

Importance: Surgery for Lumbar spinal Stenosis is the most often performed surgical procedure in the adult lumbar spine. This study reports the clinical outcome after the three most performed minimal invasive posterior decompression techniques. Objective: To compare the efficacy of three minimally invasive posterior decompression techniques for lumbar spinal stenosis. Design: A pragmatic multicenter randomized trial with a parallel group design of 437 patients enrolled between February 2014 and October 2018. Setting: Orthopedic and neurosurgical departments at 16 Norwegian public hospitals. Participants Patients with symptomatic and radiologically verified lumbar spinal stenosis without degenerative spondylolisthesis were eligible for inclusion. The Spinal Stenosis Trial (SST) reports data from one of the two multicenter randomized trials included in the NORDSTEN-study. Interventions: Patients were randomized to undergo one of the three minimally invasive posterior decompression techniques: unilateral laminotomy with crossover, bilateral laminotomy, and spinous process osteotomy. Main Outcome Measures: Primary outcome was change in disability measured with Oswestry Disability Index (ODI) (range 0-100), presented as mean change from baseline to 2-year follow-up and proportions of patients classified as success (>30% reduction in ODI). Secondary outcomes were mean change in quality of life (EQ-5D-3L), disease specific symptom severity measured with Zurich Claudication Questionnaire (ZCQ), back pain and leg pain (NRS), patient perceived benefit of surgery, duration of surgery, blood loss, perioperative complications, number of reoperations and length of hospital stay.

Results:

In total, 437 patients were included: 146 were randomized to unilateral laminotomy with crossover, 142 to bilateral laminotomy and 149 to spinous process osteotomy. The unilateral laminotomy with crossover group had a change of -17.9 ODI points (95% CI -20.8 to -14.9), the bilateral laminotomy group had a change of -19.7 ODI points (95% CI -22.7 to -16.8), and the spinous process osteotomy group had a mean change of -19.9 ODI points (95% CI -22.8 to -17.0). There were no significant differences in primary or secondary outcomes between the three surgical procedures, except a longer duration of surgery in the bilateral laminotomy group. Conclusion and Relevance: No differences in clinical outcomes or complication rates were found between the three minimally invasive posterior decompression techniques used for treatment of lumbar spinal stenosis patients.