

M.D. NEWS

Special Feature

State-of-the-Art Spinal Surgery Options at Saint Mary's Health Care

By P.L. Mindock

Neurosurgeon Steve Klafeta, MD, has been at the forefront of treatment for degenerative disc disease (DDD) since he joined The Saint Mary's Spine Program two years ago. In March, Dr. Klafeta

performed the first artificial disc replacement surgery in Grand Rapids on a 23-year-old male patient from Grandville, Mich. The U.S. Army soldier ruptured his fifth lumbar disc in Army Reserve training in

Dr. Steve Klafeta performs artificial disc replacement and other technologically advanced, minimally invasive surgical spine procedures at Saint Mary's.



PHOTO BY ANTHONY DUGAL PHOTOGRAPHY



According to Dr. Klafeta, the main benefit of artificial disc replacement over traditional spinal fusion is the preservation of range of motion and flexibility.

2003 and had the protruding disc removed surgically in 2004 before being deployed to Iraq. He subsequently re-injured his back while on patrol near Baghdad in March of 2005 and was returned to light duty stateside. While on convalescent leave in his Michigan hometown, he opted for the disc replacement surgery. The outcome for this young war veteran has been extremely favorable, according to Dr. Klafeta.

Dr. Klafeta, who trained extensively in the clinical trial phase of artificial discs during his residency at Loyola University Medical Center, Chicago, is one of an elite group of surgeons currently certified to implant the devices in Michigan. “The surgical procedure is essentially the same as an anterior lumbar fusion,” he states. “Since more exposure of the disc space is necessary, we use a team approach with a vascular or general surgeon assisting. You have to stretch the iliac arteries and veins to place the correct sized implant which will fill up the entire disc space.” For the artificial disc implants, Dr. Klafeta teams exclusively with Timothy Fitzgerald, MD, of West Michigan Surgical Associates. Dr. Fitzgerald is also the head of Surgical Oncology at Saint Mary’s.

DePuy Spine, Inc. manufactures the Charité artificial disc, which received FDA approval for use in the United States two years ago. The main benefit of the artificial disc replacement over traditional spinal fusion is the preservation of range of motion and flexibility, particularly in younger, healthier patients with no incidence of arthritis. “The artificial disc replacement works best for those with discogenic back pain,” Dr. Klafeta adds. “If they have facet mediated back pain, the facets still move, so they’ll still have pain.”

In addition to the revolutionary artificial disc replacement, Saint Mary’s offers several technologically advanced, minimally invasive surgical spine procedures. Less trauma to muscles, tendons and ligaments during these surgeries results in multiple benefits for patients, including faster recovery time, reduced post-operative pain, shorter hospital stays and diminished blood loss. “Spinal

instrumentation and surgical techniques have evolved in the last several years to give us these less invasive options to use today,” Dr. Klafeta notes.

Minimally invasive spinal fusion techniques and repairs of degenerative discs can be performed using two small incisions less than an inch long. “It’s a remarkably different approach, using a dilating tube rather than the traditional cutting of the muscle off the spine,” Dr. Klafeta says. “This new technique allows the patient to heal much faster. Most only have to be in the hospital for one day, versus five days with conventional surgery, and recovery takes days instead of weeks.” Over 100 of these procedures have taken place at Saint Mary’s over the past two years, according to Dr. Klafeta. “With anterior lumbar fusions, I can effectively place minimally invasive screws into the back without damage to the muscles and causing more pain,” he adds.

These new minimally invasive procedures are contraindicated for patients with diffuse spinal disease, severe central stenosis or those who have had previous surgery on their lumbar spine. In addition to the minimally invasive surgery, Dr. Klafeta often pairs with orthopedic surgeon Scott Russo, MD, performing scoliosis and other spinal reconstructive procedures at Saint Mary’s.

Saint Mary’s Spine Program is a collaborative, multidisciplinary program that encompasses physicians from seven specialties and many other medical professionals representing a number of disciplines. Offering advanced techniques and care approaches, including the minimally invasive procedures, the program has logged a strong track record of satisfactory outcomes.

Dr. Klafeta says he enjoys the level of collaboration that exists between orthopedic spine surgeons and neurosurgeons at Saint Mary’s. Both types of specialists are consulted for patients who are admitted with spine trauma. A multidisciplinary Spine Task Force meets quarterly to analyze patient data in an effort to improve care and outcomes. In addition, a multidisciplinary Clinical Spine Conference gathers weekly to discuss the care of complex spinal patients. “I also like the collaboration between the oncology and neuroscience departments at Saint Mary’s,” Dr. Klafeta adds. “We all tend to work closely together on spine tumor and brain tumor cases, to help ensure better outcomes for those patients.”

Steve Klafeta, MD, is board eligible in neurological surgery and is currently with the Saint Mary’s Spine Program in Grand Rapids, Mich. He received his MD from Loyola-Strich School of Medicine, Chicago, Ill. Dr. Klafeta also completed his internship in general surgery and his residency in neurological surgery at Loyola. ■

Contact Saint Mary’s Health Care

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Deep Brain Stimulation Expands at Saint Mary's Health Care

Dr. Steve Klafeta is one of only a handful of West Michigan neurosurgeons trained to perform deep brain stimulation (DBS), and Saint Mary's Health Care is one of the few neurological programs in Michigan to offer this technique to treat essential tremor. DBS is currently available through the Hauenstein Parkinson's Center at Saint Mary's.

At Saint Mary's in Grand Rapids, Dr. Steve Klafeta has performed DBS for cervical dystonia, an experimental indication, and is hoping to expand into the treatment of severe depression, OCD and epilepsy. The use of deep brain stimulation for primary generalized dystonia will evaluate the effectiveness of interrupting neuronal circuits in the Gpi and STN — areas of the basal ganglia of the brain. Patients with dystonia have severe muscle spasms that may cause repetitive movements and twisting or

abnormal postures. Since DBS can result in decreased movement, the treatment trial seeks to determine whether it will lessen dystonia patients' symptoms and pain. Dr. Klafeta stresses the possibility of quality of life improvement for Parkinson's patients. "As the medication doses increase to allow a Parkinson's patient to remain functional, they may develop side effects like dystonia and off periods," he says. "DBS may be effective for that patient, allowing us to reset the disease stage back several years and lower their medication intake." The primary contraindication is severe dementia. Those patients have not responded well and continue to experience further cognitive decline after the surgery.

DBS involves the placement of a fine electrode into specific parts of the brain. "We first obtain an MRI and perform an extensive neurologic evaluation," Dr.

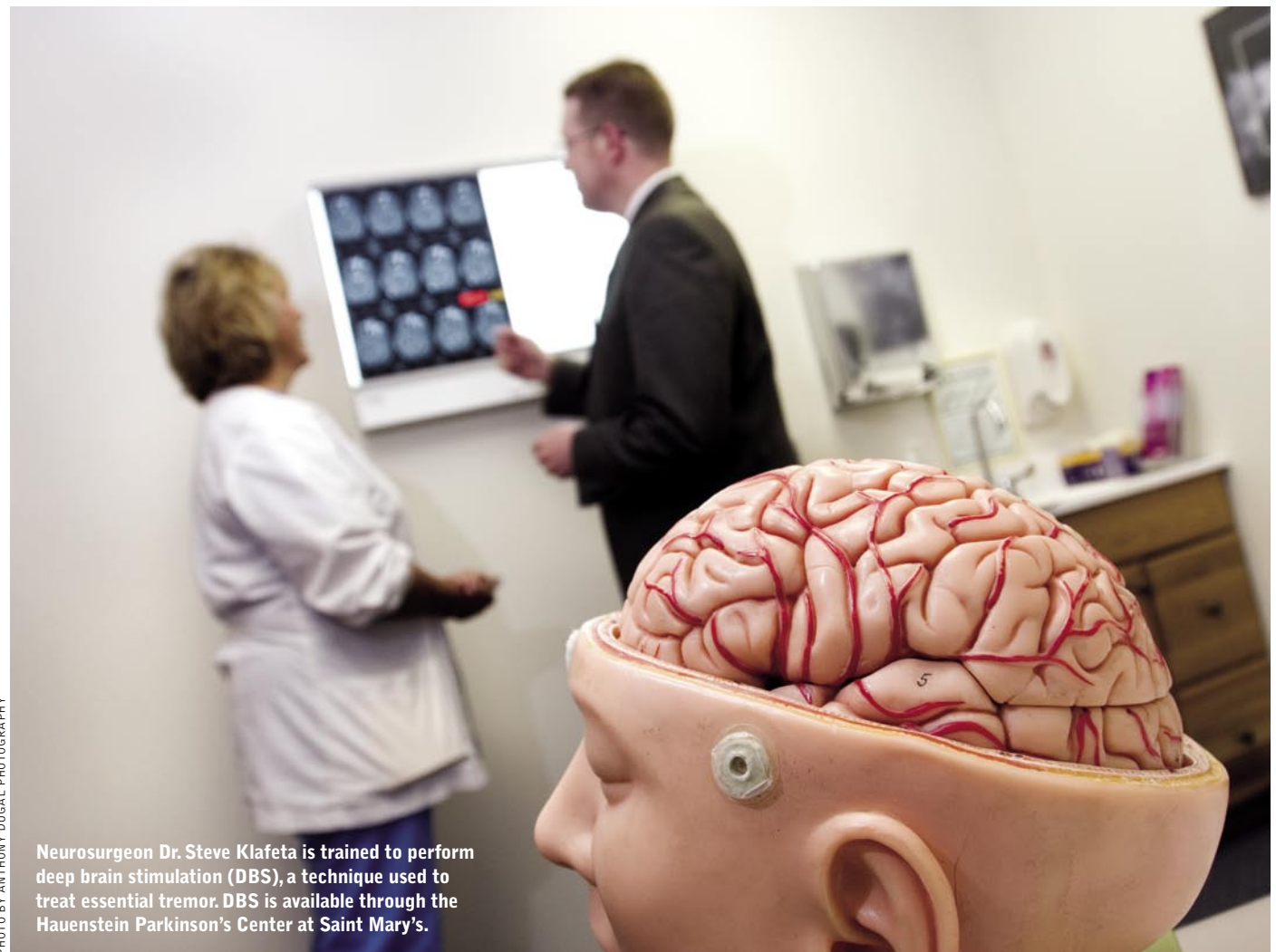


PHOTO BY ANTHONY DUGAL PHOTOGRAPHY

Neurosurgeon Dr. Steve Klafeta is trained to perform deep brain stimulation (DBS), a technique used to treat essential tremor. DBS is available through the Hauenstein Parkinson's Center at Saint Mary's.

Pain Study Results Show Efficacy of DBS

Recent statistics indicate that one in five people worldwide suffers from moderate to severe chronic pain and that one in three cannot maintain an independent lifestyle due to unresponsive pain. Most commonly used to treat Parkinson's disease, DBS has also been utilized for the alleviation of pain. Delivering a continuous electrical pulse to the regions of the brain disrupts the processing of pain signals. Beta endorphins produced by brain cells act to inhibit pain by influencing the periventricular gray matter and the periaqueductal gray matter. Electrodes may also be used to target the thalamic sensory nuclei.

In 2005, a group of neurosurgeons in Australia released results of a meta-analysis of the efficacy of DBS for pain relief. The highest rate of long-term pain alleviation — 87 percent — was seen in those patients undergoing DBS of the periventricular gray region plus the sensory thalamus. Another long-term success rate was observed in patients with intractable low back pain and failed back surgery syndrome. The rate was 80 percent for those patients who underwent trial stimulation and proceeded to permanent implantation. Trial stimulation was successful in approximately half of patients with post-stroke pain, and 58 percent of patients with permanent implantation achieved ongoing pain relief. Moderately higher success rates were noted in patients with phantom limb pain and radiculopathies.

(Deep Brain Stimulation for Pain: A Meta-analysis - Richard G. Bittar, MD, PhD, FRACS; Ishani Kar-Purkayastha, MD; Sarah L. Owen, BA, ODP; Renee E. Bear, BAppSc (Psych)(Hons); Alex Green, MD, MRCS; ShouYan Wang, PhD; and Tipu Z. Aziz, MD, DMedSc, FRCS.)

Klafeta points out. "On the day of surgery, the patient is awake and responsive, stabilized in a halo frame and we use only local anesthesia." Using a CT scan, computer-assisted stereotaxy imaging merges the MRI data to help identify the target zones. An electrode is guided through a burr hole craniotomy and eventually connected to a battery-powered programmable device that is implanted under

the skin below the clavicle. "It's like a pacemaker for the brain," Dr. Klafeta adds.

After surgery, a patient's movements are evaluated during and after stimulation.

The changes in movement and function are videotaped

and scored according to a rating scale, so optimal stimulation settings can be set. Patients are evaluated at regular follow-up intervals and the stimulators adjusted as needed.

The advantages of DBS include the fact that it is reversible and can be adjusted using the stimulator settings after implantation. However, some patients may develop a certain tolerance to this treatment modality which can diminish its effectiveness over time. Medications and the avoidance of continuous stimulation can help forestall the tolerance factor. According to Dr. Klafeta, "Another advantage of DBS over the older methods of thalamotomy — producing a permanent lesion in the brain tissue — is that you haven't destroyed a portion of the brain. A DBS patient could then be a prime candidate for options such as stem cell transplants or other regeneration therapy in the future."

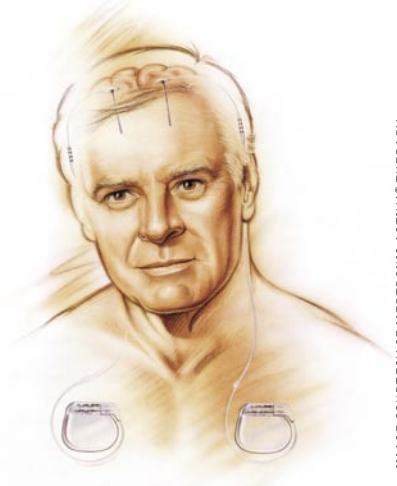


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