

Clinical Study

A matched comparison of outcomes between percutaneous endoscopic lumbar discectomy and open lumbar microdiscectomy for the treatment of lumbar disc herniation: a 2-year retrospective cohort study

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Abstract

BACKGROUND CONTEXT: Although open lumbar microdiscectomy (OLMD) is considered to be the gold standard method for discectomy, recent progress in endoscopic spinal surgery has increased the popularity of percutaneous endoscopic lumbar discectomy (PELD) for this indication. However, one of the main drawbacks of PELD is incomplete decompression, especially at the start of the surgeon's learning curve. The functional outcomes of PELD and OLMD in patients matched for age, hernia level, and hernia location have not previously been compared.

PURPOSE: To compare OLMD with PELD in terms of the clinical outcome and the time to recovery.

STUDY DESIGN: Retrospective, matched cohort study.

PATIENT SAMPLE: Data of all patients who underwent elective spinal surgery between January 2015 and June 2017 were extracted from the local database.

OUTCOME MEASURES: Clinical outcomes were assessed using a 0-to-10 visual analogue scale (VAS) for lower back pain (LBP) and leg pain were scored before surgery and at postoperative day 1 and at each follow-up visit (3, 12, and 24 months), the Oswestry Disability Index (ODI: 0%–100%), the length of hospital stay, time to resumption of work, recurrence of Lumbar disc herniation, procedure failures, and complications.

METHODS: The participants were matched for age, disc level, and location of the herniated disk (central and paracentral vs. far-lateral). The participants' mean±standard deviation age was 47.09±12.55 (range: 28–70). We compared the various clinical outcomes between the two groups to identify which procedure had better immediate and long-term functional outcomes. The differences in mortality and occurrence of postoperative complications were also compared in patients with PELD versus controls.

RESULTS: Fifty-eight patients were enrolled (29 with PELD and 29 with OLMD). Both groups reported significant reductions in LBP and leg pain ($p<0.01$) postoperatively and an improvement in the ODI at 24 months postsurgery. The intergroup difference in the VAS for LBP at 1 day and 3 months was statistically significant (1.48 vs. 3.5, and 1.62 vs. 2.72, respectively; $p=0.01$ and 0.026, respectively) but the intergroup difference in the ODI was not. The mean length of hospital stay and the time to resumption of work were significantly shorter in the PELD group than in the OLMD group (2.55 vs. 3.21 days, and 4.45 vs. 6.62 weeks, respectively; $p=0.037$ and 0.01, respectively). There were no significant intergroup differences in terms of complications, recurrence, or procedure failures.

CONCLUSIONS: Both PELD and OLMD can provide equivalent, satisfactory outcomes. However, PELD demonstrated several potential advantages, including more rapid recovery and lower LBP early on. Further large-scale, randomized studies with long-term follow-up are now warranted. © 2020 Elsevier Inc. All rights reserved.

Keywords:

Endoscopic spinal surgery; Lower back pain; Lumbar disc herniation; Minimally invasive spinal surgery; Spine robot-assisted surgery; Oswestry Disability Index