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Reintervention after TEVAR by Aortic Pathology and the Impact on Patient Survival

Author Block: Alexander Fairman, MD1, Adam W. Beck, MD2, Mahmous Malas, MD3, Philip Goodney, MD4, Nicholas Osborne, MD5, Marc Schermerhorn, MD6, Grace Wang, MD1.

1University of Pennsylvania, Philadelphia, PA, USA, 2University of Alabama at Birmingham, Birmingham, AL, USA, 3Johns Hopkins, Baltimore, MD, USA, 4Dartmouth University, Lebanon, NH, USA, 5University of Michigan, Ann Arbor, MI, USA, 6Beth Israel Deaconess Medical Center, Harvard University, Boston, MA, USA.

Objectives: Utilizing a national dataset, we sought to describe the nature and timing of reinterventions following TEVAR as well as their impact on survival.

Methods: We evaluated the national dataset for TEVAR in the VQI from 2010-2017. Student’s t-test and chi-square analysis were used to compare continuous and categorical variables in the reintervention and no reintervention groups. Freedom from reintervention and survival analysis was performed using Kaplan-Meier methods.

Results: A total of 6,170 patients were evaluated: 51.2% thoracic aneurysm (TAA), 33.5% type B dissection (TBD), 6.7% trauma, 7.0% penetrating aortic ulcer (PAU) and 1.6% intramural hematoma (IMH). Overall, 477 (7.73%) underwent at least one reintervention, with an in-hospital reintervention rate of 3.29%. Reintervention patients were younger (64.4±14.5 vs. 66.0±14.5 years, p=.022), more often transferred (37.7% vs. 29.6%, p<.001), urgent (41.5% vs. 33.6%, p=0.01), hypertensive (87.6% vs. 83.8%, p =.030), anticoagulated (14.0% vs. 10.1%, p=.007), symptomatic (54.3% vs. 48.7%, p<.001), and ruptured (10.2% vs. 6.5%, p <.001). Additionally, the reinterventions group exhibited more complexity with greater contrast volume (130 ± 81 vs. 113 ±76 ml, p<.001), EBL 318 ±606 vs. 281 ±517 ml, p=.142), procedure time (183.5±128.0 vs. 170.4±112.7 minutes, p =.142), arm/neck access (28.9% vs. 20.3%, p<.001), proximal deployment zone 0-2 (41.5% vs. 16.9, p<.001), and larger mean proximal graft diameter (36.0±4.2mm vs. 34.1±5.4mm, p = .002). Reinterventions were most commonly performed for TBD (12.4%), with reinterventions for other pathologies occurring at lower rates: TAA-6.0%, IMH-4.9%, PAU-4.3%, and trauma-1.7%. Freedom from reintervention was decreased for TBD compared to other pathologies (p<0.001). While patients requiring in-hospital reinterventions suffered from increased mortality (p=0.05), there was no difference in survival comparing patients undergoing reinterventions to those without (p=0.80).

Conclusions: While reinterventions were not rare following TEVAR, there was no difference in mortality between patients undergoing reintervention and those without. Patients undergoing TEVAR for TBD demonstrated the highest reintervention rate. This study highlights the importance of long term follow-up to address pathology-specific patterns of reintervention.