

# Single Versus Multilevel Fusions in the Setting of Multilevel Lumbar Decompressions

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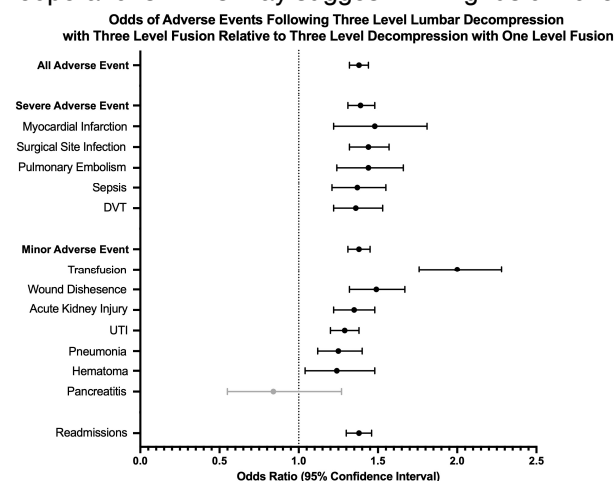
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**INTRODUCTION:** Patients undergoing multilevel lumbar decompression may be indicated for fusion at one or more levels. The question of fusing only one level with indications such as spondylolisthesis or fusing all levels decompressed is one of clinical interest in both the short and longer term. This retrospective cohort study set out to assess the relative odds of perioperative complications, readmissions, and five-year survival to reoperation for three-level lumbar decompression patients who underwent one-level versus three-level fusion.

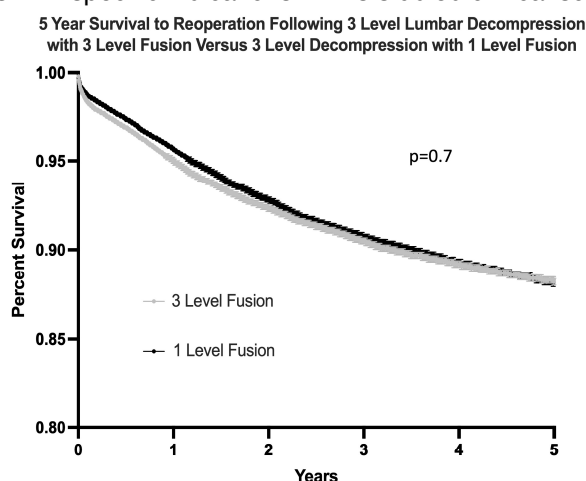
**METHODS:** Patients undergoing three-level lumbar decompression were extracted from the PearlDiver M165Ortho database. The subset of these patients undergoing concomitant one-level or three-level fusions were identified and matched 1:1 based on patient age, sex, and Elixhauser Comorbidity Index (ECI) scores. The incidence and odds of 90-day postoperative adverse events were compared between the two groups by multivariable analysis and five-year survival to lumbar spinal reoperation was compared.

**RESULTS:** After matching 1:1, 33,413 patients each were identified who had undergone three-level lumbar decompression and one-level or three-level fusion. Controlling for patient age, sex, and ECI, three-level fusion patients had significantly greater odds of 90-day any (odds ratio [OR] 1.38), serious (OR 1.39), and minor (OR 1.38) adverse events and readmissions (OR 1.38) ( $p < 0.0001$  for all). However, there was no significant difference in five-year survival to reoperation between the two groups ( $p = 0.7$ ).

**DISCUSSION AND CONCLUSION:** There is often the clinical conundrum for patients with a fusion indication undergoing multilevel lumbar decompression if a selective fusion or fusion of all levels being decompressed should be considered. In considering multilevel lumbar decompression patients undergoing one or three level fusion, the current study found increased odds of perioperative adverse events for those with more levels fused but not a difference in five-year reoperations. This may suggest limiting fusion to levels with specific indications in this studied clinical scenario.



**Figure 1.** Odds of adverse events following 3-level lumbar decompression in patients with 3-level fusion relative to 3-level decompression with 1-level fusion



**Figure 2.** 5-year Kaplan-Meier survival to reoperation for 3-level lumbar decompression patients undergoing concomitant 3-level fusion or 1-level fusion.