



Complication rates of different discectomy techniques for symptomatic lumbar disc herniation: a systematic review and meta-analysis

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Abstract

Purpose This meta-analysis aims to compare the complication rates of discectomy/microdiscectomy (OD/MD), microendoscopic discectomy (MED), percutaneous endoscopic lumbar discectomy (PELD), percutaneous laser disc decompression (PLDD), and tubular discectomy for symptomatic lumbar disc herniation (LDH) using general classification and modified Clavien–Dindo classification (MCDC) schemes.

Methods We searched three online databases for randomized controlled trials (RCTs) and cohort studies. Overall complication rates and complication rates per the above-mentioned classification schemes were considered as primary outcomes. Risk ratio (RR) and their 95% confidence intervals (CI) were evaluated.

Results Seventeen RCTs and 20 cohort studies met the eligibility criteria. RCTs reporting OD/MD, MED, PELD, PLDD, and tubular discectomies had overall complication rates of 16.8% and 16.1%, 21.2%, 5.8%, 8.4%, and 25.8%, respectively. Compared with the OD/MD, there was moderate-quality evidence suggesting that PELD had a lower risk of overall complications (RR = 0.52, 95% CI 0.29–0.91) and high-quality evidence suggesting a lower risk of Type I complications per MCDC (RR = 0.37, 95% CI 0.16–0.81). Compared with the OD/MD data from cohort studies, there was low-quality evidence suggesting a higher risk of Type III complications per MCDC (RR = 10.83, 95% CI 1.29–91.18) for MED, higher risk of reherniations (RR = 1.67, 95% CI 1.05–2.64) and reoperations (RR = 1.75, 95% CI 1.20–2.55) for PELD, lower risk of overall complication rates (RR = 0.42, 95% CI 0.25–0.70), post-operative complication rates (RR = 0.42, 95% CI 0.25–0.70), Type III complications per MCDC (RR = 0.39, 95% CI 0.22–0.69), reherniations (RR = 0.56, 95% CI 0.33–0.97) and reoperations (RR = 0.39, 95% CI 0.22–0.69) for PLDD.

Conclusions Compared with the OD/MD, results of this meta-analysis suggest that PELD has a lower risk of overall complications and a lower risk of complications necessitating conservative treatment.