

RELIEF FROM CARPAL TUNNEL SYNDROME

A common cause of hand pain

An easy-to-read discussion of this common disorder
with a self-treatment program based
on traditional, well accepted medical approaches

Ronald C. Bingham, M.D.



Ron Bingham, M.D.

Dr. Bingham has dedicated his practice to nerve and muscle testing (Electromyography or "EMG") since 1989. He has practiced in West Tennessee since completing his training.

He is board certified by the American Board of Physical Medicine and Rehabilitation. He completed medical school at Louisiana State University School of Medicine and received his specialty training at Parkland Hospital in Dallas, Texas.

Dr. Bingham is also certified by the American Board of Electrodiagnostic Medicine.



Copyright 2011 by Ronald C. Bingham, M.D.

All rights reserved. Written permission must be secured from the author to use or reproduce any part of this booklet.

Published in Jackson, Tennessee

**To order booklets call 800.224.1807
or email info@emgclinics.com.**

Contents

Introduction	4
What is Carpal Tunnel Syndrome?	6
What Causes CTS?	7
Do I Have Carpal Tunnel Syndrome?	10
Other Causes of Numbness and Tingling.....	12
Treatment	14
Hand Exercises	18
Two Methods of Surgery	19
Questions and Answers	20

Introduction

When I finished medical school, carpal tunnel syndrome (CTS) was something I had only read about. It was discussed in medical school for about 15 minutes. With the thousands of diseases to be covered, it just wasn't possible to spend much more time than this on CTS.

Carpal tunnel syndrome is a painful condition of the hand, which is caused by an irritated nerve at the wrist. Although we hear more about carpal tunnel syndrome now than 100 years ago, there is no reason to believe that it really is more common than it was a century ago. It was first discussed by Dr. Paget in 1865. Today we have a much greater understanding and awareness of carpal tunnel syndrome. This greater awareness has brought more attention from the media, the government and the medical and legal professions.

Much of the information that we read and hear is



inaccurate. Over the years, there has been much speculation and disagreement over the cause of CTS. I am often discouraged by the misinformation that is printed about the subject. We really don't know what causes this condition, but we do know how to relieve most of the discomfort.

It has been my experience that 15 to 20 percent of the adult population has some degree of carpal tunnel syndrome or the nerve abnormality associated with it. Fortunately, most of these people have only mild conditions and may never require treatment.



In this booklet, I have attempted to present a factual picture of CTS as we understand it today. I hope this will be helpful to you, and I hope you'll write to me with your comments and suggestions. Since medical school, I have learned much more about this condition, and my patients have taught me more than any of the medical books.

You may be like one of the hundreds of patients that I see every month. Their complaints sound like this:

- “My fingers tingle.”
- “My hands wake me up at night.”
- “My hand goes to sleep.”
- “My wrist is so painful.”
- “My hands are so tired.”
- “I drop things; my hands are clumsy and weak.”
- “It hurts all the way up my arm.”

If any of these complaints sound familiar, this booklet will probably help you!

In my experience, listening to patients like you has made a tremendous difference in understanding this problem. I also spend hours researching this subject and discussing it with experts around the country.

My patients have enabled me to understand how uncomfortable and frustrating it can be to have pain that no one else understands. Many doctors are unfamiliar with the various manifestations of this disease and may not readily recognize it as the culprit.

On the next few pages, I would like to share with you what I have learned.

— Ronald C. Bingham, M.D.



Educating yourself is an important part of the treatment.

What is Carpal Tunnel Syndrome?

Jackie Fisher is a 28-year-old mother of two. She is kind, articulate and sincere. She was sent to me by her family doctor for evaluation of hand pain.

“I can’t tell you how painful my hands are, Dr. Bingham. They ache and swell, and my fingers feel funny.”

“My fingers feel like they aren’t even mine. They wake me up at night. I’ll put hot water on them, shake them, walk around the house – just anything to get relief.”

Aubrey Johnson is a 65-year-old retired college music professor. He was referred to me by his doctor for treatment of “arthritis.”

“My wrists ache, my fingers get numb and I drop things. They really tingle when I play the piano or when I sleep on my arm in a certain way!”

Patricia Howard is a 48-year-old woman who has been patiently enduring discomfort in her hands for years.

“The pain starts in my wrist and works its way up into my elbow and arm.

Sometimes it hurts all the way to my shoulder. My hand gets weak easily. I can’t hold things without dropping them or my hand cramping.”

These stories are typical; they are the hallmarks of carpal tunnel syndrome. Homemakers, retired people, factory and office workers, managers and occasionally even adolescents – nearly anyone – can develop carpal tunnel syndrome.

Carpal tunnel syndrome is the result of an irritated nerve at the wrist. This nerve branches out like the limbs on a tree. These branches go to the skin of the fingers and some of the muscles in the hand.

When this nerve gets irritated or “pinched,” it can cause the fingers to become numb or tingle. It also can create weakness in the hand. Patients may also have pain or discomfort in the wrist. This pain can often radiate to the forearm, shoulder and sometimes as far up as the neck. Carpal tunnel syndrome can masquerade in

many ways.

Let’s look a little further ...



What Causes CTS?

No one really knows for sure what causes carpal tunnel syndrome. There are some good theories about its cause, but none are definitive.

Most experts agree that carpal tunnel syndrome is caused by some compression of the median nerve in the tunnel through which it travels. This tunnel is one-half inch below the skin at the base of the palm.

The nerve travels through a very narrow canal and shares this space with several tendons. The compression occurs when increased pressure develops inside the carpal canal.

What causes this increase in pressure is not completely understood. It is felt that swelling of the other structures in the wrist may play a role. This increase in pressure can be aggravated by placing the wrist in awkward positions such as bending the wrist either up or down.

CTS symptoms are often worse at night. We often sleep with our wrists bent, which places more pressure on the nerves. This increase in pressure also can affect the blood supply to the nerve, causing the numbness and tingling. Although it is a rough similarity, the nerve

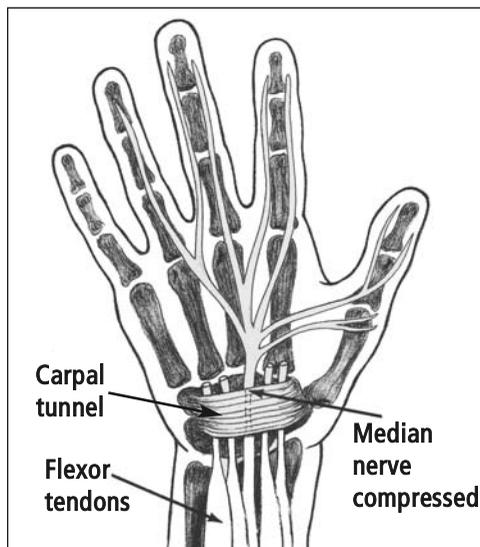
Personal characteristics and habits that may be associated with carpal tunnel syndrome

- Pregnancy
- Obesity
- Cigarette smoking
- Wrist thickness
- Caffeine
- Heredity
- Age
- Lack of aerobic exercise

can be likened to a garden hose, which when kinked pinches off the flow of water. When the nerve is compressed, it can no longer carry the electric signal.

A lot of controversy surrounds the cause of carpal tunnel syndrome. Most recent literature suggests that this condition is the result of many factors, including:

- Personal health characteristics
- Diseases
- Hobbies, sports and other avocational activities
- Certain activities at work



The median nerve is compressed in carpal tunnel syndrome.

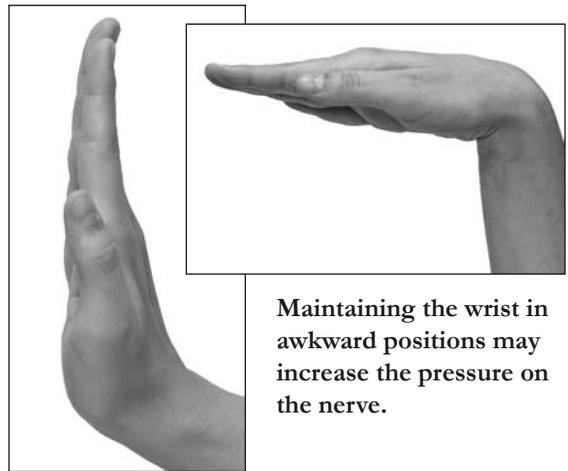
Many personal characteristics seem to be associated with carpal tunnel syndrome. Recent studies, for example, suggest that many people may be born with a predisposition for CTS. Many of the patients who I see have a parent and several siblings with this condition.

Personal health characteristics that influence other medical conditions, such as heart and lung disease, seem to be an important factor in carpal tunnel syndrome as well. This includes a person's general level of health, such as aerobic fitness, obesity, aging and possibly the use of alcohol, cigarettes and caffeine. Many studies have shown that individuals with a relatively square wrist are predisposed to this condition. Pregnancy is often associated with CTS, and it can become a problem in the third trimester. Pregnancy-related CTS often improves after delivery.

Beginning in 1993, I became involved in a research program with researchers at the University of Iowa. We tested job applicants for carpal tunnel syndrome before they started working. Nearly 20 percent of these people had the test abnormality that is associated with carpal tunnel syndrome.

Many medical conditions can cause or aggravate carpal tunnel syndrome. The most common ones include diabetes, hypothyroidism and some of the arthritic conditions. Many other, less common diseases, are associated with carpal tunnel syndrome as well.

Many hobbies are associated with carpal tunnel



syndrome. Individuals who knit or crochet in their spare time often will report hand discomfort and may develop CTS. In my experience, individuals who lift weights and play racquetball or tennis will sometimes develop carpal tunnel syndrome. Part-time mechanics and handymen often report carpal tunnel syndrome symptoms as well. The list of avocational activities that can be associated with carpal tunnel syndrome is virtually endless.

Much controversy surrounds the role of workplace activities in developing CTS. It does seem to be reasonable that certain wrist intensive jobs may at least temporarily aggravate an



Many hobbies and activities can cause carpal tunnel syndrome, including those shown, above.



Direct pressure in the palm and forceful gripping can be associated with aggravation of symptoms.

underlying condition or even cause CTS.

Several researchers have reported an association between repetitive activities, wrist flexion and high force levels with the development of carpal tunnel syndrome. A direct causal relationship, however, has not been established. In other words, it has never been proven that these activities cause carpal tunnel syndrome.

It is important to understand that “an association” does not necessarily mean that these factors cause CTS. As my high school statistics teacher said, “The statistical association between a rooster crowing and the sun coming up does not mean that the rooster causes the sun to rise!”

In my personal experience, sustained forceful gripping and pinching associated with awkward wrist postures can at times be problematic. Vibrating tools and activities that place direct

Medical conditions that may cause carpal tunnel syndrome

- Abnormal canal anatomy (muscles, bone, artery)
- Amyloidosis
- Carpal tunnel lipoma (fatty tumor)
- Connective tissue diseases
- Diabetes
- Ganglion cyst
- Gout
- Hand or forearm surgery
- Hand swelling
- Infection
- Leukemia
- Median artery thrombosis
- Median nerve tumors
- Osteoarthritis
- Penetrating wounds
- Peripheral neuropathy
- Rheumatoid arthritis
- Tenosynovitis
- Wrist fracture or dislocation

pressure on the palm from various types of hand tools can be of concern as well.

As discussed earlier, the test is abnormal in one out of five new hires even before they start working. I believe that repetition by itself is not a significant risk factor unless it is coupled with high forces or prolonged awkward positioning of the hand.

Note: Occasional work-related activities, such as the ones listed in the box below, should not represent risk. These activities must be present at high rates and for sustained periods to cause discomfort.

Hobbies & activities that can be associated with carpal tunnel syndrome

- Weight lifting
- Needlepoint
- Gardening
- Mechanic-type work
- Sewing
- Carpentry
- Crocheting
- Racquet sports
- Biking
- Woodworking

Work-related factors that may be associated with carpal tunnel syndrome

- Forceful gripping
- Direct pressure in the palm
- Twisting of the wrist
- Forceful pinching
- Awkward wrist postures
- Prolonged use of power tools
- Vibrating tools

Do I Have Carpal Tunnel Syndrome?

Not all numbness and tingling in the hand is caused by carpal tunnel syndrome, but CTS is by far the most common cause of these symptoms. It is important to see your doctor if my suggestions don't help you.

As you've now learned, carpal tunnel syndrome can manifest itself in many ways. You may have only one of the classic symptoms or a combination of them. The most common symptom is numbness and tingling in the thumb, index and middle fingers. Many of my patients report the greatest discomfort in the middle finger. Often, the numbness and tingling are worse at night.

Many times pain or weakness in the wrist or hand is the only complaint. For example, you may find it difficult to unscrew the cap from a soft drink bottle. Or you might experience pain when wringing out a washcloth.

The diagnosis of CTS, like any other condition, is made by using a three-step approach...

1. Reviewing the symptoms with the patient
2. Examining the patient
3. Appropriate tests

The symptoms:

As we have discussed already, the primary symptoms of CTS include numbness or tingling of the fingers, weakness of the hand and wrist pain.

The examination:

The physical exam alone is important, but other information often is required. Frequently, medical



CTS often causes discomfort at night.

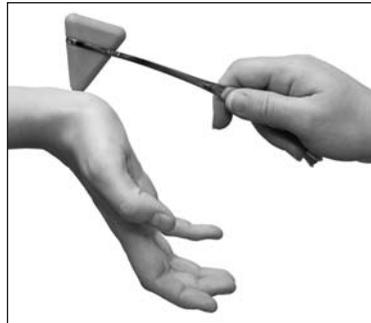
doctors will rule out the possibility of carpal tunnel syndrome based on a normal exam. However, this may be misleading.

The most popular test is called Phalen's test. The physician bends the wrist downward and holds it in place for 60 seconds to see if this position causes a certain pattern of numbness. Tinel's test evaluates a person for nerve sensitivity by tapping over the nerve at the wrist. Both tests can be inaccurate. Many people with CTS will have negative Phalen's and Tinel's tests, and many people without CTS will have positive tests.

Patients with advanced CTS will have numbness over some of the fingers. A physician can evaluate a person's sensation (the ability to feel) in a variety of ways. Typically, he or she will ask if you can feel a piece of cotton, a pin or other device.

Hand muscle strength also can be evaluated by asking you to hold your thumb in contact with the tip of the fifth finger. Your physician will ask you to hold tightly while he or she attempts to pull them apart against your resistance. Your doctor also

may ask you to raise your thumb away from your palm against resistance. All of these tests depend heavily on accurate reporting and full cooperation of the patient. Your provider can validate the accuracy of these tests several ways.



Tinel's test, above left, and Phalen's test

The tests:

There is no perfect test for carpal tunnel syndrome. Even the best test, the nerve conduction test, can fail to identify a small percentage of cases in the early stages. This type of testing (electromyography) should be interpreted by physicians fully trained in electrodiagnostic medicine. Usually this will be a physiatrist (a specialist in physical medicine and rehabilitation) or a neurologist.

Electrodiagnostic techniques measure the electrical activity of nerves and muscles. When used to diagnose CTS, this test is based on the principal that abnormal nerves will carry electricity slower than normal nerves. The nerve conduction test identifies this “slow” conduction by sending a small electrical current across a measured section of nerve at the wrist.

The diagnostic equipment used, an EMG machine, measures the time it takes for this current to travel across the nerve. The results

are compared to standard normals or compared to the values of other nerves in the same hand.

It is common for technicians to interpret this test. To be assured of an accurate result, however, it is best to have a physician interpret your test results. Like all other areas of medicine, diagnostic testing techniques and technology advance rapidly. It is important that you work with a physician who keeps up with these changes.

It is possible to have normal test results and still have CTS. A normal test result, however, probably means that the nerve is not significantly injured.

Since there are no perfect tests for CTS, a correct diagnosis only can be made by carefully evaluating patient history, examination findings and nerve conduction studies. The most important method of determining whether you have carpal tunnel syndrome is for a highly skilled physician who is familiar with CTS to evaluate you.



A nerve conduction test shows how fast a small electric stimulus conducts across the nerve.

Other Causes of Numbness and Tingling

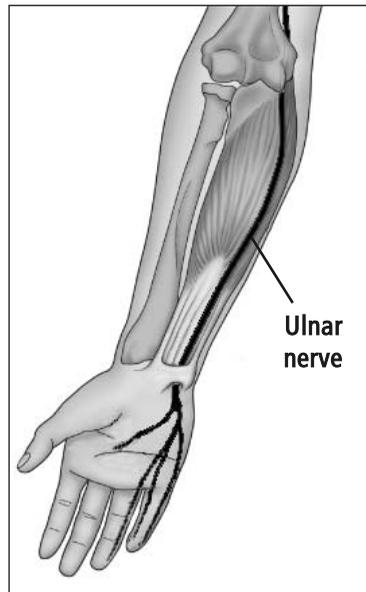
Not all numbness and tingling is the result of carpal tunnel syndrome. Often physicians will incorrectly blame these symptoms on CTS.

The scope of this booklet will not allow a complete description of other causes of numbness and tingling, but I will mention the most common ones.

- **Ulnar Nerve Impingement:** The ulnar nerve or “funny bone nerve” begins in the neck and runs all the way to the hand. Frequently it will become irritated at the elbow, which can make your ring and pinkie fingers numb. It can also cause weakness in the hand. We aren’t sure how the nerve becomes irritated, but it is often associated with a hard blow to the elbow or repetitive elbow bending, such as weight lifting. Sleeping with the elbow bent may play a role. Direct pressure over the elbow on a desk or the arm on a chair also can be a cause.

If this seems to be your problem, you might try to eliminate those things that seem to provoke the problem.

Sometimes an elbow pad helps. Avoid placing pressure on your elbow by actions, such as hanging it over the car door when the window is open. If you work with your elbows on the desk, you should change your habits. Sometimes splinting the elbow in the straight or extended



Multiple nerves exit the neck and travel to the arm. These nerves can be irritated or “pinched” at the neck through a variety of causes, such as an abnormal disc or arthritic changes. The ulnar nerve or “funny bone” nerve can be irritated as it travels around the elbow.

position at night helps. You can fashion a splint from a pillow or towel and masking tape.

This is a particularly frustrating condition and difficult to treat. If you are very uncomfortable or your condition seems to be progressive, I suggest you see your provider. He or she may recommend that you see an orthopedist, hand surgeon, plastic surgeon or neurosurgeon for evaluation.

- **Pinched Nerve in the Neck (Radiculopathy):** This is relatively infrequent compared to carpal tunnel syndrome and ulnar nerve problems, but I still see two or three patients a week who have this condition. Radiculopathy results from a herniated disc in

the neck or from a bony constriction where the nerve exits the neck. A herniated disc means that some of the material between two of the bones in the neck has protruded and is pinching a nerve. Sometimes this is referred to as a slipped disk.

Usually, patients will say that the pain begins in the back of the shoulder and radiates into the arm, forearm and hand. They often will raise their hand over their head for relief. Some patients describe the pain as a throbbing toothache-like discomfort.

This condition is often difficult to distinguish from carpal tunnel syndrome since both can have similar symptoms, and both can cause hand numbness.

If movement of the neck or shoulder seems to affect the severity of the pain, it is more likely a problem of the neck or shoulder, respectively.



Frequent resting of the elbow on your desk, for example, can irritate the ulnar nerve.

If the description of radiculopathy sounds like what you are experiencing, see your provider. He or she may recommend a physiatrist, orthopedist, neurosurgeon or a pain clinic. It is not urgent unless you are quickly developing weakness or your sensation is rapidly deteriorating.

- **Nerve Disease:** A generalized disease of the nerves can cause numbness or tingling in the hands or feet. The most common causes are diabetes and hereditary conditions. There are hundreds of other causes, however; nerve disease usually affects the feet first and then hands. The numbness usually involves the entire hand rather than only certain fingers. Often, the numbness also will extend somewhat up the forearm. Your primary care provider will order the appropriate tests. He or she may ask a physiatrist or neurologist to perform a nerve test, called a nerve conduction study or EMG.

- **Tendinitis:** Irritation of the tendons that are associated with some of the forearm muscles can cause numbness in the hand and fingers that can mimic carpal tunnel syndrome. One example of this would be De Quervain's tendinitis (inflammation of the thumb tendon). These conditions will often result in a painful wrist or hand and will improve with relative rest or splinting.

Treatment

Treatment of carpal tunnel syndrome will be most effective with early diagnosis and treatment. Having gained an understanding of the possible causes, the treatment should be easy to understand. I recommend that you follow the seven steps outlined below.

• **Step One:** The most important step is to try to understand what action is aggravating your discomfort. If you already have a significant nerve irritation, you may have discomfort regardless of what you do. This may take some detective work.

Is it too much weight lifting at the gym? Is it too much pinching, pulling, tugging, squeezing or other activity at home or work?

Once you have identified the aggravating activity, ask yourself this: What can I do to decrease the frequency and intensity of this action? This is much easier to accomplish if the activity is a hobby and more complicated if it occurs at your job. Limit leisure activities that seem to aggravate your condition. For example, needlepoint, cross-stitching, woodworking, mechanical work and gardening may cause flare-up. For others, motorcycling, weight lifting or racquet sports can be irritating.

If the aggravating activity

seems to be occurring at your workplace, it might require a little more innovation to resolve. Obviously, you may not be in a position to redesign your job site, but possibly, you can develop some better ways to accomplish your task. This is an example of the application of ergonomics.

Ergonomics is the study of the worker and how he or she performs various jobs at the work site. Many employers have started ergonomics committees or teams to develop ways to reduce the physical stresses in the workplace. Often different methods, tools, machines and equipment can reduce the demands of the job. Discuss your suggestions with your supervisor or personnel manager; maybe he or she can offer alternative suggestions.



When using tools, try to keep the wrist straight, as shown here.

• **Step Two:** You need to give your wrists a chance to heal. If your symptoms seem to be aggravated by your workplace, alternate duty for up to six weeks may be appropriate. Sometimes I will ask a patient's employer if it is possible to temporarily reduce the production rate by 50 percent. This is a very effective step if the condition is recognized early.

Your body has a remarkable ability to heal if you give it a

chance. Use common sense and be good to yourself.

• **Step Three:** Buy some wrist splints to wear at night. Wrist splints stabilize the wrists and keep them in a neutral position. This relieves the pressure on the nerve and allows the nerve to get adequate blood supply. As discussed earlier, sleeping with an awkward wrist position will often aggravate CTS.

Should the splint be worn at work? This is somewhat controversial. Most hand experts recommend only night splinting. Others recommend that the splint be worn all the time with the exception of bathing. Some types of jobs are difficult to perform while wearing a splint, and this requires understanding and accommodation by your employer. Many argue that wearing a splint while performing some jobs can aggravate wrist and arm problems. If the wrist is “locked” in position, it might be necessary to generate even greater force with the wrist and fingers to get the job done (with the splint in the way). Since the wrist no longer moves when splinted, the elbow and shoulder may try to provide the movement that the wrist no longer provides.



This brace is the type of splint to wear at night. It has a metal stay on the palm side. It should be worn comfortably and kept on your bedside table.

If you already are under the care of a provider, follow his advice. If you are not, experiment with the splint at work. If it helps to wear it at work, do so; if it doesn't, don't wear it.

If you are going to wear a splint at work, I recommend a splint that keeps the wrist in a neutral

position, but still allows it to move a bit. I usually ask my patients to wear a more rigid splint at night and a more flexible one during the day if they think that helps. Keep the splints used at night on your bedside table so they will be handy.

I have seen some splints that are cumbersome and too large, yet others that are so small their usefulness would be in question. The wrist splint should be lightweight, comfortable and easy to put on. It is not necessary for the splint to immobilize the fingers or to extend all the way to the elbow. The splint should limit wrist bending as much as possible without being uncomfortable.

Remember, the idea is to help you feel better, not worse. If any of our suggestions make you feel worse, quit following them.

• **Step Four:** If you don't have stomach

problems or an allergy to aspirin or related products, try taking over-the-counter ibuprofen, such as Advil or Nuprin. Use for two to three weeks as recommended on the label.

You may use ibuprofen for up to one month, but stop sooner if you develop stomach irritation, heartburn or other unpleasant reactions. If you are already taking similar medication, skip this step. If you have any questions, ask your provider.

- **Step Five:** Stretch your hands before you get started with hand-intensive activities. Repeat this warm-up several times a day. See the diagrams on Page 18 for a recommended warm-up session.

Some employers now require that workers stretch their hands and arms before starting a shift. Often workers will be asked to perform a stretching program several times a day. Like athletes preparing for a contest, workers can prepare for work. Besides stretching the hands and fingers, it is a good idea to stretch the neck, shoulders and arms. Stretching, strengthening and endurance activities are invaluable in terms of general health maintenance as well.

If the first five steps seem to be working, keep them up as long as improvement continues, but stop the medicine after

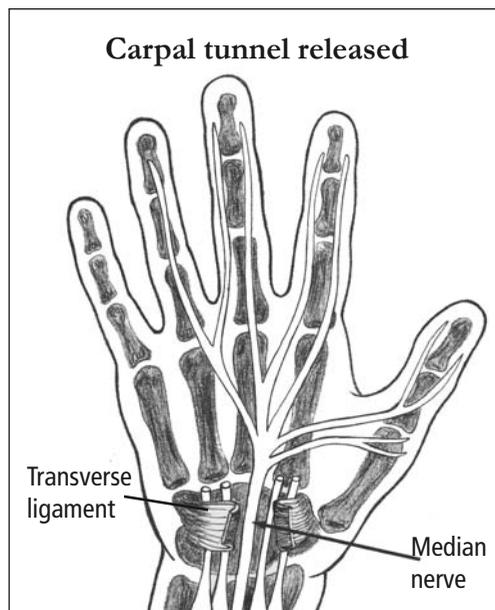
one month. Stop the medicine immediately if stomach irritation or other adverse effects develop.

- **Step Six:** If your condition has not improved substantially by the end of six weeks, I recommend that you see your provider. Tell him or her what you have done so far. Your provider may suggest a different medication or may offer you a cortisone injection. He or she may recommend an orthopedist, a hand surgeon or a neurosurgeon to manage your care if you do not improve.

- **Step Seven:** If the pain becomes unbearable and affects the quality of your life, I would recommend that you consider surgery. This becomes even more important if you have increasing weakness or constant numbness or tingling in your fingers. It is not wise to endure

hand pain indefinitely since pain is an indication that the nerve continues to be irritated. Remember that surgery will be more successful if done fairly early in the course of the condition. Waiting eight to 12 weeks while trying nonsurgical approaches does not represent an unnecessary delay, however.

Surgery involves separation of the ligament that forms the roof of the carpal tunnel. This



Surgical treatment of CTS involves cutting through the transverse ligament.

procedure, sometimes called a carpal tunnel release, relieves the pressure on the nerve. It is very effective. The surgery can be done with the traditional open incision method or with the newer endoscopic method. The two types of surgery are discussed in the following section.

The surgery is usually performed by an orthopedist, hand surgeon, neurosurgeon or plastic surgeon. Generally the surgery is done on an outpatient basis. This means that you can usually go home the same day. It is done with either regional or general anesthesia. When a regional anesthetic is used, your hand and wrist will be numbed so you will not feel any pain. Under general anesthesia, you will be put to sleep. Your doctor may also give you a sedative so that you will be relaxed before and during any of these procedures.

You will be sent home with your hand in a bandage and perhaps in a splint as well. Because your hand may be sore for a few days, you will probably need some help around the house. Your doctor may prescribe a medication to help alleviate any discomfort.

Doctors differ with regard to the amount of activity they recommend after surgery. Most will want you to resume activity as soon as you feel able. This promotes a quicker return of strength, motion and reduction of swelling. As I will discuss in the following section, there are some differences between the two kinds of surgery in this regard.

You must understand that you will continue to recover for several weeks and even months after surgery. Although most people report that pain, numbness and tingling are better immediately

following surgery, many have some mild residual discomfort for several weeks.

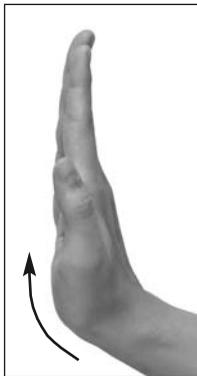
We have learned that “activity accelerates healing.” It is probably best that you return to work as soon as you safely can. Generally, you can start out on light duty within one week and progress to full duty in 4-6 weeks (or even sooner in some cases).

The question of when to return to work may result in conflict between the patient, provider and employer. Because this surgical procedure is typically very successful, most workers return to work quickly and are pleased with the results. Unfortunately, providers and employers often fail to show much compassion for workers with injuries. Worker’s compensation costs have skyrocketed, endangering the existence of many companies in the United States. The growing number of legal battles adds fuel to the fire. Some workers unfairly exaggerate their claims of injury, making it difficult for the workers who really do have a problem to be heard. These problems often serve to “harden” employer representatives and providers involved in worker’s compensation claims. Do your best to show your employer that you are doing your part to get better and to return to work as soon as you can.

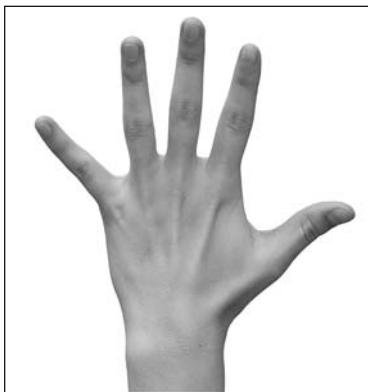
Regardless of the method of surgery you choose, do some homework. Ask around. Which orthopedist, hand surgeon, neurosurgeon or plastic surgeon has a reputation of excellence? Have they done a lot of carpal tunnel surgery? Do their patients speak highly of them? Educating yourself about your condition is an important part of your recovery.

Hand Exercises

Stretch the wrist
back and hold
for five seconds.



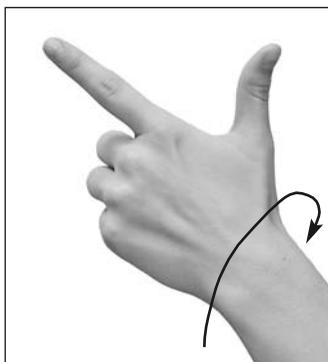
Make a fist
several times.



Spread your fingers apart as far as possible and repeat
several times for each hand.



Bend the thumb across the palm
and touch the tip of each finger.



Rotate your wrist in a circular-like motion;
do this several times in each direction.

Two Methods of Surgery

Some physicians prefer the open approach, while others prefer the newer endoscopic approach.

- **The Traditional Open Method.** This is the most common approach. It involves an incision of about one to two inches extending across the base of the palm. This exposes the ligament to be divided.

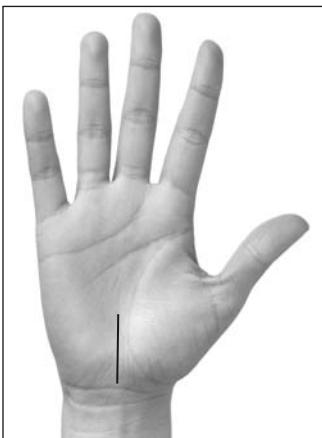
After the surgery is complete, the skin is sutured back together with stitches. These stitches usually are removed within seven to 14 days. The scar is often well concealed when examined several months later. This procedure is successful and is widely used by physicians who perform carpal tunnel surgery.

- **Endoscopic surgery** usually involves two small incisions – one in the palm and one across the wrist. (Some surgeons use only one incision.)

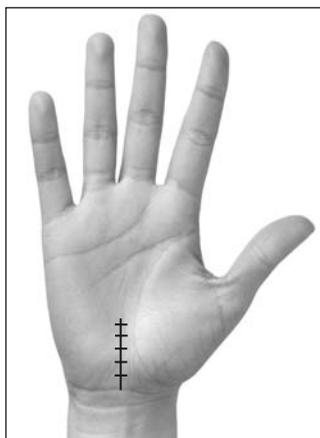
The surgeon performs the operation by using an instrument called an endoscope. This is a tiny video camera, which is inserted into one of the incisions. The technique also uses very small tools that are inserted into the small incisions to cut the ligament. Each opening usually has one or two stitches, which will need to be removed about ten days after surgery. This, too, is an excellent procedure.

Your requirements will be evaluated on an individual basis by your surgeon. He or she will help you choose the procedure that is best for you.

Traditional Open Method

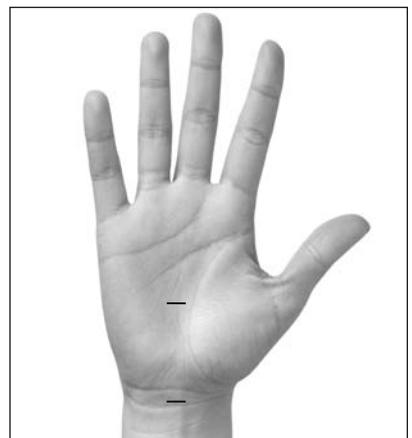


With the open approach, the incision will extend along the palm as shown.



When the procedure is completed, the incision will be closed with sutures.

Endoscopic Surgery



The endoscopic procedure involves one or two smaller incisions, which will be closed with stitches.

Questions and Answers

Will I become disabled?

No. Most patients are able to resume normal activities at home and at work once the condition is treated. If recognized early, surgery may not be necessary. If you do require surgery, you will need to recuperate for four to six weeks before you can resume your regular job. Some patients return even sooner.

Is this caused by my job?

Perhaps. Perhaps not. In summary, CTS is probably the result of several factors – your age, general level of health, presence of associated diseases, your hobbies and some things you do at work. This is certainly a controversial topic. Regardless of the cause, it is your responsibility to seek help early so it can be treated successfully.

Will I get completely better after surgery?

By far, most patients report substantial relief. If the condition is identified early, the results are better. If your condition has remained untreated for several years, surgery will usually help, but you may have some residual symptoms, including mild weakness.

The surgery itself can result in some minor, temporary weakness because the hand is often immobilized for some time after surgery. Regular use of the hand alone with an exercise program can be helpful following surgery. Some patients do report that they continue to have some uncomfortable sensations in the wrist and fingers, but most report that these sensations are

much better than they were before surgery.

The same is true with occasional reports of swelling and pain in the wrist – they are minor compared with the presurgical condition. I have seen workers from every imaginable job and of all ages return to productive work. Although very uncomfortable before it is treated, carpal tunnel syndrome is a mild disease when compared to heart disease, cancer and diabetes. Remember, carpal tunnel syndrome is not a major disabling condition if treated appropriately.

How does a physician decide when I will need surgery?

If Steps 1 through 6 have not resulted in much improvement, your doctor probably will discuss surgery as an option. Other factors to consider include the time elapsed since your symptoms developed and the amount of weakness, loss of sensation and degree of pain you are experiencing.

Patients with constant loss of normal feeling, significant weakness or unbearable pain are considered for surgery sooner. If conservative measures are not working, it is best to proceed with surgery. Wasting time is not a good idea. Injured nerves may not totally recover if treatment is unnecessarily delayed.

Several people have told me that surgery has not helped them. Why do they say this?

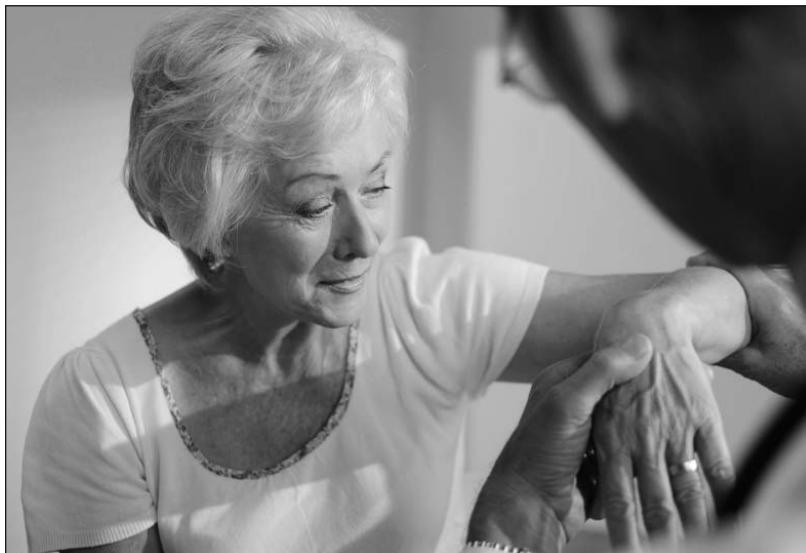
Surgery usually helps if the condition is treated soon enough and if the procedure is done

correctly. As we discussed earlier in this booklet, there are other causes of numbness and tingling in the hands and fingers. Certainly, carpal tunnel syndrome surgery will not help if your problem is caused by another condition. When I carefully question patients who claim to be “no better,” I often find that indeed they are much better. I find that

their hands no longer go to sleep at night, that their hands are stronger and that they have normal sensation. Many report soreness or a deep aching in the wrist after surgery. Any time surgery is performed, it takes time to recover completely. It often takes several months for all the soreness to go away. It is important to allow enough time for healing before becoming critical of the outcome.

Is it possible to re-injure my hand after surgery?

Although it is possible, it is unlikely unless you return to an activity that places an unusual amount of pressure directly over the incision site. Individuals who have had carpal tunnel syndrome surgery often will have residual discomfort in their hands when doing strenuous work, but serious injury is unlikely.



Will it affect both hands?

Carpal tunnel syndrome often affects both hands. It often affects the dominant hand more than the non-dominant hand, but not always. This is one reason why many experts question its relationship to work activities. If it is truly work related, it should affect the hand that performs the work. I often find CTS in the non-dominant hand that is used very little at the workplace.

Will the surgery have to be repeated later?

Rarely. Occasionally, however, if the ligament was not completely separated initially, it could continue to create problems and repeat surgery could be required. Additionally, scar tissue could develop and place pressure on the nerve, requiring a second surgery for removal of this tissue.

EMG Clinics *of Tennessee*

Nerve and muscle testing since 1989

3035 N. Highland Ave. • Jackson, TN 38305
800.224.1807 • emgclinics.com • info@emgclinics.com