

New-Onset Conduction Abnormalities Following Valve-in-Valve Transcatheter Aortic Valve Replacement

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Disclosure of Relevant Financial Relationships

I, Judah Rajendran DO NOT have any financial relationships to disclose.

Background

- Conduction disturbances are a known complication after TAVR.
- Mechanisms: mechanical injury, prosthesis expansion, or preexisting conduction substrate.
- Data on valve-in-valve (ViV) TAVR, specifically in patients without baseline conduction disease, remain limited.
- Understanding incidence and types of conduction abnormalities may inform rhythm surveillance and pacing strategies.

Objective

- To assess new-onset conduction abnormalities and pacing outcomes following ViV TAVR in patients without preexisting conduction disease.

Methods

- Data source: TriNetX research network.
- Study population: 1,202 patients undergoing ViV TAVR (2010–2023).
- Inclusion criteria: No prior conduction abnormalities or pacemaker.
- Follow-up: 30 days and 1 year.

Methods

- Outcomes assessed:
 - New conduction blocks (LBBB, AV block, fascicular block)
 - Atrial and ventricular arrhythmias
 - Permanent pacemaker (PPM), ICD, CRT-D/P implantation

Baseline Characteristics

- Mean age: 72.3 ± 10.3 years
- Race: 81.2% White
- Comorbidities:
 - Hypertension: 84.4%
 - Ischemic heart disease: 76.5%
 - Heart failure: 48.8%
- No baseline conduction disease or device therapy.

30-Day Outcomes

- **New-onset conduction abnormalities:**
 - LBBB: 16.5%
 - 1st-degree AV block: 8.7%
 - CHB: 3.7%
 - PPM implantation: 4.3%
- **New arrhythmias:**
 - Atrial fibrillation/flutter: 7.5%
 - Ventricular arrhythmias: 1.4%

1-Year Outcomes

Outcome	1-Year Incidence (%)
Left bundle branch block	17.1
1st-degree AV block	10.6
2nd-degree AV block	1.7
Complete heart block	4.5
Unspecified AV block	1.2
Fascicular block	4.7
Misc. conduction blocks	4.8
Atrial fibrillation/flutter	11.6
Ventricular arrhythmias	3.4
PPM	4.9
ICD	0.8
CRT-D/P	0.8

Discussion

- Despite exclusion of patients with baseline conduction disease, new disturbances are frequent after ViV TAVR.
- LBBB (17%) and AV block (10%) are the most common persistent abnormalities.
- PPM requirement remains notable ($\approx 5\%$).
- Findings underscore:
 - Importance of rhythm surveillance post-procedure.
 - Need for standardized monitoring and pacing strategies in ViV population.
 - Potential anatomic or procedural factors warrant further study.

Conclusion

- New-onset conduction abnormalities occur in nearly one in five ViV TAVR patients without prior conduction disease.
- Vigilant ECG monitoring and pacing readiness are key for early detection and intervention.
- Ongoing research should identify predictors to minimize conduction injury and optimize patient outcomes.