Unilateral transforaminal lumbar interbody fusion

- Spinous Process Osteotomy for High Lumbar Disc Disease - An Alternative for Transforaminal Lumbar Interbody Fusion in Young- A Case Report
- Unilateral biportal endoscopic lumbar interbody fusion (ULIF) versus minimally invasive transforaminal lumbar interbody fusion (MI-TLIF) for the treatment of degenerative lumbar spondylolisthesis: a retrospective analysis
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- Quantifying in vitro load-sharing in spinal fusion surgical constructs using strain sensor-equipped fixation rods and force sensor-equipped intervertebral cages
- Unilateral Biportal Endoscopic Technique for Multilevel Transforaminal Lumbar Interbody Fusion: 2-Dimensional Operative Video
- The unilateral biportal endoscopy journey: proposing a 10-tier difficulty progression framework for unilateral biportal endoscopy

A retrospective study was undertaken on 487 patients with lumbar degeneration who underwent unilateral TLIF in the Department of Spinal Surgery of Ningbo Sixth Hospital between January 2017 and January 2021, comprising 269 males and 218 females, with a mean age of 57.1 years (range, 48-77 years). Cases of intraoperative improper operations, such as screw deviation, postoperative hematoma, and contralateral disc herniation, were excluded, and cases of nerve root symptoms caused by contralateral FS were analyzed. Post-surgery, 23 patients with nerve root symptoms caused by contralateral FS were categorized as group A, and 60 patients without nerve root symptoms were randomly selected as group B during the same period. The general data (gender, age, body mass index (BMI), bone mineral density (BMD), and diagnosis) and imaging parameters before and after operation (including contralateral foramen area (CFA), lumbar lordosis angle (LL), segmental lordosis angle (SL), disc height (DH), foramen height (FH), foramen width (FW), fusion cage position, and the difference between postoperative and preoperative) were compared between the two groups. Univariate analysis was performed, and multivariate analysis was undertaken through logistics analysis to determine the independent risk factors. Additionally, the clinical outcomes of the two groups were compared immediately before surgery and one year after surgery, using the visual analogue scale (VAS) score and the Japanese Orthopaedic Association (JOA) score for evaluation.

Results: The patients in this study were followed up for a period of 19-25 (22.8atien months. Among them, 23 cases (4.72% incidence) were diagnosed with contralaterally symptomatic FS after the surgery. Univariate analysis indicated significant differences between the two groups in CFA, SL, FW, and cage coronal position. Logistic regression analysis identified preoperative contralateral foramen area (OR = 1.176, 95% CI (1.012, 1.367)), small segmental lordosis angle (OR = 2.225, 95% CI (1.124, 4.406)), small intervertebral foramen width (OR = 2.706, 95% CI (1.028, 7.118)), and cage coronal position not crossing the midline (OR = 1.567, 95% CI (1.142, 2.149)) as independent risk factors for contralateral symptomatic FS after unilateral TLIF. However, there was no statistically significant difference in the pain VAS score between the two groups one year after the operation. In contrast, there was a significant difference in the JOA score between the two groups.

Conclusion: The identified risk factors for contralateral symptomatic FS after TLIF include preoperative contralateral intervertebral foramen stenosis, a small segmental lordosis angle, a small intervertebral foramen width, and the coronal position of the cage not crossing the midline. For patients with these risk factors, it is recommended to carefully lock the screw rod during the recovery of lumbar lordosis and ensure that the coronal position of the fusion cage is implanted beyond the midline. If necessary, preventive decompression should also be considered. However, this study did not quantify the imaging data for each risk factor, and further research is needed to improve our understanding of the topic [1)].

1)

Lu W, Zhang J, Deng Y, Wu L, Chen Y, Hu X, Ruan C, Wang Y, Ma W, Jiang W. Analysis of risk factors for contralateral symptomatic foraminal stenosis after unilateral transforaminal lumbar interbody fusion. Int Orthop. 2023 May 8. doi: 10.1007/s00264-023-05826-6. Epub ahead of print. PMID: 37154958.