Understanding Complications Following Axial Lumbar Interbody Fusion

Surgeons from the Instituto de Patologia da Coluna in Sao Paulo, Brazil have found that an innovative minimally invasive surgical procedure performed to achieve two-level axial lumbar interbody fusion produced immediate successful results, but within two years complications set in, making the procedure far less desirable. Findings of this study are reported in the article *Results and complications after 2-level axial lumbar interbody fusion with a minimum 2-year follow-up. Clinical article*, by Luis Marchi, Leonardo Oliveira, Etevaldo Coutinho, M.D., and Luiz Pimenta, M.D., Ph.D., published this week online in the *Journal of Neurosurgery: Spine*.

The report stems from a prospective, non-randomized single-center study of 27 patients who underwent presacral axial lumbar interbody fusion surgery at two levels: L4-5 and L5-S1. Surgery was performed to correct symptomatic lumbosacral degenerative disc disease, degenerative low-grade spondylolisthesis or failed-back surgery syndrome. The patients suffered from low-back pain, radicular leg pain, or both. Outcomes of the procedures were assessed on the basis of imaging studies (radiographs and CT scans) and patient-reported questionnaires (assessments based on applying a visual analog pain scale and the Oswestry Disability Index).

No intraoperative complications were related to the surgical approach. Significant clinical improvement was apparent following surgery. By the 2-year follow-up, patients reported a 50 percent reduction in back pain and a 40 percent reduction in disability.

Outcomes of the procedure documented by imaging studies, however, were not as promising. The surgical goals of disc height/foramen space distraction, lordosis gain/maintenance, and spine stabilization appeared to be achieved shortly after surgery; however, as time progressed these achievements were lost and in some cases outcomes were worse than before surgery. In addition, complications abounded: screw breakage (14.8 percent of patients), rod detachment (11.1 percent), cephalic rod migration (24 percent), and radiolucency around the transsacral rod (52 percent). At 24 months post-operatively, solid spinal fusion had been obtained at both L4-5 and L5-S1 in only two patients (8 percent); fusion had been obtained at L4-5 in 20 percent of patients and at L5-S1 in 24 percent of patients.

The authors point out that the AxiaLIF approach has already proved to be effective for creating fusion at one level: L5-S1. In doing this it offers advantages over other techniques because it does not damage the annulus fibrosus or the anterior or posterior longitudinal ligaments. The application of the AxiaLIF technique to two spinal levels is relatively new. In this small study, application of the technique for

this purpose was not effective and was accompanied by many complications. The authors suggest that additional studies should be performed to assess the anatomical and application limitations of the technique.

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