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No conflicts to disclose

Preexisting RBB and Left Anterior Block; LBBB ?

Old age and comorbidities

Depth of implantation

Self Expandable valves versus Balloon Expandable valves

Self Expandable valves with high radial strength

New generation Balloon Expandable valves

Short observation period before decision

Which are the risk of having PPI after TAVR

Related to the procedure: hematoma, vascular injury, infections, pneumothorax, lead dislodgment, tricuspid regurgitation

Related to pacing (unless His bundle pacing is performed): lower Stroke Volume and Ejection Fraction

Outcomes Following Permanent Pacemaker Implantation After Transcatheter Aortic Valve Replacement

SWEDEHEART Observational Study

Andreas Rück, MD, PhD,[a,b] Nawzad Saleh, MD, PhD,[a,b] Natalie Glaser, MD, PhD[c,d]

3420 TAVR-------481 (14%) had PPI

Median FU 2.7 yrs. death: PPI 44.1% no PPI 34.7%
at 10 yrs. death: PPI 89.1%; no PPI 84.7%

Median FU 1.7 yrs. heart failure: PPI 15%; no PPI 9.3%

No difference in long term survival, incidence of heart failure, endocarditis in pts. requiring PPI versus no PPI

Hochstadt (Heart Rhythm, 2021) 1489 pts. no difference in mortality at 10 yrs. FU, but there was a decline in EF with PPI

Jorgensen (JACC Cardiov. Interv. 2019) 816 pts. 5 yrs. Mortality: PPI 46.7%, no PPI 32.8% (HR 1.58 CI: 1.01-2.46)

Glaser (JAMA Netw Open 2021) 25,000 pts. treated with SAVR, mortality was higher in PPI vs. no PPI; SAVR pts are younger vs. TAVR pts.

Old age may require PPI balancing any negative effect

Meta-analysis

Late Outcomes of Permanent Pacemaker Implantation After TAVR: Meta-analysis of Reconstructed Time-to-Event Data

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17 studies, 50,282 pts, PPI 14.4%

HR for mortality 1.30; CI: 1.17-1.45

HR for rehospitalization 1.30; CI:1.17-1.45

No impact for stroke and endocarditis

Conventional Deployment Technique 622 | High Deployment Technique 406

High implantation of Sapien 3 with cusp overlap technique, experience at Cleveland Clinic Yasser Sammour et al. Circul Cardiov. Interevnt. 2021

NEW RESEARCH PAPER

STRUCTURAL

Clinical Impact of Standardized TAVR Technique and Care Pathway

Insights From the Optimize PRO Study

Kendra J. Grubb, MD, MHA,[a] Hemal Gada, MD, MBA,[b,c] Suneet Mittal, MD,[d] Tamim Nazif, MD,[e] Josep Rodés-Cabau, MD, PhD,[f,g] Douglas G.W. Fraser, MB, BCHIR, BA, DM,[h] Lang Lin, MD,[i,j] Joshua D. Rovin, MD,[i,j] Ramzi Khalil, MD,[k] Ibrahim Sultan, MD,[b,c] Blake Gardner, MD,[l] David Lorenz, MD,[m] Stanley J. Chetcuti, MD,[n,o] Nainesh C. Patel, MD,[p] James E. Harvey, MD,[q] Paul Mahoney, MD,[r] Brian Schwartz, MD,[s] Zubair Jafar, MD,[t] John Wang, MD,[u] Srinivasa Potluri, MD,[v] Amit N. Vora, MD,[b,c] Carlos Sanchez, MD,[w] Amy Corrigan, BS,[x] Shuzhen Li, PhD,[y] Steven J. Yakubov, MD[w]

JACC Cardiov. Interv. 2023

Evolut PRO and PRO +

PPI with/without Lunderquist Wire

FIGURE 5 30-Day Permanent Pacemaker Implantation Rate With or Without Lunderquist Guidewire Stratified by Valve by Size

Numerically lower rates of 30-day permanent pacemaker implantation rate when the Lunderquist Extra-Stiff guidewire was used.

Predictors of PPI

TABLE 4 Univariable and Multivariable Analysis of Permanent Pacemaker Insertion (Main Cohort)

	Univariable Model		Multivariable Model	
	HR (95% CI)	P Value From Proportional Hazard Model	HR (95% CI)	P Value From Proportional Hazard Model
Pre-existing RBBB or baseline ECG RBBB[a]	5.99 (3.03-11.83)	<0.001	5.92 (2.76-12.68)	<0.001
Baseline QRS interval >120 m/s[b]	3.10 (1.59-6.03)	<0.001		
Resheath or recapture	2.74 (1.44-5.23)	0.002		
Valve size 34 mm (34 mm vs 23-31 mm)	1.84 (0.95-3.58)	0.073		
Depth of implant per NCC, mm[a]	1.19 (1.09-1.29)	<0.001	1.19 (1.09-1.31)	<0.001
Annular calcium volume, cm^3	0.97 (0.92-1.01)	0.134	0.95 (0.91-1.00)	0.059
4-step COT	0.30 (0.15-0.59)	<0.001	0.39 (0.19-0.79)	0.009

For the multivariable model, variables were selected from univariable predictors with P value ≤0.15 and clinical judgment. Stepwise method with thresholds for entry and exit = 0.10. [a]Site-reported values. [b]Core lab values. The depth of the implant was determined on the final angiography. Annular calcium volume of 0 to 2 mm measured at the left coronary cusp.

COT = cusp overlap technique; ECG = electrocardiogram; NCC = noncoronary cusp; RBBB = right bundle branch block.

The risk of PPI needs to be evaluated in different contexts

What is the risk of PPM in the specific patient: age, comorbidities etc.?

How important is the fact that the pacemaker acts during follow-up?

There are specific risks on long term regarding PPI in the specific patient (young age, low EF, etc)?

Considering the anatomy and the type of TAVR to be implanted: evaluated specific risks

Make a decision regarding SAVR taking these issues into account