

Combined minimally invasive procedures offer new option for lumbar degenerative scoliosis

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Surgeons at Cedars-Sinai Medical Center's Institute for Spinal Disorders have combined three innovative minimally invasive spine surgery procedures to treat spinal curvature in adults, a common consequence of aging. An article in the October issue of the *Journal of Spinal Disorders and Techniques* is believed to be the first to document the use of these procedures in combination to correct this condition, known as adult lumbar degenerative scoliosis.

"Many patients suffering from degenerative scoliosis are elderly and have coexisting medical problems that make them poor candidates for traditional surgery and a long recovery process. But as a result of three new technologies and minimally invasive approaches, we are able to offer patients who otherwise might not be candidates for surgery, a solution that is safe and provides very good results," said orthopaedic surgeon Neel Anand, M.D., Mch. Orth, director of Orthopaedic Spine Surgery at Cedars-Sinai.

Anand said lumbar degeneration and curvature can be caused simply by the wear and tear of aging. Discs – the cushions and spacers between vertebrae – wear down and collapse, allowing the spine to shift out of alignment. In other cases, minor scoliosis that may have existed since childhood becomes more pronounced with age. In either situation, pain is the primary complaint.

The article reviews 12 cases of Anand's. These cases were examined as part of a retrospective chart review for patients who underwent these techniques as part of standard care. Patients were 50 to 85 years old, with an average age of about 73. Each had undergone extensive conservative treatment, such as medical management and physical therapy, without long-term success. Curvature resulted from the degeneration of multiple discs, ranging from two to eight segments of the spine.

The first stage of the two- to three-step correction procedure was performed through small incisions in the patient's side, working through a tube to access the front of the spine. Using either of two systems – the XLIF® (Extreme Lateral Interbody Fusion) or the DLIF® (Direct Lateral Interbody Fusion) – Anand cleared out damaged disc material and replaced it with spacers filled with bone and a protein that promotes fusion.

"We used to access the front of the spine through the abdomen. The biggest advantage of going in from the side is that we no longer have to work around the organs and large blood vessels of the abdomen. We work through a very safe corridor to get to the discs in question. We go in and correct each disc that has collapsed, like building a skyscraper. As we put in spacers from the bottom up, we get considerable correction, just from doing the lateral approach, the first stage," Anand said.

The second step was needed only for patients whose scoliosis affected the area between the lower end of the lumbar spine and the top of the sacral spine (the lumbar 5 and sacral 1 vertebrae), which cannot be accessed from the side because of the location of the pelvic bone. In these cases, the area was accessed from below, using the AxiaLIF® procedure, which allows the L5-S1 disc to be secured with a solid, sturdy screw.

The final stage, performed two or three days after the first, was the placement of rods on either side of the spine. This was accomplished with the use of the CD Horizon Longitude system and special high-tech screws.

"The third technology making this correction possible for these patients is the percutaneous screw that can be placed through small nicks in the skin. Using fluoroscopic guidance, we're able to place the screws into the vertebral bodies and pass the rods through the skin into position. We then connect the rods to the screws and get further correction of the curve," Anand said.

Anand, first author of the journal article, is a paid consultant with the three companies that market the instrumentation and techniques. Because he was involved in the development of the percutaneous screws, he receives royalties from the manufacturer when the devices are used elsewhere, but he receives no royalties on any cases performed at Cedars-Sinai.

"With traditional surgical procedures and large incisions, patients would have to spend time after surgery in the intensive care unit for monitoring and blood transfusions, and there would be months of recuperation," said Anand. "With the new technologies and minimally invasive techniques, we lose very little blood and patients are back on a regular surgical nursing unit in about an hour. And instead of going through six months or more of painful, restricted recuperation, recovery time is much shorter and more comfortable. We're achieving the same correction but through different, smaller, safer portals of entry."

Source: Cedars-Sinai Medical Center

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