

# Pyrocarbon interposition arthroplasty

A pyrocarbon implant resurfacing an arthritic joint.

Kieran Hirpara © ⓘ 4.0



At-a-glance recovery. Pooled from 7 published studies — your own pace will vary.

| <b>LIGHT DUTIES</b><br>desk work, driving, daily tasks                                                                           | <b>MOST EVERYDAY ACTIVITIES</b><br>manual work, sport, gym                                                      | <b>FINAL OUTCOME PLATEAU</b><br>pain and strength                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>2-6 months</b>                                                                                                                | <b>12 months</b>                                                                                                | <b>12 months</b>                                                                                                       |
| Patients typically resume light activities and driving within 2 to 6 weeks post-surgery, with immobilization protocols followed. | Maximum improvement in range of motion and strength is typically observed within the first post-operative year. | Pain relief, patient satisfaction, and functional outcomes generally plateau by 12 months with good implant longevity. |

## Why this operation has been suggested

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. At your appointment we take a history, examine your hand, and arrange imaging if it is needed to confirm the diagnosis.

This operation replaces the worn surface of a small joint with a smooth, shaped piece of carbon. It is usually offered for long-standing arthritis that has not settled with activity change, hand therapy, or splinting. We usually try non-operative care first and consider surgery when that has not given enough improvement. For some structural problems, surgery may be recommended straight away.

The operation aims to relieve pain while keeping the joint moving. It also aims to keep the natural height of the thumb and preserve pinch and grip strength. For the thumb joint at the base, 91% of implants are still working

well at medium-term follow-up. We will talk through this option with you and decide together whether it suits your hand and your goals.

## Before the operation

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In the seven hours before your operation, do not eat or drink anything. We ask for seven hours rather than six so your surgery can be brought forward if the theatre list runs early. Your surgeon will tell you which of your usual medicines to stop and when, and it helps to bring a written list of everything you take. Arrange for someone to drive you home afterwards, and wear loose, comfortable clothing. X-rays are usually all we need to plan the operation, though an MRI or ultrasound scan is sometimes used as well. If you have other medical conditions, you may need blood tests or a review with the anaesthetist, the doctor who gives the anaesthetic. Most patients need neither.

## On the day

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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 anaesthetic. 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 go to a ward or go home, depending on the procedure and how your recovery is going.

## What the operation involves

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Your surgeon makes a single cut over the area of your hand being operated on. Through this opening, they remove the worn, damaged surfaces of the joint. In place of the worn surfaces, they fit a smooth, shaped piece of carbon that sits between the bones. This spacer takes over the job of the worn joint surface, so the bones glide smoothly instead of grinding on each other.

For the thumb joint at the base of your hand, your surgeon keeps the natural height of the thumb by placing the spacer between the bones. The joint is then repaired and supported so it heals in a good position. Your thumb may be held still in a straight position while it heals.

The cut is closed with stitches. A dressing goes over the wound, and our team will tell you how to care for it in the first days.

## After the operation

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Most patients stay one night in hospital after this operation, though some are able to go home the same day. You wake up in the recovery area, then move to the ward. Nurses will keep you comfortable and give you pain medicine if you need it. Your hand will be in a dressing and a splint, which protect the operation while it heals. You can get out of bed and move around as soon as you feel steady. Please arrange for someone to stay with you for the first 24 hours at home. 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

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Expect some pain and swelling in your hand during the first days and weeks. This is a normal part of healing and settles gradually. Keeping your hand raised when you are resting helps, and the pain medicine we give you will ease the discomfort. Most people find the worst of the pain passes early, and comfort improves steadily from there.

Your hand will be in a dressing and a splint, which protect the joint while it heals. We leave the dressing on for about 10 days and change or remove it when we see you. Rehabilitation after hand surgery is hand therapy, not physiotherapy. Your hand therapy after surgery is with Ruby Doolan at Extend Rehabilitation. Ruby is a hand therapist: she will guide your exercises and make any splint you need as your hand recovers. Early on, the exercises are gentle and focus on keeping swelling down. As movement returns, they build up to restore bending, straightening and grip.

You will be able to manage light daily tasks around the home within the limits of your splint. You will not be able to grip, pinch or lift with the operated hand while it is held still. Once the splint is removed and your surgeon clears you, you can start using the hand more normally, and driving can follow. See our page on [Driving after upper-limb surgery](#) for the details.

Recovery varies between individuals. Your timeline may differ, and your surgeon and therapist will guide you along the way.

## What can go wrong

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

Sometimes the implant changes position or settles into the bone. You might notice new pain in the joint, a feeling that the finger or thumb is not sitting straight, or a change in how it moves. If you notice any of these, bring them up at your next review.

The implant can also loosen. This usually feels like pain that returns after a good stretch of improvement, often worse when you grip or pinch. Tell your surgeon if this happens.

Stiffness can develop in the joint. The finger or thumb may not bend or straighten as far as it did, and the tendon on the back of the joint can become stuck down by scar tissue. Mention this at your review so your therapist can adjust your exercises.

The joint can become unstable or the original deformity can come back. You may see the finger drifting out of line again. Raise this at your next appointment.

Infection is uncommon but needs quick attention. Call the clinic the same day if you have a fever, spreading redness around the wound, or fluid or pus leaking from it. Pain that keeps getting worse despite your pain medicines also means you should call the clinic the same day.

Nearby structures can be irritated or injured during this type of surgery. A nerve near the thumb can become sensitive, giving tingling or altered feeling in the skin. The artery on the thumb side of the wrist, or a tendon at the front of the wrist, can be affected. If you notice numbness or cannot move your fingers once the nerve block has worn off, at about 24 hours, call the clinic. Numbness and weakness in the first 24 hours after a nerve block are expected.

A bone in the hand can occasionally break during or after surgery. This causes sudden pain and swelling. Call the clinic if this happens.

If an implant fails and cannot be saved, other operations can help. The implant can be removed and the joint treated another way, which reliably eases pain. In rare cases the joint can be fused, meaning it is permanently stiffened, or the finger may need to be removed.

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

## When to call us

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Most problems show up early, and quick action makes them easier to sort out. Call the clinic the same day if you have a fever, spreading redness around the wound, or fluid or pus leaking from it. Call the clinic the same day too if pain keeps getting worse despite your pain medicines. Call the clinic if you notice numbness or cannot move your fingers once the nerve block has worn off, at about 24 hours. Numbness and weakness in the first 24 hours after a nerve block are expected.

Go to the emergency department if you have calf swelling or pain, or shortness of breath or 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. This can be a circulation problem.

If you cannot reach the clinic, out of hours or on a weekend, go to your nearest emergency department.

## Where to read more about the condition

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This page is about the operation itself. The condition it treats, including what the evidence shows about when surgery helps and when it does not, is covered in more detail on the [Basal Thumb Arthritis](#) page.

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## Complication rates from published literature

Pooled from 7 published studies. These are population-level rates, not your individual risk — your surgeon will discuss what applies to you.

| COMPLICATION                       | REPORTED RATE | NOTES                                                                                                     |
|------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------|
| periprosthetic lucency             | 35.0%         | Lucency greater than 1 mm observed in a subset of patients.                                               |
| periprosthetic lucency progression | 26.0%         | Progression of radiolucent lines around the implant.                                                      |
| symptomatic instability            | 10.5%         | Instability requiring revision surgery.                                                                   |
| revision surgery                   | 6.52%         | Rate reported for instability and pain requiring implant removal and trapeziectomy.                       |
| implant failure                    | 3.4%          | Includes cases of implant breakage or fracture, particularly in high-load activities.                     |
| infection (deep)                   | 3.4%          | Deep surgical site infection requiring implant removal and antibiotic treatment.                          |
| implant breakage                   | Rare          | Specific case reports of fracture lines through the center of the prosthesis due to high-load activities. |
| squeaking                          | Rare          | Audible squeaking from implant articulation; usually benign.                                              |
| osteolysis                         | Rare          | Observed in male patients with high forces during demand activities.                                      |
| tendon attenuation                 | Rare          | Stabilizing tendon noted to be attenuated during revision surgeries.                                      |

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