity come later, once your therapist and surgeon agree the bone is ready. Sleep however feels comfortable; there is no special position you must hold.

Recovery varies from person to person. Your timeline may differ, and your surgeon and therapist will guide you at each visit.

What can go wrong

Most patients do well, but problems can occasionally happen. Your surgeon and the team monitor you closely to spot any issue early.

Sometimes the bone can shift out of its corrected position before it has healed. You might notice the finger starting to look twisted or bent, or a change in how your fingers line up when you make a fist. Bring this up at your next review, or call the clinic if the change seems sudden.

A wire or screw can sometimes move from where it was placed. A wire that sits near a joint can cause pain and make the hand harder to use. If you feel a new sharp pain, or the finger will not move as it did, call the clinic.

The finger can also develop a twisting problem. You may notice one finger overlapping another when you curl your hand into a fist, or the finger sitting out of line with its neighbours. Mention this at your review so it can be checked.

Infection is a risk with any operation. Call the clinic the same day if you have a fever, spreading redness around the wound, or fluid or pus leaking from it, or if pain keeps getting worse despite your pain medicines. If you cannot reach the clinic, go to your nearest emergency department.

A wire left through the skin can irritate the tissue around it. The skin where the wire enters may look red or weepy. Call the clinic if this happens, so we can check it before it becomes a deeper problem.

Rarely, a tendon can rupture, meaning one of the cords that moves your finger has torn. You would notice a sudden loss of movement, such as being unable to straighten or bend a finger that moved fine the day before. Call the clinic if this happens.

Nerves run close to the bones of the hand. A nerve injury can cause numbness or tingling in part of the hand. Numbness in the first 24 hours after a nerve block is expected. Once the block has worn off, call the clinic if numbness or weakness continues.

Some people develop ongoing pain and sensitivity in the hand that seems out of proportion to the injury. The hand may feel painful to touch or use long after you would expect it to settle. Bring this up at your review.

The complications table on this page lists typical rates if you want the specifics.

When to call us

Most problems show up early, and we would rather hear about them than not. Call the clinic the same day if you have a fever, spreading redness around the wound, or fluid or pus leaking from it, or if pain keeps getting worse despite your pain medicines. Go to the emergency department if your calf is swollen or painful, if you become short of breath, or if you have chest pain. These can be signs of a blood clot. Go to the emergency department if your fingers, hand or thumb turn pale, cold, white, blue or dark. Call the clinic if you cannot move your fingers once the nerve block has worn off, about 24 hours after surgery. Numbness in the first 24 hours is expected. If you cannot reach the clinic, go to your nearest emergency department.

Metacarpal Fracture Fixation

Complication rates from published literature

Pooled from 169 published studies. These are population-level rates, not your individual risk — your surgeon will discuss what applies to you.

COMPLICATION	REPORTED RATE	NOTES
a further operation for any reason	4-11%	Pooled across 1,261 fractures: 4% after an intramedullary screw, 11% after wires and 11% after plates. The same meta-analysis found no difference in healing time or infection between the three methods.
stiffness or a finger that will not fully straighten	<5%	Across 1,014 metacarpal fractures fixed with intramedullary screws, 47 complications (4.6%) were reported in total, and stiffness was the commonest of them; 18 of those 47 patients needed further surgery. Early movement with hand therapy is the main protection.
the fracture slipping out of position after plate or screw fixation	12-15%	19 of 138 fractures (13.8%) lost position on X-rays in the first weeks: 11.6% after lag screws and 15.4% after plates. The risk rose by about 7% for each year of age.
an extra operation to remove wires buried under the skin	17%	Wires buried under the skin needed a return to theatre to take them out in 58 of 337 cases (17.2%). Wires left out through the skin are removed in the clinic, and infection rates did not differ between the two.
a screw problem after fixing a knuckle (neck) fracture	9%	For unstable metacarpal neck fractures, 5 of 57 (8.8%) fixed with an intramedullary screw had a major hardware problem, such as the screw moving into the knuckle joint or a marked lag in straightening the finger, against none of 56 fixed with wires. Movement returned faster after the screw.
a bent or broken implant	2-6%	3 of 160 intramedullary screws bent or broke (1.9%), and 5 of 90 intramedullary implants bent (5.6%) in another series. Every bent implant in that series followed another punch, between 4 weeks and 7 months after surgery.

I have read this information and have had the opportunity to ask Dr Hirpara questions about the procedure, its expected recovery, and the complications listed above.

PATIENT – PRINT NAME

SIGNATURE

DATE