

# Flexor Tendon Repair

At-a-glance recovery. Pooled from 15 published studies — your own pace will vary.

| <b>LIGHT DUTIES</b>                                                                                               | <b>MOST EVERYDAY ACTIVITIES</b>                                                                                      | <b>FINAL OUTCOME PLATEAU</b>                                                                                     |
|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| desk work, driving, daily tasks                                                                                   | manual work, sport, gym                                                                                              | pain and strength                                                                                                |
| <b>2-6 weeks</b>                                                                                                  | <b>3-6 months</b>                                                                                                    | <b>12 months</b>                                                                                                 |
| Return to light activities and desk work typically occurs within 2 to 6 weeks with early active motion protocols. | Return to manual work and full strength typically occurs within 3 to 6 months as tendon healing and gliding improve. | Maximum functional improvement and plateau in range of motion are typically noted by 12 months post-operatively. |

## 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. A clinic assessment establishes the diagnosis. For long-standing problems we usually try non-operative care first and consider surgery when that has not given enough improvement. For acute injuries, surgery may be recommended straight away.

This procedure repairs the tendons that bend your fingers and thumb. We aim to restore your ability to grip and move your hand. Adhesion formation and joint contractures are the most common complications after flexor tendon repair. Good or excellent results are reported in up to 67% of cases for Zone I injuries. Repair ruptures occur in 4% to 10% of finger flexors and 3% to 17% of thumb tendons. We discuss these figures with you to support a shared decision about your care.

## Before the operation

Please fast for seven hours before your surgery. This allows your surgeon to start early if the schedule changes. Arrange a lift home and wear comfortable clothing. Bring a list of your current medications. Your surgeon will

advise you on which medicines to pause. Imaging such as X-rays, MRI, or ultrasound helps plan the repair. Blood tests and an anaesthetic review are not routine. If you have other medical conditions, you may need these checks. Your surgeon will confirm what is required for your specific case.

## On the day

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You present to the hospital's surgical admissions unit, where you are checked in and prepared for theatre. This operation is done under general anaesthetic. A regional nerve block is sometimes added for post-operative pain relief – the anaesthetist will discuss this with you on the day. You are then taken into the operating theatre, where the operation is performed.

You wake up in the recovery area, where nurses monitor you while the anaesthetic wears off. Once you are stable you either go to the ward or go home, depending on the procedure and your recovery.

## What the operation involves

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Your surgeon will make small cuts over the palm side of your finger to access the damaged tendon. This area is known as Zone II. The procedure is technically demanding because the tendons here are crowded. Your surgeon will carefully examine the tear and clean the area.

If the tendon ends can be brought together, your surgeon will repair it directly. This involves using strong, multi-strand sutures to stitch the frayed rope-like tendon back together. Modern techniques often use a six-strand core suture. Your surgeon will also manage the protective tissue sheath around the tendon. This may involve selectively dividing some pulleys to allow movement, while preserving others to maintain function. In some cases, a small part of the flexor digitorum superficialis tendon is removed to help the repair move freely.

If direct repair is not possible, or if there is a delay in treatment, your surgeon may use a tendon graft. This involves replacing the damaged section with healthy tissue from elsewhere in your body. This is the standard treatment for injuries in Zones I and II when direct stitching cannot work.

After the repair or graft is in place, your surgeon will close the skin with sutures. A dressing is applied to protect the finger. The goal of this surgery is to create a repair strong enough to allow early movement, which helps prevent stiffness and scar tissue formation.

## After the operation

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You will wake up in the recovery ward with your hand in a soft dressing and a protective splint. Your team will tell you whether you go home the same day or stay one night in hospital. We manage your pain with standard medication to keep you comfortable. Please ensure someone stays with you for the first 24 hours to help you. We will show you how to care for your wound and keep the splint dry and clean. Gentle movement of your fingers may begin soon, as guided by our rehabilitation plan. This early motion helps prevent stiffness and

supports healing. Follow our specific instructions for lifting and using your hand. Contact us if you notice increased swelling, severe pain, or changes in sensation.

## Recovery

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Your hand will feel stiff and swollen at first. This is normal as your body heals the repaired tendon. We manage this discomfort with elevation and prescribed medication. Keeping your hand raised above your heart helps reduce swelling. You may notice some bruising around the wrist or fingers. This fades as the inflammation settles.

We guide your movement through hand therapy with Ruby Doolan at Extend Rehabilitation. Ruby directs your exercises and makes any splint you need. You will wear a protective splint to keep your tendon safe while it heals. You will perform gentle movements as instructed to prevent stiffness. These exercises help your tendon glide smoothly without forming scar tissue. Avoid heavy gripping or lifting until your surgeon clears you.

Your progress depends on how well you follow the therapy plan. You will notice gradual improvements in grip strength and finger motion. Once you can move your fingers without pain, you may resume light daily tasks. You can return to driving once your surgeon confirms your hand is strong enough and you are off strong pain medication. Please see our guide on driving after upper-limb surgery for full details. Your timeline may differ; your surgeon and hand therapist will guide you.

## 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.

Tendons can stick to the surrounding tissue as they heal. This is called adhesion formation. You might notice that your finger feels stiff or does not bend as smoothly as it should. It may feel like something is catching inside your hand when you try to make a fist. If you feel this resistance, let your surgeon know at your next review. They can adjust your hand therapy to help the tendon glide better.

Your joints can become tight and hard to move. This is known as a joint contracture. You might find it difficult to straighten your finger or thumb fully. The skin around the joint may feel tight. If you cannot move the joint through its normal range, tell your surgeon. They may recommend specific splinting or therapy to loosen the joint.

If you had an infection in the tendon sheath, some stiffness is expected even after successful treatment. You might notice that your finger remains stiff despite following your therapy plan. This is a common outcome in these cases. Keep communicating with your team about your progress so they can manage expectations and support you.

The repaired tendon can break or tear again. This is called a rupture. You might feel a sudden pop or snap in your finger or thumb. There may be immediate pain, swelling, or a change in how the tendon looks or feels. If

this happens, contact the clinic immediately or go to the emergency department. Early treatment can help restore function.

Sometimes, repairs do not heal in the standard way. In some cases, direct repair is possible later if the tendon ends can be brought together with acceptable tension. This is rare and depends on your specific injury. Your surgeon will assess whether this option is suitable for you during your follow-ups.

Prompt recognition of any problems and treatment with hand therapy, splinting, and/or surgery may help minimize recovery time and improve function. If you notice any unusual pain, swelling, or loss of movement, do not wait. Bring it up at your next review or contact the clinic sooner if it is urgent.

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

## When to call us

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Call us if you notice increasing wound redness, discharge, or fever. Seek urgent care for sudden severe pain, loss of sensation, or inability to move your hand. Go to emergency immediately for calf swelling or shortness of breath. These signs need prompt assessment to protect your recovery and function.

## In more depth

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This section goes further than you need for your own treatment decisions. Flexor tendon repair is worth the extra reading because it is governed by a single unforgiving trade-off: the movement that stops the tendon sticking down is the same movement that can pull the repair apart. Almost every technical decision in this operation is an attempt to buy room between those two failures.

### THE TRADE-OFF, MEASURED

A meta-analysis of **569** zone II repairs compared early active motion with early passive motion after surgery. The early **active** group achieved greater total active motion – the outcome that determines whether the finger is useful [1].

The same analysis found the cost. A higher risk of rupture was observed in the group doing active flexion and extension **when the tendon had been repaired with a 2-strand core suture** [1].

That conditional is the whole point, and it is easy to miss. Early active motion is not inherently dangerous, and 2-strand repair is not inherently weak. The combination is the problem. The strength of the repair and the aggressiveness of the rehabilitation are a single decision made by two people, and they have to be made to match. If your hand therapist and your surgeon appear to be talking to each other about the specific suture used, that is the system working as intended.

## WHY THE LITERATURE IS HARDER TO READ THAN IT SHOULD BE

A systematic review of **1,878** digital flexor tendon repairs set out to compare 2-strand against multistrand core suture techniques and could **not** definitively confirm its hypothesis – not because the answer was negative, but because of wide variation in how outcomes and study designs were reported [2].

This is a recurring problem in hand surgery. Different papers use different motion measurements, different definitions of a good result and different follow-up points, which makes pooling them close to meaningless. Where you see confident claims that one repair technique is superior, the honest position from the pooled evidence is that the reporting is not yet consistent enough to say.

## SPLINTING IS MOVING, WITH THE EVIDENCE LAGGING

Relative motion orthoses – splints that hold the repaired finger slightly differently from its neighbours, so tendon glide is shared – have changed extensor tendon rehabilitation. A systematic review of **529** patients concluded there is now good evidence that the approach is **safe in zones V–VI extensor repairs**, but that evidence for **flexor** repairs remains limited [3].

So it is a promising direction rather than an established standard on the flexor side, and it is reasonable to ask what protocol is being used and why.

## WHERE TECHNIQUE IS HEADING

One line of work accepts the trade-off and engineers around it. A zone II technique using an externalised detensioning suture – a temporary suture outside the skin that takes load off the repair – substantially strengthened the construct and allowed early active motion with reduced rupture risk, at the cost of limiting distal joint motion until the suture is removed [4].

That is a fair summary of the field: the fundamental tension has not been dissolved, only managed more cleverly.

## WHAT THIS MEANS FOR YOUR RECOVERY

The therapy is not aftercare, it is part of the operation. Attendance, and doing exactly the prescribed amount rather than more, is what keeps you on the right side of the trade-off described above. A rupture in the first six weeks usually means a second operation with a worse starting point than the first.

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**CQ HAND + UPPER LIMB**

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# Flexor Tendon Repair

## Complication rates from published literature

Pooled from 15 published studies. These are population-level rates, not your individual risk — your surgeon will discuss what applies to you.

| COMPLICATION             | REPORTED RATE | NOTES                                                                                                              |
|--------------------------|---------------|--------------------------------------------------------------------------------------------------------------------|
| tendon rupture           | 4-10%         | Overall rupture rate for finger flexors; rates vary by suture technique and zone.                                  |
| adhesion formation       | 4-17%         | Most common complication; ranges from 4% to 17% depending on injury severity and rehabilitation protocol.          |
| joint contracture        | 17%           | Stiffness and flexion contractures are common, particularly in Zone II injuries or with delayed therapy.           |
| infection                | null          | Infection rates vary by technique; pullout techniques may have higher rates (up to 22%) compared to other methods. |
| tenolysis                | 3.6-10%       | Rate of secondary surgery required to release adhesions and restore motion.                                        |
| nail deformity           | 35%           | Specific to Zone I repairs using pullout button techniques with polypropylene sutures.                             |
| pulley failure           | null          | Can lead to bowstringing and loss of excursion efficiency.                                                         |
| quadrigea                | null          | Limited flexion of adjacent digits due to shared muscle belly tension.                                             |
| lumbrical plus deformity | null          | Paradoxical extension of IP joints due to lumbrical hyperactivity or improper graft tensioning.                    |
| swan-neck deformity      | null          | Secondary to FDS rupture or sacrifice during repair near the A-3 pulley.                                           |

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.

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|----------------------|-----------|-------|
| _____                | _____     | _____ |
| PATIENT – PRINT NAME | SIGNATURE | DATE  |