Carpal Tunnel Syndrome

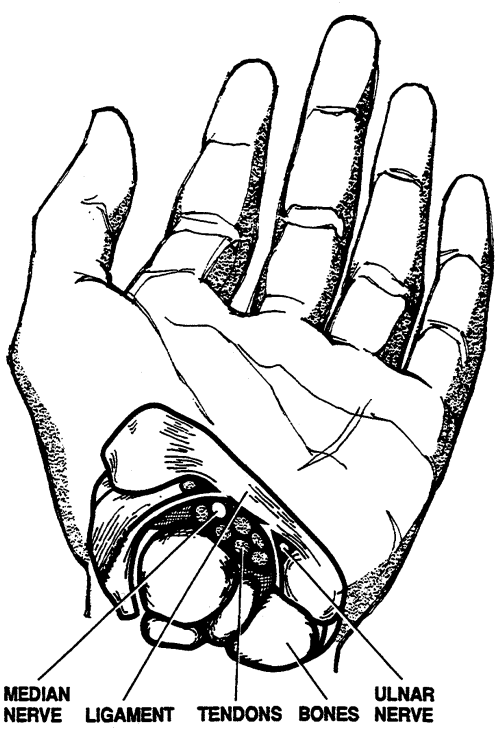
FACT SHEET 88-001-0311

Carpal tunnel syndrome (CTS) is damage to the median nerve caused by a sustained increase in pressure from a non-neutral posture, direct compression, or inflammation. CTS is commonly diagnosed as an upper extremity work-related musculoskeletal disorder (WMSD). It can lead to permanent disability if not detected early and treated properly.

What is the Carpal Tunnel?

When you perform a task using your hand, muscles in your forearm flex your wrist and fingers. Those muscles are connected to the wrist and fingers by tendons (bands of tough, nonstretchable, flexible fibers that connect the muscles to the bone).

These tendons enter your wrist through a U-shaped tunnel above a cluster of eight bones, the carpal bones, which form the “back” and “sides” of the wrist. Across the “top” of the wrist is a tough, strong ligament (similar to a tendon, but linking two bones together at a joint). This ligament forms the arch over the carpal bones, or the “roof” of the carpal tunnel.



The median nerve innervates the thumb, index and middle fingers, and half of the ring finger. The median nerve is compressed when your wrist is positioned in a non-neutral or unnatural posture (such as a deviated position while typing) or by direct pressure on the median nerve from hard, sharp edges of work surfaces or tools.

The median nerve runs through the carpal tunnel among the tendon sheaths (tubular sacs around tendons lined with a thin layer of tissue and a layer of oily lubricating fluid). Continued pressure and tendon activity on the tunnel can cause inflammation, which puts pressure on the nerve, and eventually results in nerve damage or CTS.

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CTS Symptoms

- Burning pain.
- Numbness.
- Tingling in the thumb and first two or three fingers.

These symptoms may:

- Radiate to the forearm.
- Frequently occur at night.
- Make simple tasks, such as tying shoelaces, difficult because of weakness or numbness.

Workplace Risk Factors Associated with CTS

- Hands held in fixed positions with steady pressure over prolonged periods (e.g., gripping a drill).
- Repeated wrist and finger flexion (e.g., using a trigger-operated hand tool) or alternating flexion and extension (e.g., painting).
- Light, highly repetitive wrist and finger movements (e.g., typing or data entry).
- Prolonged strenuous use of the hands (e.g., molding materials).
- Repeated pinching or grasping (e.g., stapling).
- Vibration, particularly associated with power tools.
- Bending the wrist toward the little finger while working (e.g., typing).
- Quick, repetitive dynamic activities (e.g., scanning items in a checkout line).

This fact sheet is presented as guidance and should not be substituted for a professional medical examination and proper treatment of CTS.