

Lumbar Spine Fusion: A RAND/UCLA Appropriateness Study

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Introduction: Regional rates of surgical fusion of the lumbar spine vary more than any other surgical procedure.



Figure 2. Appropriateness ratings by radiologic signs



Methods: The RAND/UCLA Appropriateness Method was used to identify degenerative indications for lumbar fusion. A North American expert panel of 13 physicians independently rated clinical scenarios for lumbar fusion. Panelists rated 1296 scenarios from 1 to 9 for their appropriateness for lumbar fusion. A meeting was then convened in a modified Delphi process and scenarios were again rated. The resulting criteria were applied in 150 patients who underwent elective instrumented lumbar fusion.

Results: Of the 1296 final scenarios, fusion was appropriate in 133 (10%), uncertain in 375 (29%), and inappropriate in 735 (57%). Disagreement occurred in the remaining 53 scenarios (4%). Of the appropriate indications, spondylolisthesis accounted for 98 (74%), spinal stenosis for 18 (14%), spondylosis for 9 (7%), and disc herniation for 8 (6%). Appropriate fusion was associated with mechanical low back pain (P<0.001) and radiologic signs of instability or sagittal imbalance (P<0.001). Of the 150 operated patients, fusion was appropriate in 72 (48%), uncertain in 70 (47%), and inappropriate in 8 (5%).



Results (cont.): In the 2 years after surgery, patients who underwent appropriate fusion required less cross-sectional imaging for persistent, worsening, or recurrent symptoms (adjusted hazard ratio [HR], 2.42; 95% confidence interval [CI], 1.31 to 4.48; P<0.01) and fewer spinal injections (adjusted HR, 2.53; 95% CI, 1.29 to 4.96; P<0.01). There was, however, no significant difference between groups in the probability of reoperation (P=0.84), rehospitalization (P=0.50), or use of prescription pain medication (P=0.23).



Conclusions: Criteria for the appropriate use of lumbar fusion for degenerative indications were identified (web-based decision tool accessible at www.appropriatelumbarfusion.com/site). In operated patients, appropriate fusion was associated with reduced healthcare demands. The criteria will require further validation and regular revision.