Predictors of Clinical Failure After Endoscopic Lumbar Spine Surgery During the Initial Learning Curve

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Abstract : Objective: This study aims to identify clinical factors that may predict failed endoscopic lumbar spine surgery to guide surgeons with patient selection during the initial learning curve. Methods: This is an Australasian prospective analysis of the first 105 patients to undergo lumbar endoscopic spine decompression by 3 surgeons. Modified MacNab outcomes, Oswestry Disability Index (ODI) and Visual Analogue Score (VAS) scores were utilized to evaluate clinical outcomes at 6 months postoperatively. Descriptive statistics and Anova t-tests were performed to measure statistically significant ($p<0.05$) associations between variables using GraphPad Prism v10. Results: Patients undergoing endoscopic lumbar surgery via an interlaminar or transforaminal approach have overall good/excellent modified MacNab outcomes and a significant reduction in post-operative VAS and ODI scores. Regardless of the anatomical location of disc herniations, good/excellent modified MacNab outcomes and significant reductions in VAS and ODI were reported post-operatively; however, not in patients with calcified disc herniations. Patients with central and foraminal stenosis overall reported poor/fair modified MacNab outcomes. However, there were significant reductions in VAS and ODI scores post-operatively. Patients with subarticular stenosis or an associated spondylolisthesis reported good/excellent modified MacNab outcomes and significant reductions in VAS and ODI scores post-operatively. Patients with disc herniation and concurrent degenerative stenosis had generally poor/fair modified MacNab outcomes. Conclusion: The outcomes of endoscopic spine surgery are encouraging, with a low complication and reoperation rate. However, patients with calcified disc herniations, central canal stenosis or a disc herniation with concurrent degenerative stenosis present challenges during the initial learning curve and may benefit from traditional open or other minimally invasive techniques.

Keywords : complications, lumbar disc herniation, lumbar endoscopic spine surgery, predictors of failed endoscopic spine surgery
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