

Article in the March 2012 edition of *Flagstaff Business News*

Carpal Tunnel Syndrome

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Definition:

Carpal tunnel syndrome is a condition experienced by about 1 in 20 people, and is caused by increased pressure on the median nerve at the level of the wrist. In essence, the median nerve or nerve that provides sensation to the thumb, index, long, and ring fingers, is pinched. Those with carpal tunnel syndrome usually experience numbness and tingling in the fingers. Sometimes patients can experience pain in the hand and wrist and even up the arm.

Causes:

The most common cause of carpal tunnel syndrome, or pinching of the median nerve at the wrist, is swelling of the lining of the tendons next to the nerve. The nerve and the tendons travel through a space or tunnel that is rigid and inflexible. Thus, when tissue swells inside the tunnel the tunnel itself cannot expand to relieve the increased pressure, and it presses against the adjacent nerve. Other conditions can cause or contribute to the carpal tunnel including arthritis, especially at the base of the thumb, fractures of the wrist, and swelling associated with pregnancy. Some medical conditions also contribute to carpal tunnel symptoms including thyroid conditions, rheumatoid arthritis and diabetes. For many patients there is a combination of factors.

Signs and symptoms:

Most patients with carpal tunnel syndrome experience a combination of numbness, tingling and pain. The tingling usually occurs in the thumb, index, middle and ring fingers. Many patients experience their most severe symptoms at night with disruption of their sleep. Certain wrist positions or activities tend to bring the tingling on as well. These include bending the wrist, driving, holding a book or newspaper. Rarely the pinching of the nerve can cause permanent nerve damage and weakness.

Diagnosis:

Carpal tunnel syndrome can be diagnosed by discussing the patients symptoms, aggravating factors and performing specific tests. Some tests are as simple as physical exam maneuvers in the doctor's office to elicit the symptoms and to ensure that the nerve pinch does not occur somewhere else along the course of the nerve. Commonly, after the clinical diagnosis of carpal tunnel syndrome is made an electrodiagnostic study is ordered to confirm the diagnosis. These are known as an EMG [electromyogram] and

NCV [nerve conduction velocities]. They essentially measure the speed at which the nerve conducts its signal and the strength of the signal as well as the muscle responses. If the tests show that the strength and speed of the signal is decreased at the carpal tunnel, then the location of the pinching of the nerve is confirmed and isolated to the carpal tunnel.

Treatment:

Not all patients with carpal tunnel syndrome need surgery. Many patients are able to achieve relief of the numbness and tingling with simple, inexpensive, nonoperative measures. Bracing of the wrist at night can relieve the pinching of the nerve that occurs while sleeping. Steroid injections around the nerve and the carpal tunnel are used to shrink the adjacent tissues and give the nerve more space. Certain over the counter supplements can also improve the health of the nerve and decrease the symptoms.

When the symptoms do not improve with the aforementioned measures, surgery may be needed. The goal of the surgery is to make more room for the nerve, or to un-pinch it. To make more room the surgeon divides a ligament that forms the roof of the tunnel called the transverse carpal ligament. Ultimately, the ligament heals again forming a roof, but does so with an enlarged canal. There are several ways to perform the surgery but the uniform goal of all the methods is to enlarge the carpal tunnel. Many patients experience rapid relief of the numbness, tingling and pain as well as the cessation of night time symptoms. If the symptoms have been present for a long time or are more severe, they can take longer to fully resolve. Some patients do not get full resolution of their symptoms. However, even in those patients, carpal tunnel surgery can very predictably prevent the condition from getting worse or causing more severe damage to the nerve.

Dr. Flint is a fellowship trained orthopaedic surgeon who specializes in the treatment of degenerative, over-use and traumatic injuries of the hand, elbow and Shoulder.

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