

FOCUS ON TAVR

Incidence, Predictors, and Outcomes of Permanent Pacemaker Implantation Following Transcatheter Aortic Valve Replacement



Analysis From the U.S. Society of Thoracic Surgeons/ American College of Cardiology TVT Registry

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CME Objective for This Article: At the end of the activity the reader should be able to: 1) appreciate the extent of conduction abnormalities

post-TAVR; 2) evaluate the clinical outcomes following permanent pacemaker implantation in subjects undergoing TAVR procedures; and 3) consider the timing of conduction abnormalities post-TAVR.

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ABSTRACT

OBJECTIVES The purpose of this study was to evaluate the incidence, predictors, and clinical outcomes of permanent pacemaker (PPM) implantation following transcatheter aortic valve replacement (TAVR).

BACKGROUND Conduction abnormalities leading to PPM implantation are common complications following TAVR. Whether PPM placement can be predicted or is associated with adverse outcomes is unclear.

METHODS A retrospective cohort study of patients undergoing TAVR in the United States at 229 sites between November 2011 and September 2014 was performed using the Society of Thoracic Surgeons/American College of Cardiology TVT Registry and the Centers for Medicare and Medicaid Services database.

RESULTS PPM placement was required within 30 days of TAVR in 651 of 9,785 patients (6.7%) and varied among those receiving self-expanding valves (25.1%) versus balloon-expanding valves (4.3%). Positive predictors of PPM implantation were age (per 5-year increment, odds ratio: 1.07; 95% confidence interval [CI]: 1.01 to 1.15), prior conduction defect (odds ratio: 1.93; 95% CI: 1.63 to 2.29), and use of self-expanding valve (odds ratio: 7.56; 95% CI: 5.98 to 9.56). PPM implantation was associated with longer median hospital stay (7 days vs. 6 days; $p < 0.001$) and intensive care unit stay (56.7 h vs. 45.0 h; $p < 0.001$). PPM implantation was also associated with increased mortality (24.1% vs. 19.6%; hazard ratio [HR]: 1.31; 95% CI: 1.09 to 1.58) and a composite of mortality or heart failure admission (37.3% vs. 28.5%; hazard ratio HR: 1.33; 95% CI: 1.13 to 1.56) at 1 year but not with heart failure admission alone (16.5% vs. 12.9%; HR: 1.23; 95% CI: 0.92 to 1.63).

CONCLUSIONS Early PPM implantation is a common complication following TAVR, and it is associated with higher mortality and a composite of mortality or heart failure admission at 1 year. (J Am Coll Cardiol Intv 2016;9:2189-99) © 2016 by the American College of Cardiology Foundation.

Transcatheter aortic valve replacement (TAVR) is a therapeutic option for the management of patients with symptomatic severe aortic stenosis who have high surgical risk or are deemed inoperable as assessed by a multidisciplinary heart team (1,2). However, conduction

abnormalities following TAVR requiring permanent pacemaker (PPM) placement have emerged as important short-term complications, noted in 6.0% to 6.4% for the balloon-expandable Edwards SAPIEN valve (ESV) and 25.4% to 28.0% for the self-expanding Medtronic CoreValve Revalving System (MCRS)

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