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Zapping Chronic Tendon Pain

Sound waves, not scalpels, now treat tennis elbow, heel spurs.

Patients suffering from debilitating tennis elbow, heel pain, and other chronic tendon injuries often face an unpleasant last resort when they fail drug therapy and rehab—the knife. But now, doctors at The Cleveland Clinic have developed a shocking new way to relieve their pain.

Extracorporeal shock wave therapy (ESWT) is a non-surgical procedure that replaces the scalpel with powerful acoustic waves. The exact mechanism remains unclear, but it's believed that the sound waves destroy the damaged tissue and increase blood flow, provoking the body to heal itself. There are no incisions, no stitches, and patients can resume normal activity in just a day or two. ESWT is similar to lithotripsy, a shock-wave procedure developed in Germany and used since the 1980s to break up kidney stones.

"Shock-wave therapy is fantastic," says Dr. Robert Dimeff, medical director of sport medicine at The Cleveland Clinic Foundation. "It is certainly the best treatment that has been developed since I've been in practice."

No pain, no gain

There are two types of shock-wave therapy: low-energy and high-energy. Low-energy therapy (.04-5.0 millijoules) is anesthesia-free and performed once a week for three weeks. Sonocur, the low-energy shock wave device currently used by The Cleveland Clinic, is FDA-approved for tennis elbow, a painful swelling of the tendons caused by repetitive use of the arm. (It can also be used to treat other tendon problems.)

During the procedure, the patient receives approximately 2,000 pulses in less than 20 minutes. Since no anesthesia is administered (to enable the doctor to focus the beam on the inflamed area—"where it hurts"), the procedure can be uncomfortable. "The pain level can literally take the person's breath away," admits Dr. Dimeff, "but the pain becomes more tolerable as the patient proceeds through the treatment. Most patients are apprehensive the first time, but by the second treatment they will typically say 'Oh yes, that's the spot.'"

Many patients notice immediate improvement after a single treatment; others may not see improvement until after the third session. Pain-level improvement will usually continue as the patient keeps up prescribed maintenance exercises.

High-energy healing

High-energy shock wave therapy is a one-time, 10-minute treatment. OssaTron, a high-energy device that The Cleveland Clinic plans to obtain, recently gained FDA approval for the treatment of tennis elbow and severe plantar fasciitis, a common foot ailment often referred to as heel spurs. Like the low-energy Sonocur, the OssaTron delivers thousands of shocks to the injured area, but its pulses are much more powerful. As a result, general anesthesia is required.

There have been no comparison studies that show one energy level to be more effective than the other, but research at

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WHO'S A CANDIDATE

Extracorporeal shock wave therapy is recommended for patients who have had chronic pain for six months or more and who have failed at least three of the following non-surgical therapies:

- Activity modification
- Strapping
- Ice
- Wrist Bracing
- Medication
- Cortizone injections
- Stretching and strengthening exercises

Avoid shock therapy if you...

- Are taking blood-thinning medications or drugs that prolong bleeding
- Have a cardiac pacemaker
- Are pregnant
- Have received a steroid injection within the past six weeks
- Are younger than 18 years of age

In addition, ESWT's safety and effectiveness has not been established for those with nerve damage, diabetic neuropathy, osteoporosis, rheumatoid arthritis, and severe peripheral vascular disease.

(Sources: FDA, American College of Foot & Ankle Surgeons)

HealthTronics, which developed the OssaTron, suggests that high-energy shock wave therapy works just as well as open surgery. What is clear is the dramatic decrease in patient recovery time. Instead of a month and a half of the painful rehabilitation associated with invasive surgery, shock-therapy patients are pain-free within two to three weeks.

"These are good therapies for a problem we've had a hard time dealing with for years," says Dr. Dimeff. "We finally have something that's new, that's relatively non-invasive, and that can be very effective."

Shock-wave therapy is also being studied for use in rotator cuff injuries, Achilles tendonitis, patellar tendonitis (a knee disorder common in basketball players), and non-unions of long-bone fractures. In a recent study published in the Journal of the American Medical Association, investigators examining shock-wave therapy for calcifying tendonitis around the shoulder found that during most follow-up visits, shock-wave therapy, especially the high-strength type, was associated with improvements in pain and reductions in deposit size. They noted few side effects.

What to expect

Shock-wave therapy is not for the recently injured. These are treatments for patients who have exhausted all other options, people who have gone through mountains of medication and hours of physical therapy. If you meet the criteria (see box), your doctor will perform a full exam and order X-rays to pinpoint the pain and ensure your diagnosis is correct.

During treatment, the patient is placed in a comfortable position. A conductive gel, similar to that used during a prenatal exam or echocardiogram, is applied over the injured area. (If receiving high-energy therapy with general anesthesia, the patient will be asleep during the procedure.) The gel makes it easier for the shock waves to enter the body. The head of the device is then positioned over the pre-marked treatment area. With a push of a button, the machine gives off a preset number of pulses, or shock waves.

Although it's not common, post-treatment pain, bruising, and swelling can sometimes occur. If so, these conditions will last no more than a few days.

Treatment costs

Shock therapy comes at a shocking price. Low-energy therapy costs \$300-\$700 a session; high-energy treatments vary widely—from \$3,000 to \$7,000. Keep in mind that even though high-energy therapy is promoted as a one-time procedure, some patients may require two treatments.

Medicare pays for shock therapy, but coverage by other insurance carriers can be sporadic. Experts believe that as the procedure becomes more widely available, insurance carriers will realize that costs associated with shock therapy are much less than those associated with six months of physical therapy, medication, and lost work time.

"Once costs come down and the insurance companies start to provide for the care," says Dr. Dimeff, "you'll see more and more people choosing this procedure."



OssaTron's high-energy shock-wave system increases blood flow to stimulate healing of patients with tennis elbow or heel spurs. Anesthesia, in this case, is needed.

Sonocur system administers low-energy pulses of sound at the elbow to reduce pain. The procedure is performed without anesthesia in a doctor's office.



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