

Orthopaedic Observations

A Matter of Medicine...

TM Pending

Carpal Tunnel Syndrome

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Carpal Tunnel Syndrome is an extremely common disorder affecting the hand, present in approximately 1 in 100 people. It is a benign condition characterized by numbness and tingling in the fingers. Pain can extend to the elbow, shoulder or neck and can occur any time, either in the day or night. People oftentimes complain of awakening from their sleep and oftentimes shake

their hands to try to restore sensibility that can oftentimes work temporarily. Symptoms will oftentimes also occur during the day when one talks on the telephone, holds a book or newspaper. Oftentimes people awaken in the morning with their hands numb and tingling and it will take some time before the symptoms diminish.

What is Carpal Tunnel Syndrome?

To understand Carpal Tunnel Syndrome, one needs to learn about the basic structures occurring at the wrist and hand level. The basic supporting structure are the bones of the wrist which include the forearm bones, the wrist bones, medically known as the carpal bones, and the bones of the hand. The flexor tendons are the structures that extend from the muscles to the fingers like the strings of a marionette. They allow us to perform the multiple activities during the day.

There are three main nerves coming down to the hand to control the muscles and tendons known as motor nerves and it gives is the ability to feel, which are the sensory nerves. The nerve involved with carpal tunnel is known as the median nerve which generally gives sensation of the thumb, index, long and ring fingers. There is also a small branch of the nerve that comes through the muscles at the base of the thumb.

The median nerve involved with Carpal Tunnel Syndrome runs with the tendons in the area appropriately called the carpal tunnel. The bones of the wrist cover this tunnel on three sides and on the palm side. There is a thick liga-

ment called the transverse carpal ligament that forms the groove of the tunnel. It is within this tunnel that pressure builds up that can cause the classic symptoms of numbness and tingling.

Causes of Carpal Tunnel Syndrome

- *Ideopathic:* Many cases of carpal tunnel have no known cause and are thought to be anatomic abnormalities that makes an individual at risk.
- *Overuse:* There is some information to suggest that overuse of the fingers or wrist or certain positions, for extended periods of time, can contribute to pressure on the nerve.
- *Injuries:* An injury to the wrist involving bleeding, such as with a fracture, can oftentimes cause increased pressure within the tunnel leading to symptoms either early or late in the course after a fracture or dislocation.
- *Medical Conditions:* Pregnancy, diabetes and thyroid problems are all known causes of Carpal Tunnel Syndrome.

Understanding Carpal Tunnel Syndrome

In many cases, the long-term consequences of numbness and tingling can be prevented through simple modifications. Altering the way one does certain activities, whether be at work, home or at recreation, can significantly improve and sometimes eliminate the symptoms of numbness and tingling.

Medical Intervention

- Oftentimes wearing a proper splint, time, or over-the-counter medications can significantly help
- Doctor recommended prescription medication known as anti-inflammatories can oftentimes help relieve the swelling. Sometimes, an injection of Cortisone can either temporarily or permanently to improve and eliminate the symptoms associated with this condition. Sometimes, physical therapy can be helpful.

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- Scientific studies have not today shown any predictable benefit from vitamins, though there has been anecdotal reports that Vitamin B6 is helpful, though studies have not proven that.

How to Diagnose Carpal Tunnel Syndrome

An early, thorough approach is very beneficial to diagnose, cure and prevent ongoing symptoms of carpal tunnel syndrome; one is history. It is very important to obtain a thorough history of other medical conditions, injuries and the characteristics of the condition. It is helpful to write down certain information that you can pass on to the doctor at the time of the examination.

Physical Examination

A thorough examination of the area is very helpful to either rule in or rule out the diagnosis. Most patients do not have textbook-like symptoms and it is important for you and your doctor to look at the characteristics and the physical examination findings. Three commonly used maneuvers are a Tinel's test, where the doctor will tap over the nerve, the second is the Phalen's maneuver, which is performed by flexing the wrist and seeing if this causes characteristic numbness and the third is termed a forearm compression test where wrist pressure is placed over the nerve to determine the distribution of tingling.

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He is a member of the American Society for Surgery of the Hand, New England Hand Society, New England Hand Study Group, American Academy of Orthopaedic Surgery, American Medical Association, New Haven County Medical Society, and the Connecticut State Medical Society. He has been a Visiting Lecturer for the American/Japanese Hand Society, Maine Orthopaedic Society, Yale University School of Medicine and the Dartmouth School of Medicine.

His special area of interests are Rheumatoid Arthritis, Fractures of the Wrist and Hand, and Carpal Tunnel Syndrome. Dr. Bernstein grew up locally in Orange and spent time volunteering at Yale New Haven Hospital during the summers. After graduating from Hopkins Grammar School, he continued college and medical school in Connecticut. Since returning from his fellowship at Harvard he has developed a specialty Orthopaedic practice in Hand and Upper Extremity Surgery.

Dr. Bernstein is actively involved with the American Society for Surgery of the Hand and has been asked by its Presidents to serve on multiple task forces, the Residents and Fellows Conference and Scientific Exhibits Committees. Besides his active clinical practice, he teaches at the Yale Medical School for Medical and Physician Associate Students as well as the Resident Doctors training in Orthopaedic Surgery.

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