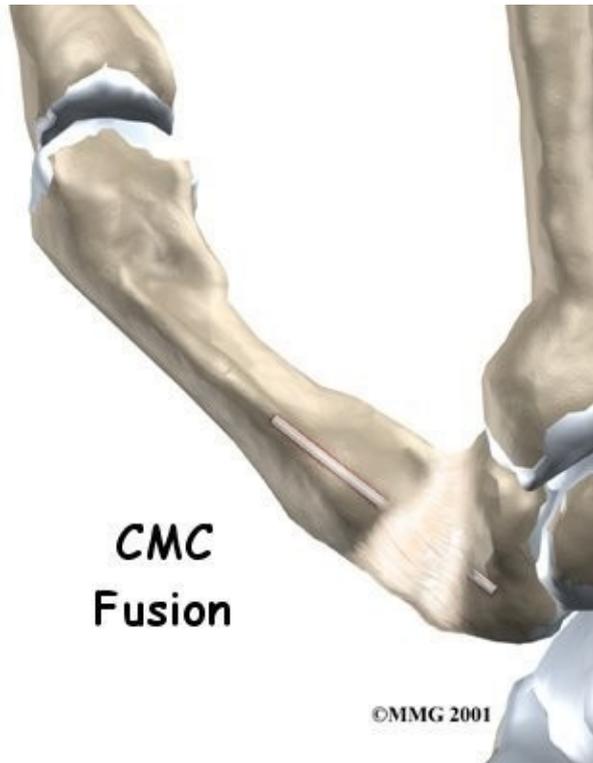


Thumb Fusion Surgery

Introduction

Physical Therapy in Lowell for Hand Conditions



Welcome to Fast Track Physical Therapy's resource on thumb fusion surgery.

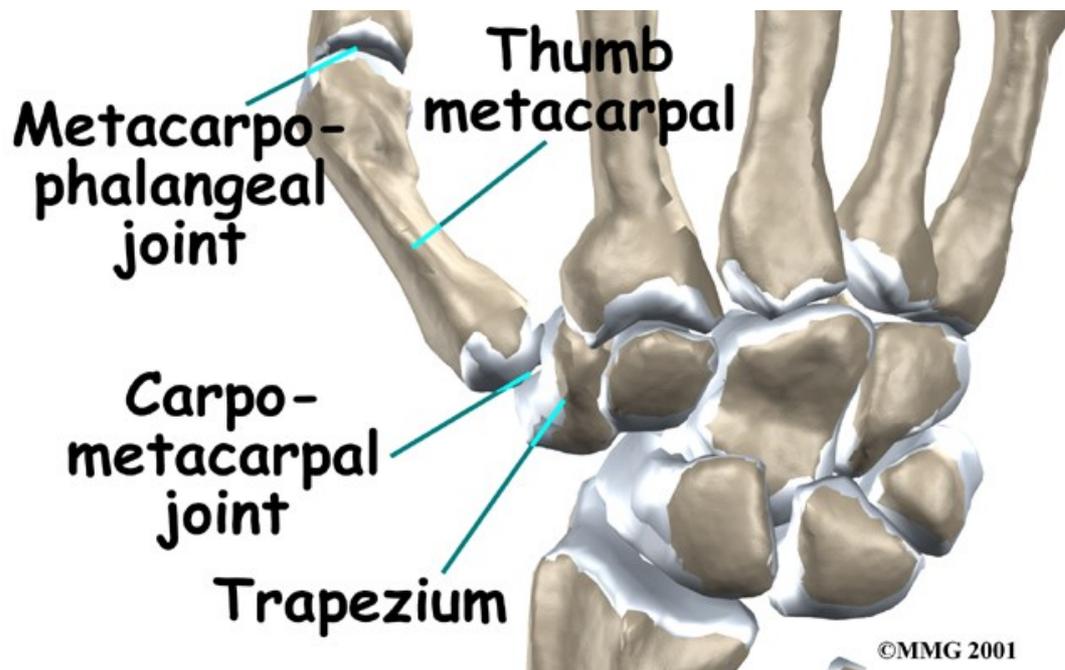
Thumb arthritis may be surgically treated with a fusion procedure. The bones that form the thumb joint are set so they can grow together, or fuse. A fusion keeps the problem joint from moving so that pain is eliminated.

This guide will help you understand:

- which parts of the thumb are involved
- why this type of surgery is used
- how the operation is performed
- what to expect before and after surgery
- Fast Track Physical Therapy's guide to rehabilitation after surgery

Anatomy

Which parts of the thumb are involved?



The carpometacarpal joint of the thumb (CMC joint) is where the metacarpal bone of the thumb attaches to the trapezium bone of the wrist. This joint is sometimes referred to as the basal joint of the thumb as it is the joint closest to the bottom of the hand. The CMC is the joint that allows you to move your thumb into your palm, a motion called opposition.

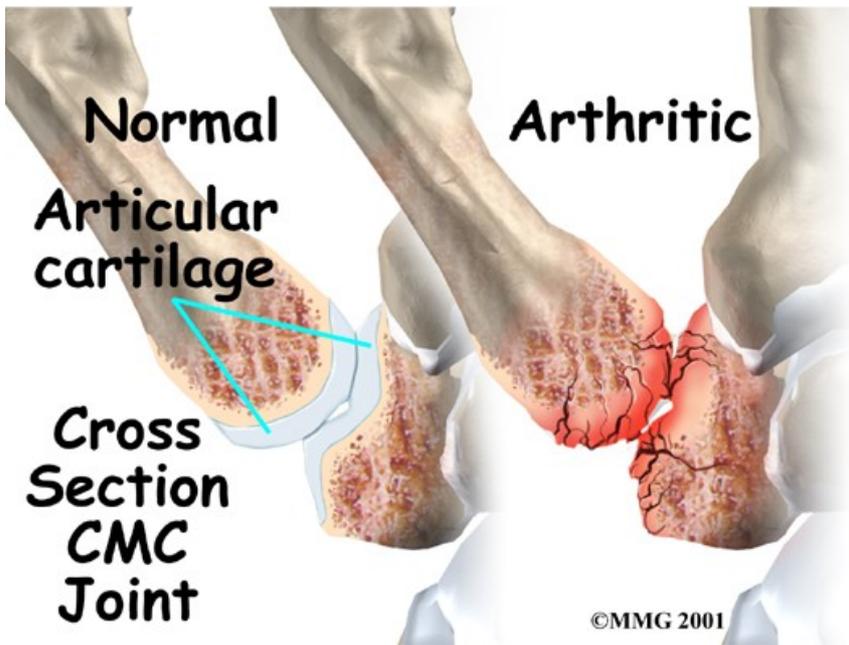
Thumb in opposition



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Several ligaments (bands of strong tissue) hold the bones of the joint together. These ligaments join to form the joint capsule of the CMC joint. The joint capsule is a watertight sac around the joint.

The joint surfaces are covered with a material called articular cartilage. This material is the slick, spongy covering that allows one side of a joint to slide against the other joint surface easily. When this material wears out, the joint develops a type of arthritis called osteoarthritis and becomes painful. Osteoarthritis is the most common form of arthritis occurring at this joint.



Related Document: [Fast Track Physical Therapy's Guide to Hand Anatomy](#)

Rationale

What does the surgeon hope to achieve?



When the articular cartilage wears out, the CMC joint becomes arthritic. The joint becomes painful when the thumb is used for gripping and pinching.

Joint fusion is a procedure that joins the surfaces of the thumb metacarpal and the trapezium bone so that they don't move or cause pain. This surgery is usually done on younger patients who need a lot of thumb strength for their job, such as carpenters who need to use a hammer all day. Once the CMC joint is fused, the pain goes away. They lose joint movement, but they still have a good ability to grip and pinch. Joint fusion of this joint is used when all other potential forms of treatment, including a joint replacement, have been exhausted.

Preparation

What should I do to prepare for surgery?

The decision to proceed with surgery must be made together by you and your surgeon. Your Physical Therapist may also liaise with your surgeon to confirm the types of therapy techniques trialed and confirm the ineffectiveness of conservative therapy. You need to understand as much about the procedure as possible. Any concerns or questions you have should be brought up to your surgeon.

Once you decide to go ahead with surgery, you need to take several steps. Your surgeon may suggest a complete physical examination by your regular doctor. This exam helps ensure that you are in the best possible condition to undergo the operation.

On the day of your surgery, you will probably be admitted to the hospital early in the morning. You shouldn't eat or drink anything after midnight the night before. The length of time you spend in the hospital depends on a variety of factors including the ease of the surgery, your body's reaction to the surgery, as well as any complications that can, but rarely occur.

Related Document: [Fast Track Physical Therapy's Guide to Arthritis of the Thumb](#)

Surgical Procedure

What happens during the operation?

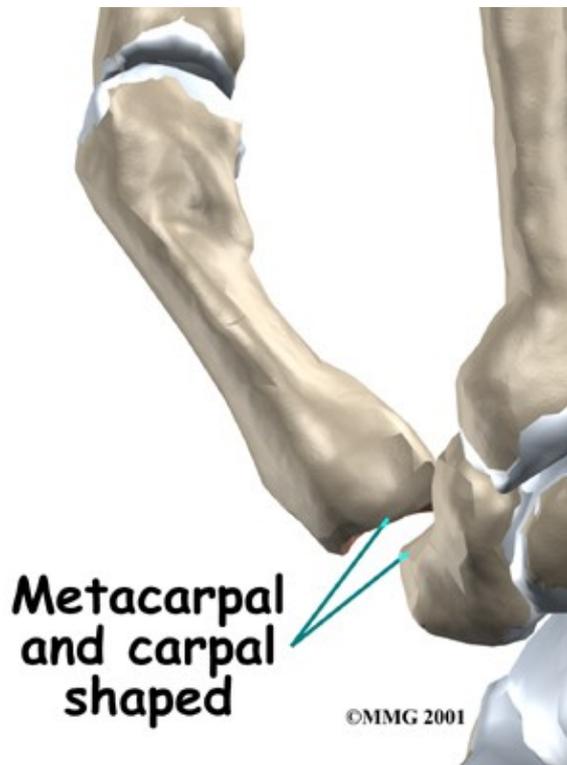
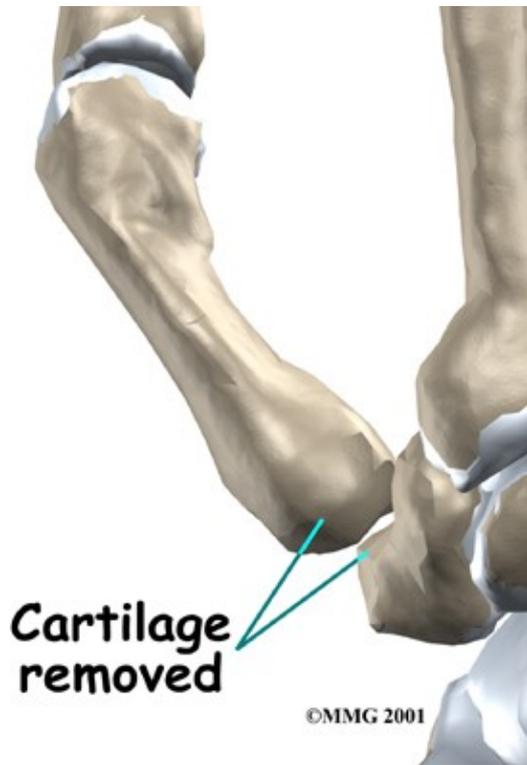
Surgery can last up to 90 minutes. Surgery may be done using a general anesthetic, which puts you completely to sleep, or a local anesthetic, which numbs only the hand. With a local anesthetic you may be awake during the surgery, but you won't be able to see the surgery.

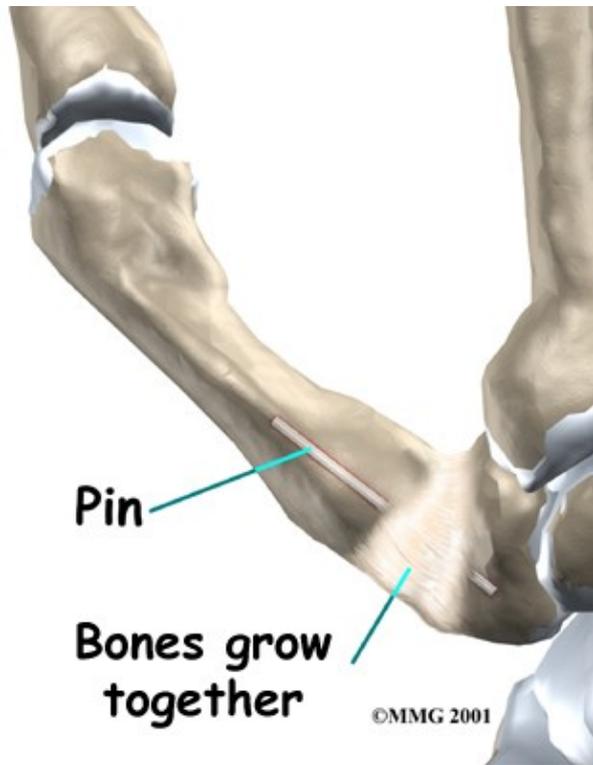


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Once you have anesthesia, your surgeon will make sure the skin of your hand is free of infection by cleaning the skin with a germ-killing solution.

An incision is made on the side of the thumb just over the CMC joint. Special care is taken not to damage the nearby nerves going to the thumb. The joint capsule surrounding the CMC joint is then opened so that the surgeon can see the joint surfaces. The articular cartilage is removed from both joint surfaces to leave two surfaces of raw bone. A special tool is used to hollow the end of the thumb metacarpal to form a socket. The surface of the trapezium is shaped into a rounded cone that fits into the socket inside the thumb metacarpal.





The surgeon places a metal pin through the center of both bones and then connects the cone and socket snugly together. The metal pin allows the surgeon to hold the two bones in the correct alignment and prevents the bones from moving too much as they grow together, or fuse.

The soft tissues over the joint are then sewn back together. The forearm and hand are placed in a cast until the bones completely fuse together. This takes about six weeks.

After Surgery

What happens after surgery?

After surgery, you will be fitted with an elbow-length cast for about 6 weeks. This gives the ends of the bones the opportunity to fuse together. Your surgeon will want to check your hand within five to seven days. Stitches may need to be removed after 10 to 14 days, though most of your stitches will be absorbed into your body. You may have some discomfort after surgery. You will be given pain medication to control the discomfort.

You should keep your hand elevated above the level of your heart for several days to avoid swelling and throbbing. Keep it propped up on a stack of pillows when sleeping or sitting up. Ice may also be used at this stage for pain relief.

Rehabilitation

What should I expect during my rehabilitation period?

As mentioned above, you will wear a cast on your arm and hand for about six weeks to give the fusion time to heal. When the cast is removed, you may have stiffness or pain in the joints closest to the fused joint or pain around the surgical incision. Physical Therapy at Fast Track Physical Therapy will help relieve your pain and decrease the stiffness in the surrounding joints.

In order to decrease pain we may use modalities such as heat, ice, or electrical current. These will assist with managing pain and any ongoing swelling you have around the surgical site, anywhere along the arm, or into the hand. Massage to these areas may also be done in order to improve circulation and assist with easing any discomfort. Some of the muscles of the neck may also be painful from having the arm in a cast for an extended period. These muscles may also benefit from massage treatment, which will make movement of your entire surgical side easier.

The next part of our treatment will focus on regaining the range of motion, strength, and dexterity in the joints on either side of your fused thumb as well as your other fingers, wrist, hand, elbow, and even shoulder. As the motion of your fused thumb joint will be permanently lost, it is of paramount importance to maintain the range of motion, strength, and dexterity in the joints surrounding the fusion in order to be able to continue to use your hand functionally. Your Physical Therapist at Fast Track Physical Therapy will prescribe a series of stretching and strengthening exercises that you will practice in the clinic and also learn to do as part of your home exercise program. These exercises may include the use of rehabilitation equipment such as mini pulleys, putty, elastics or balls for strengthening and gripping resistance. In addition to strengthening your grip we will educate you on ways to grip and support items in order to do your daily tasks by compensating for your surgical joint but without putting too much stress on your healing fusion or the other joints.

If necessary, your Physical Therapist will mobilize the joints above and below your fused CMC joint or any other joint in the area that is stiff and impeding movement of your hand and limb. This hands-on technique encourages the stiff joints to move gradually into their normal range of motion.

Being able to move your hand and thumb so that you can complete your work tasks and daily activities is the goal for our therapy at Fast Track Physical Therapy. Maximizing dexterity can greatly improve the functional use of your hand. For this reason, we will also incorporate functional activities like picking up items from a table or twisting items into place using your surgical hand. These functional activities encourage the joints and the muscles of the hand and arm to work in unison, which is critical to maximizing the use of your overall upper limb. Exercises where weight is put through your fused joint, such as pressing the pad of your thumb into something, will also be added when appropriate to encourage the fusion to tolerate weight in a controlled fashion.

When you are well underway, regular visits to Fast Track Physical Therapy will end. Your therapist will continue to be a resource, but you will be in charge of doing your exercises as part of an ongoing home program. Generally, the majority of your gains from Physical Therapy will occur within the first 1-2 months after the joint is fused. Since the fused joint does not move and therefore does not need any therapy to gain range of motion itself, improvements with therapy at Fast Track Physical Therapy after a CMC joint fusion are noticed very quickly.

Generally the Physical Therapy we provide at Fast Track Physical Therapy after CMC joint fusion occurs without any complications. If, however, during rehabilitation your pain continues longer than it should or therapy is not progressing as your Physical Therapist would expect, we will ask you to follow-up with your surgeon to confirm that the joint fusion is tolerating the rehabilitation well and to ensure that there are no hardware issues that may be impeding your recovery.

Complications

What might go wrong?

As with all major surgical procedures, complications can occur. Some of the most common complications with a fusion of the CMC joint of the thumb are highlighted below:

- reaction to the anesthesia
- infection
- nerve damage
- nonunion

Anesthesia

Problems can arise when the anesthesia given during surgery causes a reaction with other drugs that the patient is taking. In rare cases, a patient may have problems with the anesthesia itself. In addition, anesthesia can affect lung function because the lungs don't expand as well while a person is under anesthesia. Be sure to discuss these risks and your concerns with your anesthesiologist.

Infection

Any operation carries a small risk of infection. Fusing the CMC joint of the thumb is no different. You will probably be given antibiotics before the operation to reduce the risk of infection. If an infection occurs you will most likely need antibiotics to cure it. You may need additional operations to drain the infection if it involves the area around the hardware. In these cases, the hardware may need to be removed.

Nerve Damage

All of the nerves and blood vessels that go to the thumb travel across, or near, the thumb joint. Since the operation is performed so close to these important structures, it is possible to injure either the nerves or the blood vessels during surgery. The result may be temporary if the nerve injury has come from the nerve being stretched by retractors during the surgery holding them out of the way. It is uncommon to have permanent injury to either the nerves or the blood vessels during this surgery, but it is possible.

Nonunion

Sometimes the bones do not fuse as planned. This is called a nonunion, or pseudarthrosis. (Pseud means false, and arthro means joint; a pseudarthrosis refers to the motion at a false joint.) If the motion from a nonunion continues to cause pain, you may need a second operation to try to get the bones to completely fuse. This may mean adding a bone graft and making sure that any metal pins that have been used are holding the bones still to allow the fusion to occur.

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