Thomas Jefferson University Hospital
October 2003
Contemporary Medicine
ORTHOPEDICS

Jefferson Offers Speedy Less-Invasive Treatment for Tennis Elbow, Other Troublesome Tendon Problems

From left, Drs. John McShane and Levon Nazarian guide ultrasound along the arm of patient Jason Luzak, camp director for the former Philadelphia Charge women's soccer team, in order to diagnose Luzak's tendon problem.

Athletes and non-athletes are prone to chronic tendon problems commonly known as "tennis elbow," "jumper's knee," Achilles tendon, plantar fasciitis, and many others. Caused by a wide variety of activities, these problems can range in severity from merely annoying to completely debilitating. In extreme cases, they can cause individuals to be unable to perform their jobs, pursue their favorite sports and even manage their daily lives.

"Chronic tendon problems tend to be very difficult to treat," says Jefferson Hospital Family Medicine/Sports Medicine specialist John McShane, MD, Clinical Assistant Professor of Family Medicine at Jefferson Medical College of Thomas Jefferson University. "People with these conditions often suffer for many years without relief."

Traditional non-invasive treatment approaches for chronic tendon problems, including activity moderation, splinting or immobilization, steroid injections, and anti-inflammatory medication, have been imperfect. Either they do not fully remedy the problem, or they entail major orthopedic surgery and long recovery periods, says Jefferson Hospital ultrasound specialist Levon N. Nazarian, MD, who is an Assistant Professor of Radiology at Jefferson Medical College of Thomas Jefferson University.

Sports Medicine and Imaging Team Up in Minimally Invasive Treatment

Now, a new procedure developed by Drs. McShane and Nazarian combines sports medicine and imaging to offer a quicker, minimally invasive treatment for chronic tendon problems.

"It provides effective treatment for patients who may not have been able to get relief before, with minimal disruption to their life," says Dr. McShane, who specializes in sports medicine at the Rothman Institute at Jefferson and is Assistant Director of Medical Services for the Philadelphia Phillies.

Drs. McShane and Nazarian use diagnostic ultrasound to better visualize abnormal tendons, identify areas of the tendon containing scar tissue, and determine if the scar tissue is infiltrated with calcification. "Once we see the abnormality on the ultrasound, we can make a diagnosis right away and tell exactly what is wrong. Additionally, we can treat the problem immediately," says Dr. Nazarian.

MRI vs. Ultrasound

Traditionally, physicians have used magnetic resonance imaging (MRI) to assess problem areas. "But we've found that ultrasonography provides a very accurate look," says Dr. McShane. "In fact, in many ways, ultrasonography is preferable to MRI. It's quicker and more cost-efficient."

What's more, points out Dr. Nazarian, "Because the ultrasound examination is performed in real-time, any abnormalities can be directly correlated with the physical examination."

Dr. McShane agrees. "The advantage is that it's very dynamic. We can quickly and easily view one elbow and then the other, for example. If we see something that's not normal, we can go back to the other side and confirm the differences. We can also move the limb around during the study, as well as ask the patient to contract his or her muscles or resist movement. We can ask the patient to turn the joint to a particular position so that we can see what things look like when in use. MRI provides us with only a static photo."

The Procedure

To treat the identified problem, local anesthesia is administered. Then, with the guidance of ultrasound, a needle is inserted into the areas that contain scar tissue. "We use the needle to break up and puncture the scar tissue and smooth any bony calcification that we find," says Dr. McShane.

The procedure is usually completed with an injection of cortisone-like medication into the area. "The procedure encourages blood vessels to enter the area and enables the body to dissolve the scar tissue and lay down new, healthier tissue," notes Dr. Nazarian.

The entire new less-invasive procedure takes between five and 15 minutes. Patients are awake and can comfortably watch.

Afterwards, Dr. McShane explains, patients may be outfitted with a splint or brace. Stretching and physical therapy may help tissue to become more elastic and lengthened.

The doctors have seen great success to date. In December at the 88th Scientific Assembly and Annual Meeting of the Radiological Society of North America (RSNA) in Chicago, they reported results of a trial of 400 individuals who had various tendon, muscle and ligament injuries, including tennis elbow, golfer's elbow, jumper's knee, hamstring and rotator cuff injuries and Achilles tendon problems. They had not responded to more conservative therapies such as medication, bracing, physical therapy or rest, and had been living with symptoms from three months to 15 years.

Many of the patients who participated in the trial were able to resume athletic and other activities after 12 weeks, Dr. Nazarian says. Approximately 65 percent of the study participants (151 males, 155 females, ages 13-82) reported improvement.

Jefferson Family Medicine/Sports Medicine specialist Marc I. Harwood, MD, of the Rothman Institute at Jefferson, was also an author on the study.

Ultrasound Can Help Detect Ligament Wear and Tear in Major League Athletes, Says **Jefferson University Hospital** Study

For years, professional and weekend athletes alike have sustained injuries occurring in the main ligament on the inner side of the elbow called the ulnar collateral ligament (UCL). Major league baseball pitchers to javelin throwers' repeated overhand throwing causes stress and tension in the elbow that can lead to significant damage.

Now, a new study by radiologists and sports medicine specialists at Thomas Jefferson University Hospital and Jefferson Medical College has shown that diagnostic ultrasound can help detect wear and tear that occurs in the UCL. Levon N. Nazarian, MD, and John McShane, MD, used dynamic sonography to reveal the abnormalities of the anterior band of the UCL in 26 major league professional baseball pitchers. They reported their results in April 2003 in the journal *Radiology*.

"Our study shows the wear and tear that occurs on the UCL in baseball pitchers, even those who have no symptoms," says Dr. Nazarian. "This information can then be used as a baseline for comparison if the pitcher injures himself. We then re-image the elbow to see if any changes have taken place and decide if the pitcher needs surgery or other treatment."

Small tears in the ligament can eventually grow into one large tear. This could ultimately produce so much damage that the ligament is unable to hold the bones together strongly enough while the pitcher is throwing.

This approach shows potential to predict who is at higher risk for injury. However, Dr. Nazarian points out that long-term studies would be necessary before any conclusions could be drawn.

Chronic Tendon Problems

Although chronic tendon problems tend to be associated with active sports, a large percentage is related to work activities or daily living. "People who perform repetitive tasks at work are subject to stress injuries to their tendons," says Dr. McShane. "Additionally, people who have had a non-sports injury, such as a twist, a fall, or a car accident, are prone to tendon problems.

Tendons are vulnerable to normal wear and tear as people age. Over time, tendons become subject to tiny breaks and tears in their fibers.

"When the tendon is overused, strained, or injured, some of the tendon tissue gets replaced with thick, dense scar tissue instead of normal elastic tendon tissue," Dr. McShane says. Because scar tissue occurs right at the location where the tendon attaches to the bone, when the muscle contracts, the remaining normal tendon pulls on this tissue that then pulls against the bone, causing pain. This discomfort often is associated with swelling, tenderness and grating sensations.

Dr. McShane is optimistic that the new procedure will become more widely used in the future. "We've been very pleased with the results we have seen in tendons all over the body, including the foot, ankle, knee, elbow and shoulder," he says.

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