**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 surgical instrumentation, whether it is mini-open or percutaneous (meaning through the skin), is the 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.

**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.

**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...

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**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.

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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 hand springs,” 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.