Patient Expectations and Surgical Satisfaction in Primary versus Revision Lumbar Spine Surgery

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INTRODUCTION: Patient satisfaction is a key indicator used to monitor outcomes after spine surgery. Patient satisfaction can be influenced by patient expectations and outcome measures. Given that revision surgery patients have had prior surgeries, their pre-operative expectations may differ, potentially affecting their satisfaction. We hypothesize that primary and revision lumbar surgery patients will have different pre-operative expectations that could influence their satisfaction.

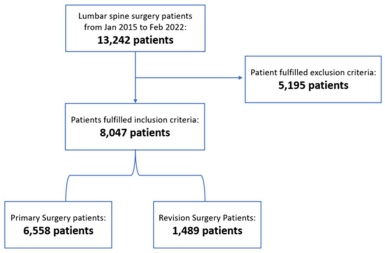
METHODS: Using the Canadian Spine Outcomes and Research Network (CSORN) registry, we retrospectively collected lumbar spine surgery patients between January 2015 and February 2022. We excluded patients who had spine surgery due to injury, tumors, infections, or complications from a recent spine surgery that required intervention within six weeks. We grouped patients into primary and revision surgery cohorts (figure 1). For each cohort, we assessed patients' pre-operative expectations across six dimensions including leg pain, back pain, independence in everyday activities, sporting activities/recreation, general physical activities at home and work, and mental well-being. At 1-year post-surgery, we assessed whether their expectations were met, exceed, or unmet. We also assessed patient-reported outcome measures (PROMs) including ODI, EQ-5D, MCS, PCS, as well as their self-reported scores of back and leg pain pre-operatively and at 1-year post-operatively. At one-year, we assessed patient satisfaction using a 5-point Likert scale. Differences between expectations, surgical outcomes, and patient satisfactions were computed to compare between the two different surgery cohorts.

RESULTS:

Twenty-two (22) hospitals contributed to a total of 8,047 patients who fulfilled the inclusion criteria. Primary surgery patients had higher pre-operative expectations compared to revision group across all six dimensions ($p<0.0001$). A lower percentage of revision surgery patients had their expectations met or exceeded across the six dimensions ($p<0.0001$). Specifically, for leg pain, 63% of primary surgery patients had their expectations met, versus 56.47% of revision surgery patients. For back pain, it was 66.79% versus 57.8%; for independence, 79.13% versus 72.93%; for sporting activity, 64.85% versus 58.29%; for physical health, 83.37% versus 78.41%; and for mental health, 70.22% versus 62.63% ($p<0.0001$). Primary surgery group satisfaction was higher (60.42%) than revision surgery group (47%, $p<0.0001$). Mean EQ-5D was 71.65 (±18.19) in primary cohort, greater than 66.39 (±19.58) ($p<0.0001$) in revision cohort, with greater change from baseline to the one-year mark in primary cohort 15.85 (±23.53) than revision group (13.73 ±23.53) ($p<0.0001$). Mean ODI score was lower in primary cohort (24.56 ±18.98) than revision group (33.94 ±19.38) with a greater decrease from baseline to one-year post-surgery in primary surgery cohort (-21.73±19.00) than revision cohort (-14.81±18.02) ($p<0.0001$). Mean PCS score was 29.00 (±7.86) in primary surgery cohort, greater than 27.81 (±7.69) ($p<0.0001$) in revision surgery cohort, with greater change from baseline to the one-year mark in primary surgery cohort 11.99 (±11.26) than revision group (8.63 ± 10.73) ($p<0.0001$), and overall better PROMs in primary surgery group (figure 2). Multivariable analysis adjusted to the baseline of each of the PROMs showed that primary group were, almost always, ~1.7 times more likely to be satisfied than revision group for the same change in PROMs (figure 3).

DISCUSSION AND CONCLUSION:

Revision surgery patients had lower pre-operative expectations, and this was consistent across all measured six dimensions. Even though revision surgery patients had lower pre-operative expectations, a lower percentage of them had their expectations met compared to primary surgery patients. We also showed that revision surgery patients had worse PROM scores at baseline and at 12-months post-operatively, and the degree of improvement in PROMs from baseline to 12-months was significantly greater in the primary surgery patients. However, regardless of fulfilled expectations, revision surgery patients had 1.7 times lower odds of satisfaction for the same change in PROMs. This shows that revision surgery patients are likely to be less satisfied regardless of the degree of improvement in surgical outcomes and fulfillment of expectations.



	OR	95% CI		P-value
Back pain	**1.684**	1.474	1.925	**<.0001**
Leg pain	**1.709**	1.496	1.952	**<.0001**
PCS	**1.683**	1.469	1.927	**<.0001**
MCS	**1.694**	1.479	1.94	**<.0001**
EQ5D	**1.676**	1.465	1.917	**<.0001**
ODI	**1.671**	1.462	1.91	**<.0001**