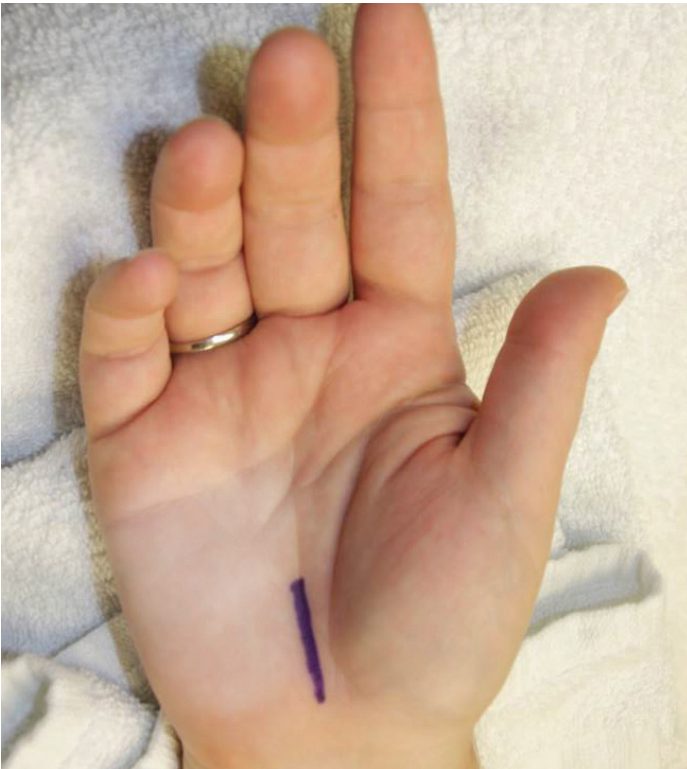
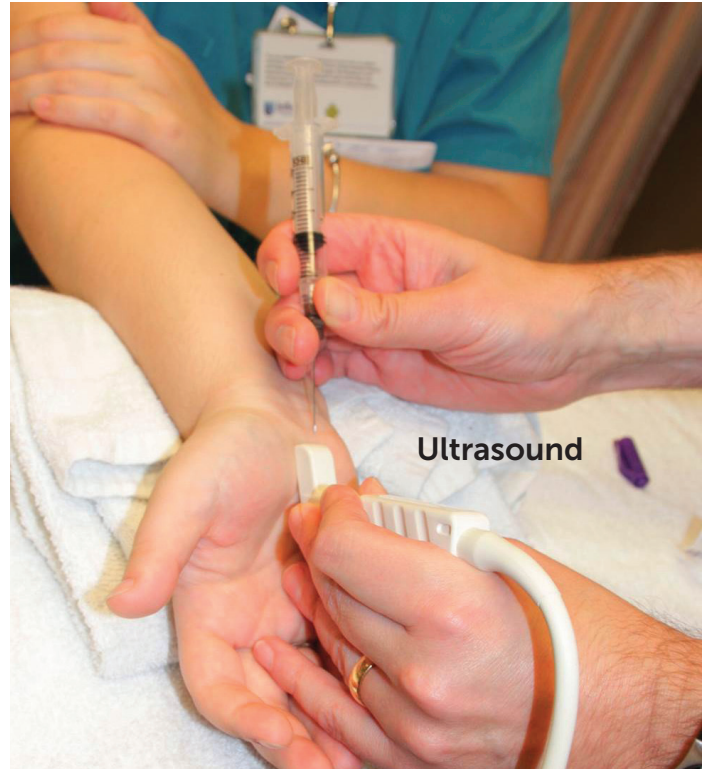


# Research & Innovation

## A Sound Treatment for Carpal Tunnel



Plane where transverse carpal ligament compresses the median nerve.



Simulated needle carpal tunnel release.

**By Levon Nazarian, MD**

Carpal tunnel syndrome (CTS) is a common medical condition that causes pain, numbness and tingling in the wrist and hand. Estimates show that one out of 20 people in the U.S. suffer from this condition—three of every four are women. About 3 million new work-related cases are added every year. Because the condition can be disabling, CTS is a major public health problem.

The symptoms are created by excessive pressure on the median nerve in the wrist. The underlying cause may be hard to identify, but CTS is more common in people who perform work that involves repetitive use of the

hand; have conditions such as obesity, pregnancy or rheumatoid arthritis; or have had a prior wrist injury.

There are various treatments for CTS such as physical therapy, splinting and corticosteroid injections. These treatments can be effective, but some patients eventually need surgical intervention. The goal of surgery, so-called “carpal tunnel release,” is to relieve pressure on the median nerve by cutting the transverse carpal ligament (TCL), which runs over the nerve.

Although carpal tunnel release is generally successful, it is more desirable to release pressure on the median nerve without surgery. One non-invasive technique for doing so, called “ul-

trasound-guided percutaneous needle release of the carpal tunnel,” has been developed at the Jefferson Center for Diagnostic and Interventional Musculoskeletal Ultrasound. The median nerve and the TCL are extremely well visualized by ultrasound, so that the ultrasound image guides the treatment, making surgical incision unnecessary.

The procedure is performed in the outpatient office with the patient wide awake. With local anesthetic, the patient feels very little discomfort. The area over the skin is prepped and draped in the usual sterile fashion. A skinny needle is inserted into the skin and guided into the TCL with direct real-time ultrasound visualization.

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The TCL is repeatedly punctured with the needle tip. After 25-30 perforations, the ligament is sufficiently softened so that it is no longer pressing on the median nerve. The needle is removed and a Band-Aid is placed over the site.

After the procedure, the patient's hand is numb for several hours, sometimes until the next day. There is very little post-procedure pain, and complications are rare. Generally, within 1-2 weeks, patients notice significant

improvement in their carpal tunnel symptoms, which can last months or years. We feel that the results are similar to those achieved by surgery with much less cost and invasiveness. If the procedure is not successful or the effects wear off, it can easily be repeated. There is still the option to have traditional surgery, although in our preliminary study on the technique, we were able to prevent surgery in 94 percent of patients.

Jefferson offers a minimally inva-

sive alternative to surgery that uses ultrasound to guide treatment of patients who suffer from carpal tunnel syndrome. This is only one example of many breakthrough procedures performed at the Jefferson Center for Diagnostic and Interventional Musculoskeletal Ultrasound, where innovative treatments are constantly being developed to treat painful and debilitating conditions.



Levon Nazarian, MD is Professor of Radiology and head of the Jefferson Center for Diagnostic and Interventional Musculoskeletal Ultrasound. He is an expert at using ultrasound imaging to diagnose and treat a variety of problems involving joints, muscles, tendons and ligaments, including carpal tunnel syndrome. For more information about Carpal Tunnel treatments, please contact Dr. Nazarian at [levon.nazarian@jefferson.edu](mailto:levon.nazarian@jefferson.edu) or 215-955-4916.