

Lumbar Spondylolisthesis—Geographic Variation in Arthrodesis Rates, Costs, and Narcotic Outcomes

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Introduction

The role of arthrodesis in the management of lumbar spondylolisthesis remains controversial. Practice patterns, quality indicators, and narcotic outcomes for this population vary widely.

Methods

We identified 67,077 patients (60.7% female, mean age of 59.8 years (SD, 12.0) with lumbar spondylolisthesis who received either laminectomy or laminectomy with arthrodesis in the MarketScan database from 2007 through 2014. We calculated arthrodesis rates, inpatient costs, and narcotic utilization outcomes, adjusted for patient-level demographic factors, and used these results to assess variation beyond differences in patient populations.

Results

The majority (91.8%) of patients received arthrodesis; state-level rates varied from 97.5% in South Dakota to 81.5% in Oregon. Adjusting for patient-level characteristics, 15 states had higher than expected arthrodesis rates, such as South Dakota (5.5% greater than expected; $p<0.001$), and 10 states had lower than expected arthrodesis rates, such as Oregon (10.0% lower than expected; $p<0.001$). Costs of surgery varied from \$32,889 in Michigan to \$78,096 in New Jersey. Eleven states had costs significantly higher and 20 states with costs significantly lower than expected (each $p <0.05$).

Patients who had received arthrodesis were significantly less likely to have stopped using narcotics by 6 months after their procedure (OR=0.89, $p<0.05$). Patients undergoing arthrodesis were not significantly more likely to meet the criteria for chronic narcotic use (OR = 1.02). Chronic narcotic use was most strongly associated with pre-operative narcotic use, which ranged from 24.0% in New Mexico to 72.9% in Mississippi. Post-operative narcotic use in the 2 years following surgery varied markedly, from 3,753 cumulative morphine milligram equivalents (MMEs) in New Mexico to 30,749 MMEs in Idaho.

Conclusions

There is marked geographic variation in the rates of arthrodesis in treatment of spondylolisthesis within the United States. This variation remains pronounced after accounting for patient-level demographic differences. Costs of surgery and narcotic utilization also vary widely.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the variations in arthrodesis rates for lumbar spondylolisthesis 2) Discuss possible drivers of geographic variation