

## Recent Advances in Techniques & Technology Transform Adult Spine Stabilization Surgery



**A**dvancements in fixation techniques and technology are revolutionizing spine stabilization surgery for adults with spinal column deformities.

“Spine stabilization surgery is one of medicine’s fastest changing specialties,” said orthopaedic surgeon Marc Agulnick, MD, who collaborates at Winthrop-University Hospital with neurosurgeon Benjamin Cohen, MD, to correct adult spine deformities that cause progressive, debilitating pain in the back or lower extremities. “The rapid evolution of our field has altered the way we practice. New instrumentation made with stronger — yet lighter — metals, improved techniques and a better understanding of the biomechanics of the spine enable us to approach patients very differently today compared with just two years ago.”

With ongoing advanced training and a clear understanding of the surgical innovations transforming their specialty, Drs. Agulnick and Cohen are at the forefront of their field, tailoring their approach to each patient’s unique condition. “Every deformity is different, and

every surgical approach varies to accommodate that difference,” explained Dr. Cohen. “But our goals are the same for patients: to eliminate pressure on spinal nerves, stop the

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Marc Agulnick, MD

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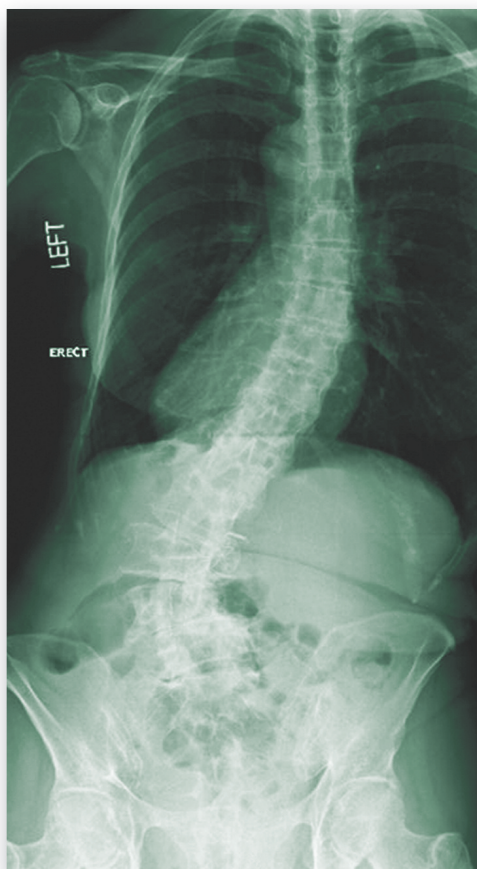
deformity’s progression, minimize back pain and neurogenic leg symptoms and finish with a balanced spine.”

Beginning with careful pre-operative evaluation and extensive surgical planning to treat the deformity and ensure that it is neurologically feasible for the patient, Drs. Agulnick and Cohen first determine the surgical approach — anterior, posterior or combined. Once in the OR, they flank the patient, utilizing implanted instrumentation to redistribute the stresses on the bones and keep them aligned properly so that bone fusion can take place.

The lengthy, arduous, complex and risky surgery is seamlessly performed as if the two specialists were melded into one surgeon with four hands. Their joint efforts blend their distinctive skills, expertise and training into an exceptionally productive synergy that continues through the post-operative period and significantly improves the patient's quality of life.

That is exactly what they did for AD, a 56-year-old woman barely able to work because of excruciating pain caused by a thoracolumbar 52° spinal curve. "She had scoliosis that developed and progressed during years of arthritis," explained Dr. Agulnick. "The degenerative changes resulted from a vicious cycle of asymmetric loading of the spine, asymmetric degeneration and asymmetric deformity. Due to the variability of the condition, degenerative scoliosis is one of the most challenging spine conditions to treat. Her non-surgical therapies had failed, she was living on pain medication, and her quality of life was terrible."

In most cases, thoracic curves can be treated with a one-stage posterior fusion and instrumentation. AD's surgery to release and stabilize her spine, as well as relieve her pain, was more complex than most, and involved the combined approach conducted in two stages: Stage one entailed anterior access to the spine and focused on releasing the curve between the L3 segment and the sacrum; stage two, performed posteriorly three days later, addressed deformity between T10 and the pelvis. To support the bone grafts, the surgeons used state-of-the-art instrumentation, including high-grade plastic cages in the front and the latest pedicle screw systems made of the strongest metal alloys in the back.

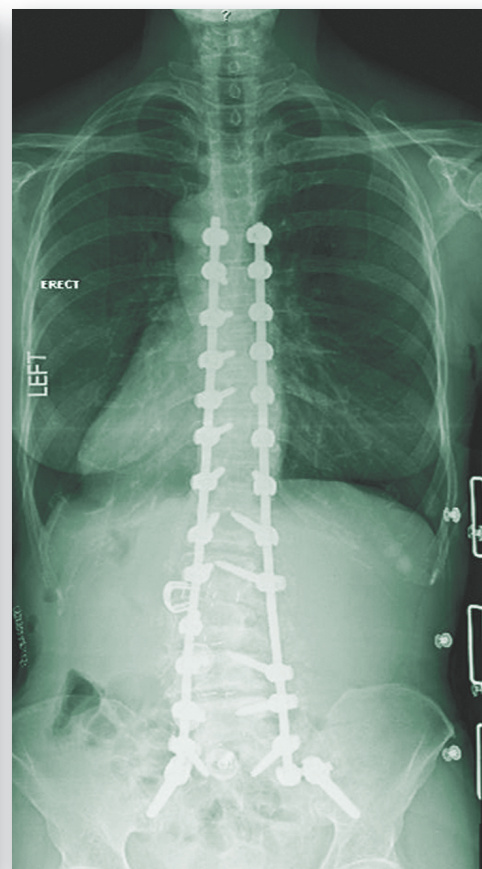


**Pre-operative view of lumbar curve greater than 60°.**

"In the not-too-distant past, we would have been restricted to using unwieldy rods, wires and hooks, with varying results and rigid spine stabilization," said Dr. Agulnick. "Today, many of the obstacles of the older-generation technology have been overcome with the development, refinement and strengthening of segmental instrumentation and the new, FDA-approved, pedicle screw systems, which allow us to use shorter rods and fuse fewer motion segments."

"We are correcting stiffer adult curves and restoring sagittal balance once thought to be unachievable. And, we're getting greater control, correction and flexibility, as well as improved fusion rates, better prevention of pseudarthrosis and ease of post-op management. These advances are providing patients with immediate spine stability and earlier mobility."

AD recovered and regained her mobility in short order. After eight days in Winthrop's surgical intensive care unit, she began rehabilitation and returned



**Post-operative pedicle screw segmental instrumentation construct.**

to work four months post-operatively. She was off all pain medication by month six.

According to Dr. Cohen, the procedures he and Dr. Agulnick perform are enhanced by Winthrop's spine specialty setup. "We have the most modern equipment, specialized microscopes and highly trained, experienced staff," said Dr. Cohen. "Additionally, progress in pre-operative assessment technology, anesthetic techniques, intra-operative management and spinal cord monitoring has greatly improved our understanding of post-operative care and the ability to better handle the complexities of this high-risk surgery."

*For more information, call the Institute for Neurosciences at 1-866-NEURO-RX or visit [www.winthrop.org](http://www.winthrop.org).*

Courtesy of Marc Agulnick, MD