



# What Is LRTI Surgery and Can It Help Treat Arthritis?

**REVIEWED***By Chris at 1:39 pm, Sep 23, 2020*Written by [Marjorie Hecht](#) on November 27, 2018[Candidates](#)[Procedure](#)[Success rate](#)[Recovery protocol](#)[Takeaway](#)

## Overview

LRTI stands for ligament reconstruction and tendon interposition. It's a type of surgery for treating arthritis of the thumb, a common type of arthritis in the hand.



Joints are formed where two bones meet. Your joints are lined with smooth tissue known as cartilage. Cartilage permits free movement of one bone against another. When you have arthritis, the cartilage has deteriorated and may not be able to cushion the bones as it used to.

The problem may start when the strong tissue (ligament) that holds the joint together loosens up. This allows the bones to slip out of place, causing wear to the cartilage.

LRTI surgery removes a small bone ([trapezium](#)) at the base of the thumb, and rearranges a nearby tendon to serve as a cushion for the arthritic thumb joint. A portion of the damaged ligament is also removed and replaced with a piece of your wrist flexor tendon.

[Most people](#) get complete pain relief from LRTI, but recovery time is long and sometimes painful. Also, there can be significant complications from the removal of the trapezium bone.

[A 2016 study of 179 people suggests](#) that removal of the trapezium

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[Earlier studies](#) ✓ published in the Cochrane Database of medical outcomes also indicated that trapeziectomy alone may be better for you than a complete LRTI.

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## Who's a good candidate for this surgery?

The technical name for arthritis of the thumb is [basal joint arthritis](#).

The best candidates for LRTI are adults with moderate-to-severe basal joint arthritis who have difficulty pinching or gripping with their thumb.

LRTI has been around [since the 1970s](#) ✓, and the procedure has evolved and improved. At first, only people [older than 50 years](#) ✓ were considered for the procedure. Since then, it has become more common to treat younger age groups.

Basal joint arthritis affects women over 50 years of age [10 to 20 times](#) more often than men. Your susceptibility for basal joint arthritis depends in part upon inherited (genetic) factors.

## What to expect at the procedure

### Anatomy of the thumb

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metacarpal. The metacarpal connects the longer, second bone of your thumb to your wrist.

The bones of your thumb have three joints:

- The first one near the tip is called the interphalangeal (IP) joint.
- The second joint, where the second bone of the thumb meets the bone of the hand (metacarpal), is called the metacarpophalangeal (MP) joint.
- The third joint, where the metacarpal (hand) bone meets the trapezium bone of your wrist, is called the carpometacarpal (CMC) joint. The CMC is the joint most affected in thumb arthritis.

The CMC has more freedom of motion than any other finger joint. It allows the thumb to bend, extend, move toward and away from the hand, and spin around. This explains why it's painful to pinch or grip when you have thumb arthritis.



At the base of thumb is the [trapezium](#) bone. It's called that because it's shaped like a trapezoid. It's one of eight bones that make up the complex structure of your wrist.

One more joint to consider is the one where the trapezium meets the other part of the wrist. This carries the imposing name of scaphotrapeziotrapezoidal (STT) joint. It can also have arthritis along with the CMC joint.

## What the LRTI procedure does

In LRTI, [all or part](#) of the trapezium bone is removed from the wrist and the remaining surfaces of the CMC and STT joints are smoothed out.

An incision is made in your forearm, and the FCR (flexor carpi radialis) tendon that allows you to bend your wrist is cut.

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The remaining portion of the FCR is cut off and preserved in gauze. Part of the tendon tissue is used to reconstruct the ligament of the CMC joint. The other, longer portion is rolled up into a coil called an anchovy.

The “anchovy” is placed in the CMC joint to give the cushioning that the arthritic cartilage used to provide. An artificial anchovy [can also be used](#) to remove the need for harvesting a tendon.

To maintain the proper positioning of the thumb and wrist, specialized wires or pins, known as Kirschner (K-wires), are placed in the hand. These protrude from the skin, and are usually removed about four weeks after surgery.

This procedure may be done under a type of anesthesia known as regional axillary block, so you won't feel pain. It may also be done under a general anesthesia.



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## LRTI surgery success rate

Many people experience pain relief after LRTI surgery. David S. Ruch, professor of orthopedic surgery at Duke University in North Carolina, says LRTI has a [96 percent success rate](#).

But [a 2009 review](#) of LRTI procedures found that 22 percent of people

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- tendon adhesion or rupture
- sensory change
- **chronic pain** (complex regional pain syndrome, type 1)

This compares to adverse effects in only **10 percent** of people who had their trapezium bone removed (trapeziectomy), but no ligament reconstruction and tendon interposition. The benefit from both procedures was the same.

## Postoperative protocol and recovery timeline

Regional axillary block is the **preferred form** of anesthetic for LRTI. It's given in the brachial plexus artery, where it passes through the underarm. It provides the advantage of continued pain relief after the operation is over.

You **typically** awake from sedation with nausea, but you're able to return home shortly afterward.

### First month

After surgery, a splint is applied that you'll wear for at least the first week. At the end of the week, you may be transferred to a cast. Or, you may keep the splint alone for a full month after surgery.

You must keep your hand elevated at all times during the first month. Your doctor might recommend a foam wrist-elevation pillow or other device. Slings aren't used, to avoid stiffness of the shoulder.

After one or two weeks, the dressing on the surgical wound may be changed.

Your doctor will give you range-of-motion exercises for your fingers and thumb to perform over the first month.

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After four weeks , your doctor will remove the K-wires and stitches.


You'll get a thumb splint known as a spica splint, which attaches to your forearm.

Your doctor will prescribe a physical therapy program that emphasizes range of motion and strengthening of the wrist and forearm using isometric exercises.

## Third to sixth month

By the start of the third month, you'll begin a gradual return  to normal daily activity. You'll be weaned off the splint and start gentle activities with the affected hand. These include tooth brushing and other personal hygiene activities, as well as eating and writing.

Therapy will include squeezing and manipulating special hand putty to strengthen your fingers and thumb. The putty comes in graduated resistance levels to use as your strength increases.

Use of the putty is recommended  for an indefinite period after surgery. Some people can continue to gain strength for one to two years.

## Return to work

People in white collar and executive positions may be able to return to work within a week. But it can take as long as three to six months before returning to a job that requires extensive use of your hands.

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## The takeaway

LRTI is a serious surgery with a lengthy recovery time. It can provide effective relief of the pain of thumb arthritis for many people. However, the risk of ongoing complications can be as high as 22 percent.

If all other remedies have failed and surgery is the only option left, you might consider trapezium removal (trapeziectomy) alone, without the full LRTI procedure. Discuss this with your doctor and seek a second or third opinion.

You may be able to find relief in wearing a hand splint to support your thumb.





Splints and special strengthening exercises for your hands, including use of therapy putty, may help. A physical therapist specializing in hands can make a splint to fit your hand and provide special exercises for you.

You can't undo the surgery. Keep in mind that there's no remedy if you're among the 22 percent of people with LRTI who have complications.

+ 10 sources



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