

Tendon Transfers Following Cervical Spinal Cord Injury

Information Sheet



What is a tendon transfer?

A tendon transfer is when you take the tendon of a working muscle (donor muscle) and re-route it into the tendon of a paralysed muscle in order to move the joint previously moved by the paralysed muscle and restore function.

Who can have the surgery?

To be suitable for tendon transfer surgery you need to have one or more suitable donor muscles. You are likely to have suitable donors if you have a C5 – C7 complete or incomplete cervical spinal cord injury. This level of injury means that, pre-surgery, you have movement in your shoulder muscles, you can bend your elbow up to your mouth and you can possibly extend your wrist upwards. If you do not have all these functions, you may still be a candidate for surgery but you will need further assessment.

Examples of donor muscles include part of the deltoid (a muscle that moves the upper arm out to the side and backwards), the brachioradialis muscle (one of three muscles that bend the elbow up to the mouth) and the extensor carpi radialis longus muscle (one of the three muscles that lift the wrist upwards when your palm is facing the floor). These donor muscles can be considered “spare” as their movement is duplicated by other muscles so you don’t lose any function when you use the donor muscle for a tendon transfer.

You can have tendon transfer surgery at any time once your muscle recovery has plateaued after spinal cord injury. This could be as early as six months after injury but tendon transfers can also be done many decades after injury so there is no rush. When you commit to tendon transfer surgery you should be in good health and be motivated to complete the required exercises.

What movements will I be able to do?

Movements that can be restored include:

- straightening your elbow to reach (elbow extension)
- pulling your wrist up (wrist extension)
- closing your fingers around an object to allow you to grip or hold it (finger flexion)
- closing your thumb against your index finger to pinch (thumb flexion).

The success of surgery will depend on the general strength of other muscles in the arm, the strength of the donor muscles, the surgery completed and your participation in exercises/hand therapy.

Will my hand work like it did before my spinal cord injury?

No, each tendon transfer can only replace one movement and there are not enough donor muscles to power all the paralysed muscles in the hand. However, successful tendon transfers should improve your hand and arm function.

What does the surgery involve?

Surgery occurs under a general anaesthetic and takes two to six hours. In addition to the tendon transfer, you may require some additional small surgical procedures to your hand to optimise the benefit of your tendon transfer. Tendon transfers are often combined with nerve transfers to maximise the number of functions that can be restored. The surgeons may recommend that you have one or more nerve transfers combined with your tendon transfers. Most people are in hospital for two to three nights following surgery.

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What happens after surgery?

What you require after surgery depends on the type and number of tendon transfers that you have. For example, if you have a tendon transfer to restore elbow extension you will need to wear an elbow brace all the time for 8-10 weeks. If you have tendon transfers for thumb and finger flexion, you will need to wear a forearm-based resting splint for up to 4 weeks and take it off for supervised exercise. You are likely to need extra attendant care, a power wheelchair and a hoist for this time.

In the weeks after surgery, you will need to be reviewed by the surgeons and also by the hand therapists who will be managing your post surgery exercises. International patients will need to stay in Melbourne either in the hospital's rehabilitation ward or, in some cases, in wheelchair accessible accommodation nearby for approximately 2- 3 weeks after surgery.

Once you return home your local therapist may be able to assist with some of the rehabilitation. Telehealth (Skype or Facetime) reviews with the surgeons and therapists will also be organised to keep track of your recovery and progress. You may need further operations in the future to maximise your hand function.

How do I organise an assessment?

Once you have contacted Melbourne TetraHand you will be asked to complete an assessment form to provide details about your spinal cord injury and general health. This assessment form is available on our website. The practice manager will then contact you to make an appointment to meet the surgeons and therapists either in person or, if you are overseas or interstate, via Telehealth. At your appointment we will assess your current upper limb function, talk with you about your functional goals, answer your questions and discuss what procedures may be best for you.

How much does surgery cost?

If you are eligible for health care under the public health care system in Australia (Medicare), you can be placed on the waiting list for surgery at Austin Health and managed through the Austin Health's Upper Limb Program. If you would like to be assessed through Austin Health please contact the Upper Limb Program at upper.limb.program@austin.org.au or by phone on +61 3 9490 7285.

Those not insured for surgery within Australia will need to be self-funded. Once you have been assessed as being suitable for surgery then you will be provided with an estimate for surgery and post surgery rehabilitation.

Where will the surgery take place?

Surgery is performed at Epworth Hospital in Richmond. Rehabilitation will take place at Bethesda ward which is an inpatient rehabilitation ward at Epworth Richmond.

For those having treatment through Austin Health your surgery will be performed at the Austin Hospital and your rehabilitation will be managed as an outpatient by therapists affiliated with the Royal Talbot Hospital.

Where do I find out more information?

You can get more information by contacting Melbourne TetraHand with your questions. You can also talk to your spinal rehabilitation physician and therapists. Links to articles published by the Melbourne TetraHand team are available on this website as well as links to media coverage of the surgery and patient videos.

Melbourne TetraHand

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