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Alex La Poche B.S. Advisor(s): Zorica Buser Ph.D.

Co-author(s): Melissa Baker, Evan Chaladoff

Incidence and Risk Factors of Revision Surgery in Patients Undergoing Endoscopic Lumbar Discectomy

Lumbar disc herniation is a common cause of lower back pain, with endoscopic lumbar discectomy emerging as a preferred treatment due to its minimally invasive nature. Despite high success rates, 5%-15% of patients require revision surgery, yet the factors contributing to reoperation remain poorly understood. This retrospective study analyzed 392 patients who underwent single or multi-level endoscopic discectomy between 2020 and 2023, comparing revision (n=47) and non-revision (n=345) groups. Patient demographics, smoking status, body mass index (BMI), preoperative radiographic parameters (Pfirrmann disc degeneration, Modic changes), surgical levels, and patient-reported outcomes (VAS Leg, VAS Back, ODI) were assessed.

Key findings include a significantly higher revision risk for patients who underwent three-level discectomies ($p=0.001$) and those whose index surgery involved the L3-4 level, with a 1.8-fold increased likelihood of revision ($p=0.049$). While smoking status trended higher in the revision group, this difference was not statistically significant. Notably, preoperative VAS Leg scores were significantly higher in the revision group ($p=0.0084$), suggesting greater baseline radicular pain as a predictor of surgical failure. Although the revision group also had higher preoperative VAS Back and ODI scores, these differences did not reach statistical significance.

Neither preoperative Pfirrmann grades nor Modic changes were predictive of revision, despite their established association with recurrent disc herniation. At six months post-revision surgery, VAS Leg and Back scores improved, though they remained higher than those of non-revision patients following their index procedures. These results highlight the multifactorial nature of revision risk, emphasizing the need for careful patient selection and consideration of surgical level and symptom severity to optimize outcomes.