

## **Do Postoperative Neurological Complication Rates Vary Between Anterior Cervical Discectomy and Fusion (ACDF) for Cervical Radiculopathy or Cervical Myelopathy?**

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### **INTRODUCTION:**

Baseline cervical radiculopathy (CR) and/or myelopathy (CM) may predispose patients undergoing anterior cervical discectomy and fusion (ACDF) to increased postoperative risk of neurological complications. We sought to compare 90-day rates and identify predictors of neurological complications following ACDF for CR vs. CM.

### **METHODS:**

The New York Statewide Planning and Research Cooperative System (SPARCS) database was used to identify all patients undergoing 2-3-level ACDF for CR or CM from 2009-13 with  $\leq 90$ -day follow-up. Demographic, hospital-related parameters, and 90-day neurological and other complications, readmissions, and revisions data were queried. Multivariate logistic regression was used to identify independent predictors of overall & neurological complications (covariates: age, sex, Charlson/Deyo, and race and CR/CM).

### **RESULTS:**

5221 patients were identified (CM, n=4,401; CR, n=820). CM patients were older (56.9 vs. 49.5 yrs) and had higher comorbidity burden (Charlson Deyo, 0.6 vs. 0.4),  $p < 0.05$ . CM patients had lengthier hospital stay (LOS) and higher total charges (3.7 vs. 2.0 days; \$51,549 vs. \$39,162), all  $p < 0.001$ .

CR and CM patients had comparable rates of individual nerve complications, including C5-C7, phrenic, and recurrent laryngeal nerve damage, as well as overall neurological complications (0.4% vs. 0.8%). Cervical vascular complications were also comparable between CR and CM, as were CNS-related complications (0 vs. 0.1%), dural tears (0.1% vs. 0.6%) and overall surgical complications (1.46% vs. 1.3%),  $p > 0.05$ . CM incurred higher 90-day total complications (7.5% vs. 2.7%), readmissions (3.8% vs. 0.7%), and revisions (7.6% vs. 5.1%), all  $p \leq 0.032$ . Regression analysis revealed that CM was associated with increased odds of 90-day readmissions, medical complications, total complications, and revisions (ORs=3.8, 2.8, 1.7, 1.4,  $p \leq 0.043$ ) but was not associated with increased odds of 90-day neurological complications.

**DISCUSSION AND CONCLUSION:** CM patients were older and with higher comorbidity burden, hospital charges, LOS, and total complications rate yet had similar neurological complication rates when compared to CR patients. This data may guide cervical surgeons in counseling patients regarding risk of individual and overall neurological complications following 2-3-level ACDF.