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A Comparison of 2-level Lumbar Fusions Using Minimally Invasive (XLIF) vs Open (PLIF)

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Introduction: Multi-level pathology has in the past precluded minimally invasive surgical techniques due to the requirements for greater exposure to achieve results comparable to traditional techniques. The XLIF approach, however, provides access to multiple lumbar levels through small lateral incisions and retroperitoneal dissection, minimizing approach-related morbidity while providing anterior column access for large graft placement, excellent disk height and alignment restoration, and indirect decompression.

Methods: In our single-site consecutive series of 720 XLIF patients, 117 had 2-level treatment for multiple indications (stenosis, scoliosis, post-decompression instability, DDD, and/or spondylolisthesis). Clinical and radiographic measures were prospectively collected and evaluated. A retrospective database of 109 2-level open PLIF patients from the same practice were identified and evaluated for the same measures as a basis of comparison.

Results: Patient demographics were similar in both groups. All XLIF surgeries were quick and uneventful. All included minimally disruptive posterior fixation. In the XLIF group, there were no transfusions or infections, with a mean hemoglobin change of 1.42; while hemoglobin change in PLIF patients averaged 3.10. Hospital stay averaged 1.2 days for XLIFs and 3.16 days for PLIFs. Lenke score of 89% of XLIF patients with 12 month follow-up was 1, compared with 79% of PLIF patients at 12 months. While reoperation rate among XLIF patients was 8% (10/117), there was a 19% reoperation rate in the PLIF cohort.

Conclusions: There is little in the literature describing the use of minimally invasive techniques for 2-level pathologies. In our experience, patients with multi-level pathologies can expect the same benefits and successful outcomes from this less invasive procedure as those with single-level indications. Moreover, the clinical and radiographic outcomes in two-level XLIF compare favorably to those using more traditional open techniques in this single-site series.