

83309 | Single-Center Experience with Transcatheter Tricuspid Valve Replacement Using the EVOQUE System



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Background: Transcatheter tricuspid valve replacement (TTVR) with the EVOQUE system (Edwards Lifesciences) is an emerging therapy for severe tricuspid regurgitation (TR), yet real-world outcome data remain limited.

Methods: We retrospectively analyzed consecutive patients with severe TR who underwent TTVR with EVOQUE at our institution. Outcomes included 1-year all-cause mortality, new permanent pacemaker (PPM) implantation within 30 days, right ventricular (RV) function pre- and post-TTVR, and paravalvular leak (PVL).

Results: Among 96 patients (median age 80 years [IQR 76–85], 72% female), 82% were NYHA class III/IV. Left ventricular ejection fraction was 60% (IQR 52–64%) and median TriScore was 4 (IQR 2–7). Torrential or massive TR was present in 23%. Pre-procedural comorbidities included RV failure signs in 39%, moderate/severe RV dysfunction in 30%, elevated bilirubin in 31%, and eGFR <30 mL/min/1.73m² in 16%. Forty patients had a pre-existing RV lead; of those, 7 were from a cardiac resynchronization therapy defibrillator and 8 from an implantable cardioverter-defibrillator. At 1-year follow-up, all-cause mortality was 16% (n=15). New PPM implantation within 30 days of TTVR occurred in 9% (n=9). Moderate/severe RV dysfunction increased from 30% pre- to 57% post-TTVR. Twenty-five of 96 encountered at least one hospitalization for a heart failure event, occurring at varying date from implant. PVL was none in 45%, trivial/trace in 36%, mild in 16%, and moderate or greater in 3%. Of those with mild to moderate PVL, 9 had a pre-existing RV lead.

Conclusion: EVOQUE TTVR achieved effective TR reduction but was associated with a significant increase in post-procedural RV dysfunction, a clinically meaningful new PPM rate and high mortality. Mortality was slightly higher than clinical trial data due to a sicker and older population. These findings emphasize the need for careful patient selection, RV assessment, and structured post-procedural surveillance.

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83314 | Vectorial Impact Trajectory and Membranous Septum Anatomy: A Novel Biomechanical Paradigm for Refining Conduction System Risk in Balloon-Expandable TAVI



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Background: Permanent pacemaker (PPM) implantation remains a persistent challenge in Transcatheter Aortic Valve Implantation (TAVI). While baseline Right Bundle Branch Block (RBBB) and membranous septum (MS) length are established risk factors, they do not fully account for the mechanical interaction between the prosthesis and the conduction tissue. We investigated the Vectorial Impact Angle (theta) at the LVOT level as a predictor of PPM in a balloon-expandable system.

Methods: A total of 67 patients who underwent TAVI with the Myval balloon-expandable valve between 2023 and 2026 were analyzed. Pre-procedural CT was used to measure MS length and the Vectorial Impact Angle at the LVOT level. The angle was calculated between the minor axis of the LVOT annulus and the orthogonal projection of a radial line extending from the center toward the RCC-NCC commissure, which serves as the primary anatomical landmark for the conduction system. Our multivariate logistic regression was performed to determine independent predictors of PPM.

Results: The new PPM requirement rate was 17.9 percent (12/67). Mean MS length was significantly shorter in the PPM group compared to the non-PPM group. Similarly, the mean Vectorial Impact Angle was significantly narrower in the PPM group (30.4 plus/minus 8.5 vs. 55.2 plus/minus 12.4 degrees; p less than 0.001). In univariate analysis, baseline RBBB was a significant predictor (p = 0.008, OR: 13.25). However, in the multivariate model, RBBB lost its statistical significance (p = 0.159) and was excluded. Independent predictors in the final model were MS length (p = 0.002, OR: 0.148, 95% CI: 0.045-0.490) and the Vectorial Impact Angle (p = 0.008, OR: 0.927, 95% CI: 0.877-0.980). The overall model accuracy was 88.1 percent.

Conclusion: Biomechanical trajectory and localized sub-annular anatomy outweigh baseline ECG findings in predicting post-TAVI conduction disturbances. A narrow vectorial impact angle focuses the prosthesis radial force directly onto the RCC-NCC junction, whereas wider angles allow force dissipation. This model provides a personalized, pre-procedural risk-projection tool that transcends conventional static measurements.

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83318 | Ultrasound-Guided Single Versus Dual ProGlide Closure for Large-Bore Femoral Access in Transcatheter Aortic Valve Implantation: A Propensity Score-Matched Analysis



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Background: Dual ProGlide pre-close technique has been the standard for large-bore femoral access closure in transfemoral TAVI. The incremental vascular risk imposed by crossing sutures and the potential benefit of integrating real-time ultrasound (USG) guidance into a single-device strategy remain incompletely characterized.

Methods: In this retrospective single-center cohort study, 463 consecutive patients undergoing transfemoral TAVI (January 2015–January 2026) were stratified by closure strategy: USG-guided single ProGlide (n=100) versus conventional dual ProGlide (n=363). The primary endpoint was access site-related vascular complications per VARC-3 criteria. After 1:1 propensity score matching (PSM) for age, sex, BMI, and delivery sheath size, 100 matched pairs were analyzed. Multivariable logistic regression identified independent predictors of vascular complications.

Results: The study included a cohort with a mean age of 76.2±10.2 years (59% female). Notably, there was no significant difference in femoral artery diameters between the single and dual ProGlide groups. In the overall cohort, the single ProGlide technique was associated with significantly lower total vascular complications compared to the dual group (9.0% vs. 17.9%, p=0.031), primarily due to fewer minor events (7.0% vs. 14.9%, p=0.039). Multivariate analysis identified dual ProGlide use as the sole independent predictor of vascular complications