

Complications following two-level axial lumbar interbody fusion

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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 2 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, nonrandomized single-center study of 27 patients who underwent presacral axial [lumbar interbody fusion](#) (AxiaLIF [TranS1, Inc.]) [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% reduction in back pain and a 40% 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% of patients), rod detachment (11.1%), cephalic rod migration (24%), and radiolucency around the transsacral rod (52%). At 24 months postoperatively, solid spinal fusion had been obtained at both L4-5 and L5-S1 in only 2 patients (8%); fusion had been obtained at L4-5 in 20% of patients and at L5-S1 in 24% 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.

More information: Marchi L, Oliveira L, Coutinho E, Pimenta L. Results and complications after 2-level axial lumbar interbody fusion with a minimum 2-year follow-up. Clinical article, *Journal of Neurosurgery: Spine*, published online July 17, 2012, ahead of print; [DOI: 10.3171/2012.6.SPINE11915](https://doi.org/10.3171/2012.6.SPINE11915)

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