

# Clinical Outcomes After Lumbar Discectomy for Sciatica: The Effects of Fragment Type and Anular Competence

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## Abstract

**Background:** The surgical treatment of sciatica with discectomy is ineffective in a sizable percentage of patients, and reherniation occurs after 5% to 15% of such procedures. The purpose of the present study was to determine if competence of the disc anulus and the type of herniation could be used to predict postoperative clinical outcomes following lumbar discectomy.

**Methods:** A prospective observational study of 187 consecutive patients undergoing single-level primary lumbar discectomy was conducted. A single surgeon performed all of the procedures, and an independent examiner evaluated 180 of the patients clinically at a minimum of two and a median of six years after surgery. The extent of anular deficiency and the presence of disc fragments were determined. On the basis of these intraoperative findings, disc herniations were classified into four categories: (1) Fragment-Fissure herniations (eighty-nine patients), (2) Fragment-Defect herniations (thirty-three patients), (3) Fragment-Contained herniations (forty-two patients), and (4) No Fragment-Contained herniations (sixteen patients). The effects of disc herniation morphology and preoperative variables on subsequent clinical outcome were determined with the Student t test for continuous variables and chi-square analysis for categorical variables.

**Results:** Patients in the Fragment-Fissure group, who had disc fragments and a small anular defect, had the best overall outcomes and the lowest rates of reherniation (1%) and reoperation (1%). Patients in the Fragment-Contained group had a 10% rate of reherniation and a 5% rate of reoperation. Patients in the Fragment-Defect group, who had extruded fragments and massive posterior anular loss, had a 27% rate of reherniation and a 21% rate of reoperation. Patients in the No Fragment-Contained group did poorly: 38% had recurrent or persistent sciatica, and the standard outcomes scores were less improved compared with those in the other groups ( $p < 0.001$ ).

**Conclusion:** Intraoperative findings, as described in the present study, were more clearly associated with outcomes than were demographic, socioeconomic, or clinical variables. The degree of anular competence after discectomy and the type of herniation appear to have value for the prediction of the recurrence of sciatica, reoperation, and clinical outcome following lumbar discectomy.

**Level of Evidence:** Prognostic study, Level I-1 (prospective study). See p. 2 for complete description of levels of evidence.

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