Surgical Ablation of Atrial Fibrillation is Superior to Appendage Obliteration Alone: Analysis of 100,000 Medicare Beneficiaries

Objective: Societal guidelines support concomitant management of atrial fibrillation (AF) in patients undergoing cardiac surgery. To evaluate the adoption of these guidelines in practice and assess outcomes in a real-world population of Medicare Beneficiaries with AF undergoing cardiac surgery, we compared no AF management vs. left atrial appendage obliteration (LAAO) alone vs. surgical ablation (SA) and LAAO.

Methods: Using the United States Centers for Medicare and Medicaid Services inpatient claims database, we evaluated all beneficiaries aged 65 and older with a diagnosis of AF undergoing CABG or Mitral/Aortic/Tricuspid valve repair or replacement between January 2018 and December 2020. Diagnosis-related group and International Classification of Diseases 10th revision procedure codes were used to define variables. Risk adjustment was performed with regression analysis and Cox Proportional Hazards models. Subgroup analyses stratified patients by primary operation and paroxysmal or persistent AF.

Results: A total of 103,371 patients with preoperative AF were stratified by SA+LAAO (10,436; 10.1%), LAAO only (12,900; 12.5%), or no AF management (80,035; 77.4%). In patients with persistent AF (21,070; 20.4%) there was a higher ratio of SA+LAAO (3,820; 18.1%) and LAAO only (3,192; 15.1%) vs. no AF management (14,058; 66.7%). Similarly, patients undergoing open atrial operations (Mitral/Tricuspid; 17,204; 16.6%) had a higher ratio of SA+LAAO (5,267; 30.6%) and LAAO only (4,259; 24.8%) vs no AF management (7,678; 44.8%). After robust risk-adjustment, compared to no AF treatment, SA+LAAO was independently associated with reduced 3-year mortality (HR 0.84, 0.78 - 0.91, p < 0.001), which was superior to LAAO only (HR 0.93, 0.87 - 0.99, p = 0.026). Similarly, we demonstrated fewer readmissions for embolic stroke for SA+LAAO (HR 0.82, 0.7 - 0.97, p = 0.019) but not for LAAO only (HR 0.88, 0.76 - 1.01, p = 0.064). Directly comparing SA+LAAO to LAAO only for patients with AF, the reduction in 3-year mortality following SA+LAAO was superior (HR 0.90, 0.83 - 0.99, p=0.023).

Conclusions: In Medicare beneficiaries with AF undergoing cardiac surgery, the surgical management of AF was associated with reduced three-year mortality and readmission for stroke with Surgical Ablation + LAAO being superior to LAAO alone. These contemporary real-world data further clarify the procedural benefits of concomitant treatment of AF during cardiac surgery.

J. Hunter Mehaffey (1), J. W. Hayanga (1), Lawrence Wei (1), Christopher Mascio (2), J. Scott Rankin (1), Vinay Badhwar (1), (1) West Virginia University, Morgantown, WV, (2) WVU Medicine Children's Hospital, Morgantown, WV