



No benefit with preservation of midline structures in decompression for lumbar spinal stenosis

Results from the National Swedish Spine Registry 2-year post-op

Erik Elmqvist, MD¹, Lars Lindhagen², Peter Försth MD, PhD³

¹Department of Orthopedics, Visby Hospital, Visby, ²Uppsala Clinical Research Center, Uppsala University, Uppsala, ³Department of Surgical Sciences, Uppsala University Hospital, Uppsala

PURPOSE

To investigate whether preservation of the midline structures is associated with a better clinical outcome compared to classic central decompression for lumbar spinal stenosis (LSS).

INTRODUCTION

Decompression for lumbar spinal stenosis (LSS) is the most common spine procedure and gradually increases as the demographics of the population change to a growing proportion of the elderly.

The classic surgical procedure for LSS is a central, facet joint sparing decompressive laminectomy (LE) to expose the dural sack. In the past years alternative approaches have been developed and advocated in studies. These techniques aim to minimize surgical trauma and preserve the midline structures, mainly the spinal process and the interspinous ligaments.

It is important to clarify how decompression should be performed with the greatest benefit at the lowest risk for the patient.

METHODS AND MATERIALS

All patients >50 years of age who underwent decompression surgery for LSS without concomitant fusion in the National Swedish Spine Registry (Swespine) from December 31, 2015 until October 6, 2017 were included in this observational cohort study. The study is based on surgeon-reported data and patient questionnaires before and 2 years postoperatively. Propensity score matching was used to compare decompression with preservation of midline structures with patients who underwent decompression with removal of these structures (laminectomy, LE). The primary outcome was the Oswestry Disability Index (ODI) and secondary outcomes were the Numeric Rating Scale (NRS) for leg and back pain, EuroQol-5 Dimensions (EQ-5D), Global Assessment (GA), patient satisfaction and rate of subsequent surgery.

Endpoint	Propensity score matched, adjusted		
	Mean difference	95% Confidence interval	p
ODI, decrease	0.53	(-1.71, 2.76)	0.64
EQ-5D, increase	0.01	(-0.02, 0.05)	0.50
NRS back, decrease	0.07	(-0.28, 0.41)	0.71
NRS leg, decrease	-0.12	(-0.50, 0.26)	0.53
	Odds ratio		
ODI, success	0.95	(0.71, 1.28)	0.73
GA back, success	0.92	(0.69, 1.23)	0.59
GA leg, success	0.79	(0.60, 1.05)	0.11
Patient satisfaction, success	0.89	(0.67, 1.17)	0.39
Dural lesion	0.93	(0.51, 1.70)	0.82

*Mean difference between the groups is adjusted for baseline value and confounders. Differences are based on continuous variables. A positive mean difference corresponds to larger values in the preserving group. Odds ratio compares midline preserving surgery to non-preserving based on ordinal data. OR>1 corresponds to larger values in the preserving group.

RESULTS

Some 3,339 patients completed a 2-year follow-up. Of these, 2,974 (89%) had decompression with LE and 365 underwent midline preserving surgery. Baseline scores were comparable between the groups. Mean ODI improvement at follow-up was 16.6 (SD=20.0) in the LE group and 16.9 (SD=20.2) in the midline preserving surgery group. In the propensity score-matched analysis the difference in improved ODI was 0.53 (95% confidence interval, CI -1.71 to 2.76; p=0.64). The proportion of patients who showed a decreased ODI score of at least our defined minimal clinically important difference (=8) was 68.3% after LE and 67.0% after preserving the midline structures (p=0.73). No significant differences were found in the improvement of NRS for leg and back pain, EQ-5D, GA or patient satisfaction. The rate of subsequent surgery was 5.5% after LE and 4.9% after midline preserving surgery without a significant difference in the propensity score-matched analysis (hazard ratio 0.87; 95% CI 0.49 to 1.54; p=0.64).

CONCLUSION

In this study on decompression techniques for LSS there was no benefit in preserving the midline structures compared to LE 2 years after decompression. The conclusion is that the surgeon is free to choose the surgical method that is thought most suitable for the patient and the condition with which the patient presents.