

Examining the value of lumbar spine surgery

March 17 2021



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Since the 1990s the rate of spinal fusion to treat lower back pain has been on the rise. A new prospective clinical study published in the journal *Neurosurgery*, the official journal of the Congress of Neurological Surgeons, found that lumbar fusions were three times more likely to be effective and obtain better patient outcomes, when

guidelines for fusion were followed. The results suggest that when surgeons operate outside of what the evidence based literature suggests, patients may not have significant improvements in their quality of life and could have increased pain or other limitations.

"Unfortunately, we don't know how many lumbar [fusion](#) surgeries are not based on evidence-based best practice, or how these patients do clinically," says neurosurgeon James Harrop, MD, MSHQS professor and chief of the Spine and Peripheral Nerve Surgery division at the Vickie and Jack Farber Institute for Neuroscience—Jefferson Health. "The study goal was to explore what drove the best clinical outcomes for lumbar fusion, specifically the outcomes that patients valued as important to them. Our results indicate that alignment with [clinical guidelines](#) was the best predictor of positive outcomes over all other factors we evaluated."

The researchers assessed 325 lumbar fusion cases on whether they conformed to the North American Spine Societies (NASS) lumbar fusion guidelines. Assessments were done in a blinded fashion, and did not influence the decision of a patient's surgical team. The researchers then followed the patients out for 6 months after surgery and had them fill out a validated survey tool (the Oswestry Disability Index—ODI), which assessed patient-reported outcomes measures (PROM). Rather than examining surgical success, the ODI examines patient centric outcomes including: pain, walking, lifting, sleep, social life and sex life.

Dr. Harrop and his colleagues found that of all of the variables they examined—concordance with NASS guidelines, type of surgeon, whether it was the first back surgery or a revision—following guidelines was most strongly associated with positive patient ODI outcomes. And that the patients meeting their criteria for a successful surgery were three times higher in these cases, highlighting how effective lumbar fusions can be for the right patient. "This study shows that the majority of

patients did well with a lumbar fusion," says Dr. Harrop, "But for the wrong patients, lumbar fusion can at best do nothing and at worst, create other problems."

The evidence-based guidelines, published by NASS, describe nine criteria including things like trauma, deformity of the spine, certain kinds of axial back pain, tumor, or infection. However, there is still some debate in the field as to when patients fit the criteria.

"For example, after a trauma with a "broken" back, where we know the spine is unstable—we also know a fusion can help," says Dr. Harrop. "That is a minority of the problems we see in practice. For our most common patient, one with degenerative diseases, spinal stability and instability has not been defined and understood as well as it should be. The NASS guidelines certainly help, but we need more research to understand what qualifies as normal range of movement, when is something pathologic and is immobilization through fusion the best option."

The research was initiated and funded by Jefferson as part of an effort to improve [patient care](#) and outcomes through rigorous study. "What we really need is support from [insurance companies](#) and other agencies to fund and promote research on best practices and evidence-based care. Without that, we cannot debate value," says Dr. Harrop.

More information: James Harrop et al, Are Guidelines Important? Results of a Prospective Quality Improvement Lumbar Fusion Project, *Neurosurgery* (2021). [DOI: 10.1093/neuros/nyab062](https://doi.org/10.1093/neuros/nyab062)

Provided by Thomas Jefferson University

Citation: Examining the value of lumbar spine surgery (2021, March 17) retrieved 19 April 2024 from <https://medicalxpress.com/news/2021-03-lumbar-spine-surgery.html>

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