

## What is Carpal Tunnel Syndrome?

Muscles in the forearm turn into tendons and pass through the wrist at the carpal tunnel before inserting into the bones of the fingers to allow flexion. The carpal tunnel at the wrist is composed of bone on the back of the hand and traversed by a ligament on the palm. This tunnel created by ligament and bone can not change in size. It is a rigid structure.

Through this tunnel run nine tendons and the median nerve, which provides sensation to the thumb, index, middle and half of the ring finger as well as branch which goes to 2 ½ muscles of the three muscles of the thumb. Around the tendons is tenosynovium which secretes lubricant and allows the tendons to pass one another without friction. In carpal tunnel syndrome this tissue becomes inflamed and swollen occupying all the extra space in the carpal tunnel until the pressure rises and begins to put pressure on the median nerve preventing the nerve from getting the normal blood supply needed for the nerve to function normally.

When the nerve is denied the normal blood supply providing nutrients, oxygen, washing away the normal metabolic byproducts, the nerve begins to dysfunction, first patients develop numbness and tingling, then pain develops, typically at night preventing a normal nights rest, the pain may radiate into the forearm, arm, shoulder and even neck in severe cases. Left untreated for a prolonged period of time will result in some of the nerve fibers being starved of the required nutrients and cellular death may proceed, resulting in permanent nerve damage. Such as permanent sensory deficit and even muscle atrophy making thumb opposition difficult or even impossible. By dividing the transverse carpal ligament the rigid carpal tunnel is released, making more room for the median nerve and the pressure on the nerve is eliminated allowing normal blood supply to the nerve, elimination of symptoms and nerve recovery.

The standard open technique of carpal tunnel release requires cutting the palm from the wrist to the mid-palm including skin, subcutaneous tissue (fat) containing superficial sensory fibers, palmar fascia and palmaris brevis muscle before reaching the transverse carpal ligament. In contrast, an endoscopic intracarpal decompression approaches the ligament from underneath (the under surface of) the ligament through two tiny incisions on either end of the ligament, isolating it and dividing it under direct vision of a small T.V camera placed through one of the incisions, thusly leaving all of the superficial layers intact, undisturbed. This created less, tenderness, pain, swelling, bruising and scar tissue. Patients return to work earlier, almost never require any kind of hand therapy and in general resume normal activities faster than the traditional open carpal tunnel release procedure.

This technique has proven to be as effective as the traditional open technique with similar recurrence rates, lower complication rates and an easier recovery. This will get you back to normal activities sooner.