Objective(s): Management of the left subclavian artery during TEVAR for Zone 2 anatomy remains controversial, based mostly on low-quality evidence and variable outcome data. The purpose of this study was to compare outcomes of subclavian coverage and revascularization during TEVAR using the multicenter prospectively collected American College of Surgeons Quality Improvement Program (ACS-NSQIP) database.

Methods: ACS-NSQIP national public use files from 2005 to 2015 were queried for patients undergoing TEVAR, open subclavian revascularization, or both using procedural codes. Cases with concurrent carotid-to-carotid bypass were excluded. 30-day outcomes were compared between 4 groups: TEVAR distal to subclavian, TEVAR covering subclavian without revascularization, TEVAR with open subclavian revascularization, and open subclavian revascularization without TEVAR.

Results: A total of 5305 patients were identified: 2087 underwent TEVAR distal to subclavian, 1099 underwent TEVAR covering subclavian without revascularization, 264 underwent TEVAR with subclavian revascularization, and 1855 underwent subclavian revascularization without TEVAR. When compared to TEVAR distal to subclavian, TEVAR covering subclavian without revascularization was associated with a higher 30-day mortality (9.5% vs. 7.1%, P = .023) and a higher rate of stroke (CVA) or acute myocardial infarction (AMI) (7.7% vs. 4.6%, p<0.01). On univariate analysis, TEVAR with subclavian revascularization had similar 30-day mortality (8.3%) and combined risk of CVA or AMI (11.4%) compared to TEVAR covering subclavian without revascularization. However, a higher percentage of the “no revascularization” cohort was performed emergently (25.8% vs 15.9%, P <0.001) or had pre-operative shock (12.6% vs 4.5%, P<0.001). After multivariate adjustment, adjuvant subclavian revascularization had an increased risk of CVA or AMI (OR 1.71, P<.01) compared to subclavian coverage without revascularization, but no significant increase in 30-day mortality (OR 1.16). Further, open subclavian revascularization without TEVAR entailed a 30-day mortality of 2.3% and combined rate of CVA or AMI of 3.0%.

Conclusions: Results from ACS-NSQIP confirm that subclavian coverage during TEVAR is associated with increased 30-day mortality and postoperative complications. However, open subclavian revascularization is not without risk and when used as an adjuvant during TEVAR requiring subclavian coverage is independently associated with increased risk for CVA or AMI, without significantly impacting mortality. Although there may be uncaptured differences in anatomic risk factors between groups in this study, the results do not support routine open subclavian revascularization during Zone 2 TEVAR.