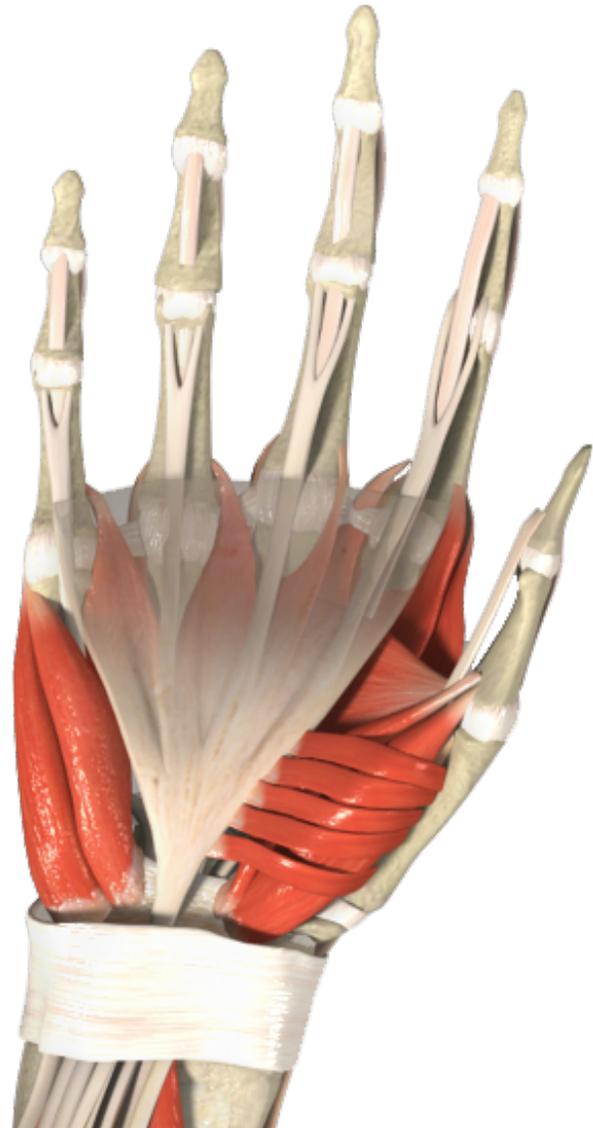


Carpal Tunnel Release

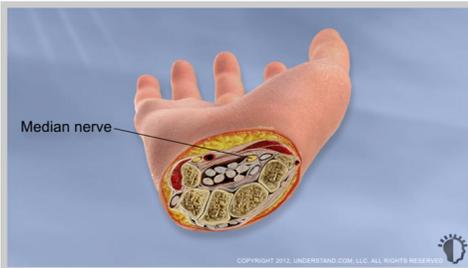
Carpal tunnel syndrome is a condition in the hand and wrist caused by excessive pressure on the median nerve in the wrist. Compression of the nerve typically causes numbness and tingling in the thumb, index finger, middle finger, and ring finger. Pain in the hand and wrist may also occur. Carpal tunnel release is a surgical procedure that reduces the pressure on the median nerve to alleviate symptoms.





Introduction

Carpal tunnel syndrome is a condition in the hand and wrist caused by excessive pressure on the median nerve in the wrist. Compression of the nerve typically causes numbness and tingling in the thumb, index finger, middle finger, and ring finger. Pain in the hand and wrist may also occur. Carpal tunnel release is a surgical procedure that reduces the pressure on the median nerve to alleviate symptoms.



What Causes Carpal Tunnel Syndrome

The median nerve controls thumb movement and provides sensation from the palm side of the thumb to half of the ring finger. This nerve runs from the forearm into the hand, along with flexor tendons, through the carpal tunnel, which is a narrow tunnel formed by the transverse carpal ligament and carpal bones in the wrist. If the median nerve is compressed or pinched, numbness and tingling in the thumb, index, middle, and ring finger are typically present. Pain in the wrist may also occur and may even radiate up the forearm. In severe cases of carpal tunnel syndrome, the muscles of the thumb may become weak and decrease in size. Compression of the nerve may be the result of any number of factors that narrow the carpal tunnel or cause changes in the median nerve.

Fluid retention or swelling at the wrist, such as occurs during pregnancy or after trauma or injury; flexor tendon irritation from excessive or repetitive hand use; nerve changes resulting from diabetes, hypothyroidism, or alcoholism; wrist inflammation due to rheumatoid and other forms of inflammatory arthritis; bone changes from arthritis or an overactive pituitary gland; and cysts or tumors may all lead to carpal tunnel syndrome.

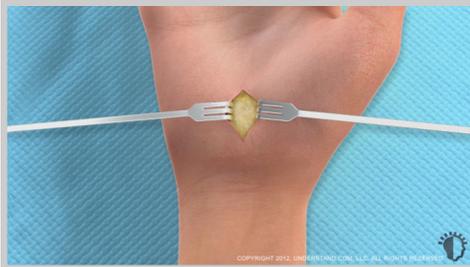


Surgery Options and Preparation

Carpal tunnel release may be performed either as an open procedure or an endoscopic procedure. The open procedure typically involves a small incision on the palm of your hand to expose the carpal ligament. Alternatively, the procedure may be performed endoscopically, which involves one or two small incisions and the use of a special surgical camera and instruments to perform the surgery beneath the tissues. Both procedures are described in this animation.

Each procedure may be done under local, regional, or general anesthesia. The type chosen will be determined by your surgeon based on a variety of factors. If local anesthesia is used, the surgeon will inject medication into your wrist or hand to numb the incision area. Prior to this injection you are often given medication so you are relaxed during the procedure. Regional anesthesia with IV sedation involves injecting medication into an IV in your arm to numb your entire arm and hand, and you may be relaxed but not entirely asleep. If general anesthesia is used, you will be given medication so that you are asleep during the procedure.

Prior to the procedure, a tourniquet will be carefully placed on your arm. This will temporarily stop blood flow to the hand so that the surgeon can clearly visualize the nerve in the hand and wrist area during the short surgical procedure.

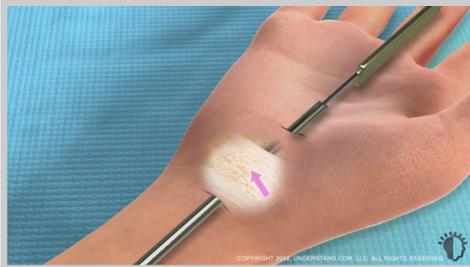


Open Procedure

To begin the open procedure, an incision is made at the base of the palm of the hand in line with the ring finger. Instruments known as retractors are used to pull the skin and fat apart and expose the underlying tissue, called the superficial palmar fascia. Another incision is made through the fascia to expose the transverse carpal ligament. The ligament is then carefully cut to relieve the pressure on the median nerve. The fascia that is connected to the carpal ligament is then loosened and cut to further open the carpal tunnel.

The surgeon will inspect the carpal tunnel, nerve, and flexor tendons. If a cyst or other mass is present, or if significant tendon inflammation is present, the surgeon may extend the original incision to address these problems.

Once the carpal tunnel is completely released, the tourniquet is removed and the incision is closed with sutures or special wound tape. A medication is typically injected to numb the area for several hours after surgery and a bandage is placed over the wound. A splint may be applied to limit wrist motion after surgery.



Endoscopic Procedure

To begin the endoscopic procedure in a single incision technique, a small incision is made in the wrist. In a double incision technique, which is described in this animation, incisions are made in the wrist and in the palm of the hand. A thin tube with a camera attached, called an endoscope, is gently guided through the incision in the wrist, allowing the surgeon to visualize the tissues beneath the skin. A special surgical knife is inserted into the incision under the transverse carpal ligament which is then cut to relieve the pressure on the median nerve. The instruments are withdrawn and reinserted in the opposite direction. This allows visualization of the fascia that is connected to the carpal ligament. The fascia is loosened and cut to further open the carpal tunnel.

Once the carpal tunnel is completely released, the tourniquet is removed and the incision is closed with sutures or special wound tape. A medication is typically injected to numb the area for several hours after surgery and a bandage is placed over the wound. A splint may be applied to limit wrist motion after surgery.



Recovery

Immediately following the procedure, you can expect to have some pain, swelling, and possibly stiffness around the wrist and hand that may last for several weeks. You will likely be advised to keep your hand elevated for a few weeks after the surgery to reduce swelling. Sutures will typically be removed between 10 days and two weeks. Your surgeon will likely suggest hand and finger exercises after surgery and may also recommend hand therapy if necessary. You will consult with your surgeon about when to resume other activities.

Carpal tunnel release provides complete or nearly complete relief of numbness, tingling, and pain depending on your age, the severity of your condition, and other medical conditions.