A Comparison of Perioperative Charges and Outcome between Open Anterior and Mini-open Lateral Approaches for Lumbar Discectomy and Fusion

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Summary of background data: Several recent analyses have shown broad cost-effectiveness for spine surgery. These reports, however, primarily examined conventional open procedures. Minimally invasive techniques may theoretically decrease overall costs with less blood loss (EBL), fewer complications, and shorter hospital stays (LOS), although such reports do not yet exist.

Objective: The objectives of this study were to examine charge data, to assess relative cost, and long-term outcomes of two approaches for lumbar interbody fusion: a mini-open lateral approach and an open anterior approach.

Methods: Retrospective chart review was performed on 202 patients treated at one institution from 2004 to 2008 by two neurosurgeons. 87 patients underwent one- or two-level anterior lumbar interbody fusion (Open group) and 115 underwent one- or two-level mini-open, lateral lumbar interbody fusion (Mini-open group). Both received bilateral pedicle screw fixation.

Results: Demographics were matched between the Open and Mini-open patients with the exception of age, which was greater in the Mini-open group (p< 0.001) and incidence of prior lumbar surgery, also greater in the Mini-open group (p=0.002). The most common diagnoses were degenerative disc disease and stenosis with instability. Mean operative time (ORT), EBL, and LOS for one- and two-level cases were significantly less in the Mini-open compared to Open group. Complications occurred in 16.7% of Open cases and 8.2% of Mini-open cases (p=0.041). Charges for Mini-open were significantly less than for Open for both one- and two-level cases. Mean one-level Mini-open and Open charges were $91,995 and $102,146, and two-level charges were $124,540 and $144,183, respectively. This represents a 10% cost-savings, based on charges, for one-level and 13.6% for two-level Mini-open over Open procedures. Functional outcomes improved significantly at two years for both cohorts, though the difference between Mini-open and Open patients was not significant.

Conclusions: By using a mini-open lateral, as compared to a conventional open anterior approach, significant clinical as well as cost benefits are seen with similar long-term outcomes.