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The Use of rh-BMP2 in Standalone eXtreme Lateral Interbody Fusion (XLIF) Clinical and Radiological Results after 24 Months Follow-up

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Introduction: The eXtreme Lateral Interbody Fusion technique (XLIF®) is a safe and effective procedure for minimally invasive treatment of various spinal conditions. The XLIF allows for easier, less invasive true lateral access to the disc space. Lateral implantation also preserves the stabilizing ligaments, and the footprint of the device capitalizes on the biomechanical support of the ring apophysis, allowing its use without the need of additional supplementation. Due the emphasis on minimizing the invasiveness of the technique and for being considered as good as autograft, rh-BMP2 was used as bone graft to achieve fusion.

Methods: A prospective, non-randomized study was conducted in a single center site. 15 patients underwent spinal fusion for single level DDD (L4-L5). None of the patients presented major osteoporosis condition or previous fusion surgery at L4-L5. Within the cases, 7 patients were male and 8 female, with a mean age of 45.7 (26-69 years). All patients completed two years follow up. Radiological exams, such as X-ray and CT scans, neurological examination, and clinical outcome assessment using Oswestry Disability Index and VAS scores were performed at the preoperative and 1, 6 week, 3, 6, 12 and 24 months after surgery. The XLIF® procedure was done through the retroperitoneal space and through the Psoas muscle to access the anterior spine, avoiding vascular lesions, and avoiding neural damages using nerve avoidance monitoring system (NeuroVision®). A partial discectomy was done and the end-plates were cleaned preserving the spinal ligaments, keeping the spine more stable than the traditional anterior surgery. A large peek cage was filled with synthetic bone graft containing rh-BMP2 (Infuse®) and inserted into the disc space. All procedures were standalone constructions without the need of supplementation.

Results: The procedures were performed without major complications in an average 67.3 minutes and with less than 50cc blood loss. VAS and Oswestry scores statistically improved from preoperative to postoperative assessments. After surgery, was possible to observe 1 case (6.7%) of subsidence. Two patients had additional surgery (13.4%), one direct decompression due congenital small pedicle screws and other due excessive bone formation that compressed the nerve root. All patients presented some source of bone formation 12 months after surgery, showing the efficacy of the stand alone procedure.

Discussion and conclusion: Using the stand alone XLIF® procedure we were able to treat single level DDD in a minimal invasive way, targeting the disc space without the risks and morbidity associated with other fusion techniques. The technique provided pain relief and improvement in physical disability assessments. The study revealed that it is possible to treat DDD with standalone anterior spine fusion via lateral approach, which allowed rapid and efficient spine fusion with the use of a biological bone graft. The use of this technique improves patient’s recovery and allows bone formation, reducing surgery costs due to a shorter hospital stay, less material implanted and the needless presence of an access surgeon.