Health Basics

Carpal Tunnel Syndrome

What is carpal tunnel syndrome?

Carpal tunnel syndrome (CTS) is a common nerve disorder that causes pain, numbness and tingling in the hand and arm. The condition occurs when the median nerve (one of the main nerves in the hand) is compressed as it travels through the carpal tunnel, a narrow passageway in the wrist. CTS affects 4 to 10 million Americans, most of whom are middle-aged or older adult women, according to the American College of Rheumatology.

What are the symptoms of carpal tunnel syndrome?

Typically, symptoms of carpal tunnel syndrome begin slowly, but as CTS worsens, they may occur more frequently. A person with CTS may also commonly experience symptoms at night.

The American Academy of Orthopaedic Surgeons notes that symptoms of carpal tunnel syndrome may include:

- Numbness, tingling, burning and pain—primarily in the thumb and index, middle and ring fingers
- Occasional shock-like sensations that radiate to the thumb and index, middle and ring fingers
- Pain or tingling that may travel up the forearm toward the shoulder
- Weakness and clumsiness in the hand that may make it difficult to perform fine movements such as buttoning your clothes
- Dropping objects as a result of weakness, numbness or loss of proprioception (the awareness of body movement and position), especially in the limbs.

What are the risk factors for carpal tunnel syndrome?

- Heredity: People with smaller carpal tunnels are at greater risk for CTS. Individuals may also suffer from anatomical problems such as a wrist facture or arthritis, which reduce the amount of space for the nerve. These traits can run in families.

- Repetitive activities: Repeating the same motions with the hand or wrist or engaging in unvaried activities over a prolonged period of time may aggravate the tendons in the wrist, causing swelling that compresses the nerve.
- Age: CTS occurs most commonly in adults.
- Health conditions: Some medical issues linked to carpal tunnel syndrome include diabetes, rheumatoid arthritis, thyroid disorders, menopause, pregnancy and obesity.
- Hand or wrist position: Activities involving extreme flexion or extension of the hand and wrist for long periods of time can increase pressure on the nerve.
- Sex: Women are three times more likely than men to develop carpal tunnel syndrome. This may be because the carpal tunnel is smaller in women than in men.
- Workplace factors: CTS is most common in people who perform monotonous assembly-line work or in jobs such as sewing and cleaning.

How is carpal tunnel syndrome diagnosed?

Doctors first review an individual's history of symptoms before conducting a physical examination, including the Tinel's sign and Phalen's maneuver tests.

For the Tinel's sign test, a doctor taps the inside of the wrist over the median nerve to determine whether this action causes CTS symptoms, such as any numbness or tingling in the fingers. Phalen's maneuver test, or the wrist-flexion test, requires bending the wrists at a 90-degree angle and pressing the backs of the hands together for one minute to see whether this action causes CTS symptoms.

Electrophysiological examinations, such as nerve conduction studies and electromyogram, are also conducted to help physicians measure how well the median nerve is functioning and whether there is too much pressure on the nerve.

Physicians may also order an ultrasound to evaluate the median nerve for signs of compression and an MRI to look for abnormal tissues that might be affecting the median nerve. X-rays and MRIs are used to exclude other causes of symptoms.

How is carpal tunnel syndrome treated?

People with symptoms of CTS who are diagnosed and treated early may experience relief from carpal tunnel syndrome without surgery. In these cases, doctors often recommend bracing or splinting, nonsteroidal anti-inflammatory drugs (NSAIDs) and steroid injections. They also suggest patients change their activities and perform nerve-gliding exercises to stretch the nerves affected,

encourage movement and reduce pain.

When nonsurgical treatment fails to work, physicians may recommend surgery. Two surgical techniques intended to relieve the pressure on the median nerve are open carpal tunnel release and endoscopic carpal tunnel release. Both procedures require cutting the ligament that forms the roof of the tunnel to make more room for the nerve and tendons.

Surgery improves CTS symptoms for most patients. But recuperation is gradual and complete recovery could take up to a year.

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