

## NEW SCOLIOSIS SURGERY MEANS FASTER RETURN TO ACTIVITY WITH MINIMAL MUSCLE TRAUMA TO THE SPINE

The treatment options for scoliosis continue to advance along with the new knowledge that genetic testing for idiopathic scoliosis can provide more effective care for children and adolescents. In addition, new predictive data which helps measure the long term effect of scoliosis and spine related disability in young and older adults may allow more innovative treatment options. Dr. Matthew Geck at Seton Spine & Scoliosis Center in Austin, Texas is experienced in the complex problems of pediatric and adult scoliosis.

Scoliosis results from an abnormal curvature of the spine when seen from the back. Depending on the cause of the scoliosis, a variety of treatment plans are available, including nonsurgical options such as bracing or physical therapy. If the disease progressively worsens, surgical options may be necessary. Traditional scoliosis surgery can be very complicated and recovery in the hospital can last up to a week. New minimally invasive scoliosis surgery options are now available at Seton Spine & Scoliosis in Austin.

### Minimally Invasive Scoliosis Reconstruction

Dr. Geck was the first surgeon in Texas to perform minimally invasive posterior scoliosis procedures on both adolescents and young adults with idiopathic scoliosis. The procedures performed by Dr. Geck of Seton Spine & Scoliosis have been used at only a few of the top scoliosis centers in the United States.

"In my opinion, the minimally invasive spine surgery movement has been a long time in coming to scoliosis reconstruction," notes Dr.

Geck. "That is because we need to achieve more complex goals than removing a small disc herniation or fusing one spinal segment. We need to realign and reconstruct the spine in a way that preserves or enhances long term normal function, while at the same time minimizing trauma to the soft tissues of the spine."

Using a few small incisions instead of a single long one, and also using muscle sparing surgical approaches, many scoliosis curves can be reconstructed with similar results to traditional open approaches. When surgeons use a minimally invasive approach there is less scarring, less muscle dissection, less chance of tissue complications and less blood loss. Other advantages may include shorter hospital stays, less pain, and, because of the muscle sparing approach, faster return to normal activity.

"One real advantage of minimally invasive instrumentation, whether it is mini-open or percutaneous (meaning through the skin), is the minimal trauma to the muscles around the spine and faster recovery of function," says Dr. Geck.

### Vertebral Body Stapling

A minimally invasive scoliosis treatment now available in Austin is vertebral body stapling. This procedure involves placing staples along the vertebral growth plate to modulate the asymmetrical growth. By slowing the anterior growth of the spine, the lateral side can catch up. Two-year follow-up studies show that 80 percent of the patients had either stabilized or improved results. The best outcomes were among children 8 to 11 years old. "Vertebral body stapling is an innovative, minimally invasive approach that is

an alternative therapy for early onset scoliosis," explains Dr. Geck. "What we're trying to do is to preserve the long-term motion of the spine."

The best patients for vertebral body stapling have a curve between 25 degrees and 35 degrees and are between the ages of 8 to 11 years old. The staples are made of a substance called nitinol, a nickel-titanium alloy that has "shape memory." When the staples are cold, they can be in an open position for surgical implantation. When they warm to body temperature, they resume their original shape and clamp onto

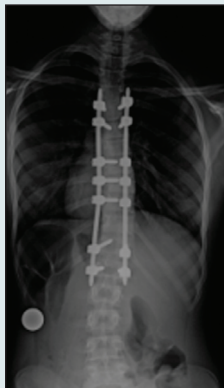
## SCOLIScore

### CAN A TEST REALLY PREDICT SCOLIOSIS PROGRESSION?

A new genetic test, known as Scoliscore, helps predict the progression of spinal curves in some patients. This test detects 53 different genetic markers in the saliva of patients and in clinical trials, these markers were identified to have a connection with curve progression in patients with Adolescent Idiopathic Scoliosis. The score is reported in a range of 1 to 200, indicating a low, medium or high risk of curve progression. It is important to note that the Scoliscore test isn't for all scoliosis patients. The test is used for Caucasian adolescents between the ages of 9 and 13 with a curve of 25 degrees or less.



"There are curves that don't need bracing that we've historically braced," Dr. Geck says. In fact, the genetic testing calls into question the use of bracing to prevent scoliosis progression. "A child who spends years in a brace and doesn't progress may not be a success story after all," he states. "The Scoliscore test could show that the child didn't have the genetic risk factors for progression – with or without the brace." Conversely, a high Scoliscore could lead to treatments such as vertebral body stapling or minimally invasive spine reconstruction. Delayed treatment may result in a more severe curve developing, which would require open spinal fusion. "What we're doing is attacking the problem early to prevent larger surgeries, which benefits the patient in the short and long term," remarks Dr. Geck.



Actual patient before and after X-rays. Before surgery patient had a 50 degree main thoracic curve, photo above left. After minimally invasive reconstruction from T5-L1, patient thoracic curve reduced to 12 degrees, photo above right.

Photo above left shows the incision site after minimally invasive scoliosis reconstruction. Photo above right shows patient back to normal life, including dancing, after minimally invasive scoliosis surgery at Seton Spine & Scoliosis in Texas.

the vertebrae. "The metal flexes and allows for continued movement of the spine," says Dr. Geck. Even the most intense athletes can resume their activities after recovery. "Gymnasts can still do back handsprings," he says. Dr. Geck is one of the early adopters of the new technique. "To my mind, it makes more sense to combine minimally invasive surgical approaches, such as video assisted thoracoscopic surgery, with vertebral body stapling to minimize the impact on the patient's growing body," says Dr. Geck.

Patient selection is critical. "You have to pick the right candidate, the right curve and the right reason," Dr. Geck says. It is most effective with spinal curves from 25 degrees to 35 degrees. If the curve is greater, spinal fusion is still the treatment of choice, and mild curves may respond to bracing.

### Video Assisted Thoracoscopic Surgery

Video assisted thoracoscopic surgery allows entry into the chest wall or thoracic cavity using a minimally invasive approach. With an incision of 4-8mm, the surgeon is able to access the thoracic spine safely, and perform a variety of techniques, including vertebral body stapling, release of severe scoliotic curves, and reconstruction and fusion if necessary. Benefits of video assisted thoracoscopic surgery (VATS) include less post-operative pain, shorter hospital stay, faster recovery, and most importantly, less impact on short and long term lung function.

### About Seton Spine & Scoliosis

Seton Spine & Scoliosis in Austin is the only spine specialized neurosurgery, orthopedic surgery, and non-surgical rehabilitation group in the central Texas area. It currently receives some of the most complex cases of back and neck pain from across the state. This spine center is able to care for any type of back or neck problem, including scoliosis, from the simple back or neck strain all the way to the most complex spine and scoliosis surgery. The spine center is a nonprofit center of Seton Family of Hospitals, one of the largest hospital systems in Texas.



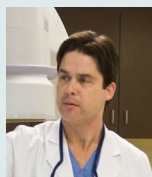
Dr. Matthew Geck, Co-Chief of Seton Spine & Scoliosis in Austin, has recently been featured on FOX 7 to discuss the new minimally invasive scoliosis treatments he performs. Dr. Geck was the first surgeon in Texas to perform minimally invasive posterior scoliosis procedures on both adolescents and young adults with idiopathic scoliosis.

## NON-SURGICAL SPINE CARE

### Lee E. Moroz, M.D.

Board-Certified Physical Medicine & Rehabilitation

At Seton Spine & Scoliosis Center, Dr. Moroz specializes in helping patients return to activity without having to resort to surgery. His focus of care is the diagnosis and assessment of back and neck pain problems. Dr. Moroz is proficient in pain relieving spinal injections. Dr. Moroz's undergraduate work was completed at St. Mary's University in San Antonio, Texas. He received his medical degree from the University of Texas at Houston and went on to complete his residency training at NYU Medical Center's Rusk Institute of Rehabilitation. Dr. Moroz was Chief Resident in Physical Medicine and Rehabilitation at Manhattan V.A. Hospital. His work has been published in the American Journal of Physical Medicine and Rehabilitation. Dr. Moroz is a member of the American Academy of Physical Medicine and Rehabilitation.



### Enrique B. Pena, M.D.

Board-Certified Physical Medicine & Rehabilitation

Fellowship-Trained in Interventional Spine, Musculoskeletal & Electrodiagnostic Medicine

At Seton Spine & Scoliosis in Austin, Dr. Pena specializes in the non-surgical treatment of patients with back and neck problems. His focus of care is the diagnosis and assessment of musculoskeletal and spine problems. He earned his undergraduate degree in Biochemistry at New York University in New York. Dr. Enrique Pena received his medical degree from the University of Medicine and Dentistry of New Jersey, New Jersey Medical School in Newark. He completed an internship in Internal Medicine at Morristown Memorial Hospital / Atlantic Health Systems in Morristown. Followed by residency training in Physical Medicine and Rehabilitation at Baylor College of Medicine and University of Texas in Houston. Dr. Pena furthered his education by completing a fellowship in Interventional Spine, Musculoskeletal and Electrodiagnostic Medicine at The Spine Center at New England Baptist Bone & Joint Institute in Boston. Dr. Pena served as a Staff Physician and Clinical Instructor in the Department of Orthopaedics at Tufts University Medical School, The Spine Center at New England Baptist Bone & Joint Institute in Boston. He is a member of the American Academy of Physical Medicine and Rehabilitation, the North American Spine Society and the Physiatric Association of Spine, Sports and Occupational Rehabilitation.

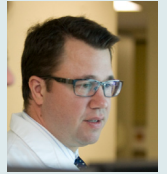


## SPINE SURGEONS

### Matthew Geck, M.D.

Board-Certified Orthopedic Surgeon  
Fellowship-Trained Spine Surgeon  
Co-Chief, Seton Spine & Scoliosis Center

For the past 10 years, Dr. Geck has focused exclusively on spine and scoliosis surgery, and since 2003 his practice has become the largest spinal deformity practice in Central Texas treating adult and pediatric scoliosis, kyphosis and other complex spinal problems. Dr. Geck also specializes in cervical disc replacement and cervical myelopathy. He has performed more than 1,200 spine surgeries. Dr. Geck completed his medical degree at the University of Wisconsin School of Medicine and his orthopedic surgery residency at UCLA Medical Center. He completed two fellowships in spine surgery, the first in adult and pediatric spine surgery at Jackson Memorial Hospital and a second fellowship at Miami Children's Hospital in scoliosis and kyphosis surgery. Dr. Geck is the co-founder of the SpineHope program, a nonprofit organization that transforms the lives of children with spinal deformities worldwide through surgery, education and research. He has completed seven trips to Columbia to perform free surgery on children with scoliosis.



### John Stokes, M.D.

Board-Certified Neurological Surgeon  
Fellowship-Trained Spine Surgeon  
Co-Chief, Seton Spine & Scoliosis Center

Dr. Stokes has been in practice in Austin for more than seven years and has performed more than 2,000 spinal surgeries. He completed his medical degree from the University of Texas Health Science Center at San Antonio. He then completed neurosurgical residency training at the University of North Carolina Hospitals and Clinics in Chapel Hill, NC. Dr. Stokes completed fellowship training at the Cedars Sinai Institute for Spinal Disorders in Los Angeles, CA and UCLA ending in 2002. He is a member of the American Association of Neurological Surgeons and the Congress of Neurological Surgeons. He was named as Co-Chief of the Seton Spine & Scoliosis Center in November 2009. Dr. Stokes has published numerous scientific articles in peer reviewed journals and has authored book chapters relevant to spinal surgery. In addition, he has given presentations at scientific meetings around the country. Dr. Stokes was a principal investigator in a FDA IDE study of the Mobi-C artificial cervical disc. He also collaborates with several medical device manufacturers in the development of new spinal technologies.



### Eric Truumees, M.D.

Board-Certified Orthopedic Surgeon  
Fellowship-Trained Spine Surgeon

Dr. Truumees specializes in cervical, thoracic and lumbar spine disorders. He received his medical degree from the University of Virginia School of Medicine. He then completed an internship in General Surgery followed by a residency in Orthopedic Surgery at the Cleveland Clinic Foundation. Dr. Truumees furthered his education by completing a fellowship in spine surgery at William Beaumont Hospital with Dr. Harry Herkowitz in Michigan. Dr. Truumees has served as Clinical Director for the Harold W. Gehring Center for Biomechanical Research and Implant Retrieval, William Beaumont Hospital. He is a member of the following societies and more: the American Academy of Orthopaedic Surgeons, the North American Spine Society and the Cervical Spine Research Society.

