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Midwest Spine Institute

INTEGRATED APPROACH TO
SPINE CARE AND INTERVENTIONAL
PAIN MANAGEMENT

RUITERMANN M.D.

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INTEGRATED APPROACH TO SPINE CARE AND INTERVENTIONAL PAIN MANAGEMENT

By Marian Deegan

MOST PEOPLE WITH spine-related pain knows that Schopenhauer's theory of pain as the enemy of human happiness is more than philosophic conjecture. Spine problems can hamper movement, restrict activity, impair work performance, impact personal relationships and diminish quality of life. Physical pain can be compounded by the apprehension with which some patients view the complexities of spine diagnosis and intimidating surgical procedures.

The orthopedic spine surgeons and interventional pain physicians at the Midwest Spine Institute understand these concerns and work collaboratively with patients to design a comprehensive treatment program with an emphasis on conservative care. Midwest Spine Institute's practice is distinguished by its integration of spa-like interventional pain centers within its four main locations. Interventional pain physicians at Midwest Spine Institute are specialty-trained anesthesiologists or physical medicine and rehabilitation physicians who have also completed a fellowship in interventional pain management. In addition to its integrated clinics, Midwest Spine Institute offers a number of outreach locations for patient visits with spine surgeons.

"The overall approach of our group," says Louis Saeger, M.D., interventional pain physician based in Midwest Spine Institute's Stillwater clinic, "is to address spine-related problems comprehensively, while managing patients in the most conservative and appropriate manner. The spine issues we see most frequently involve disc herniations, straining injuries like whiplash and degenerative conditions such as spinal stenosis. Research indicates that up to 85% of patients with disc disruption and sciatica can successfully be managed conservatively with nonoperative treatment. Whenever appropriate, we look for ways to control pain and return function without surgery.

"Interventional procedures are integral to patient care," he continues. "By incorporating pain centers into our comprehensive spine practice, we are able to preserve continuity of care, enable efficient access to records and ensure familiarity with the patient's history. Many times, as people's clinical trajectory unfolds, their treatment plans are modified accordingly. This is easier to do when



Louis Saeger, M.D., is shown positioning a water-cooled radiofrequency probe, used to treat sacroiliac joint pain by coagulating the lateral branch nerves that innervate that joint. This advanced radiofrequency technique produces a larger zone of thermocoagulation, making it feasible to ablate nerve branches that are more variable in their anatomic location.

all of the records are integrated. I can communicate directly with the surgeons and can readily review what the patient expressed in the initial consultation visit as well as follow-up visits. There is a nice continuity. We have an exceptional team who take great pride in caring for patients by offering conscious sedation to make procedures more pleasant and providing a treatment experience that is calming and non-threatening."

As an anesthesia resident at the University of Washington, Dr. Saeger studied with John Loeser, M.D., a pioneer neurosurgeon in the field of spinal cord stimulation (SCS), using technology derived from very similar electrophysiological modalities pioneered in pacemaker technology. SCS is one of the pain treatments offered at Midwest Spine Institute, for patients with classic postlaminectomy syndrome and low back pain.

"Advances in technology allow us to better isolate the spinal cord area being stimulated, focus the current and fine tune the quality of the stimulation to make it more pleasant," Dr. Saeger explains. "The advent of rechargeable generators means that power sources no longer have to be replaced every three to five years. Today, we can program multiple arrays of electrode contacts so that the stimulation is focused to penetrate the cord more deeply and better address not only sciatica, but also low back pain of a neurogenic nature. These stimulation treatments are expanding to address complex regional pain syndrome, or RSD, other nerve-injury syndromes and chronic pain for shingles."



The success of SCS treatments is dependent on the skill and care taken to position and anchor the leads correctly to prevent slipping or migration. “This treatment is not for every patient,” Dr. Saeger cautions. “We screen patients carefully and are very selective about recommending this procedure.”

Another procedure offered by Midwest Spine Institute is a radiofrequency (RF) neurolysis, also known as RF ablation. This treatment coagulates the protein inside the nerve for pain relief. By applying high-frequency energy, nerve tissue is heated just enough to destroy nerve conduction for six to 24 months. The technique is used on peripheral nerves, such as those affecting the facet joints, and on discrete sensory cell bodies, including the dorsal root ganglia of the peripheral nerve roots and the trigeminal ganglion of the cranial nerves. Sympathetic nerves, including the grey ramus communicans for spine compression fracture pain treatment and splanchnic nerve for abdominal pain, are also amenable to the RF ablation procedure. In order to insure accuracy and address the significant placebo response, RF ablation procedures are preceded by two kinds of local anesthetic diagnostic blocks on two separate occasions to insure a consistent

and highly positive response and an estimated 80% reduction in pain.

“This is a treatment that may be repeated,” says Dr. Saeger. “It offers patients pain control over an extended period of time. When we are treating injuries like whiplash, which don’t respond very well to steroid injections, RF ablation can be a very good option.”

For patients with conditions that do require surgical intervention, Midwest Spine Institute offers a variety of advanced surgical treatments. One of these treatments is a relatively new annular disc repair technique that enables repair of the hole through which a disc herniates, reducing risk of reherniation and maintaining the shock absorption effect to afford better range of motion for the patient and help prevent the disc from collapsing.

“Studies show that there is a 5-10% lifetime chance of reherniation after surgery for lumbar spine disc herniation,” says Glenn Buttermann, M.D., spine surgeon, research physician and international lecturer with Midwest Spine Institute. “We’ve been using an annular repair device for about a year. Disc annulus heals by scar formation, which is not as strong as the original tissue. A device, developed by a local Minnesota company, pulls the edges of the annulus together, making the hole smaller to reduce the rate of reherniation. Lower reherniation rates translate to less patient time off work and long-term reduced health care costs.”

The Midwest Spine Institute established a research division to promote the continued advancement of treatments for spinal injuries and disorders. Midwest Spine Institute participates in clinical trials and basic scientific research, and its physicians have authored numerous peer-reviewed articles. Dr. Buttermann spends several days each month in research activities with special focus in total disc replacement (TDR) and motion preservation for degenerative, trauma and deformity conditions.

Midwest Spine Institute is currently participating in a clinical FDA trial to evaluate the NuBac Nucleus Replacement Device. Axial discogenic pain in the low back is the indication for the procedure, which involves making a small hole in the annulus, cleaning out the nucleus thought to be the source of the pain and replacing it with a device that can rotate, swivel and tilt. The system is intended to help relieve back pain while preserving the natural motion of the disc. In this clinical trial, Dr. Buttermann and Thomas Rieser, M.D., are comparing the safety and effectiveness of the NuBac Nucleus Replacement Device to a competitive total disc replacement procedure.

“This particular study has a very narrow indication,” explains Dr. Buttermann. “It can only be used for degenerative disc disease at L4-5. I was initially a skeptic with regard to TDR, but now am very supportive with our outcomes going on to four years follow up. Cervical TDR patients have a trend for less pain and disability than fusion patients and none have had reoperations. Lumbar TDR patients have done significantly better than fusion patients and also have not required reoperation. It will be interesting to see how a nucleus replacement fares.”

With his commitment to advances through clinical research, Dr. Buttermann is looking forward to the development of hybrid devices to preserve motion in the anterior and posterior spine. “I think disc replacements are here to stay,” he says. “However, the challenge with current disc replacements on multiple levels is that

Glenn Buttermann, M.D., in the process of preoperation planning for a cervical disc replacement.





Standing (L-R): Stefano M. Sinicropi, M.D. (spine surgeon); Glenn R. Buttermann, M.D. (spine surgeon); Louis C. Saeger, M.D. (interventional pain physician); Daniel W. Hanson, M.D. (spine surgeon); Thomas V. Rieser, M.D. (spine surgeon). Seated: Mark A. Janiga, M.D. (interventional pain physician), and Mark K. Yamaguchi, M.D. (interventional pain physician).

they can cause instability due to extensive soft tissue disruption. We need a treatment that allows physiologic motion. Historically, many scoliosis procedures were handled with fusion of the anterior and posterior spine. I believe there's a realistic possibility that in the next quarter century, we'll see a motion-sparing device utilizing a front and back approach to the spine that is applicable to patients with multilevel conditions and abnormal spinal curvatures."

Expertise in advanced interventional pain treatments and sophisticated surgical techniques are expected in a specialty spine practice, but at Midwest Spine Institute, attention to patient well-being extends beyond clinical care. Dedicated historians contact new patients to capture their story before they arrive for their first visit. In monthly cases conferences, Midwest Spine Institute's surgeons and interventional pain physicians consult with one another on patient treatment plans. Documented patient outcomes provide continuity throughout the care cycle.

The monthly case conferences present complicated or unusual patient cases to the surgeons and interventionists. "Many of the interventions we do are primarily for diagnostic purposes," explains Dr. Saeger. "Selective nerve blocks or provocative procedures can help define the pain generator from normal spondylosis. Our process in clinical conferences is important in the sense that we collaborate together in our approach to the 'interrogation of the spine.' Diagnostic tests can guide decision making about the most appropriate treatment. Unlike many practices, our community-based practice routinely tracks patient outcomes. Our hand-in-glove collaboration is one of the most unique and rewarding aspects of our practice."

"This type of case management is the foundation of our practice," says Dr. Buttermann. "We instituted case conferences at Midwest Spine because we felt this was the right thing to do for our patients."

Midwest Spine Institute also uses a medical management agreement with patients. "We are a member of the Institute for Clinical Systems Improvement [ICSI] and support their clinical guidelines," explains Dr. Saeger. "ICSI is an interdisciplinary group founded by a consortium of providers and payers to establish and promote an evidence-based approach to care, incorporating best practices in effect for everything from management of depression and diabetes to back pain and chronic pain. Our patients undergo noninterventional and nonoperative treatment following the guidelines. A few may be treated with opioids, and it is recognized that opioid medications have greater adverse effects and are subject to abuse, diversion, tolerance and dependence issues. National pain societies have suggested medication agreements or contracts be routinely used to address these issues. Our medication agreement is a partnership with our patients so they agree to the medications they'll be taking on a week-to-week basis and understand how to self-manage."

For the physicians at Midwest Spine Institute, returning patients to function without pain is the best reward. "I saw a patient today who told me that he was able to throw a football with his son for the first time in eight months," reflects Dr. Saeger. "It really gives you a great feeling to hear that kind of feedback. When a patient tells us that he has been able to reclaim his life, that is our definition of success." ■



FOR ADDITIONAL INFORMATION about Midwest Spine Institute with office locations in the Twin Cities and western WI, visit our website at MidwestSpineInstitute.com
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