

## Postoperative complications after anterior cervical discectomy and fusion in patients with versus without carotid stenosis

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**Disclosures:** Katie M Zehner (8- Associate Editor of Visual Abstracts, North American Spine Society Journal), Julian Smith-Voudouris (N), Joshua G Sanchez (N), Sahir S Jabbouri (N), Yoji Ogura (N), Basar Atalay (N), Jonathan N Grauer (8- North American Spine Society Journal Editor-in-Chief, 8- Journal of the American Academy of Orthopedic Surgeons Deputy Editor, 9- North American Spine Society past board member), Arya G Varthi (3B-consultant, Depuy Synthes spine)

**INTRODUCTION:** Carotid stenosis (CS) may elevate risk of stroke related to anterior cervical discectomy and fusion (ACDF) due to manipulation of the carotid artery and altered flow dynamics. Prior studies assessing this potential association are limited by small sample size and assessment of in hospital stroke only. The present study sought to compare 90-day adverse events following ACDF in patients with relative to without CS.

**METHODS:** Adult patients (age >17 years) without a history of stroke who underwent isolated 1-3 level ACDF were identified in the 2010-2023 PearlDiver M170 database. Patients with CS were matched 1:4 to patients without CS on the basis of age, sex, and Elixhauser comorbidity index (ECI). Adverse outcomes, emergency department (ED) visits, and readmissions in the 90 postoperative days were identified. These adverse outcomes were compared with univariable and multivariable analyses, the latter controlling for age, sex, and ECI. The timing of stroke following surgery was also plotted on a Kaplan-Meier survival curve and compared by log-rank test. A secondary analysis was conducted comparing CS patients who had undergone revascularization relative to those who had not.

**RESULTS SECTION:** Among patients in the database undergoing ACDF, 17,772 with and 423,401 without CS were identified. Following matching, final cohorts consisted of 16,888 CS patients and 67,355 matched controls. CS was associated with greater odds of cardiac events (OR=1.74, p<0.0001) and stroke (OR=1.49, p<0.0001), but not other assessed adverse outcomes (Figure 1). The incidence of stroke continued to diverge for the two groups out to 90-days postoperatively.

Of CS patients, 2.8% had prior carotid revascularization. These patients had no difference in odds of stroke when compared to patients who had not undergone revascularization (p=0.5220)

**DISCUSSION:** ACDF patients with CS were found to be at significantly elevated odds of cardiac events and stroke (adverse outcomes associated with atherosclerotic burden), but not other assessed adverse outcomes. Surveillance of related symptoms through the perioperative period is importantly considered.

**SIGNIFICANCE/CLINICAL RELEVANCE:** (1-2 sentences): Patients with CS undergoing ACDF are at elevated odds of stroke and MI throughout the postoperative period and may warrant additional monitoring.

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**Odds of 90-Day Adverse Events for Patients with Carotid Stenosis Relative to Patients without Carotid Stenosis Following ACDF**

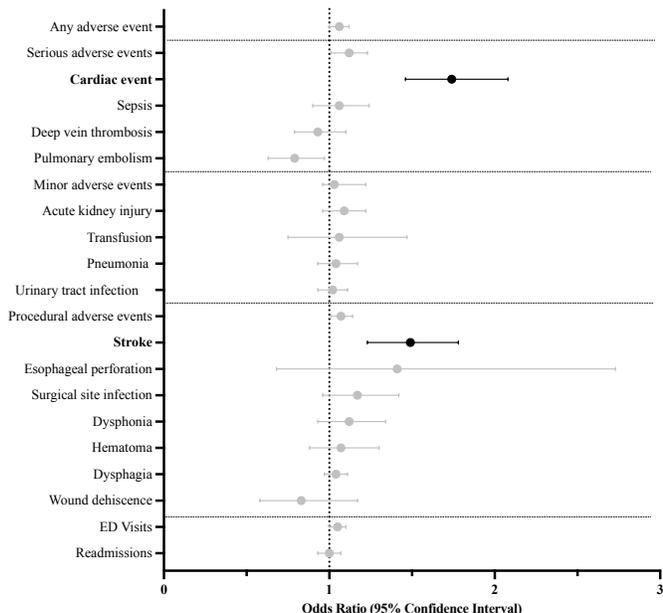


Figure 1. Forest plot depicting the odds of 90-day adverse events for patients with carotid stenosis relative to those without carotid stenosis following anterior cervical discectomy and fusion. Black bars indicate statistical significance (p<0.05). ED=emergency department.