CQ HAND + UPPER LIMB
SPECIALIST ORTHOPAEDIC SURGEON

PATIENT INFORMATION — IN DEPTH

Arthroscopic Calcium Deposit Removal

यह पृष्ठ मशीन द्वारा अनूदित है और अभी तक किसी चिकित्सक द्वारा जाँचा नहीं गया है। **अंग्रेज़ी संस्करण** ही आधिकारिक है।

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. For a painful calcium deposit in the shoulder, that means physiotherapy and anti-inflammatory medicine, a steroid injection into the bursa, ultrasound-guided needling of the deposit (barbotage) and shock wave therapy. 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. We consider this operation when those treatments have not given you enough relief.

The operation is keyhole surgery to remove a calcium deposit that has settled in one of your rotator cuff tendons. These deposits cause ongoing pain and stiffness that can last months or years. Removing the deposit aims to ease your pain and let your shoulder move and work normally again. Most people who have this operation are satisfied with the result, with satisfaction reported at 93% in one group studied. We will only suggest surgery once we agree that your deposit is the reason your shoulder still hurts.

Before the operation

Before surgery you will need some imaging to plan the operation. This is usually an X-ray and an ultrasound, which shows the calcium deposit and the tendons clearly, and sometimes an MRI scan as well. Most people need nothing else. If you have other medical conditions, you may need blood tests or a review with the anaesthetist.

In the weeks before your operation, keep taking the treatments that help, and follow any instructions from our rooms about your medicines. You will be asked not to eat or drink for seven hours before your operation, so the list can run on time if cases move faster than planned. Arrange for someone to drive you home, as you will not be able to drive yourself. Bring a list of your current medicines with you, and wear loose, comfortable clothing that is easy to change out of.

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On the day

On the day of your operation, you present to the hospital's surgical admissions unit. You will be checked in there and prepared for theatre. This operation is done under general anaesthetic combined with a regional nerve block. You will be fully asleep for the operation, and the block (an injection that numbs the nerves supplying the arm before you wake up) provides pain relief for the first 12 to 24 hours after surgery. The anaesthetist will meet you before the operation and talk you through both parts.

You are then taken into the operating theatre, where the operation is performed. When it is finished, you will wake up in the recovery area. Nurses will monitor you there while the anaesthetic wears off. Once you are stable, you will either go to the ward or go home, depending on the procedure and your recovery.

What the operation involves

This is keyhole surgery, done through a few small cuts placed at different points around your shoulder, including one at the back. The surgeon passes a small camera through one of the cuts so they can see inside your shoulder on a screen. The operation starts with a look around the shoulder joint itself, to check for any other problems before the work on the tendon begins.

The calcium deposit sits inside one of your rotator cuff tendons, the group of tendons that hold your shoulder together and move your arm. Finding it can take some care. The surgeon often locates it by probing the tendon with a fine needle, sometimes with ultrasound help during the operation. Once it is found, the deposit is removed, and the inflamed bursa, a thin cushion of tissue over the tendon, is cleared away so the tendon can be seen clearly.

Removing the deposit can leave a gap in the tendon. If that gap is significant, or if a tear is found, the surgeon repairs the tendon with stitches, and uses small anchors in the bone to hold the stitches if needed. Whether a repair is done is decided during the operation, based on what your tendon looks like once the calcium is out. The aim throughout is to remove as much of the deposit as possible without cutting away healthy tendon.

When the work is finished, the small cuts are closed with stitches and covered with a dressing. You will wake up with your arm in a sling. If your tendon was not repaired, the sling is for comfort and you will wear it for up to four weeks. If your tendon was repaired, your sling and recovery follow the slower program used for rotator cuff repairs.

After the operation

Most patients stay one night in hospital after this operation, though some are able to go home the same day. You will wake up in the recovery area with your arm in a sling, and nurses will check on you as the anaesthetic wears off. Your shoulder may feel sore once the nerve block wears off, and pain relief is often gradual and uneven: most of the improvement comes over three to six months, and some people take up to a year. 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. The sling comes off for exercises and washing. Someone should stay with you for the first 24 hours. Call the clinic the same day if

you have a fever, spreading redness around the wound, fluid or pus leaking from it, or pain that keeps getting worse despite your pain medicines.

Recovery

Your shoulder will be sore and swollen for the first few days. The nerve block from theatre wears off, so expect the pain to build before it eases. Rest, ice packs and your prescribed pain medicine help in those early days. Keep the dressing on until we see you, and take the sling off for your exercises and washing.

Your physiotherapist will guide your exercises from soon after surgery. These start gently and build as your shoulder allows. If your tendon was repaired, your recovery follows the slower program used for rotator cuff repairs, so your physio will pace things differently. You will not drive until at least six weeks after surgery, and only once your surgeon has cleared you. See Driving after upper-limb surgery for details.

Improvement comes gradually and unevenly. Most of the gain in pain and movement happens over the first few months, and the shoulder keeps improving for up to a year. Once the swelling settles and your movement returns, daily tasks around the house get easier. You can return to desk work and light daily tasks once your surgeon clears you, typically at your six-week review. Manual work, sport and the gym come later, once your shoulder is strong enough and your surgeon is happy with your progress.

Recovery varies between individuals. Your timeline may differ, and your surgeon and physio will guide you.

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.

The problem seen most often after this operation is stiffness, sometimes called a frozen shoulder. Your shoulder feels tight and increasingly hard to move, in any direction. Reaching up, behind your back or out to the side gets harder rather than easier as the weeks pass. If your shoulder is stiffening instead of loosening, call the clinic so we can assess it and, if needed, start treatment early.

Some people notice the shoulder staying painful and stiff for longer than expected. This can feel like a deep ache that will not settle, with movement that stays restricted. Bring this up at your next review, as it may need further assessment.

If your tendon was repaired during the operation, recovery takes longer, and stiffness is more likely. Your physio will pace your exercises accordingly.

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

When to call us

Most problems after this operation are minor, but some need prompt attention. Go to the emergency department if you have swelling or pain in your calf, shortness of breath or chest pain, as these can be signs of a blood clot. Call the clinic the same day if you have a fever, spreading redness around the wound, fluid or pus leaking from it, or pain that keeps getting worse despite your pain medicines. Numbness or weakness in the arm is expected while the nerve block wears off, in the first 24 hours. Once it has worn off, call the clinic if your arm or hand stays numb, or if you cannot move it. If you cannot reach the clinic, go to your nearest emergency department.

In more depth

This section goes further than you need for your own treatment decisions. The operation is worth the extra reading because the procedure that used to go with it, shaving bone from the acromion, turned out to add nothing, and because the questions that remain open (how much calcium to remove, and whether to repair the tendon afterwards) are still argued over.

WHY THE DEPOSIT HURTS, AND WHY SURGERY IS THE EXCEPTION

Calcific tendinopathy is a cell-driven process in a living tendon: calcium is laid down, and in most people it is later broken down and cleared by the body, after which the tendon reconstitutes itself [1]. While the calcium is forming, the shoulder may be painless or only mildly sore. The severe, sudden pain usually comes when the body starts to break the deposit down [1]. That is why the first treatments either wait out or speed up that resorption, and why surgery is kept for a chronically painful deposit that has not responded to them.

When the non-operative options have failed, removal works for most people. Across randomised trials, the average improvement in pain was similar after needling (**4.8 points** on a 10-point scale) and after surgery (**4.7 points**). The gain in shoulder function scores was larger in the surgical groups (**38 points** on the Constant score, against **22** after needling) [2]. These are averages within each treatment group, pooled from different trials, rather than a direct head-to-head comparison, and the people who reach surgery have usually already tried needling.

THE DECOMPRESSION THAT WAS DROPPED

For many years the deposit was removed together with a subacromial decompression: bone was shaved from the underside of the acromion on the theory that the tendon was being pinched. Three comparisons now argue against it.

- In a randomised trial of **80** patients, adding a decompression made no difference to pain, function or quality of life at one year [3].
- In a comparative series, people who had the deposit removed alone returned to pain-free, unrestricted activity in **11 weeks** on average, against **18 weeks** when a decompression was added. Within six weeks, nearly **60%** of the removal-only group were back to unrestricted activity, against **20%** with a decompression [4].

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- In a three-arm randomised trial of **69** patients, a decompression on its own, leaving the deposit, gave less pain relief at six weeks and needed more follow-up treatment (**9** further treatments, mostly cortisone injections, against **1** after removal plus decompression). Removal with and without a decompression did equally well [5].

A series of **105** shoulders treated without a decompression reported quick pain relief whatever the shape of the acromion [6]. The deposit is the problem; the bone above it usually is not. This is why the operation described on this page does not include a decompression.

REMOVE ALL OF IT, OR MOST OF IT?

This is a genuine disagreement. In one series, shoulder scores at two to five years were lower the more calcium was left behind, and the authors recommended complete removal [7]. Others have taken the opposite approach to protect the tendon. In a series that deliberately preserved the tendon, small remnants were left in **17 of 99** shoulders (about **58%** of the original deposit size on average). These people did no worse, and the remnants had reabsorbed by follow-up [8]. A more recent series of **99** shoulders found the same: the **20** shoulders with a remnant had results similar to those with complete removal [9]. In practice the aim is to remove as much as possible without cutting away healthy tendon.

REPAIR THE GAP, OR LEAVE IT?

Removing a deposit leaves a defect inside the tendon. Whether to stitch it is the second open question.

- Left unrepaired: in **99** shoulders, results were good regardless of the deposit's size or site. Of **29** shoulders scanned later, **79%** had healed, and the **6** with a small residual defect had scores as good as the rest [9]. A series of **54** unrepaired shoulders followed for at least seven years reported that **3.7%** went on to a rotator cuff tear [10].
- Repaired: in a comparison of **44** patients, those who had the defect repaired had better clinical scores, and MRI showed a normal-looking tendon in **80%** of the repaired shoulders. The tendons in the debridement-only group were mostly intact but with abnormal signal [11].

The trade-off is recovery. A repair needs the arm protected for longer. In one series where every defect was repaired, **10 of 35** patients (**29%**) developed a stiff shoulder, which settled over three to nine months [12]. That is why repair is decided during the operation, for a defect that is significant or a tear that is found, rather than done routinely.

STIFFNESS, AND A RECOVERY THAT TAKES ITS TIME

Frozen shoulder is the commonest complication of this operation. In **340** shoulders it developed in **12%**. Routinely looking inside the shoulder joint as well raised the odds more than fivefold (odds ratio 5.6), while finding very few problems in the joint that needed treatment [13]. In the series without a decompression, the rate was **2.9%** [6].

Recovery is uneven. In one series **78%** of patients were back at work within six weeks, whatever their job. Yet pain reached its lowest level at three months in only **31%**, at six months in **17%**, at nine months in **20%** and at a year in **28%** [14]. Feeling a deposit has gone is not the same as feeling better that week, and a shoulder that is still sore at three months is usually on track, not failing.

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WHAT THIS MEANS FOR YOUR DECISION

- Most deposits clear without surgery. The operation is for one that has not, despite a proper trial of the non-operative treatments.
- Removing the deposit is the operation. Taking bone from the acromion adds time to recovery without adding to the result.
- Whether the tendon is repaired depends on what is found. A repair protects the tendon but slows recovery and raises the risk of stiffness.
- Expect improvement over months, not weeks, and some people take up to a year.

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