THE ANATOLIAN JOURNAL OF CARDIOLOGY

Official journal of the TURKISH SOCIETY OF CARDIOLOGY

Impact of Balloon Post-Dilatation Strategy During Transcatheter Aortic Valve Implantation on the Cardiac Conduction System

ABSTRACT

Background: Transcatheter aortic valve implantation (TAVI) has become a well-established treatment for patients with severe aortic stenosis who are at intermediate or high surgical risk. Despite procedural advances, post-procedural conduction disturbances remain among the most common complications, particularly new-onset left bundle branch block (LBBB). This study aimed to investigate the impact of balloon pre- and post-dilatation on the cardiac conduction system during TAVI.

Method: A retrospective analysis was conducted on 447 consecutive patients who underwent successful TAVI between June 2021 and June 2025. After excluding patients with baseline bundle branch block or permanent pacemaker rhythm, 282 patients were included. Standard 12-lead electrocardiograms were evaluated before and after TAVI. Post-procedural QRS prolongation was defined as QRS >120 ms, and logistic regression analysis was performed to identify predictors.

Result: The mean age was 76.5 ± 6.9 years, and 63.8% of patients were female. Larger prosthesis diameter (OR = 1.173, 95% CI 1.082-1.271; $P < .001$) and post-dilatation (OR = 2.147, 95% CI 1.235-3.733; $P = .007$) were independently associated with QRS prolongation. Post-dilatation specifically correlated with new-onset LBBB but not with right bundle branch block (RBBB), intraventricular conduction delay, or high-grade atrioventricular (AV) block. No significant predictors were identified for permanent pacemaker implantation.

Conclusion: Balloon post-dilatation during TAVI is an independent risk factor for the development of new-onset LBBB. Patients with pre-existing conduction abnormalities, such as RBBB or first-degree AVr block, should be monitored closely after post-dilatation, as LBBB may adversely affect left ventricular function and long-term clinical outcomes.

Keywords: Conduction disturbances, LBBB, pacemaker, post-dilatation, TAVI

ORIGINAL INVESTIGATION

INTRODUCTION

Aortic stenosis is the most common valvular heart disease in developed countries, and its prevalence continues to increase with the aging population. Severe aortic stenosis is frequently symptomatic, and if left untreated, it is associated with significantly increased morbidity and mortality. Although surgical aortic valve replacement remains the standard treatment for patients with operable severe aortic stenosis, transcatheter aortic valve implantation (TAVI) has become the preferred therapeutic option for patients with moderate to high surgical risk.[1] According to the latest European Society of Cardiology Guidelines on Valvular Heart Disease, TAVI is recommended in patients over 70 years of age.[1]

With the growing number of procedures and expanding operator experience worldwide, TAVI has evolved into a well-established and widely performed intervention. Nevertheless, several periprocedural and post-procedural complications remain of concern. Because of the close anatomical relationship between the aortic valve and the cardiac conduction system, TAVI may lead to conduction disturbances, including new-onset bundle branch blocks or high-grade atrioventricular (AV) block requiring permanent pacemaker implantation.

Ekrem Şahan[1]
Süleyman Kalaycı[1]
Suzan Şahan[2]
Orhan Maden[1]

[1]*Department of Cardiology, Ankara Bilkent City Hospital, Ankara, Türkiye*
[2]*Department of Cardiology, Çubuk Halil Şıvgın State Hospital, Ankara, Türkiye*

Corresponding author:
Ekrem Şahan
✉ ekremsahan@hotmail.com

Received: November 6, 2025
Accepted: April 8, 2026
Available Online Date: June 5, 2026

Cite this article as: Şahan E, Kalaycı S, Şahan S, Maden O. Impact of balloon post-dilatation strategy during transcatheter aortic valve implantation on the cardiac conduction system. *Anatol J Cardiol.* 2026;XX(X):1-6.

DOI: 10.14744/AnatolJCardiol.2026.5998

The aim of the present study was to investigate the potential impact of balloon pre-dilatation of the native aortic valve and post-dilatation following prosthesis deployment on the cardiac conduction system during the TAVI procedure.

METHODS

Study Population

In this retrospective study, the records of 447 patients who underwent successful TAVI for symptomatic moderate-to-severe aortic stenosis at the center between June 2021 and June 2025 were reviewed. Patients with pre-procedural right bundle branch block (RBBB), left bundle branch block (LBBB), or permanent pacemaker rhythm, as well as those with incomplete medical records, were excluded. After applying these exclusion criteria, a total of 282 patients were included in the final analysis. The study population was evaluated based on demographic characteristics such as age, sex, and comorbidities, as well as the anatomical structure of the aortic valve, the type and size of the TAVI valve, the performance of pre-dilation and post-dilation, and echocardiographic data. The distribution of TAVI valve types was as follows: all balloon-expandable valves were Meril Myval (n = 107, 100%), while the self-expandable valves included Abbott Navitor (n = 1, 0.57%), Abbott Portico (n = 7, 4%), Biosensors Allegra (n = 1, 0.57%), Boston Acurate Neo2 (n = 47, 26.86%), Medtronic Evolut R (n = 107, 61.14%), and Medtronic Evolut Pro (n = 12, 6.86%). Pre-dilation and post-dilation procedures were performed under rapid ventricular pacing (180 bpm) for a maximum duration of 5 seconds. Pre-dilation was performed in 42.1% (n = 45) of patients receiving balloon-expandable valves and 73.1% (n = 128) of those receiving self-expandable valves. Post-dilation was applied in 5.6% (n = 6) of the balloon-expandable group and 44.0% (n = 77) of the self-expandable group. Indications for the post-dilation process included achieving optimal intraprocedural hemodynamic response (low transvalvular gradient) and/or minimizing paravalvular aortic regurgitation.

Electrocardiographic Evaluation

Standard 12-lead electrocardiograms (ECGs) were obtained digitally using a GE Healthcare mitral annular calcification (MAC) 2000 system at a paper speed of 25 mm/s and an amplitude of 10 mm/mV. RBBB was defined by a QRS duration >120 ms, an RSR′ ("M-shaped") pattern in leads V1-V3, and a wide, slurred S wave in the lateral leads (I, aVL, V5-V6). The LBBB was defined according to conventional criteria as a QRS duration ≥120 ms, an R-wave peak delay >60 ms in leads V5-V6, and an rS or QS pattern in leads V1-V2. Patients with QRS duration >120 ms who did not meet the criteria for either RBBB or LBBB were categorized as having intraventricular conduction delay (IVCD).

Post-procedural ECGs obtained on or after the fifth day following TAVI were analyzed. The temporary pacemaker used during the TAVI procedure, which remains active for the first 24 hours, and the anesthetic agents administered during the procedure can potentially affect the cardiac conduction system. This methodology was employed to exclude these transient effects—including temporary blocks—and to ensure that the study focuses specifically on permanent conduction disturbances. Patients were classified according to the presence or absence of a post-procedural QRS duration >120 ms. In addition, the study population was stratified into 2 groups based on whether permanent pacemaker implantation was performed for high-grade AV block.

Echocardiographic Assessment

Echocardiographic data were retrieved from the digital database. Left ventricular ejection fraction (LVEF) was measured using the modified Simpson's biplane method, and aortic valve area (AVA) was calculated using the continuity equation.

Statistical Analysis

All statistical analyses were performed using SPSS for Windows, version 23.0 (SPSS Inc., Chicago, IL, USA). Continuous variables were expressed as mean ± standard deviation, while categorical variables were presented as percentages. Continuous data were compared using the independent samples *t*-test, and categorical variables were compared using the chi-square test. A 2-tailed *P* value <.05 was considered statistically significant. Factors associated with QRS widening and permanent pacemaker implantation were evaluated using binary logistic regression analysis. Results were presented as odds ratios (OR) with 95% CI. The term "n" was used to denote the number of patients in subgroups.

Ethical Considerations

The study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical approval was obtained from the Clinical Trials Scientific and Ethics Committee of the center (protocol number: TABED 2-25-898). As this was a retrospective analysis of anonymized data, the requirement for informed consent was waived by the ethics committee.

RESULTS

The mean age of the study population was 76.54 ± 6.89 years, and 63.8% of the patients were female. There were no statistically significant differences between patients with and without ECG changes in terms of age, sex, body mass index (BMI), Agatston score, type of TAVI prosthesis, annulus diameter, annulus perimeter, prosthesis diameter to left ventricular outflow tract (LVOT) diameter ratio, balloon diameter on

HIGHLIGHTS

- Post-dilatation during transcatheter aortic valve implantation independently predicts new-onset left bundle branch block (LBBB).
- Larger prosthesis diameter and balloon post-dilatation were significantly associated with QRS prolongation and development of LBBB after the procedure.
- Careful monitoring is warranted in patients with pre-existing conduction abnormalities undergoing post-dilation.
- The additional mechanical stress and trauma from post-dilatation may increase conduction disturbances and impact long-term cardiac function.

post-dilatation, balloon diameter to valve size ratio, use of pre-dilatation, pre-procedural AVA, presence of atherosclerotic heart disease, diabetes mellitus, hypertension, chronic obstructive pulmonary disease, chronic kidney disease, cerebrovascular disease, pre-procedural mean aortic valve gradient, MAC or LVEF ($P > .05$) (Table 1).

When all types of conduction disturbances were considered, patients with post-procedural QRS prolongation had significantly larger implanted valve diameters compared with those without QRS prolongation ($P < .001$) (Table 1). In addition, the frequency of post-dilatation was significantly higher in the group with increased QRS duration ($P = .007$) (Table 1).

Among patients who required permanent pacemaker implantation due to high-grade AV block after TAVI, post-dilatation was more frequent in the pacemaker group compared with those without pacemaker implantation; however, this difference did not reach statistical significance for any variable, including valve diameter (Table 1).

In regression analyses, both prosthesis diameter (OR = 1.173, 95% CI 1.082–1.271; $P < .001$) and post-dilatation (OR = 2.147, 95% CI 1.235–3.733; $P = .007$) were independently associated with post-procedural QRS prolongation (Table 2). No statistically significant association was found between any of the studied variables and permanent pacemaker implantation (Table 2).

When the patient population was evaluated according to the presence of ECG changes and post-dilatation status, a statistically significant difference was observed only for the development of new-onset LBBB (Table 3). There were no significant differences between groups regarding the occurrence of RBBB, IVCD, or high-grade AV block.

Table 1. Clinical Characteristics of the Study Population

	QRS Widening (–) n = 205	QRS Widening (+) n = 77	*P*	Pacemaker Implantation (–) n = 255	Pacemaker Implantation (+) n = 27	*P*
Age (Years)	76.46 ± 6.92	76.77 + 6.84	.739	76.60 + 6.89	76.04 +7.02	.689
Gender			.284			.113
Female (%)	127 (62.0)	53 (68.8)		159 (62.4)	21 (77.8)	
Male (%)	78 (38.0)	24 (31.2)		96 (37.6)	6 (22.2)	
BMI	30.26 ± 3.80	30.02 ± 3.66	.637	30.13 ± 3.73	30.79 ± 4.01	.383
Agatson score	2645.73 + 1521.35	2755.66 + 1568.69	.611	2668.31 + 1510.48	2743.37 + 1725.87	.810
TAVI valve type			.245			.753
BE (%)	82 (40.0)	25 (32.5)		96 (37.6)	11 (40.7)	
SE (%)	123 (60.0)	52 (67.5)		159 (62.4)	16 (59.3)	
Annulus diameter (mm)	23.57 ± 2.80	24.04 ± 3.50	.261	23.78 ± 2.79	23.02 ± 4.45	.212
Annulus perimeter (mm)	75.95 ± 8.87	78.55 ± 16.06	.100	76.78 ± 11.36	75.61 ± 11.04	.612
TAVI valve diameter (mm)	26.67 ± 2.96	28.46+3.87	< .001	27.18 ± 3.35	27.02+3.18	.812
Prostesis diameter/LVOT diameter	1.31 ± 0.20	1.34 ± 0.21	.150	1.31 ± 0.20	1.37 ± 0.20	.154
Pre-dilatation (%)	125 (61.0)	48 (62.3)	.834	159 (62.4)	14 (51.9)	.287
Post-dilatation (%)	51 (22.9)	32 (41.6)	.006	74 (29.0)	9 (33.3)	.640
Balloon diameter on postdiatation	23.73 ± 2.10	24.59 ± 2.17	.074	24.16 ± 2.13	23.22 ± 2.28	.219
Balloon diameter / valve size	0.87 ± 0.14	0.84 ± 0.76	.330	0.86 ± 0.13	0.85 ± 0.09	.852
ASCVD (%)	100 (48.8)	31 (40.3)	.201	122 (47.8)	9 (33.3)	.151
Previous CABG (%)	29 (14.1)	8 (10.4)	.405	33 (12.9)	4 (14.8)	.784
HT (%)	197 (97.0)	72 (93.5)	.174	246 (96.5)	23 (92.0)	.272
DM (%)	80 (39.4)	33 (42.9)	.599	104 (40.8)	9 (36.0)	.642
KBH (%)	13 (6.4)	6 (7.8)	.680	18 (7.1)	1 (5.3)	.562
COPD (%)	43 (21.3)	20 (26.0)	.403	59 (23.2)	4 (16.0)	.410
CVE (%)	16 (7.9)	2 (2.6)	.107	17 (6.7)	1 (4.0)	.604
AF (%)	42 (20.5)	15 (19.5)	.851	52 (20.4)	5 (18.5)	.818
Mean gradient (mm Hg)	47.58 ± 12.04	49.01 ± 13.46	.394	48.01 ± 12.33	47.69 ± 13.68	.903
AVA (cm^2)	0.71 ± 0.17	0.70 ± 18	.861	0.70 ± 0.17	0.75 ± 0.15	.092
LVEF (%)	53.05 ± 11.40	53.27 ± 10.88	.882	53.07 ± 11.29	53.54 ± 10.89	.839
MAC	130 (66.7)	44 (58.7)	.219	157 (64.6)	17 (63.0)	.865

AF, atrial fibrillation; ASCVD, atherosclerotic cardiovascular disease; AVA, aortic valve area; BE, balloon-expandable; BMI, body mass index; CABG, coronary artery bypass graft surgery; COPD, chronic obstructive pulmonary disease; CVE, cerebrovascular event; DM, diabetes mellitus; HT, hypertension; LVEF, left ventricular ejection fraction; MAC, mitral annular calcification; SE, self-expandable; TAVI, transcatheter aortic valve implantation.

Table 2. Binary Logistic Regression Analysis of Study Popullation

	QRS Widening Group			Pacemaker Implantation Group		
	Odd's Ratio	CI (95%)	*P*	Odd's Ratio	CI (95%)	*P*
Age (Years)	1.007	0.969-1.046	.738	0.988	0.933-1.046	.688
Gender	1.356	0.776-2.371	.285	2.113	0.824-5.421	.120
BMI	.983	0.916-1.055	.636	1.048	.943-1.164	.382
Agatson score	1.000	1.000-1.000	.610	1.000	1.000-1.000	.810
TAVI valve type	1.387	0.798-2.410	.246	0.878	.391-1.971	.753
Annulus diameter	1.055	0.961-1.158	.260	0.921	.811-1.047	.211
Annulus perimeter	1.020	0.995-1.046	.124	0.990	0.951-1.030	.607
TAVI valve diameter	1.173	1.082-1.271	<.001	0.985	0.873-1.112	.811
Prostesis diameter/LVOT diameter	2.614	0.704-9.712	.151	3.891	0.597-25.361	.155
Pre-dilatation	1.059	0.618-1.817	.834	0.650	0.293-1.442	.289
Post-dilatation	2.147	1.235-3.733	.007	1.223	0.526-2.846	.640
Balloon diameter on postdiatation	1.227	0.976-1.544	.080	0.825	0.608-1.120	.218
Balloon diameter / valve size	.157	0.003-7.751	.352	0.609	0.004-105.827	.851
ASCVD	.708	0.416-1.204	.202	0.545	0.236-1.259	.155
Previous CABG	.407	0.307-1.615	.407	1.170	0.381-3.596	.784
HT	.439	0.130-1.481	.184	0.421	0.086-2.065	.286
DM	1.153	0.677-1.963	.600	0.817	0.348-1.918	.642
KBH	1.235	0.452-3.374	.680	0.549	0.070-4.291	.567
COPD	1.297	0.704-2.390	.403	0.630	0.208-1.907	.413
CVE	.312	0.070-1.389	.126	0.583	0.074-4.577	.608
AF	.939	0.486-1.813	.851	0.887	0.321-2.455	.818
Mean gradient	1.009	0.988-1.030	.394	0.998	0.966-1.031	.903
AVA	.859	0.159-4.639	.860	8.461	0.695-103.069	.094
LVEF	1.002	0.978-1.026	.882	1.004	0.968-1.041	.838
MAC	.710	0.410-1.227	.220	0.931	408-2.123	.865

AF, atrial fibrillation; ASCVD, atherosclerotic cardiovascular disease; AVA, aortic valve area; BE, balloon-expandable; BMI, body mass index; CABG, coronary artery bypass graft surgery; COPD, chronic obstructive pulmonary disease; CVE, cerebrovascular event; DM, diabetes mellitus; HT, hypertension; LVEF, left ventricular ejection fraction; MAC, mitral annular calcification; SE, self-expandable; TAVI, transcatheter aortic valve implantation.

DISCUSSION

Aortic stenosis, the most common valvular heart disease in developed countries, should be treated once it becomes severe and symptomatic. The main treatment options are surgical aortic valve replacement and TAVI.[1,2] In patients aged over 70 years or those at high surgical risk, TAVI has become the preferred intervention. As both the number of TAVI centers and the volume of procedures increase, awareness, management of TAVI-related complications, and post-procedural follow-up have gained growing importance.

Table 3. Study Analysis of Population According to Post-dilatation Process

	Post-dilatation (–) n = 199 (%)	Post-dilatation (+) n = 83 (%)	*P*
QRS widening	45 (22.6)	32 (38.6)	.006
LBBB	33 (16.6)	26 (31.3)	.006
RBBB	5 (2.5)	2 (2.4)	.960
IVCD	7 (3.5)	4 (4.8)	.607
Pacemaker implantation	18 (9.0)	9 (10.8)	.640

IVCD, intraventricular conduction delay; LBBB, left bundle branch block; RBBB, right bundle branch block.

The most frequent complication following TAVI is cardiac conduction disturbance, particularly new-onset LBBB.[3] The pathophysiological mechanisms underlying new conduction abnormalities, especially LBBB after TAVI, remain incompletely understood.[4] Given the close anatomical relationship between the aortic valve and the AV node, His bundle, and bundle branches, post-procedural edema, inflammation, mechanical compression, or local hematoma may contribute to conduction disturbances. Post-dilatation may be performed after valve deployment to optimize hemodynamic function or minimize paravalvular leakage. However, this maneuver may impose additional mechanical trauma to the aortic annulus and surrounding tissues, potentially aggravating edema, inflammation, or compression effects on the conduction system. Only limited data are available regarding the impact of post-dilatation on conduction abnormalities. Therefore, this study aimed to evaluate the potential influence of post-dilatation on the cardiac conduction system.

New-onset LBBB after TAVI has been associated with high-grade AV block within 30 days and with sudden cardiac death.[5] In a multicenter registry by Testa *et al*, the incidence of persistent LBBB at hospital discharge following TAVI was 27.3%.[4] Interestingly, during the one-year follow-up, LBBB did not significantly affect mortality, pacemaker implantation, or heart failure–related hospitalization. Conversely, other studies have reported that longer post-procedural QRS duration is associated with higher mortality after TAVI.[6] Similarly, patients discharged with new-onset LBBB exhibited higher mortality rates, consistent with the findings of Houthuizen et al.[7,8] Increased QRS duration and LBBB may contribute to ventricular dyssynchrony, impaired cardiac performance, and consequently, adverse clinical outcomes and mortality.[9] The MADIT-CRT trial demonstrated that treatment of LBBB with cardiac resynchronization therapy (CRT) reduced mortality even in patients without overt cardiovascular disease, supporting the concept that LBBB may be an independent prognostic marker in TAVI patients as well.[10]

In this study, LBBB was present in 27.3% of patients at discharge. Analysis of these patients revealed that larger prosthesis diameter and post-dilatation were independent predictors of new-onset QRS prolongation. The use of larger valve sizes may increase mechanical stress on the aortic annulus and adjacent structures, potentially causing compression or trauma to the conduction pathways. Moreover, the additional mechanical stress induced by balloon post-dilatation may further exacerbate these effects, particularly on the left bundle branch. When patients were classified according to post-dilatation status, post-dilatation was significantly associated with LBBB development (Table 3), while no major influence was observed on the right bundle. Furthermore, when considering anatomical and procedural factors, it was observed that parameters such as annular diameter and circumference, the ratio of prosthesis size to LVOT diameter, and the ratio of the balloon diameter used during post-dilation to the prosthesis size had no significant impact on QRS widening—specifically LBBB—or the requirement for a permanent pacemaker (Table 2). The absence of significant pre-procedural cardiac conduction defects in the study population may explain why these factors remained secondary. Additionally, this situation may suggest that the presence of direct trauma (i.e., the application of post-dilation) is the primary driver of such effects (QRS widening or the requirement for a permanent pacemaker).

High-grade AV block requiring permanent pacemaker implantation is another well-recognized complication after TAVI.[11] Pre-existing RBBB, the use of self-expanding valves, and deep prosthesis implantation relative to the aortic annulus have been reported as independent predictors of pacemaker implantation.[12] In the study by Fujita et al,[13] the rate of permanent pacemaker implantation after TAVI was approximately 16.6%, and the need for a pacemaker was associated with increased 1-year mortality. In the meta-analysis published by Mansuri et al,[14] balloon-expandable valves showed lower rates of permanent pacemaker implantation compared to concurrent self-expanding valves. In a study by Özderya et al[15] focusing on balloon-expandable valves, aortic valve calcification, LVOT calcification, and non-coronary cusp calcification were not found to be significantly associated with the requirement for permanent pacemaker implantation. Regarding the Agatston score, the findings appear consistent with their results in terms of the relationship between aortic valve calcification and permanent pacemaker implantation. Additionally, that study identified membranous septum length, age, and aortic knob calcification as predictors of permanent pacemaker implantation need. Furthermore, Kilic et al[16] reported a 30-day permanent pacemaker implantation rate of 11% following TAVI, which is highly comparable to the rate observed in the study (27/255; 10.6%). A similar rate of permanent pacemaker implantation was also observed in the study by Akyüz et al,[17] which included balloon-expandable TAVI valves. However, data regarding the impact of mechanical trauma on the need for a pacemaker remained limited in these aforementioned studies. In the cohort, although the frequency of post-dilatation was higher in patients who required permanent pacemaker implantation, no statistically significant relationship was observed in regression analyses. Female sex was also more common among pacemaker recipients; however, this difference did not reach statistical significance. Interestingly, patients who required permanent pacemaker implantation had slightly larger preoperative AVAs on echocardiography.

Study Limitations

This study has several limitations that should be acknowledged. First, it was a single-center, retrospective analysis, which may inherently introduce selection and information bias. Second, the study population was relatively modest in size, and some subgroup analyses may have been underpowered to detect smaller differences, particularly in patients requiring permanent pacemaker implantation. Third, although all ECGs were analyzed by experienced cardiologists, transient conduction disturbances that resolved before discharge may have been missed. Finally, the type and depth of valve implantation, as well as specific procedural maneuvers such as the degree of balloon inflation pressure during post-dilatation, were not quantitatively assessed, which may have limited further mechanistic interpretation.

CONCLUSION

Despite these limitations, the findings suggest that both larger prosthesis diameter and the performance of post-dilatation are independently associated with QRS prolongation following TAVI. Moreover, post-dilatation appears to have a specific influence on the development of new-onset LBBB. In patients with pre-existing conduction abnormalities such as RBBB or first-degree atrioventricular block, post-dilatation should be undertaken with caution, and closer post-procedural monitoring may be warranted. Furthermore, given the potential adverse effects of LBBB on left ventricular function, patients undergoing post-dilatation should be carefully followed for the development and persistence of LBBB as part of their long-term risk assessment. While no statistically significant predictors of

permanent pacemaker implantation were identified, the observed trends highlight the importance of careful procedural planning, particularly with respect to balloon sizing and the decision to perform post-dilatation. Further prospective, multicenter studies are warranted to validate these results and to clarify the clinical implications of conduction disturbances after TAVI.

Ethics Committee Approval: Ethical approval was obtained from the Local Clinical Trials Scientific and Ethics Committee of Health Sciences University Ankara Bilkent City Hospital with the protocol number (TABED 2-25-898 06/08/2025).

Informed Consent: As this was a retrospective analysis of anonymized data, the requirement for informed consent was waived by the ethics committee.

Peer-review: Externally peer-reviewed.

Data Availability: All data generated or analyzed during this study are included in this article. Further inquiries can be directed to the corresponding author.

Statement on the Use of Artificial Intelligence: Artificial intelligence was not used in the preparation of the article.

Author Contributions: Concept – E.Ş., S.K., S.Ş, O.M.; Design – E.Ş., O.M.; Supervision – E.Ş., O.M.; Resources – E.Ş., S.K., S.Ş.; Data Collection and/or Processing – E.Ş., S.K.; Analysis and/or Interpretation – E.Ş., S.K., S.Ş.; Literature Search – E.Ş., S.K., S.Ş.; Writing – E.Ş., S.Ş.; Critical Review – E.Ş., O.M.

Declaration of Interests: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding: The authors declare that this study received no financial support.

REFERENCES

1. Praz F, Borger MA, Lanz J, et al. 2025 ESC/EACTS Guidelines for the management of valvular heart disease. *Eur Heart J*. 2025. Nov 21;46(44):4635-4736. doi: 10.1093/eurheartj/ehaf194
2. Wilczek K, Hawranek M, Wojakowski W, et al. Transcatheter versus surgical valve replacement: A 24-months propensity-matched analysis of the SILCARD registry. *Anatol J Cardiol*. 2022;26(3):172-179. [CrossRef]
3. Lin SI, Miura M, Tagliari AP, et al. Intraventricular conduction disturbances after transcatheter aortic valve implantation. *Interv Cardiol*. 2020;15:e11. [CrossRef]
4. Testa L, Latib A, De Marco F, et al. Clinical impact of persistent left bundle-branch block after transcatheter aortic valve implantation with CoreValve Revalving System. *Circulation*. 2013;127(12):1300-1307. [CrossRef]
5. Auffret V, Puri R, Urena M, et al. Conduction disturbances after transcatheter aortic valve replacement: current status and future perspectives. *Circulation*. 2017;136(11):1049-1069. [CrossRef]
6. Meguro K, Lellouche N, Yamamoto M, et al. Prognostic value of QRS duration after transcatheter aortic valve implantation for aortic stenosis using the CoreValve. *Am J Cardiol*. 2013;111(12):1778-1783. [CrossRef]
7. Houthuizen P, Van Garsse LAFM, Poels TT, et al. Left bundle-branch block induced by transcatheter aortic valve implantation increases risk of death. *Circulation*. 2012;126(6):720-728. [CrossRef]
8. Houthuizen P, van der Boon RMA, Urena M, et al. Occurrence, fate and consequences of ventricular conduction abnormalities after transcatheter aortic valve implantation. *EuroIntervention*. 2014;9(10):1142-1150. [CrossRef]
9. Zannad F, Huvelle E, Dickstein K, et al. Left bundle branch block as a risk factor for progression to heart failure. *Eur J Heart Fail*. 2007;9(1):7-14. [CrossRef]
10. Zareba W, Klein H, Cygankiewicz I, et al. Effectiveness of cardiac resynchronization therapy by QRS morphology in the multicenter automatic defibrillator implantation trial-cardiac resynchronization therapy (MADIT-CRT). *Circulation*. 2011;123(10):1061-1072. [CrossRef]
11. Chen S, Chau KH, Nazif TM. The incidence and impact of cardiac conduction disturbances after transcatheter aortic valve replacement. *Ann Cardiothorac Surg*. 2020;9(6):452-467. [CrossRef]
12. Urena M, Mok M, Serra V, et al. Predictive factors and long-term clinical consequences of persistent left bundle branch block following transcatheter aortic valve implantation with a balloon-expandable valve. *J Am Coll Cardiol*. 2012;60(18):1743-1752. [CrossRef]
13. Fujita B, Schmidt T, Bleiziffer S, et al. Impact of new pacemaker implantation following surgical and transcatheter aortic valve replacement on 1-year outcome. *Eur J Cardiothorac Surg*. 2020;57(1):151-159. [CrossRef]
14. Mansuri Z, Rajith G, Taikadan T, Ashraf H, Ayesha A, Cavalcante LFF. Myval versus Contemporary Valves in Patients Undergoing transcatheter Aortic Valve Implantation: A Systematic Review and Meta-Analysis. *Anatol J Cardiol*. 2025;29(12):675-686. [CrossRef]
15. Özderya A, Yerlikaya MG, Aslan AO, et al. A new and easy parameter to predict the requirement for permanent pacemaker implantation after transaortic valve implantation: aortic knob calcification. *Postepy Kardiol Interwencyjnej*. 2024;20(3):319-328. [CrossRef]
16. Kilic T, Ielasi A, Ninios V, et al. Clinical outcomes of the Myval transcatheter heart valve system in patients with severe aortic valve stenosis: a two-year follow-up observational study. *Arch Med Sci*. 2024;20(2):410-419. [CrossRef]
17. Akyüz AR, Konuş AH, Çırakoğlu ÖF, Şahin S, Kul S, Korkmaz L. First experiences with a new balloon-expandable Myval transcatheter aortic valve: a preliminary study. *Herz*. 2022;47(5):449-455. [CrossRef]