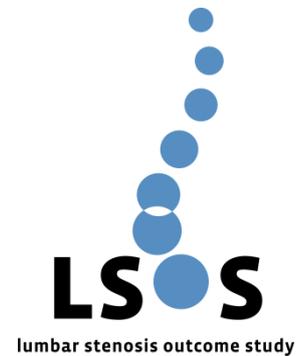


Abstract

Decompression surgery alone versus decompression plus fusion in symptomatic lumbar spinal stenosis: A Swiss prospective multi-center cohort study with 3 years of follow-up



Ulrich NH, Burgstaller JM, Pichierri G, Wertli MM, Farshad M, Porchet F, Steurer J, Held U

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Purpose

To assess whether patients with symptomatic degenerative lumbar spinal stenosis (DLSS) with and without spondylolisthesis benefit more from decompression alone or decompression plus fusion surgery. We did use data from the Swiss Lumbar Stenosis Outcome Study (LSOS), a multi-center prospective cohort study, to explore this issue.

Methods/Materials

Patients of the LSOS with confirmed DLSS were enrolled in this study. The main outcomes of this study were Spinal Stenosis Measure (SSM) symptoms and function over time, measured at baseline, 6, 12, 24 and 36 months follow-up. Further outcomes of interest were changes in SSM, specifically whether MCID was reached in the subscales SSM symptoms and SSM function from baseline to 6, 12, 24 and 36 months. In order to quantify the effect of fusion surgery as compared to decompression alone and number of decompressed levels, we used mixed effects models and accounted for the repeated observations in main outcomes (SSM symptoms and SSM function) over time. In addition to individual patients' random effects, we also fitted random slopes for follow-up time points and compared these two approaches with Akaike's Information Criterion (AIC) and the chi-squared test. Confounders were adjusted with fixed effects for age, gender, BMI, diabetes, CIRS musculoskeletal disorders and duration of symptoms.

Results

One thousand seven hundred and sixteen patients were potentially eligible, and 853 patients agreed to participate. Decompression surgery alone and decompression plus fusion surgery were performed in 443 patients. One hundred and thirty-one patients (29.6%) completed the twelve months, 78 (17.6%) completed the 24 months, and 46 (10.4%) completed the 36 months follow-up. After 6 months, approximately two thirds (64.7% in the decompression alone group vs. 67.4% in the fusion group) reached MCID in SSM symptoms. In the decompression alone group there was an increase up to 75.9% after 24 months follow-up, but after that the percentage of patients who reached MCID decreased to 61.5% at 36 months follow-up. In the fusion group there was first an increase to 78.3% from 6 to 12 months follow-up, then a slight decrease at 24 months follow-up, followed by steep increase to its highest value of 85% at 36 months follow-up.

Conclusion

Among our patients with degenerative lumbar spinal stenosis our study confirms that in both surgical groups, decompression alone and decompression plus fusion, patients distinctively benefited from surgical treatment. In the fusion group more patients reached minimal clinically important difference (MCID) in spinal stenosis measure (SSM) symptoms and function score and were able to maintain the positive clinical development over the three years follow-up period. When adjusted for potential confounders, however, fusion surgery was not associated with a more favorable outcome in both SSM scores as compared to decompression alone surgery.