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Comparative Study on Efficacy and Clinical Outcomes in Minimally Invasive Surgery Transforaminal Interbody Fusion vs Minimally Invasive Surgery Lateral Interbody Fusion

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Abstract : Introduction: Transforaminal Interbody Fusion (TLIF) has been adopted for many decades now, however, XLIF, still in relative infancy, has grown to be accepted as a new Minimally Invasive Surgery (MIS) option. There is a paucity of reports directly comparing lateral approach surgery to other MIS options such as TLIF in the treatment of lumbar degenerative disc diseases. Aims/Objectives: The objective of this study was to compare the efficacy and clinical outcomes between Minimally Invasive Transforaminal Interbody Fusion (TLIF) and Minimally Invasive Lateral Interbody Fusion (XLIF) in the treatment of patients with degenerative disc disease of the lumbar spine. Methods: A single center, retrospective cohort study involving a total of 38 patients undergoing surgical intervention between 2010 and 2013 for degenerative disc disease of lumbar spine at single L4/L5 level. 18 patients were treated with MIS TLIF, and 20 patients were treated with XLIF. Results: The XLIF group showed shorter duration of surgery compared to the TLIF group (176 mins vs. 208.3 mins, P = 0.03). Length of hospital stay was also significantly shorter in XLIF group (5.9 days vs. 9 days, p = 0.03). Intraoperative blood loss was favouring XLIF as 85% patients had blood loss less than 100cc compared to 58% in the TLIF group (P = 0.03). Radiologically, disc height was significantly improved post operatively in the XLIF group compared to the TLIF group (0.56mm vs. 0.39mm, P = 0.01). Foraminal height increment was also higher in the XLIF group (0.58mm vs. 0.45mm , P = 0.06). Clinically, back pain and leg pain improved in 85% of patients in the XLIF group and 78% in the TLIF group. Post op hip flexion weakness was more common in the XLIF group (40%) than in the TLIF group (0%). However, this weakness resolved within 6 months post operatively. There was one case of dural tear and surgical site infection in the TLIF group respectively and none in the XLIF group. Visual Analog Scale (VAS) score 6 months post operatively showed comparable reduction in both groups. TLIF group had Owsterty Disability Index (ODI) improvement on 67% while XLIF group showed improvement of 70% of its patients. Conclusions: Lateral approach surgery shows comparable clinical outcomes in resolution of back pain and radiculopathy to conventional MIS techniques such as TLIF. With significantly shorter duration of surgical time, minimal blood loss and shorter hospital stay, XLIF seems to be a reasonable MIS option compared to other MIS techniques in treating degenerative lumbar disc diseases.

Keywords : extreme lateral interbody fusion, lateral approach, minimally invasive, XLIF
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