

Table S1 Baseline characteristics (n=127)

Characters	Value
Age (years), mean (SD)	81.8 (6.3)
Female, n (%)	79 (62.2)
NYHA, n (%)	
1	1 (0.8)
2	50 (39.4)
3	69 (54.3)
4	7 (5.5)
Diabetes mellitus, n (%)	90 (70.9)
Hypertension, n (%)	32 (25.2)
Dyslipidemia, n (%)	33 (26.0)
Smoker, n (%)	
Never	117 (92.1)
Current smoker	7 (5.5)
Ex-smoker	3 (2.4)
Coronary artery disease, n (%)	55 (43.3)
AF, n (%)	105 (82.7)
Bicuspid valve, n (%)	3 (2.4)
Prior CIEDs, n (%)	7 (5.5)
GFR (mL/min/1.73 m ²), mean (SD)	55.8 (22.60)
Body mass index (kg/m ²), mean (SD)	24.3 (4.27)
LVEF (%), mean (SD)	62.3 (13.7)
STS mortality score (%), mean (SD)	6.1 (4.5)
EuroScore II (%), mean (SD)	5.0 (5.2)
Preexisting bundle branch block, n (%)	
Intraventricular conduction delay	1 (0.8)
RBBB	9 (7.1)
RBBB and left anterior fascicular block	1 (0.8)
Preexisting AVB, n (%)	
1 st degree AVB	14 (11.0)
Severe 1 st degree AVB (PR interval >300 ms)	6 (4.7)
Mobitz I	1 (0.8)
Baseline rhythm, n (%)	
Sinus	119 (93.7)
AF or flutter	8 (6.3)

SD, standard deviation; NYHA, New York Heart Association; AF, atrial fibrillation; CIEDs, cardiac implantable electronic devices; GFR, glomerular filtration rate; LVEF, left ventricular ejection fraction; STS, Society of Thoracic Surgeons; RBBB, right bundle branch block; AVB, atrioventricular block.

Table S2 Procedural characteristics and outcomes (n=127)

Characters	Value
TAVR models, n (%)	
Absolute Neo	17 (13.4)
EVOLUT	6 (4.7)
Portico	18 (14.2)
S3	62 (48.8)
SAPIEN XT	24 (18.9)
Type of TAVR devices, n (%)	
BE	86 (67.7)
SE	41 (32.3)
AVA (cm ²), mean (SD)	
Before TAVR	0.7 (0.20)
30 days after TAVR	1.7 (0.43)
Mean peak gradient (mmHg), mean (SD)	
Before TAVR	48.9 (11.90)
30 days after TAVR	10.5 (5.20)
Post-procedural paravalvular leak, n (%)	
None	40 (31.5)
1+	65 (51.2)
2+	19 (15.0)
3+	3 (2.4)
Implantation depth (mm), mean (SD)	
At non-coronary cusp	3.9 (2.45)
At right coronary cusp	4.8 (2.54)
At left coronary cusp	4.7 (2.73)
Procedural time (min), mean (SD)	93.5 (47.08)
Procedural success, n (%)	126 (99.2)
Acute complication, n (%)	39 (30.7)
Conduction disturbances	28 (22.0)
Major bleeding	4 (3.1)
Cardiac tamponade	4 (3.1)
Acute kidney injury	4 (3.1)
Stroke	2 (1.6)
Death	1 (0.8)
30-day major adverse events, n (%)	27 (21.3)
PPM implantation, n (%)	22 (17.3)
Stroke, n (%)	4 (3.1)
Infection of pacemaker system required extraction, n (%)	1 (0.8)
Death, n (%)	2 (1.6)
Death at the end of follow up, n (%)	18 (14.2)
Follow-up time (months), mean (SD)	25.8 (21.21)
Follow-up time (months), range	0–117

TAVR, transcatheter aortic valve replacement; BE, balloon-expandable; SE, self-expanding; AVA, aortic valve area; SD, standard deviation; PPM, permanent pacemaker.

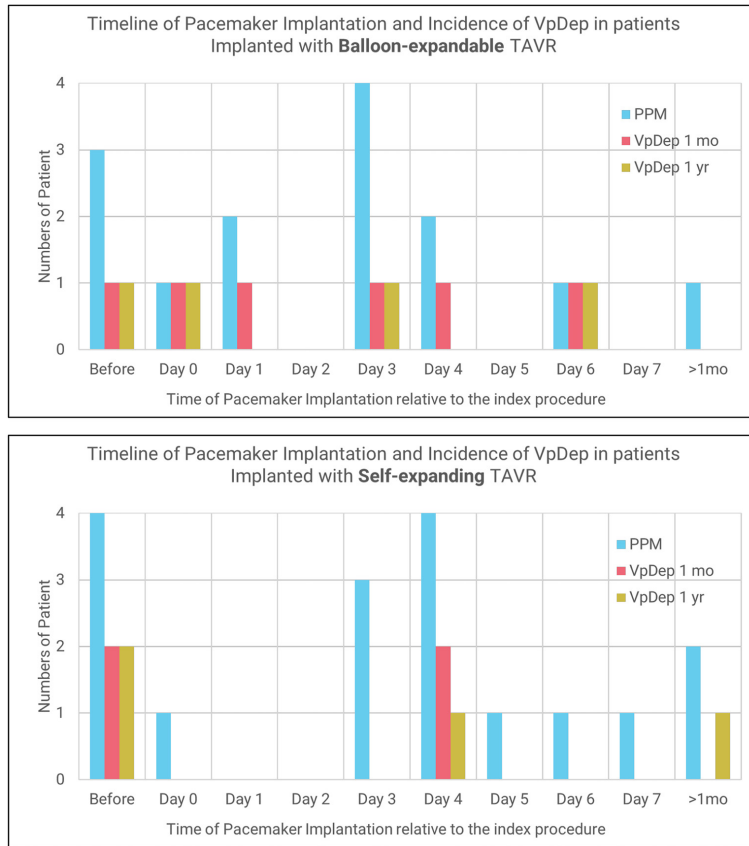


Figure S1 Timeline of pacemaker implantation and incidence of VpDep by type of devices. VpDep, ventricular pacing dependency; TAVR, transcatheter aortic valve replacement; PPM, permanent pacemaker; mo, months; yr, years.

Table S3 Conduction disturbances and pacemaker implantation (n=127)

Characters	Value
Type of new conduction disturbances, n (%)	
Complete AVB	13 (10.2)
High grade AVB	3 (2.4)
LBBB	11 (8.7)
Intraventricular conduction delay	2 (1.6)
1 st degree AVB	8 (6.3)
EP study performed, n (%)	13 (10.2)
HV interval (ms), mean (SD)	62.9 (17.7)
Time to new PPM (days), mean (SD)	47.5 (130.6)
New PPM, n (%)	25 (19.7)
Implanted ≤7 days after TAVR	22 (17.3)
Implanted >7 days to 180 days after TAVR	0 (0.0)
Implanted >180 days after TAVR	3 (2.4)
Indications for PPM implantation, n (%)	
Implanted ≤7 days after TAVR	
Complete AVB	15 (11.8)
New LBBB and HV interval ≥65 ms	5 (3.9)
High grade AVB and HV interval ≥65 ms	1 (0.8)
Sick sinus syndrome	1 (0.8)
Implanted >7 days after TAVR	
Complete AVB	3 (2.4)
New LBBB and HV interval ≥65 ms	0 (0.0)
High grade AVB and HV interval ≥65 ms	0 (0.0)
Sick sinus syndrome	0 (0.0)
Types of pacemaker, n (%)	
Single-chamber	1 (0.8)
Dual-chamber	23 (18.1)
Cardiac resynchronization system	1 (0.8)
New VpDep at 30 days, n (%)	10 (7.9)

AVB, atrioventricular block; LBBB, left bundle branch block; EP, electrophysiologic; PPM, permanent pacemaker; TAVR, transcatheter aortic valve replacement; VpDep, ventricular pacing dependency.

Table S4 Pacemaker indications, parameters, and pacing dependency (n=32)

Patient ID	Time from TAVR to PPM	Valve	Indication	Type	Mode	LRL	URL	sAVD/pAVD	%VP 1 month/ 1 year	New VpDep at 1 month	VpDep at 1 year
77	7 years before	Portico	SSS	dPPM	DDDR	60	110	320/350	36/19	N	N
74	4 years before	S3	SSS	dPPM	DDD	50	130	330/360	3/6	N	N
129	3 years before	S3	SSS	dPPM	DDD	50	110	250/280	77/100	Y	Y
110	1 year before	S3	High grade AVB	dPPM	DDD	60	120	310/340	54.8/59.6	N	N
137	6 months before	EVOLUT	SSS	dPPM	AAIR ↔ DDDR	60	110	MVP	34.5/17.9	N	N
63	2 months before	Portico	Symptomatic bifascicular block	dPPM	DDD	50	100	200/230	100/99.9	Y	Y
109	2 months before	EVOLUT	High grade AVB	dPPM	DDD	60	120	270/300	99.7/99.9	Y	Y
116	Same day	AN	CHB	dPPM	DDD	60	110	300/330	2/2	N	N
141	Same day	S3	CHB	dPPM	DDD	60	110	200/220	100/100	Y	Y
21	1 day after	SAPIEN XT	CHB	dPPM	DDD	60	110	250/280	8/23	N	N
119	1 day after	S3	CHB	sPPM	VVI	50	NA	NA	100/NA	Y	Death
55	3 days after	S3	CHB	dPPM	DDD	60	120	200/220	0.1/16.4	N	N
64	3 days after	Portico	New LBBB, HV ≥65	dPPM	DDD	60	120	240/260	0.1/NA	N	Death
70	3 days after	Portico	CHB	dPPM	DDDR	50	120	325/350	20/43	N	N
79	3 days after	Portico	New LBBB, HV ≥65	dPPM	DDD	60	110	325/350	0.1/0.1	N	N
83	3 days after	S3	SSS, new 1 st AVB	dPPM	AAIR ↔ DDDR	60	120	MVP	2.9/100	N	Y
106	3 days after	S3	High grade AVB, HV ≥65	dPPM	DDD	60	120	330/360	27.6/MS	N	MS
134	3 days after	S3	New LBBB, HV ≥65	dPPM	DDD	60	100	300/330	96/0.1	Y	N
40	4 days after	Portico	CHB	dPPM	DDD	60	120	Search AV+ at 300	4/5	N	N
73	4 days after	S3	New LBBB, HV ≥65	dPPM	DDI	40	NA	NA	0.1/NA	N	Death
80	4 days after	AN	CHB	dPPM	DDD	60	120	240/260	90/NA	Y	Death
94	4 days after	EVOLUT	CHB	dPPM	DDD	60	120	300/320	8.4/MS	N	MS
98	4 days after	S3	CHB	dPPM	DDD	60	120	270/300	97.7/NA	Y	Death
114	4 days after	AN	CHB	dPPM	DDD	50	120	200/230	100/99	Y	Y
135	4 days after	AN	CHB	dPPM	DDD	60	120	AV search+ at 300	22.8/0.1	N	N
58	5 days after	Portico	CHB	dPPM	DDD	60	120	200/230	0.2/NA	N	Death
4	6 days after	SAPIEN XT	CHB	dPPM	DDD	60	110	200/220	97/98.5	Y	Y
30	6 days after	Portico	CHB	dPPM	DDD	60	120	240/260	7.7/0.1	N	N
72	7 days after	Portico	New LBBB, HV ≥65	dPPM	DDD	50	120	250/275	0.1/0.1	N	N
81	7 months after	AN	CHB, HFrEF	CRT	DDD	60	110	160/180	98.9*	N	Y
66	1 year after	S3	CHB	dPPM	DDD	50	100	250/280	36.6*	N	NA
86	18 months after	AN	CHB	dPPM	DDD	60	100	180/200	100*	N	NA

*, data recorded at 1 month after implantation. TAVR, transcatheter aortic valve replacement; PPM, permanent pacemaker; LRL, lower rate limit; URL, upper rate limit; sAVD, sensed atrioventricular delay; pAVD, paced atrioventricular delay; %VP, ventricular pacing percentage; VpDep, ventricular pacing dependency; SSS, sick sinus syndrome; dPPM, dual-chamber pacemaker; DDDR, dual-chamber, rate-modulated pacing; N, no; DDD, dual-chamber pacing; Y, yes; AAIR, single-chamber atrial, rate-modulated pacing; MVP, managed ventricular pacing; AVB, atrioventricular block; AN, Absolute Neo; CHB, complete heart block; sPPM, single-chamber pacemaker; VVI, single-chamber ventricular pacing; NA, not applicable; LBBB, left bundle branch block; AV, atrioventricular; DDI, dual-chamber pacing without AV synchrony; MS, data missing; HFrEF, heart failure with reduced ejection fraction; CRT, cardiac resynchronization therapy.

Table S5 Implantation depth, pacemaker implantation and VpDep by type of TAVR devices (n=127)

Characters	Type of TAVR devices		P
	BE (n=86)	SE (n=41)	
Implantation depth (mm)			
At NCC, mean (SD)	3.1 (1.32)	5.7 (3.34)	<0.001
At RCC, mean (SD)	3.9 (1.37)	6.8 (3.30)	<0.001
At LCC, mean (SD)	3.6 (1.32)	7.1 (3.37)	<0.001
Mean (SD)	3.5 (1.22)	6.6 (3.22)	<0.001
Prior CIEDs, n (%)	3 (3.5)	4 (9.8)	0.148
New pacemaker within 1 month, n (%)	10 (11.6)	12 (29.3)	0.014
Indication for pacemaker implanted within 1 month, n			
Complete AVB	6	9	
New LBBB and HV interval \geq 65 ms	2	3	
High grade AVB and HV interval \geq 65 ms	1	0	
Sick sinus syndrome	1	0	
New VpDep at 30 days, n (%)	6 (7.0)	4 (9.8)	0.587
Prior CIEDs, n	1	2	
Without prior CIEDs, n	5	2	
VpDep at 1 year, n (%)	4 (4.7)	4 (9.8)	0.268
Prior CIEDs, n	1	2	
Without prior CIEDs, n	3	2	

VpDep, ventricular pacing dependency; TAVR, transcatheter aortic valve replacement; BE, balloon-expandable; SE, self-expanding; NCC, non-coronary cusp; SD, standard deviation; RCC, right coronary cusp; LCC, left coronary cusp; CIEDs, cardiac implantable electronic devices; AVB, atrioventricular block; LBBB, left bundle branch block.

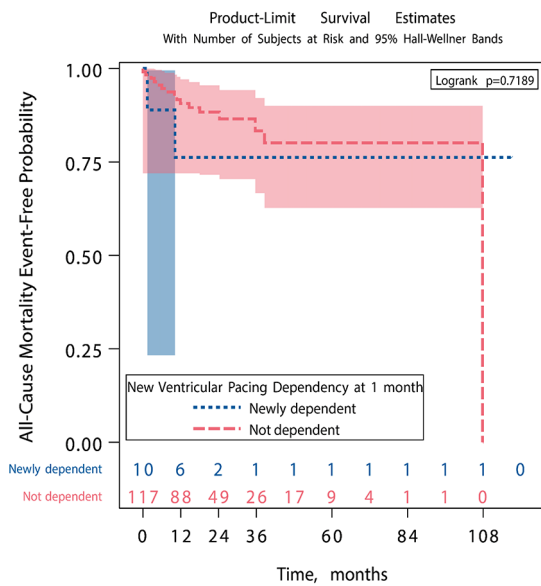


Figure S2 Kaplan-Meier survival estimates by new VpDep. VpDep, ventricular pacing dependency.

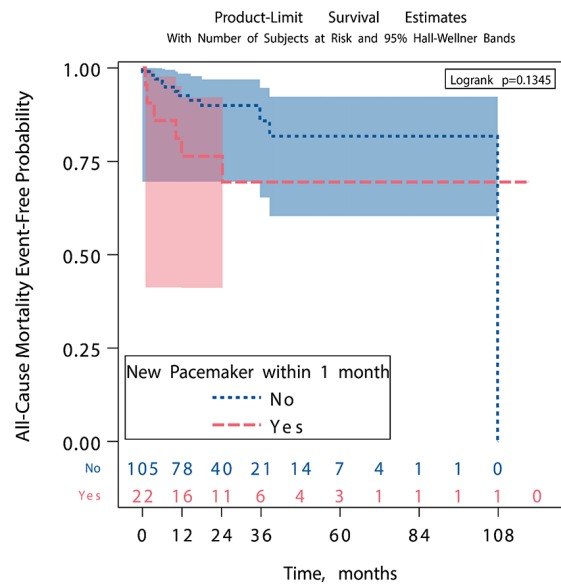


Figure S3 Kaplan-Meier survival estimates by new PPM implanted within 1 month after the procedure. PPM, permanent pacemaker.