Grade 1 lumbar spondylolisthesis surgery indications

Addition of fusion to decompression for stenosis with grade 1 degenerative spondylolisthesis is a controversial topic, and the question remains if fusion provides any benefit to the patient that warrants the increased health care utilization and perioperative morbidity. There is no consensus on indications for use of fusion over decompression alone.

There is some moderate evidence that decompression alone may be a feasible treatment with lower surgical morbidity and similar outcomes to fusion when performed in a select population with a low-grade slip. Similarly, the addition of interbody fusion may be best suited to a subset of patients with high-grade degenerative spondylolisthesis, although this remains controversial.

Prior studies have revealed that a body mass index (BMI) \geq 30 is associated with worse outcomes following surgical intervention in grade 1 lumbar spondylolisthesis. Using a machine learning approach, a study aimed to leverage the prospective Quality Outcomes Database (QOD) to identify a BMI threshold for patients undergoing surgical intervention for grade 1 lumbar spondylolisthesis and thus reliably identify optimal surgical candidates among obese patients. In this multicenter study, the authors found that a BMI \leq 37.5 was associated with improved patient outcomes following surgical intervention. These findings may help augment predictive analytics to deliver precision medicine and improve prehabilitation strategies ¹⁾

Minimally invasive techniques are increasingly being utilized for both decompression and fusion surgeries with more and more studies showing similar outcomes and lower postoperative morbidity for patients. This will likely be an area of continued intense research. Finally, the role of spondylolisthesis reduction will likely be determined as further investigation into optimal sagittal balance and spinopelvic parameters are conducted. Future identification of ideal thresholds for the sagittal vertical axis and slip angle that will prevent progression and reoperation will play an important role in surgical treatment planning. Current evidence supports the surgical treatment of degenerative spondylolisthesis. While posterolateral spinal fusion remains the treatment of choice, the use of interbodies and decompressions without fusion may be efficacious in certain populations. However, additional high-quality evidence is needed, especially in newer areas of practice such as minimally invasive techniques and sagittal balance correction²⁾

Patients received fusion or decompression according to a decision-making protocol based on their pattern of complaints, location of the compression, and facet angles and effusion as proven predictors of postoperative instability. Propensity score matching of patients was done for baseline data.

The study comprised 102 patients in 2 equally sized groups. No intergroup differences in numeric rating scale and Oswestry Disability Index were detected at any follow-up point (all P > 0.05). Duration of surgery, length of stay, estimated blood loss, and radiation doses were higher in the fusion group (all P < 0.001). Cumulative reoperation rate was similar with 6% for fusion and 8% for

decompression (P > 0.05), as was the complication rate (8% vs. 6%, P > 0.05). Postoperative iatrogenic progression of spondylolisthesis requiring fusion surgery was seen in only 2% in the decompression group.

Use of a decision-making protocol led to a low rate of iatrogenically increased spondylolisthesis after decompression, while retaining outcomes. These data suggest that a decision-making protocol based on clinical history, location of nerve root compression, and proven radiologic predictors of postoperative instability assigns patients to fusion or decompression in a safe and effective manner ³.

- Early results and indications of Stand-alone oblique lateral interbody fusion in lumbar lesions
- Decompression without Fusion in Patients with Low-Grade Degenerative Spondylolisthesis and Stenosis: Long-Term Patient-Reported Outcome
- Surgical treatment of high-grade spondylolisthesis
- Symptomatic lumbar stenosis due to low-grade degenerative spondylolisthesis can effectively be treated with mere decompression
- Efficacy of less Invasive modified O-arm navigated delta fixation in osteoporotic high-grade spondylolisthesis: "a LIMO delta technique"
- In which cases do surgeons specializing in total disc replacement perform fusion in patients with symptomatic lumbar disc degeneration?
- Characteristics and outcomes of patients undergoing lumbar spine surgery for axial back pain in the Michigan Spine Surgery Improvement Collaborative
- Rehabilitation to improve outcomes of lumbar fusion surgery: a systematic review with metaanalysis

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