

Patients at the highest risk for reherniation following lumbar discectomy in a multicenter randomized controlled trial

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Abstract

Background: The purposes of the present study were to (1) confirm the risk of recurrent lumbar disc herniation in patients with a large anular defect who had undergone limited discectomy and (2) assess potential risk factors within this population.

Methods: The patient population was extracted from the control cohort of a prospective, randomized, multicenter controlled trial investigating the efficacy of an anular closure device following standard limited discectomy. All control patients underwent limited discectomy for the treatment of a single-level symptomatic posterior or posterolateral lumbar disc herniation. Only patients presenting with a large anular defect (6 to 10 mm wide by 4 to 6 mm long) were included in the study (n = 278). Baseline demographic, clinical, and surgical characteristics were recorded. Follow-up evaluations were performed at 6 weeks and at 3, 6, 12, and 24 months. Imaging modalities included magnetic resonance imaging, low-dose computed tomography, and radiographs. Symptomatic recurrent lumbar disc herniation was defined as any symptomatic postoperative herniation on either side of the index level. A multivariate logistic regression analysis of demographic and surgical variables associated with the incidence of recurrent lumbar disc herniation was performed.

Results: The mean anular defect area (and standard deviation) was 39.3 ± 9.1 mm², and the mean excised nuclear tissue volume was 1.3 ± 0.8 mL. At 2 years, the incidence of symptomatic recurrent lumbar disc herniation was 25.3% (64 of 253), with the herniation occurring at a mean of 264 days after the index procedure. Of the 64 patients with recurrent lumbar disc herniation, 36 underwent a subsequent surgical procedure. Logistic regression analysis identified an increased risk for recurrent lumbar disc herniation in females (odds ratio, 2.2) and in patients with greater anular defect widths (odds ratio, 1.3). Furthermore, multivariate logistic regression analyses revealed a significant interaction between age and sex ($p = 0.005$).

Conclusions: The outcomes of the present study provide the most substantial evidence to date in confirming previous reports of a high risk of reherniation among patients with large anular defects. Among those with large anular defects (width, ≥ 6 mm), females ≤ 50 years of age had the highest risk (up to 10 times higher) of recurrent lumbar disc herniation. It is recommended that an anular repair or closure should be performed after limited discectomies in patients with large anular defects.

Level of Evidence: Therapeutic Level IV. See Instructions for Authors for a complete description of levels of evidence.

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