

## **Patients Undergoing Multiple Lumbar Fusions: Analysis of Demographics and Outcomes in Comparison to Successful Index Surgery**

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**INTRODUCTION:** Lumbar fusion is commonly performed for degenerative spine conditions, but a minority of patients require revision surgery. There is limited understanding regarding what patients tend to require revision surgery and how revision affects patient-reported outcome measures (PROMs).

**METHODS:** Patients who underwent primary or revision lumbar fusion at a tertiary institution were identified (2011-2022). Demographic/surgical characteristics were collected by chart review. Patient reported outcomes (PROM) were collected from the institution's prospective PROM database. Descriptive statistics and bivariate analysis were performed to assess the differences between both groups.

**RESULTS:** 747 patients were included (193 with at least one revision). Patients who required revision were younger (60 vs. 61.7 years,  $p=0.026$ ), more commonly male (67.9% vs. 45.5%,  $p<0.001$ ), had higher body mass index (31.4 vs. 30,  $p=0.003$ ), and higher Charlson Comorbidity Index (1.84 vs. 0.88,  $p<0.00$ ). Successful index surgeries were more commonly combined surgical approaches (19.1% vs. 10.4%,  $p=0.007$ ), had lower 90-day readmission (3.99% vs. 11.4%,  $p<0.001$ ), and a higher percentage of home health care utilization (32.9% vs. 22.3%,  $p<0.001$ ). Despite having generally similar baseline pain and physical function PROM scores, patients who required one or more revisions experienced worse scores and worse improvement (delta) at three and 12 months ( $p<0.05$ ).

**DISCUSSION AND CONCLUSION:** Patients undergoing lumbar revision fusion, especially multiple, demonstrate worse outcomes when compared to those who undergo primary fusion. These findings should be considered when performing patient selection and counseling at the time of index and revision lumbar fusion.