Orthopaedic Surgery versus Neurosurgery: Prevalence and Surgical Detail Assessment of Adult Spinal Fusion Procedures

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INTRODUCTION: A significant procedural overlap between orthopaedic surgeons and neurosurgeons exist, with both specialties performing adult spinal fusion procedures. However, the annual prevalence of varying adult spinal fusion procedures performed by orthopaedic surgeons, relative to neurosurgeons, is unknown. This retrospective review sought to compare the prevalence of spinal fusion procedures among orthopaedic and neurologic surgeons. The American College of Surgeons (ACS) National Surgical Quality Improvement Program (NSQIP) database was queried to identify all patients undergoing spinal fusion from 2008-16. Procedure prevalence by surgical specialty, operative time, and hospital length of stay (LOS) were recorded and analyzed.

METHODS: The NSQIP database was queried for all adult (>18 y/o) spinal fusion procedures from 2008-2016 using Current Procedural Terminology codes. Prevalence of orthopaedic (O) versus neurological surgeon (N) specialty was assessed among surgical cases. Spinal fusion cases investigated: all fusions, 2-3-level lumbar fusion, 4+ level lumbar fusion, anterior cervical discectomy and fusion (ACDF), 3-6-level posterior cervical fusion, and 6+ level posterior cervical fusion. Operative time and LOS were compared among N and O for each spinal fusion procedure.

RESULTS: A total of 67,775 adult spinal fusion were performed during 2008-16, 22,896 (33.7%) and 44,879 (66.2%) by O and N, respectively. Prevalence of 2-3-level lumbar fusions was 8.6% (5,851 cases; 3,210 O [54.9%], 2,641 N [45.1%]; $p<0.001$). O had shorter operative time (124.0 vs. 134.0 min, $p<0.001$) and similar LOS (4.3 vs. 4.2 days, $p=0.196$). Prevalence of ≥4-level lumbar fusions was 0.5% (363 cases; 212 O [58.4%], 151 N [41.6%]; $p<0.001$). O had a similar operative time (176.1 vs. 189.2, $p=0.930$) and LOS (5.8 vs. 6.3, $p=0.446$). Prevalence of ACDFs was 40.9% (27,748 cases; 7,128 O [25.7%], 20,620 N [74.3%], $p<0.001$). O had similar Op time (77.0 vs. 71.1, $p=0.560$) and LOS (5.7 vs. 4.6, $p=0.789$). Prevalence of 3-6-level posterior cervical fusion was 0.3% (195 cases; 67 O [34.4%], 128 N [65.6%]; $p=0.865$). O had similar Op time (138.1 vs. 157.2, $p=0.175$) and LOS (4.5 vs. 6.5, $p=0.219$). Prevalence of ≥6-level cervical fusion was 0.1% (62 cases; 21 O [33.9%], 41 N [66.1%]; $p=0.988$). O had similar operative time (181.8 vs. 143.8, $p=0.586$) and LOS (7.5 vs. 9.9, $p=0.253$).

DISCUSSION AND CONCLUSION: Neurosurgeons performed more spinal fusion cases from 2008-2016, especially ACDFs, while orthopaedic surgeons performed significantly more 2-3-level and 4+ level lumbar fusions. Orthopaedic surgeons also required shorter operative times for 2-3-level lumbar fusions.