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Increased Rate of Postoperative Cerebrovascular Events in Adult Spinal Deformity Patients with Coronary Artery Stenosis Undergoing 2+ Level Spinal Fusion: A Propensity Scored-Match Analysis

Study Design: Retrospective Analysis

Introduction: This study aims to investigate the impact of Coronary Artery Stenosis (CAS) on 2-year postoperative outcomes following 2+ level spinal fusion surgery in patients with Adult Spinal Deformity (ASD). CAS is the most common type of heart disease that causes thickening and narrowing of coronary arteries. Disruption of oxygen and nutrient flow to the heart may result in serious health problems. The development of medical or surgical complications in CAS patients who undergo spinal fusion surgery remains poorly understood.

Methods: The New York Statewide Planning and Research Cooperative System was queried to identify patients with ASD who underwent 2+ level spinal fusion surgery with at least 2-year follow-up. Controlling for variables such as age, sex, and obesity, differences in postoperative outcomes in a cohort diagnosed with CAS were compared to a control. Demographics and rates of 2-year postoperative surgical and medical complications were compared between cohorts.

Results: A cohort of 128 non-CAS patients and 128 CAS patients were identified. Non-CAS and CAS patients had comparable ages (69.71 vs 69.88 years) and sex (51.6% vs 52.3% female) distributions. CAS patients were more likely to have higher DEYO scores, increased rates of medical complications and cerebrovascular events (all, $p < 0.05$).

Conclusions: CAS patients who undergo corrective surgery for ASD, when compared to a control cohort, experienced higher rates of medical complications, specifically more cerebrovascular events. These findings should be taken into consideration to optimize CAS patients prior to spinal fusion surgery and to prepare providers for such potential complications post-operation.

Keywords: Adult Spinal Deformity; Spinal Fusion; Coronary Artery Stenosis; Surgical Outcomes

Level of Evidence: III