

Carpal Tunnel Syndrome



Hand & Wrist Surgical Services

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What is carpal tunnel syndrome?

Carpal tunnel syndrome manifests by numbness, tingling, and pain in the fingers, hand, and arm. The carpal tunnel is a space in the wrist through which the median nerve and nine flexor tendons pass into the hand. The symptoms of carpal tunnel syndrome occur when anything takes up or encroaches on this space in the wrist and places pressure on the median nerve.



Diagram 1
Median nerve function in the hand

What are the signs and symptoms?

Numbness, tingling, and/or pain in the affected hand(s) are symptoms of carpal tunnel syndrome. The numbness or tingling occurs in the fingers innervated by the median nerve—the thumb, index, long, and ring fingers. The numbness is often worse at night, and when driving or reading the newspaper. Some patients report dropping things, and feel that the hand is weak. The most severely affected hands can be entirely numb with loss of the muscles of the thumb.

What causes it?

The most common cause is tenosynovitis of the tendons in the carpal tunnel, which causes swelling of the tendons and puts pressure on the nerve. Motions that involve repetitive use of the fingers and/or wrist cause swelling and increased pressure in the tunnel. The increased fluid that accompanies pregnancy also causes swelling in the tendons, and can cause symptoms that are often resolved with delivery. Other conditions that narrow the tunnel include arthritis, fractures, and dislocations of the wrist. Medical problems such as hypothyroidism, diabetes, and rheumatoid arthritis can also be associated with carpal tunnel syndrome.

How is it diagnosed?

An accurate history of the onset and duration of symptoms as well as prior injuries and how the hand was used is very important. Several diagnostic tests are completed during the examination that usually recreates the symptoms of numbness and tingling. Sometimes X-rays are required if there is a possibility of fracture or arthritis. Specific laboratory tests may be indicated if an unproven medical condition is suspected. Many patients are referred to a neurologist for nerve tests (nerve conduction and electomyograms) to ensure that there are no other sites of compression of the median nerve.

How is it treated?

Sometimes the symptoms can be relieved without surgery. Non-operative treatment includes avoiding repetitive use of the hand, and keeping the wrist in a straight position with a splint. Most patients sleep better if the splint is worn at night. Nonsteroidal anti-inflammatory agents such as ibuprofen decrease the swelling around tendons and help many patients. An injection of cortisone into the carpal tunnel can also relieve the symptoms by reducing the swelling around the nerve. In cases of severe compression of the nerve or symptoms that persist, surgery may be necessary to open the carpal tunnel. All surgical procedures are designed to open the roof of the carpal tunnel to provide more room for the median nerve. After surgery, the wrist is sore around the incision for several weeks. The numbness and tingling often disappears quickly, but several months are necessary for strength of the hand and wrist to return to normal. Some symptoms may continue after surgery. Returning to repetitive or strenuous work with the hand may cause symptoms to return.



Diagram 2

During surgery, the ligament is divided to provide more room for the median nerve in the carpal tunnel