



Carpal Tunnel Syndrome

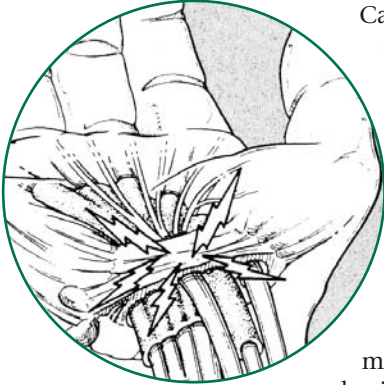


FIGURE 1

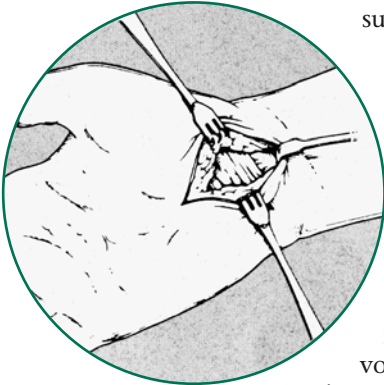


FIGURE 2

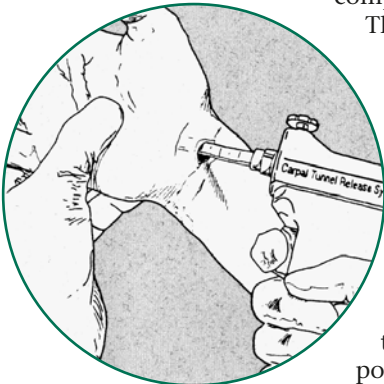


FIGURE 3

Carpal tunnel syndrome (CTS) is the most common form of nerve entrapment involving the upper extremity. It is one of the most common hand problems reported in the United States and treated at the Michigan Hand Center. Because of increased awareness on the part of the medical community and the public, this syndrome is now recognized early and treated by most physicians. A major concern is the tendency to classify a wrist or hand problem as only carpal tunnel syndrome without recognizing other associated conditions. When surgery is needed, a specialist in hand and upper extremity surgery will provide the best surgical care and expertise during recovery.

Carpal tunnel syndrome is the compression of the median nerve at the wrist. The nature of this condition and its causation are best understood by considering the wrist's anatomic structure (see Figure 1). The carpal tunnel represents a fixed space with a finite volume. Any increase in the volume of its contents will raise the pressure within the carpal tunnel. This elevation of pressure compromises median nerve function.

The most common cause of pressure increase is swelling of the flexor tendons as they pass through the wrist. This is usually associated with repetitive use of the hands and wrists. Carpal tunnel syndrome is also related to a variety of medical conditions including gout, rheumatoid arthritis, diabetes, and thyroid conditions. Trauma, wrist fractures, tumors, and pregnancy are other potential causes of CTS.

Most patients with CTS will describe numbness, tingling, and a burning pain in their hands and fingers. These symptoms often extend from the hand into the forearm and sometimes to the shoulder. Patients often report weakness in their grip and dropping things. Symptoms are often noticeable at night, while driving, reading, and holding a phone.

A thorough medical history is helpful in determining the probable cause. A complete physical examination is necessary to confirm the diagnosis and to rule out other potential coexisting problems. Conditions that may coexist with carpal tunnel syndrome include different forms of tendonitis such as trigger finger and DeQuervain's tendonitis. Degenerative arthritis of the hands and wrists, especially basilar joint

thumb arthritis, is common. Cervical and vascular conditions also need to be assessed properly.

CTS responds to both nonsurgical and surgical treatment. When the duration of symptoms is less than three months, they will usually respond to conservative treatment. This may include a wrist splint and anti-inflammatory medication. Cortisone injections are helpful in relieving symptoms, particularly for patients during pregnancy. Although nonoperative treatment may provide early symptomatic relief of CTS, it usually does not result in complete resolution of symptoms or the permanent relief of median nerve compression.

Surgery remains the most effective method to treat CTS. When surgery is required, it should be performed by a surgeon with specialized training and experience in hand surgery. Carpal tunnel surgery enlarges the carpal tunnel by dividing the ligament that forms its roof. The dividing of this ligament relieves the pressure on the median nerve. Most patients experience a rapid return of feeling and resolution of numbness and pain.

The traditional open surgical release of the transverse carpal ligament requires an incision through the palmar skin to identify and divide the carpal ligament (see Figure 2). Historically, this has provided effective and successful surgical treatment for CTS.

An alternative to the open carpal tunnel surgery is the endoscopic technique, which was developed to reduce the incidence of incision-related problems (see Figure 3). Endoscopic carpal tunnel release surgery is performed through a small incision made at the wrist crease. The transverse carpal ligament is released from the inside of the carpal canal, leaving the overlying soft tissue structures of the palm intact. Endoscopic carpal tunnel release surgery results in an early recovery of grip strength, a less tender scar, and minimal postoperative pain.

Both surgical techniques for CTS, open and endoscopic, have proven to be highly successful. Carpal tunnel surgery is a safe and effective surgery often resulting in a dramatic relief of symptoms. The outcomes of endoscopic surgery may be found in various medical journals. Most individuals are able to return to their normal activities at work and at home following a brief time of recovery. Hand therapy is helpful to assist in the recovery of hand function and strength.

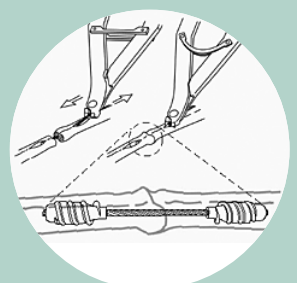
Success of CTS surgery is also dependent on the experience and training of the surgeon. The surgeons at Michigan Hand Center specialize exclusively in hand and upper extremity surgery, and are very experienced in carpal tunnel surgery. Every evaluation includes a complete upper extremity examination to insure an accurate diagnosis, treatment plan, and good surgical outcome.

What's New at the Michigan Hand Center

TENO-FIX: A NEW MOVEMENT IN TENDON REPAIR

The physicians at the Michigan Hand Center have initiated the use of TenoFix, an innovative new implant that allows for immediate active motion therapy of a repaired flexor tendon. Rehabilitation time

is thus dramatically reduced, as previous protocols demanded over four weeks before motion was regained. A case study documenting this remarkable advance will be forthcoming.





Dr. Mark R. De Haan's experience with endoscopic carpal tunnel release surgery

began in 1990. He has continued to use this technique with excellent results.

In 1996, Dr. De Haan published his experience in *Contemporary Orthopedics*.

His study supports the conclusions of other reports, and highlights the safety and efficacy of single portal endoscopic carpal tunnel release surgery.

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MICHIGAN HAND CENTER



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- **Teno Fix:** A New Movement in Tendon Repair



We Welcome Medicare Patients

We are pleased to announce that our therapy department has just opened its doors to the Medicare population, and custom splinting will be among the services offered to these patients.

It's Ribbon Cutting Time!

We have just completed the construction of a Functional Activity Center in our therapy department at MHC. This wonderful addition offers devices to strengthen, simulate work tasks, and provide general conditioning to all of our rehabilitation patients. This new Center supports and advances our mission to fully rehabilitate our patients from shoulder to fingertips.

Michigan Hand Center Recognized by the Medical Group Management Association

MHC is proud to be qualified as a "better performing practice" by the Medical Group Management Association (MGMA). The MGMA publishes an annual report that provides benchmarking data for medical groups across the United States in areas such as productivity and managed care operations.

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