

Resource Utilization following Anterior versus Posterior Cervical Decompression and Fusion for Acute Central Cord Syndrome

Collin Blackburn¹, Jerry Y Du², Jens R Chapman, Nicholas Utchan Ahn, Randall Evan Marcus¹

¹University Hospitals Cleveland Medical Center, ²University Hospitals/ Case Western/ Metrohealth

INTRODUCTION:

Acute traumatic central cord syndrome (CCS) is the most common form of spinal cord injury in the United States and can result in significant neurologic sequelae. CCS is commonly treated with surgical intervention with decompression and fusion. Choice of anterior versus posterior approach surgery depends on a variety of factors. However, the demands in terms of hospital resources based on surgical approach remain unclear. The purpose of this study is to compare the impact of anterior cervical decompression and fusion (ACDF) versus posterior cervical decompression and fusion (PCDF) for treatment of acute traumatic CCS on hospital episode of care for in terms of 1) cost, 2) length of hospital stay, and 3) discharge destination.

METHODS:

This is a retrospective cohort study. Patients cohorts were identified using the 2019 Medicare Provider Analysis and Review (MedPAR) Limited Data Set (LDS) and Centers for Medicare and Medicaid Services (CMS) 2019 Impact File. Patients undergoing ACDF and PCDF for acute traumatic CCS were included. Combined anterior and posterior cervical fusions, revision cases, thoracic extension, disc replacements, and epidural abscess were excluded. A univariate analysis of potential demographic, comorbidity, surgical, perioperative, and hospital confounders was performed. Multivariate models for hospital cost of care, length of stay, and discharge destination were performed including surgical approach and potential confounders.

RESULTS:

There were 1,474 central cord cases that met inclusion criteria. There were 673 cases treated with ACDF (45.7%) and 801 cases treated with PCDF (54.3%). There were 1,007 males (68.3%) and 467 females (31.7%). The majority of patients were age 65-74 (48.9%). The mean cost of a hospital episode for central cord was \$47,193.107±32,410.139 and mean length of stay was 10.49±8.39 days. The majority of patients were discharged to non-home destinations (82.8%).

On univariate analysis, ACDF was associated with lower cost of hospital episode of care (\$39,542.715±28,117.179, $p<0.001$) and shorter length of stay (9.70±7.69 days vs. 11.15±8.89 days, $p=0.001$) compared to PCDF for central cord syndrome. ACDF was associated with increased incidence of home discharge compared to PCDF (24.8% vs. 10.7%, $p<0.001$).

On multivariate analysis, ACDF was independently associated with decreased cost of \$9,801.509 (95% confidence interval [CI]: \$6,199.266-\$13,403.751, $p<0.001$), shorter length of stay by 1.073 days (95% CI: 0.115-2.031 days, $p=0.028$), and a 59.2% decreased risk of discharge to non-home destinations (adjusted odds ratio [aOR]: 0.408, 95% CI: 0.297-0.562).

DISCUSSION AND CONCLUSION: For treatment of acute traumatic CCS, ACDF was associated with almost \$10,000 less expensive cost of care, 1 day shorter length of stay, and a 60% decreased risk of discharge to non-home destination compared to PCDF. Although injury and patient clinical factors should always be prioritized in surgical decision making, these findings may inform value-based decisions regarding treatment of acute traumatic CCS.