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Not surprisingly, in both men and women, older golfers report more low back injuries than their younger competitors. Low-handicap golfers tend to experience higher rates of injury than high handicappers, perhaps due to more frequent play and practice. Realistically, all golfers have some risk, although the factors contributing to this risk can be modified.

Swing bio-mechanics is a critical factor. Maintaining a straight upper back with appropriate hip and knee bend are important fundamentals that also reduce the stress on the spine. Replacing the “Reverse C”—popular in the classic



swing that emphasized backward bending in the follow-through—with the more modern upright finish posture, minimizes stress on the low back. “Overswinging” a reverse-pivot at the top of the backswing, or a lack of flexibility in the hips, may also lead to added stress on the back.

If you cannot easily cross your legs or put on your shoes or touch the floor with your knees straight, your inflexibility may affect your performance and increase your risk of injury. The hamstring muscles and the muscles that rotate the hips are among the most important to stretch. Maintaining abdominal strength is also extremely

important. The abdominal muscles both stabilize and support the spine as well as control rotation and twisting.

It is important to progress through the various clubs while striking balls on the range to adequately warm up. Prior to teeing off, the major muscle groups of the arms and legs should be strengthened, also. Remember that warm muscles are more effectively stretched than cool ones. The most crucial method of reducing injury is maintaining a balance of strength and flexibility—even off the course. ▼

Meet Our Physicians

- Paul J. Tsahakis, MD
- Mark B. Hartman, MD
- Robert B. Giedraitis, MD
- Frank E. Lorch, MD
- Joseph P. Zuhosky, MD

TOTAL DISCOVERY

VOLUME 2



WINTER 2006

A PATIENT'S PERSPECTIVE: Pain Relief Without Surgery

by Heather Cone



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In 1989, I was involved in a serious automobile accident that caused a compression fracture in my lower back. Since that time, although I had undergone many types of surgical and non-surgical treatments, I had been living with almost constant pain.

People told me I should feel lucky that the accident didn't leave me paralyzed, so it was difficult to get anyone to truly understand the pain I was always experiencing. But it affected everything about my life. I couldn't even sleep through the night because something as simple as turning over in bed caused excruciating pain. The first part of every day just after getting out of bed was almost unbearable.

I first went to see Dr. Zuhosky of Total Spine Specialists a few years ago. We tried several different therapies, including epidural steroid injections and oral steroids.

They sometimes provided temporary relief, but the pain would always come back. We talked about fusing the injured vertebrae (a procedure that had been performed right after the accident), including the vertebrae above and below the original injury, yet it would have severely restricted my mobility for the rest of my life.

Dr. Zuhosky also explained the IDET procedure (intradiscal electrothermal therapy, described in detail on page 2). He was very candid with me and said that the therapy was only about 50 percent successful. I told him that even 50 percent improvement was a lot better than continuing with the pain I was living with.

The procedure was performed in November of 2002. I had to have the electrothermal process done for two different discs, and there was a lot of scarring from previous surgeries, so it lasted longer than the typical procedure. I wore

a corset brace initially and had to stay off my feet for a while. After eight weeks I started physical therapy and was able to return to work by January.

Now, I feel fantastic. I work out nearly every day and have lost almost 50 pounds. That's something I couldn't have dreamed of doing a couple years ago. I still have occasional flare-ups if I sit or stand for too long, but I would say that the improvement is at least 90 percent. The IDET procedure was the only treatment ever explained to me that gave me hope of being able to return to somewhat of a normal life.

Obviously, I had a great experience with Dr. Zuhosky and Total Spine Specialists. He was always very straightforward in discussing my condition and treatment options. Because of him, my life is very different now. ▼



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INTRADISCAL ELECTROTHERMAL THERAPY (IDET)

Relieving Pain Without Fusion

by Joseph P. Zubosky, MD

Chronic “discogenic” pain represents one of the most difficult conditions seen by a spine specialist. These patients have limiting symptoms of pain—generally in the low back—presumed to result from an internal derangement within the nucleus pulposus of the disc or its outer fibers, the annulus fibrosus. The cardinal feature is disruption of the annulus fibrosus, seen as a high intensity zone on magnetic resonance images (MRIs). These patients generally experience greater pain when sitting as opposed to standing or walking, and the pain is usually intense for the first 30 minutes of each day. Pain also increases when:

- rising from a seated position
- coughing or sneezing
- lifting a weight away from the body
- bending or twisting at the waist

Until recently, a fusion represented the only viable treatment option. Because this procedure has a variable success rate and results in loss of mobility and rapid progression of degenerative changes at adjacent levels, alternative treatments have been sought for many years. IDET represents a cutting-edge alternative.

IDET is an outpatient procedure performed with conscious sedation. A navigable catheter is placed through an introducer needle into the disc and coiled within the annulus fibrosus. The catheter is heated to 90°C over approximately 17 minutes. IDET theoretically works to: (a) thermally ablate, or destroy, the nociceptive (pain) nerve fibers in the outer third of the disc; (b) thermally coagulate collagen within the annulus fibrosus with remodeling and “stiffening” over time;

and (c) decompress disc material.

In our experience, ideal candidates for IDET have had lumbar pain for more than six months, failed to respond to aggressive, non-operative care including physical therapy, and demonstrated a positive, but non-sustained response to an epidural steroid injection. They also must demonstrate pain reproduction upon provocative discography with a CT discogram, which demonstrates internal disc and annular disruption.

Additionally, the MRI must demonstrate preserved disc height (at least 50 percent of normal height) preferably with high intensity zone or degenerative “black disc,” but no significant disc protrusion or stenosis. The predominant symptoms are sitting intolerance and good standing tolerance. Motivated patients with realistic expectations of improved sitting tolerance, reduced pain and use of pain medications represent the optimal candidates for this procedure.

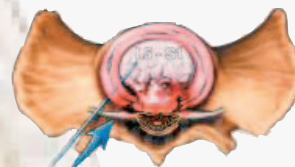
Following the procedure, most patients will return to employment within the first week. A lace-up lumbar corset is worn for the first 6–8 weeks and walking is common after three days (20 minutes a day the first two weeks and increasing as tolerated). Patients may resume driving the day after the procedure, but sitting is restricted to 30–45 minutes for the first two weeks. Typically 8–12 weeks of intensive physical therapy begins six weeks after the procedure.

The research and literature on IDET has consistently shown a statistically significant improvement with its use, but to varying degrees. The most rigorous study by Dr. Kevin Pauza suggests that

approximately 60 percent of carefully selected candidates who meet all of these criteria will realize significant improvements in their sitting tolerance and 50 percent or greater relief of their symptoms. Total Spine Specialists’ experience with this procedure approximates these results.

IDET is a viable alternative to a fusion for patients with longstanding, limiting discogenic pain. It is important to keep in mind, however, that a very small percentage of patients will turn out to be ideal candidates for this procedure. Patient selection remains a crucial component for successful results. ▼

Source: Intradiscal Electrothermal Treatment for Chronic Discogenic Low Back Pain. Prospective Outcome Study with a Minimum 2-Year Follow-up. *Spine* 2002; 27:966–974.



1. A needle is inserted into the disc material and an electrode is passed through and coiled.



2. The electrode is manipulated to cover the defect and high temperature is applied.



3. After the disc is lesioned, the electrode and needle are removed.

Low back pain can be relieved by Intradiscal Electrothermal Therapy.

THE ABCs OF IMAGING

Diagnosis with Magnetic Resonance Imaging and Computed Tomography

by Joseph P. Zubosky, MD, Frank E. Lorch, MD, Robert B. Giedraitis, MD

Advanced imaging technologies play a vital role in the diagnosis and treatment of patients with spinal problems. The most widely used advanced imaging technology is magnetic resonance imaging, or MRI. Like any imaging option, the MRI has certain strengths and weaknesses. Understanding the basics of how an MRI works allows a healthcare provider to intelligently decide whether or not it is the most appropriate test for a particular condition or complaint.

The human body has many elements and one of the most plentiful is hydrogen, which has a nucleus with an odd number of protons and neutrons. Researchers theorized that placing a human body in a magnetic field would cause the charged hydrogen atoms to “align” along the magnetic field. These same atoms can be temporarily “energized” when bombarded with radio waves. When the radio wave pulse is discontinued, the energy is released.

In the human body, different tissues have different numbers of hydrogen atoms that release energy at different rates and amounts. An MRI is a complex array of magnets and radio wave coils that magnetize and send radio wave pulses through the human body at programmable strengths, rates and pulse lengths.

There are two basic pulse sequences, T1 and T2. T1 pictures are often referred to as “fat images” because they better depict adipose tissue. T2 pictures are termed “water images” because tissues with greater fluid content are better visualized. Conditions with higher water content such

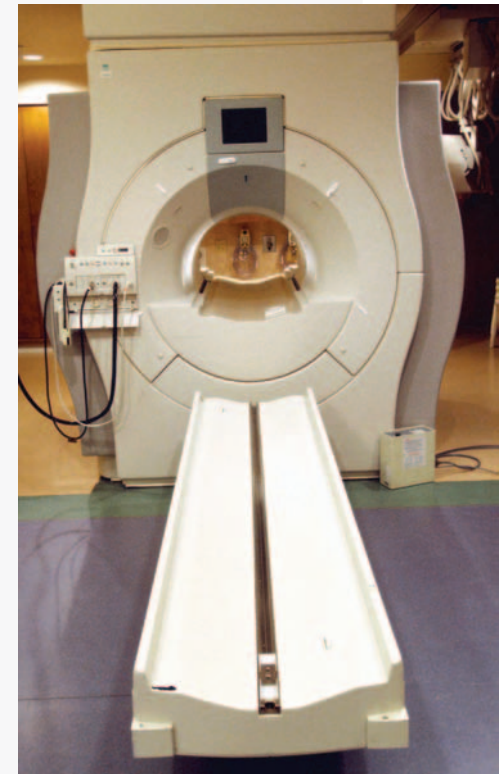
as edema, tumors and infections are, in most cases, better visualized on T2 images.

In order to “light up” the hydrogen atoms surrounding abnormal or damaged tissue for better MRI visualization, technicians use gadolinium, a non-iodinated contrast that decreases T1 relaxation time. When tumor or infection is suspected or when there has been previous surgery in the region under study, gadolinium should be requested to increase the diagnostic yield of the MRI.

In the evaluation and treatment of spine-related disorders, an MRI is usually used to visualize disc pathology such as a ruptured disc and annular tears. In addition, the spinal cord, marrow, soft tissues/muscles, scar tissue and most tumors and infection are best visualized with MRI.

Due to the relatively low hydrogen content of bone, osseous structures do not show up as well with MRI. CT scanning is considered the best imaging technology for assessment of bony abnormalities, the neuroforamen, and some foraminal disc herniations. CT scanning in the cervical spine allows optimal visualization of the neuroforamen but must be performed with intravenous contrast to distinguish pathology from nearby vasculature.

At Total Spine Specialists, we are committed to reviewing and interpreting complex imaging studies with our patients. Please call us to discuss the most appropriate imaging choices available today. ▼



In 2003, there were approximately 10,000 MRI units worldwide and approximately 75 million MRI scans per year performed.

PHYSICIANS’ TIPS: Back in the Swing of Things

by Paul J. Tsahakis, MD
and Mark B. Hartman, MD

In recent surveys of professional and amateur golfers, low back pain due to disc injuries was the most commonly cited obstacle to achieving peak performance. The discs of the spine serve as cushions between the vertebra or bones. Flexion, bending and rotation of the back are critical to generating power in the golf swing; however, they also place significant stress on the discs in the lumbar spine. This repetitive flexion and rotation can aggravate or cause injuries such as a disc herniation or annular tear.

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