Complications and Cost in Open versus Endoscopic Lumbar Decompression: A Database Study

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INTRODUCTION: Though open lumbar decompression is considered the gold standard, endoscopic procedures are on the rise. The majority of studies comparing endoscopic to open decompression have been limited to small retrospective studies. This database study was designed to compare complications and costs associated with endoscopic and open lumbar decompression on a larger scale.

METHODS: Patients who underwent single-level endoscopic or open lumbar decompression from 2017-2021 with 2-year follow up were identified in a large insurance database using CPT codes. Multi-level surgery, concomitant fusion, or cervical/thoracic procedures were excluded. Postoperative complications including infection, wound dehiscence, and dural tear were evaluated for both groups as well as additional lumbar surgery within 2 years. Costs, complications, and rate of repeat surgery were compared between groups. Statistical analysis was determined by chi square and t tests as appropriate.

RESULTS: A total of 895 endoscopic and 102,258 open lumbar decompression cases met inclusion criteria. The median age range was 60-64 for both groups and the majority were low risk on CCI. Rates of dural tear, infection, and dehiscence were similar between groups. Total cost at two years was higher for the endoscopic group ($20,347 vs. $18,089, $p=0.03$). Patients who underwent endoscopic lumbar decompression were more than twice as likely to undergo a second lumbar surgery in the following two years (16% vs. 7%, $p<0.00001$). Of the patients who underwent additional surgery, there was a higher proportion of patients undergoing reexploration in the open group (33.4% vs. 13.8%, $p<0.00001$) and a higher proportion undergoing endoscopic decompression in the endoscopic group (35.5% vs. 0.64%, $p<0.00001$).

DISCUSSION AND CONCLUSION: Cost and complication profiles are similar between endoscopic and open single-level lumbar decompression. However, endoscopic decompression patients are more than twice as likely to undergo a second procedure within two years. Prospective studies are needed to determine the cause for additional surgery.