

A New Twist on Scoliosis Surgery

Robot-guided surgery ensures greater precision and accuracy

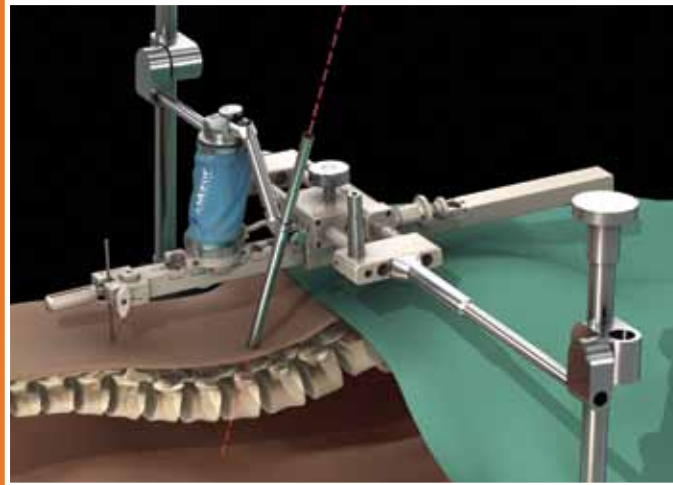
Surgeons already work miracles. But what if a surgeon had the ability to see into the future, to predict a problem with an upcoming surgery in time to remedy the issue? Using SpineAssist technology, that is exactly what Dennis Devito, M.D., does for pediatric scoliosis surgeries.

The SpineAssist miniature robot is a surgical navigation device and preplanning system. Israel-based Mazor Robotics developed it for minimally invasive spinal surgeries, and it was largely used to correct adult lumbar disease. In 2007, Dr. Devito, an orthopaedic surgeon with Children's Orthopaedics of Atlanta, began working with Mazor Robotics to adapt the company's SpineAssist device for use in complex pediatric scoliosis surgery. Since then, Dr. Devito has completed more than 100 pediatric scoliosis surgeries using SpineAssist technology at Children's at Scottish Rite, which is the first pediatric facility in the U.S. to offer robot-guided scoliosis surgery.

The best way to correct the improperly curved spine of a child with scoliosis is to use pedicle screws to attach the vertebrae to a rod. The goal in scoliosis surgery is to maximize the spinal curvature correction in the safest way possible. Dr. Devito uses the SpineAssist surgical guidance system to make pediatric scoliosis surgery more precise and consistent. The improved accuracy minimizes the potential risks associated with spinal surgeries, such as nerve damage or paralysis.

"A good surgeon does a good job without a robot, but the risks associated with scoliosis surgery are too great not to look for best practices," Dr. Devito said.

Here's how SpineAssist works: the 2.2-inch, 8-ounce SpineAssist device attaches to the patient's spine during surgery,



and its robotic arm helps Dr. Devito to line up screw insertions. Each screw placement is determined by a detailed pre-op plan developed with the SpineAssist technology.

Before the surgery, Dr. Devito looks at a 3D scan of the patient's spine on his computer and he chooses the size of screw and angle of insertion to be used for each vertebra. He looks at the

3D imaging to analyze whether he has chosen the best placement before he even gets to the operating room. For particularly difficult placement in the deformed pedicle of a vertebra, he can alter the angle until he is satisfied that it is the safest placement.

During the surgery, the SpineAssist device ensures the screw lines up at the angle Dr. Devito has chosen. While the robot assists with positioning the screw, Dr. Devito is still in control of the drilling and placement.

In addition to the ability to preplan a surgery on the computer, the SpineAssist technology gives Dr. Devito the ability to place screws he would skip without robot assistance. For example, the device allows screw insertions through muscular tissue without direct visualization.

Dr. Devito expected the robot guidance system to significantly improve his ability to place screws in deformed or hard-to-reach vertebrae, and it has. But what he didn't expect was that he'd also start using the device on more routine surgeries. "With the robot I can plan a surgery in such detail," said Dr. Devito. "Now, I want the SpineAssist precision on every case."

Sure, technically it's impossible to foresee the future. But with the help of SpineAssist, our surgeons are getting about as close as you can get. 🌟