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A Patient's Guide to
Tarsal Tunnel Syndrome



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The First Name in Specialized Orthopedic Care

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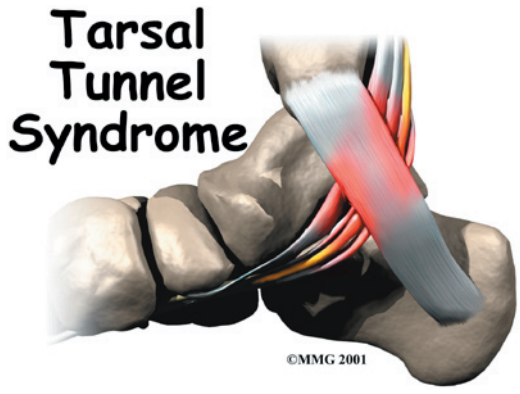
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Introduction

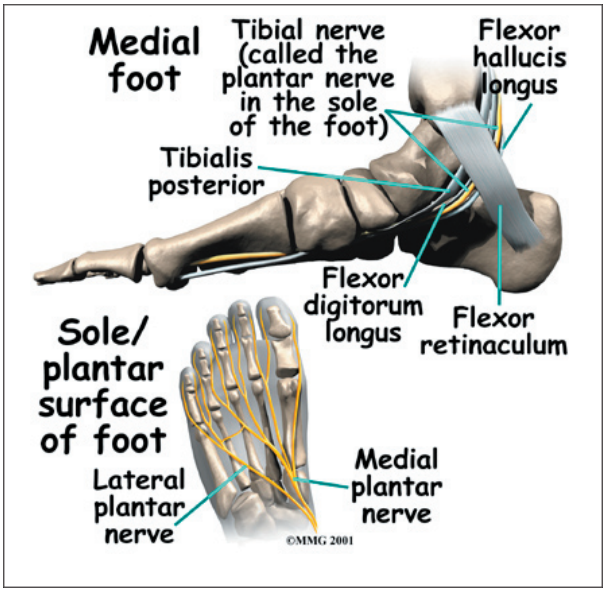
Tarsal tunnel syndrome is a condition that occurs from abnormal pressure on a nerve in the foot. The condition is similar to carpal tunnel syndrome in the wrist. The condition is somewhat uncommon and can be difficult to diagnose.

This guide will help you understand

- **where the tarsal tunnel is located**
- **how tarsal tunnel syndrome develops**
- **what can be done to treat the condition**

Anatomy

Where is the tarsal tunnel, and what does it do?

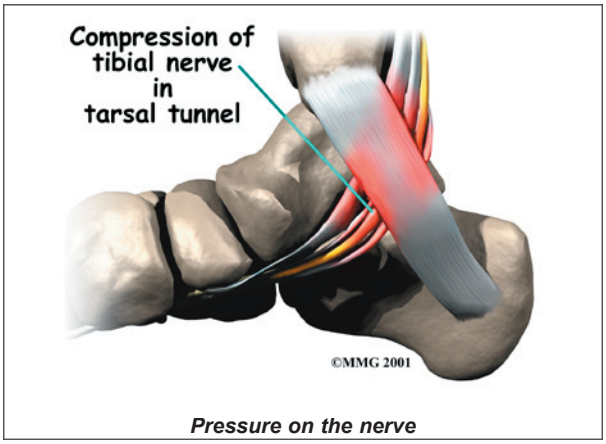


The tibial nerve runs into the foot behind the *medial malleolus*, the bump on the inside of the ankle. As it enters the foot, the nerve runs under a band of fibrous tissue called the *flexor retinaculum*. The flexor retinaculum is a dense band of fibrous tissue that forms a sort of tunnel, or tube. Several tendons, as well as the nerve, artery, and veins that travel to the bottom of the foot pass through this tunnel. This tunnel is called the *tarsal tunnel*. The tarsal tunnel is made up of the bone of the ankle on one side and the thick band of the flexor retinaculum on the other side.

Causes

What causes tarsal tunnel syndrome?

In many cases, doctors aren't sure what causes tarsal tunnel syndrome. Inflammation in the tissues around the tibial nerve may contribute to the problem by causing swelling in the tissues and **pressure** on the nerve.

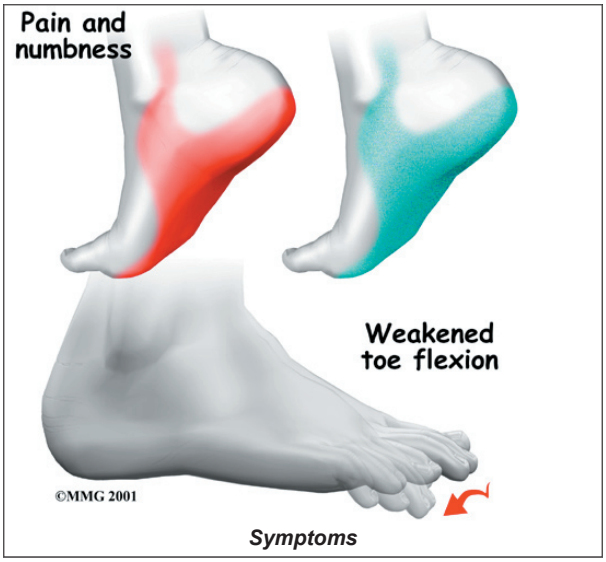


Pressure on the nerve

Anything that takes up space in the tarsal tunnel can increase pressure in the area because the flexor retinaculum cannot stretch very much. This can occur from swollen varicose veins, a tumor (noncancerous) on the tibial nerve, and swelling caused by other conditions, such as diabetes. As pressure increases in the tarsal tunnel, the nerve is the most sensitive to the pressure and is squeezed against the flexor retinaculum. This causes problems in the nerve that may lead to symptoms of tarsal tunnel syndrome.

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In the case of a nerve, the area of skin supplied by the nerve usually feels numb, and the muscles controlled by the nerve may become weak. Pain is sometimes felt near the area where the nerve is squeezed or pinched.



Symptoms

Symptoms

What does tarsal tunnel syndrome feel like?

Tarsal tunnel syndrome usually causes a vague pain in the sole of the foot. Most patients describe this pain as a burning or tingling sensation. The symptoms are typically made worse by activity, especially standing and walking for long periods. Symptoms are generally reduced by rest. You may feel pain if you touch your foot along the course of the nerve. If the condition becomes worse, your foot may feel numb and weak.

Diagnosis

How do doctors identify tarsal tunnel syndrome?

The diagnosis of tarsal tunnel syndrome begins with a complete history and physical examination. A *Tinel's sign* may be present. This is a tingling sensation that shoots what feel like electric shocks into the foot when the skin above the nerve is tapped with a finger at the level of the irritation.

If more information is needed to make the diagnosis, a *nerve conduction velocity* (NCV) test may be suggested by your doctor. This test measures how fast nerve impulses travel along a nerve. If the test shows that the impulses are traveling slowly across the ankle, this may confirm a diagnosis of tarsal tunnel syndrome.

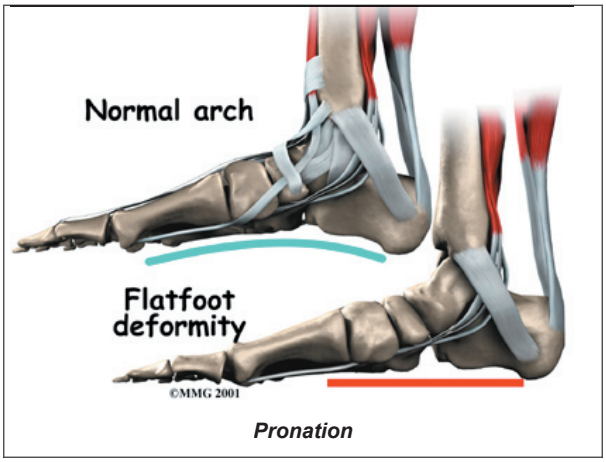
Treatment

What can be done for the condition?

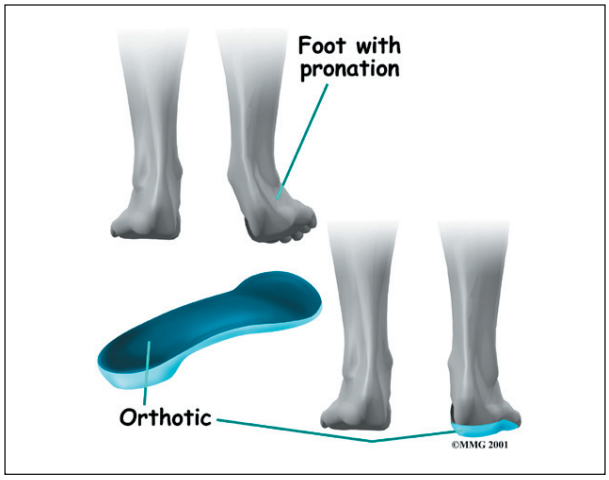
Nonsurgical Treatment

Treatment for this condition depends on what is contributing to the pressure on the nerve. Anti-inflammatory medication and rest may be suggested to control the symptoms initially. Anti-inflammatory medications help reduce the inflammation and swelling of the tissues around the tibial nerve in the tarsal tunnel and may ease the irritation on the nerve.

People who have problems of ***pronation*** (flattened arches) may need specialized inserts, called *orthotics*, for their shoes. Pronation is a common condition in which the inside edge of the foot rolls in, causing the arch to flatten. When this happens, the tibial nerve within the tarsal tunnel can become stretched. If your tarsal tunnel syndrome is being aggravated by an abnormal position of the foot such as pronation, orthotics may be suggested to relieve the problem. Orthotics worn inside your shoe can help support the arch and take tension off the tibial nerve.



Pronation



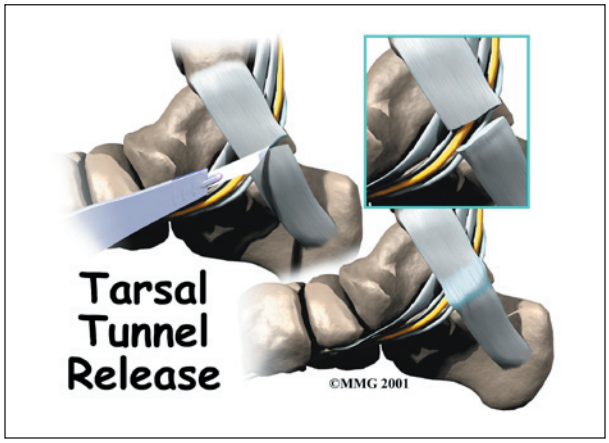
A cortisone injection may give temporary relief of symptoms. The cortisone is injected into the tarsal tunnel so that it bathes the nerve and other tissues. This may decrease the inflammation and swelling of the tissues in the tarsal tunnel and reduce the irritation on the nerve.

If your symptoms fail to respond to nonsurgical treatments, surgery to relieve the pressure on the tibial nerve may be suggested.

Surgery

The procedure to release the flexor retinaculum can usually be done using either a spinal type anesthetic or a general anesthetic. Once you have anesthesia, your surgeon will make sure the skin of your leg and ankle are free of infection by cleaning the skin with a germ-killing solution.

The surgeon then makes a small incision in the skin behind the inside ankle bone (medial malleolus). The incision is made along the course of the tibial nerve where it curves behind the malleolus. The nerve is located and released by cutting the flexor retinaculum. The surgeon will then surgically follow the nerve into the foot, making sure the nerve is free of pressure throughout its course.



The flexor retinaculum is left open to give the nerves more space. Eventually, the gap between the two ends of the flexor retinaculum fills in with scar tissue. Following surgery, the skin is repaired with stitches.

This surgery can usually be done on an outpatient basis, meaning you can leave the hospital the same day.

Rehabilitation

What should I expect after treatment?

Nonsurgical Rehabilitation

If your doctor recommends nonsurgical treatment, you should begin to see some improvement in your symptoms within a few days. Anti-inflammatory medications may take up to seven to 10 days to become effective. A cortisone shot usually works within 24 hours. Alterations to your shoe wear, such as using orthotics, may take several weeks to have an effect.

Patients with tarsal tunnel syndrome may also benefit from physical therapy treatments. Your therapist can design stretching exercises to improve flexibility in the calf muscles and to encourage the tibial nerve to glide within the tarsal tunnel.

Treatments directed to the painful area help control pain and swelling. Examples include ultrasound, moist heat, and soft-tissue massage. Therapy sessions sometimes include *iontophoresis*, which uses a mild electrical current to push anti-inflammatory medicine to the sore area.

After Surgery

Pain and symptoms generally begin to improve with surgery, but you may have tenderness in the area of the incision for several months after the procedure.

Your ankle will be supported in a plaster splint for 10 days after surgery. During this time, you may also be instructed to use crutches to keep from placing weight on your foot while you stand or walk.

Take time during the day to support your leg with the ankle and foot elevated above the level of your heart. You are encouraged to move your ankle and toes occasionally during the day. Keep the dressing on your foot until you return to the doctor. Avoid getting the stitches wet. Your stitches will be removed 10 days after surgery, at which time you will switch to a supportive walking boot.

Your surgeon may have you attend physical therapy sessions for up to eight weeks after surgery. Full recovery could take several months. You'll begin by doing active movements and range of motion exercises for the ankle and toes. Therapists also use ice packs, soft-tissue massage, and hands-on stretching to help with the range of motion. When the stitches are removed, you'll begin doing exercises to help strengthen the muscles that support the ankle and arch. Therapists also use special stretches to encourage the tibial nerve to slide inside the tarsal tunnel.

Some of the exercises you'll do are designed to get your leg and ankle working in ways that are similar to the activities you do every day, such as rising on your toes, walking, and going up and down stairs.

Your therapist will help you find ways to do your tasks that don't put too much stress on your ankle and foot. Before your therapy sessions end, your therapist will teach you a number of ways to avoid future problems.

Notes