

Supplementary Data

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Table 1: Baseline Variables of the patient cohort included for the 30 day analysis

Covariates	No PPM implantation (N=775)	PPM Implantation (N=189)	p-value
Age (years) (mean ± SD)	80.8 ± 8.9	81.2 ± 8.1	0.54
Men n (%)	449 (57.9)	109 (57.7)	0.94
Height (mean ± SD)	167.06 ± 10.7	165.4 ± 9.8	0.06
Weight (mean ± SD)	82.48 ± 20.33	82.86 ± 20.69	0.81
Body Mass Index (mean ± SD)	29.38 ± 6.23	30.3 ± 7.4	0.08
Body Surface Area (mean ± SD)	1.92 ± 0.25	1.91 ± 0.24	0.63
Diastolic Blood Pressure (mean ± SD)	67.9 ± 13.45	68.31 ± 12.56	0.71
Systolic Blood Pressure (mean ± SD)	130.1 ± 21.6	130.5 ± 20.3	0.81
Prior Percutaneous Coronary Intervention n (%)	255 (32.9)	80 (42.8)	0.01
Prior Coronary Artery Bypass Graft n (%)	215 (27.7)	44 (23.3)	0.21
Prior Stroke n (%)	57 (7.4)	21 (11.1)	0.09
Prior Peripheral Arterial Disease n (%)	387 (49.9)	102 (54)	0.32
Hypertension n (%)	657 (84.8)	166 (87.8)	0.28
Diabetes Mellitus n (%)	277 (35.7)	78 (41.3)	0.15
Diabetes Control (Insulin/Oral/Diet) n (%)	261 (33.7)	71 (37.6)	0.31
Pre-Procedural Hemoglobin (Mean ± SD)	12.1 ± 1.79	11.9 ± 1.8	0.41
Pre-Procedural Creatinine (Mean ± SD)	1.35 ± 1.11	1.38 ± 0.99	0.79
Platelets (Mean ± SD)	203055.5 ± 76535.38	201122.4 ± 70358.73	0.75
International Normalized Ratio (Mean ± SD)	1.18 ± 0.57	1.18 ± 0.27	0.97
Albumin (Mean ± SD)	4.04 ± 0.46	3.93 ± 0.41	0.015
FEV1 (Mean ± SD)	73.9 ± 23.1	72.1 ± 23.4	0.37
Prior other cardiac surgery n (%)	38 (4.9)	4 (2.1)	0.09
Number of previous cardiac surgeries (Mean ± SD)	0.355 ± 0.552	0.298 ± 0.503	0.19
Any prior Aortic Valve intervention n (%)	122 (15.7)	18 (9.5)	0.03
Prior Aortic Valve Surgical Replacement n (%)	60 (7.7)	4 (2.1)	0.005
Previous Aortic Valve Balloon Valvuloplasty n (%)	58 (7.5)	13 (6.9)	0.77
History of transient ischemic attack n (%)	62 (8)	18 (9.5)	0.49
Prior Coronary stenting n (%)			
Left	52 (6.7)	11 (5.9)	0.88
Right	42 (5.4)	8 (4.3)	
Both	55 (7.1)	14 (7.4)	
Right Coronary Artery Stenosis n (%)	97 (12.5)	22 (11.6)	0.73
Left Coronary Artery Stenosis n (%)	84 (10.9)	18 (9.5)	0.59
Prior carotid endarterectomy n (%)	53 (6.8)	13 (6.9)	0.98
Chronic lung disease n (%)			
Mild	175 (22.6)	36 (19)	0.309
Moderate	130 (16.8)	38 (20.1)	
Severe	111 (14.3)	34 (18)	
Home Oxygen use n (%)	70 (9)	15 (7.9)	0.63
Hostile Chest n (%)	74 (9.5)	16 (8.5)	0.64

Immunosuppression n (%)	97 (12.5)	32 (16.9)	0.11
Aspirin use n (%)	104 (13.4)	10 (5.3)	0.002
Anticoagulants use n (%)	65 (8.4)	18 (9.5)	0.61
Coronary Artery Disease Presentation n (%)			
No symptoms, no angina	379 (48.9)	109 (57.7)	0.03
Other	396 (51.1)	80 (42.3)	
Myocardial Infarction n (%)			
0-30 days	176 (22.7)	10 (10.6)	<0.001
Never	599 (77.3)	141 (74.6)	
Atrial Fibrillation/Flutter n (%)	267 (34.5)	76 (40.2)	0.13
Atrial Fibrillation Class n (%)			
Paroxysmal	91 (11.7)	36 (19)	0.02
Persistent	144 (18.6)	33 (17.5)	
None	540 (69.7)	120 (63.5)	
Ejection Fraction % (mean ± SD)	58.1 ± 12.9	57.14 ± 12.08	0.34
Cardiac Power Index (Watts/m²) (mean ± SD)	0.596 ± 0.162	0.588 ± 0.157	0.53
Cardiac Efficiency (Watts/100 gm) (mean ± SD)	0.53 ± 0.203	0.518 ± 0.201	0.53
Heart failure 2 weeks prior to the procedure n (%)	605 (78.1)	169 (89.4)	<0.001
New York Heart Association class within 2 weeks n (%)			
I/ II	216 (27.9)	32 (16.9)	0.002
III/ IV	559 (72.1)	157 (83.1)	
Conduction Defect n (%)	315 (40.6)	105 (55.6)	<0.001
Number of diseased vessels (mean ± SD)	1.42 ± 1.26	1.58 ± 1.2	0.125
Left Main Disease n (%)	97 (12.5)	24 (12.7)	0.94
Proximal Left Anterior Descending artery n (%)	143 (18.5)	39 (20.6)	0.49
Aortic Valve Annular Calcification n (%)	625 (80.6)	171 (90.5)	0.001
Cardiac Proc 30 Days n (%)	158 (20.4)	37 (19.6)	0.81
Porcelain aorta n (%)	58 (7.5)	17 (9)	0.48
Society of Thoracic Surgery Risk Score (mean ± SD)	7.52 ± 4.7	8.74 ± 7.37	0.007
Kansas City Cardiomyopathy Questionnaire (KCCQ-12) (mean ± SD)	53.1 ± 24.2	49.3 ± 23.1	0.07
TVT access site n (%)			
Femoral	583 (75.4)	164 (86.8)	0.007
Trans-aortic	30 (3.9)	2 (1.1)	
Subclavian	3 (0.4)	0 (0)	
Other	157 (20.3)	23 (12.2)	
TVT Access method n (%)			
Percutaneous	347 (44.8)	102 (54)	0.023
Other	428 (55.2)	87 (46)	
Valve Type			
Sapien	96 (12.4)	11 (5.8)	<0.001
Sapien XT	191 (24.6)	22 (11.6)	
Sapien 3	354 (45.7)	97 (51.3)	
Others	134 (17.3)	59 (31.2)	
Balloon Expandable valve n (%)	641 (82.7)	130 (68.8)	<0.001
Self-Expanding valve n (%)	134 (17.3)	59 (31.2)	<0.001

Aortic Valve Systolic Mean Gradient by Continuous wave Doppler (mean ± SD)	43.6 ± 13.8	43.8 ± 13.4	0.88
Aortic Valve Systolic Maximal Instantaneous Gradient by Continuous wave Doppler (mean ± SD)	71.553 ± 21.85	71.84 ± 20.6	0.86
Left Ventricular Mass by 2-D echocardiography (mean ± SD)	234.681 ± 115.01	231.211 ± 64.51	0.69
Left Ventricular Mass Index by 2-D echocardiography (mean ± SD)	122.237 ± 53.4	118.994 ± 31.03	0.45
Left Ventricular Cardiac Output by Quantitative Doppler (mean ± SD)	5.79 ± 1.34	5.65 ± 1.36	0.21
Aortic Valve Systolic Peak Velocity by Continuous wave Doppler (mean ± SD)	4.35 ± 4.63	4.21 ± 0.63	0.67
Left Ventricular Stroke Volume by Quantitative Doppler (mean ± SD)	86.25 ± 20.3	84.65 ± 20.4	0.36
Left Ventricular Cardiac Index by Quantitative Doppler (mean ± SD)	3.01 ± 0.65	3.022 ± 0.65	0.92
Right Ventricular Systolic Pressure by Continuous wave Doppler (mean ± SD)	41.76 ± 14.82	42.84 ± 15.08	0.41
Estimated Right Atrial Pressure (mean ± SD)	7.422 ± 4.22	6.897 ± 3.53	0.17
Left Ventricular Systolic Stroke Volume Index by Quantitative Doppler (mean ± SD)	45.11 ± 10.35	44.51 ± 9.96	0.5
Interventricular Septum Diastolic Thickness by 2-D echocardiography (mean ± SD)	12.53 ± 2.65	12.59 ± 2.24	0.77
Left Ventricular Posterior Wall Diastolic Thickness by 2-D echocardiography (mean ± SD)	11.52 ± 1.87	11.54 ± 2.12	0.91
Left Ventricular Internal End Diastolic Dimension by 2-D echocardiography (mean ± SD)	49.54 ± 7.54	49.1 ± 6.65	0.46
Left Ventricular Internal Systolic Dimension by 2-D echocardiography (mean ± SD)	32.89 ± 8.77	33.01 ± 8.1	0.78
Left Atrium Maximum Volume Index by 2-D Method of Discs Biplane (mean ± SD)	46.36 ± 15.62	48.95 ± 15.19	0.05
Corrected Aortic Valve Systolic Maximal Instantaneous Gradient (mean ± SD)	68.89 ± 20.67	70.13 ± 19.81	0.49
Aortic Valve Systolic time velocity integral by Continuous wave Doppler (mean ± SD)	102.42 ± 21.1	104.96 ± 21.24	0.16
Aortic Valve Systolic Area by Tissue Velocity Imaging (mean ± SD)	0.86 ± 0.31	0.82 ± 0.31	0.11
Aortic Valve Systolic Area by Velocity (mean ± SD)	0.91 ± 0.31	0.87 ± 0.31	0.28
Aortic Valve Systolic Area Index by Tissue Velocity Imaging (mean ± SD)	0.45 ± 0.14	0.42 ± 0.09	0.32
Aortic Valve Systolic Area Index by Velocity (mean ± SD)	0.46 ± 0.13	0.45 ± 0.09	0.12
Left Ventricle Outflow Tract to Aortic Valve Velocity Ratio Systolic (mean ± SD)	0.234 ± 0.06	0.227 ± 0.06	0.21
Left Ventricle Outflow Tract to Aortic Valve Time Velocity Integral Ratio Systolic (mean ± SD)	0.226 ± 0.07	0.21 ± 0.06	0.07

Aortic Valve regurgitation n (%)			
Mild/Moderate/Severe	150 (19.4)	22 (11.6)	0.03
Trivial/Mild	488 (63.1)	134 (70.9)	
Left Ventricular Outflow Tract Systolic Diameter by 2-D echocardiography (mean ± SD)	2.21 ± 0.18	2.21 ± 0.16	0.92
Left Ventricular Outflow Tract Systolic Peak Velocity by Pulsed Wave Doppler (mean ± SD)	0.96 ± 0.18	0.94 ± 0.23	0.39
Left Ventricular Outflow Tract Systolic Time Velocity Integral by Pulsed Wave Doppler (mean ± SD)	22.41 ± 4.84	21.97 ± 5.07	0.31
Mitral Valve E-Wave Peak Velocity by Pulsed Wave Doppler (mean ± SD)	0.96 ± 0.32	0.96 ± 0.31	0.97
Mitral Valve A-Wave Peak Velocity by Pulsed Wave Doppler (mean ± SD)	0.95 ± 0.31	0.96 ± 0.31	0.71
Mitral Valve E to A Ratio at Baseline by Pulsed Wave Doppler (mean ± SD)	1.11 ± 0.81	1.06 ± 0.54	0.57
Mitral Valve Deceleration Time by Pulsed Wave Doppler (mean ± SD)	229.74 ± 78.21	234.71 ± 83.8	0.55
Mitral Valve Medial Annulus Ratio by Pulsed Wave Doppler (mean ± SD)	0.051 ± 0.024	0.055 ± 0.084	0.36
Mitral Valve medial E to e Ratio by Pulsed Wave Doppler (mean ± SD)	20.9 ± 9.44	22.24 ± 10.09	0.17
Mitral Valve Medial Annulus Systolic Velocity by Tissue Doppler Imaging (mean ± SD)	0.05 ± 0.01	0.05 ± 0.01	0.85
Mitral Valve Lateral Annulus e' Velocity by Tissue Doppler Imaging (mean ± SD)	0.065 ± 0.02	0.063 ± 0.019	0.22
Mitral valve regurgitation n (%)			
Mild/Moderate/Severe	167 (21.5)	44 (23.4)	0.83
Mild/Trivial	501 (64.6)	120 (63.8)	
Pulmonary valve regurgitation n (%)			
Mild/Moderate/Severe	26 (3.4)	2 (1.1)	0.04
Trivial/Mild	501 (64.6)	120 (63.8)	
Tricuspid Valve Lateral Annulus Systolic Velocity by Tissue Doppler Imaging (mean ± SD)	0.113 ± 0.062	0.117 ± 0.08	0.59
Tricuspid valve regurgitation n (%)			
Mild/Moderate/Severe	155 (20)	45 (23.8)	0.39
Mild/Trivial	611 (78.8)	143 (75.7)	
Tricuspid Valve Regurgitant Systolic Peak Velocity by Continuous Wave Doppler (mean ± SD)	2.911 ± 0.482	2.9 ± 0.44	0.81
Tricuspid Valve Systolic Regurgitant Maximal Instantaneous Gradient by Continuous Wave Doppler (mean ± SD)	34.79 ± 11.94	34.39 ± 11.34	0.73
Valve Calcium Score (mean ± SD)	2142.8 ± 1575.84	2389.97 ± 1561.903	0.05
Aortic annulus diameter horizontal (mm) (mean ± SD)	26.85 ± 3.79	27.55 ± 2.89	0.02
Aortic annulus diameter vertical (mm) (mean ± SD)	22.65 ± 3.37	22.33 ± 2.68	0.24

Aortic annulus diameter mean (mm) (mean ± SD)	24.37 ± 2.7	24.57 ± 2.7	0.36
Aortic annulus area (cm²) (mean ± SD)	4.81 ± 3.32	4.71 ± 0.89	0.68
Aortic annulus perimeter (cm) (mean ± SD)	78.1 ± 12.8	78.1 ± 11.7	0.91
Distance of Left main coronary to basal ring (mm) (mean ± SD)	14.38 ± 2.99	14.47 ± 2.52	0.71
Distance of Right Coronary artery to basal ring (mm) (mean ± SD)	15.1 ± 4.23	15.35 ± 3.41	0.48
Distance of right Brachiocephalic artery to annulus (mm) (mean ± SD)	94.1 ± 15.5	95.4 ± 11.1	0.30
Aorta angulation (mean ± SD)	18.78 ± 15.4	18.12 ± 15.64	0.64
Brachiocephalic artery to annulus distance to height ratio (mean ± SD)	0.56 ± 0.009	0.57 ± 0.06	0.07
Ascending aortic atherosclerosis burden n (%)	83 (11.1)	17 (9.3)	0.49
Right common iliac artery minimum diameter (mm) (mean ± SD)	7.98 ± 3.05	7.53 ± 2.87	0.21
Right external iliac artery minimum diameter (mm) (mean ± SD)	7.04 ± 2.46	6.78 ± 2.21	0.38
Right common femoral artery minimum diameter (mm) (mean ± SD)	7.1 ± 2.31	6.57 ± 2.43	0.11
Left common iliac artery minimum diameter (mm) (mean ± SD)	8.01 ± 3.15	7.32 ± 2.85	0.061
Left external iliac artery minimum diameter (mm) (mean ± SD)	7.1 ± 2.16	6.82 ± 2.31	0.31
Left common femoral artery minimum diameter (mm) (mean ± SD)	6.96 ± 2.0	6.49 ± 2.3	0.05
Iliac artery calcification n (%)	430 (57.5)	105 (58)	0.89
Iliac artery atherosclerosis degree n (%)			
Mild	222 (29.7)	58 (31.9)	0.05
Moderate	288 (38.5)	80 (44)	
Severe	151 (20.2)	35 (19.2)	
Abdominal aorta atherosclerosis degree n (%)			
Mild	156 (20.9)	42 (23.1)	0.31
Moderate	286 (38.3)	78 (42.9)	
Severe	168 (22.5)	38 (20.9)	
Abdominal artery atherosclerosis n (%)			
Calcified	268 (35.8)	66 (36.3)	0.45
Non-calcified	271 (36.2)	70 (38.5)	
Mixed	80 (10.7)	23 (12.6)	
TVT-Location n (%)			
Cardiac catheterization lab	319 (41.2)	74 (39.2)	0.53
Hybrid catheterization lab suite	15 (1.9)	6 (3.2)	

Hybrid or suite	440 (56.8)	109 (57.7)	
Procedure Status n (%)			
Elective	734 (94.7)	174 (92.1)	0.16
Urgent	41 (5.3)	15 (7.9)	
TVT-Procedure Indication			
Primary aortic stenosis	701 (90.5)	184 (97.4)	0.002
Other	74 (90.6)	5 (2.6)	
Valve-in-Valve Transcatheter aortic valve replacement n (%)	73 (9.4)	6 (3.2)	0.005
Valve-in-Valve Transcatheter aortic valve replacement status n (%)			
None	702 (90.6)	183 (96.8)	0.005
Other	73 (9.4)	6 (3.2)	
Operator Reason n (%)			
High risk	342 (44.1)	118 (62.4)	<0.001
Other	433 (55.9)	71 (37.6)	
Anesthesia Type n (%)			
Moderate Sedation	140 (18.1)	37 (19.6)	0.63
General Anesthesia	635 (81.9)	152 (80.4)	
Ventricular rate (mean ± SD)	71.72 ± 14.38	70.55 ± 14.06	0.31
PR (mean ± SD)	185.54 ± 40.32	193.21 ± 50.01	0.05
QRS (mean ± SD)	106.47 ± 24.68	115.16 ± 28.3	<0.001
QT (mean ± SD)	416.84 ± 39.63	426.99 ± 44.61	0.002
Corrected QT interval (mean ± SD)	449.71 ± 33.0.	456.51 ± 34.82	0.01
Right Bundle Branch Block n (%)	84 (10.9)	55 (29.1)	<0.001
Left Bundle Branch Block n (%)	56 (7.2)	12 (6.3)	0.66
1st Degree Atrioventricular Block n (%)	159 (20.6)	53 (28)	0.02
Left anterior Fascicular Block n (%)	39 (5)	27 (14.3)	<0.001
Valve Size (mm) (mean ± SD)	25.91 ± 2.83	26.62 ± 3.35	0.003
Dementia n (%)	0 (0)	0 (0)	1.00
Chronic Obstructive Pulmonary Disease n (%)	416 (53.7)	108 (57.1)	0.39
Connective Tissue Disease n (%)	52 (6.7)	15 (7.9)	0.55
Peptic ulcer disease n (%)	0 (0)	0 (0)	1.00
Liver Disease n (%)			
Mild	16 (2.1)	2 (1.1)	0.57
Moderate-Severe	12 (1.5)	4 (2.1)	
Hemiplegia n (%)	0 (0)	0 (0)	1.00
Solid Tumor n (%)	0 (0)	0 (0)	1.00
Leukemia n (%)	0 (0)	0 (0)	1.00

Lymphoma n (%)	0 (0)	0 (0)	1.00
Acquired Immunodeficiency Syndrome n (%)	0 (0)	0 (0)	1.00
Charlson Comorbidity Index (mean \pm SD)	6.23 \pm 1.53	6.61 \pm 1.67	0.003
Estimated 10-year survival (mean \pm SD)	11.83 \pm 20.25	10.46 \pm 19.54	0.401
Fall within 6 months n (%)	135 (17.4)	49 (25.9)	0.008

TVT- Transcatheter Valve Therapy

LVOT- Left Ventricular Outflow Tract

Table 2: Baseline Variables of the patient cohort included for the 1 year analysis

Covariates	No PPM implantation (N=481)	PPM Implantation (N=176)	p-value
Age (years) (mean \pm SD)	80.57 \pm 8.56	81.19 \pm 7.3	0.39
Men n (%)	272 (56.5)	105 (59.7)	0.47
Height (mean \pm SD)	167.15 \pm 10.56	165.49 \pm 9.7	0.07
Weight (mean \pm SD)	82.45 \pm 20.95	83.37 \pm 21.21	0.61
Body Mass Index (mean \pm SD)	29.33 \pm 6.64	30.42 \pm 7.61	0.08
Body Surface Area (mean \pm SD)	1.91 \pm 0.25	1.91 \pm 0.24	0.83
F status n (%)			
Alive	409 (85)	144 (81.8)	0.31
Dead	72 (15)	32 (18.2)	
Diastolic Blood Pressure (mean \pm SD)	68.05 \pm 13.79	67.55 \pm 12.52	0.68
Systolic Blood Pressure (mean \pm SD)	129.65 \pm 21.45	129.91 \pm 20.7	0.89
Prior Percutaneous Coronary Intervention n (%)	159 (33.1)	70 (39.8)	0.11
Prior Coronary Artery Bypass Graft n (%)	135 (28.1)	37 (21)	0.06
Prior Stroke n (%)	44 (9.1)	18 (10.2)	0.67
Prior Peripheral Arterial Disease n (%)	235 (48.9)	93 (52.8)	0.36
Hypertension n (%)	404 (84)	154 (87.5)	0.26
Diabetes Mellitus n (%)	178 (37)	75 (42.6)	0.19
Diabetes Control (Insulin/Oral/Diet) n (%)	168 (34.9)	68 (38.6)	0.38
Pre-Procedural Hemoglobin (Mean \pm SD)	12.03 \pm 1.81	11.95 \pm 1.85	0.59
Pre-Procedural Creatinine (Mean \pm SD)	1.43 \pm 1.3	1.37 \pm 1.01	0.61
Platelets (Mean \pm SD)	20.3726.56 \pm 11871.11	201536.24 \pm 71214.87	0.74
International Normalized Ratio (Mean \pm SD)	1.19 \pm 0.68	1.18 \pm 0.27	0.89
Albumin (Mean \pm SD)	4.14 \pm 0.41	4.07 \pm 0.36	0.04
Bilirubin (Mean \pm SD)	0.67 \pm 0.41	0.81 \pm 0.92	0.14
FEV1 (Mean \pm SD)	70.04 \pm 21.96	72.5 \pm 23.9	0.26
Predicted Diffusing Capacity of Lungs for Carbon Monoxide (DLCO) (Mean \pm SD)	64.68 \pm 19.12	66.36 \pm 19.85	0.39
Prior other cardiac surgery n (%)	32 (6.7)	4 (2.3)	0.02
Number of previous cardiac surgeries (Mean \pm SD)	0.374 \pm 0.57	0.27 \pm 0.49	0.05
Any prior Aortic Valve intervention n (%)	89 (18.5)	17 (9.7)	0.006
Prior Aortic Valve Surgical Replacement n (%)	41 (8.5)	4 (2.3)	0.005
Previous Aortic Valve Balloon Valvuloplasty n (%)	46 (9.6)	12 (6.8)	0.27
History of transient ischemic attack n (%)	41 (8.5)	17 (9.7)	0.65
Prior 2 weeksnum	369 (76.7)	155 (88.1)	0.001
Prior Coronary stenting n (%)			
Left	25 (5.2)	5 (2.9)	0.55
Right	30 (6.3)	9 (5.2)	
Both	33 (6.9)	14 (8.1)	
Right Coronary Artery Stenosis n (%)	58 (12.1)	20 (11.4)	0.81
Left Coronary Artery Stenosis n (%)	51 (10.6)	16 (9.1)	0.56

Prior carotid endarterectomy n (%)	35 (7.3)	12 (6.8)	0.84
Chronic lung disease n (%)			
Mild	95 (19.8)	32 (18.2)	0.84
Moderate	83 (17.3)	31 (17.6)	
Severe	77 (16)	33 (18.8)	
Home Oxygen use n (%)	54 (11.2)	13 (7.4)	0.15
Hostile Chest n (%)	54 (11.2)	16 (9.1)	0.43
Immunosuppression n (%)	58 (12.1)	30 (17)	0.09
Aspirin use n (%)	90 (18.7)	10 (5.7)	<0.001
Anticoagulants use n (%)	47 (9.8)	18 (10.2)	0.86
Coronary Artery Disease Presentation n (%)			
No symptoms, no angina	231 (48)	100 (56.8)	0.04
Other	250 (52)	76 (43.2)	
Prior Myocardial Infarction n (%)	115 (23.9)	39 (22.2)	0.63
Myocardial Infarction n (%)			
0-30 days	114 (23.7)	39 (22.2)	0.67
Never	367 (76.3)	137 (77.8)	
Atrial Fibrillation/Flutter n (%)	162 (33.7)	71 (40.3)	0.11
Atrial Fibrillation Class n (%)			
Paroxysmal	53 (11)	35 (19.9)	0.01
Persistent	80 (16.6)	29 (16.5)	
None	348 (72.3)	112 (63.6)	
Ejection Fraction % (mean ± SD)	57.46 ± 13.21	57.19 ± 12.25	0.81
Cardiac Power Index (Watts/m²) (mean ± SD)	0.601 ± 0.16	0.58 ± 0.16	0.17
Cardiac Efficiency (Watts/100 gm) (mean ± SD)	0.522 ± 0.19	0.51 ± 0.21	0.53
Heart failure 2 weeks prior to the procedure n (%)	369 (76.7)	155 (88.1)	0.001
New York Heart Association class within 2 weeks n (%)			
I/ II	117 (24.3)	32 (18.2)	0.09
III/ IV	364 (75.7)	144 (81.8)	
Conduction Defect n (%)	181 (37.6)	100 (56.8)	<0.001
Number of diseased vessels (mean ± SD)	1.41 ± 1.26	1.53 ± 1.21	0.24
Left Main Disease n (%)	60 (12.5)	22 (12.5)	0.99
Proximal Left Anterior Descending artery n (%)	79 (16.4)	35 (19.9)	0.29
Aortic Valvular Insufficiency n (%)			
Mild	168 (34.9)	70 (39.8)	0.28
Moderate	62 (12.9)	19 (10.8)	
Severe	37 (7.7)	6 (3.4)	
Trace/Trivial	140 (29.1)	54 (30.7)	
Aortic Valve Annular Calcification n (%)	374 (77.8)	158 (89.8)	<0.001
Cardiac Proc 30 Days n (%)	110 (22.9)	34 (19.3)	0.33
Porcelain aorta n (%)	46 (9.6)	17 (9.7)	0.97
Society of Thoracic Surgery Risk Score (mean ± SD)	8.23 ± 4.72	8.61 ± 7.34	0.43
Kansas City Cardiomyopathy Questionnaire (KCCQ-12) (mean ± SD)	52.54 ± 24.67	49.77 ± 23.38	0.23
TVT access site n (%)			
Femoral	339 (70.5)	152 (86.4)	<0.001

Trans-aortic	23 (4.8)	2 (1.1)	
Subclavian	0 (0)	0 (0)	
Other	119 (24.7)	22 (12.5)	
TVT Access method n (%)			
Other	311 (64.7)	82 (46.6)	<0.001
Percutaneous	170 (35.3)	94 (53.4)	
Valve Type			
Sapien	82 (17)	9 (5.1)	<0.001
Sapien XT	155 (32.2)	23 (13.1)	
Sapien 3	162 (33.7)	87 (49.4)	
Others	82 (17)	57 (32.4)	
Balloon Expandable valve n (%)	399 (83)	119 (67.6)	<0.001
Self-Expanding valve n (%)	82 (17)	57 (32.4)	<0.001
Aortic Valve Systolic Mean Gradient by Continuous wave Doppler (mean ± SD)	44.54 ± 14.14	44.48 ± 13.85	0.96
Aortic Valve Systolic Maximal Instantaneous Gradient by Continuous wave Doppler (mean ± SD)	73.04 ± 22.59	72.13 ± 22.81	0.65
Left Ventricular Mass by 2-D echocardiography (mean ± SD)	235.06 ± 68.23	232.44 ± 64.41	0.66
Left Ventricular Mass Index by 2-D echocardiography (mean ± SD)	122.58 ± 33.08	119.99 ± 32.79	0.41
Left Ventricular Cardiac Output by Quantitative Doppler (mean ± SD)	5.81 ± 1.36	5.64 ± 1.41	0.17
Aortic Valve Systolic Peak Velocity by Continuous wave Doppler (mean ± SD)	4.23 ± 0.66	4.22 ± 0.64	0.83
Left Ventricular Stroke Volume by Quantitative Doppler (mean ± SD)	85.44 ± 20.16	83.99 ± 20.63	0.44
Left Ventricular Cardiac Index by Quantitative Doppler (mean ± SD)	3.02 ± 0.64	3.01 ± 0.66	0.79
Right Ventricular Systolic Pressure by Continuous wave Doppler (mean ± SD)	41.54 ± 13.76	42.07 ± 14.29	0.66
Estimated Right Atrial Pressure (mean ± SD)	7.52 ± 4.22	7.1 ± 3.73	0.22
Left Ventricular Systolic Stroke Volume Index by Quantitative Doppler (mean ± SD)	44.75 ± 10.05	44.14 ± 9.92	0.52
Interventricular Septum Diastolic Thickness by 2-D echocardiography (mean ± SD)	12.63 ± 2.18	12.61 ± 2.23	0.91
Left Ventricular Posterior Wall Diastolic Thickness by 2-D echocardiography (mean ± SD)	11.62 ± 1.95	11.56 ± 2.16	0.73
Left Ventricular Internal End Diastolic Dimension by 2-D echocardiography (mean ± SD)	49.36 ± 7.58	49.06 ± 6.75	0.64
Left Ventricular Internal Systolic Dimension by 2-D echocardiography (mean ± SD)	32.98 ± 8.69	33.14 ± 8.06	0.83
Left Atrium Maximum Volume Index by 2-D Method of Discs Biplane (mean ± SD)	46.29 ± 14.96	48.14 ± 14.39	0.18
Corrected Aortic Valve Systolic Maximal Instantaneous Gradient (mean ± SD)	70.18 ± 21.23	70.28 ± 19.38	0.96

Aortic Valve Systolic time velocity integral by Continuous wave Doppler (mean ± SD)	102.79 ± 21.49	105.04 ± 21.39	0.26
Aortic Valve Systolic Area by Tissue Velocity Imaging (mean ± SD)	0.88 ± 0.47	0.82 ± 0.32	0.13
Aortic Valve Systolic Area by Velocity (mean ± SD)	0.89 ± 0.27	0.87 ± 0.31	0.43
Aortic Valve Systolic Area Index by Tissue Velocity Imaging (mean ± SD)	0.45 ± 0.16	0.42 ± 0.88	0.02
Aortic Valve Systolic Area Index by Velocity (mean ± SD)	0.46 ± 0.13	0.44 ± 0.09	0.11
Left Ventricle Outflow Tract to Aortic Valve Velocity Ratio Systolic (mean ± SD)	0.233 ± 0.05	0.226 ± 0.06	0.205
Left Ventricle Outflow Tract to Aortic Valve Time Velocity Integral Ratio Systolic (mean ± SD)	0.22 ± 0.07	0.214 ± 0.06	0.07
Aortic Valve regurgitation n (%)			
Mild/Moderate/Severe	64 (13.9)	17 (10.9)	0.03
Trivial/Mild	226 (49.1)	95 (60.9)	
Left Ventricular Outflow Tract Systolic Diameter by 2-D echocardiography (mean ± SD)	2.2 ± 0.18	2.2 ± 0.16	0.43
Left Ventricular Outflow Tract Systolic Peak Velocity by Pulsed Wave Doppler (mean ± SD)	0.96 ± 0.17	0.94 ± 0.23	0.19
Left Ventricular Outflow Tract Systolic Time Velocity Integral by Pulsed Wave Doppler (mean ± SD)	22.38 ± 4.68	21.91 ± 5.17	0.29
Elevated filling pressure n (%)			
Mild	146 (30.4)	43 (24.4)	<0.001
Moderate	173 (36)	58 (33)	
Severe	86 (17.9)	21 (11.9)	
Mitral Valve E-Wave Peak Velocity by Pulsed Wave Doppler (mean ± SD)	0.97 ± 0.32	0.97 ± 0.32	0.98
Mitral Valve A-Wave Peak Velocity by Pulsed Wave Doppler (mean ± SD)	0.97 ± 0.31	0.97 ± 0.32	1.00
Mitral Valve E to A Ratio at Baseline by Pulsed Wave Doppler (mean ± SD)	1.089 ± 0.84	1.064 ± 0.53	0.78
Mitral Valve Deceleration Time by Pulsed Wave Doppler (mean ± SD)	230.303 ± 78.96	234.186 ± 83.47	0.66
Mitral Valve Medial Annulus e Velocity by Pulsed Wave Doppler (mean ± SD)	0.05 ± 0.02	0.05 ± 0.08	0.35
Mitral Valve medial E to e Ratio by Pulsed Wave Doppler (mean ± SD)	21.87 ± 9.83	22.58 ± 10.73	0.51
Mitral Valve Medial Annulus Systolic Velocity by Tissue Doppler Imaging (mean ± SD)	0.054 ± 0.15	0.055 ± 0.017	0.73
Mitral Valve Lateral Annulus e` Velocity by Tissue Doppler Imaging (mean ± SD)	0.065 ± 0.02	0.062 ± 0.019	0.19
Mitral stenosis n (%)	109 (22.7)	58 (33)	0.007
Mitral Valve Diastolic Mean Gradient by Continuous Wave Doppler (mean ± SD)	1.55 ± 2.45	2.66 ± 2.94	<0.001
Mitral valve regurgitation n (%)			

Mild/Moderate/Severe	114 (23.8)	44 (25.1)	0.277
Mild/Trivial	351 (73.4)	122 (69.7)	
Pulmonary valve regurgitation n (%)			
Mild/Moderate/Severe	303 (63)	100 (56.8)	0.15
None	178 (37)	76 (43.2)	
Tricuspid Valve Lateral Annulus Systolic Velocity by Tissue Doppler Imaging (mean ± SD)	0.112 ± 0.057	0.121 ± 0.082	0.26
Tricuspid valve regurgitation n (%)			
Mild/Moderate/Severe	94 (19.5)	42 (23.9)	0.42
Mild/Trivial	381 (79.2)	131 (74.4)	
Tricuspid Valve Regurgitant Systolic Peak Velocity by Continuous Wave Doppler (mean ± SD)	2.92 ± 0.49	2.9 ± 0.45	0.61
Tricuspid Valve Systolic Regurgitant Maximal Instantaneous Gradient by Continuous Wave Doppler (mean ± SD)	35.21 ± 12.21	34.45 ± 11.51	0.55
Valve Calcium Score (mean ± SD)	2086.01 ± 1618.12	2395.51 ± 1558.78	0.032
Aortic annulus diameter horizontal (mm) (mean ± SD)	24.65 ± 7.8	27.26 ± 4.1	<0.001
Aortic annulus diameter vertical (mm) (mean ± SD)	21.02 ± 6.76	22.06 ± 3.59	0.058
Aortic annulus diameter mean (mm) (mean ± SD)	24.31 ± 2.67	24.55 ± 2.84	0.311
Aortic annulus area (cm²) (mean ± SD)	4.37 ± 1.54	4.65 ± 1.02	0.03
Aortic annulus perimeter (cm) (mean ± SD)	65.78 ± 30.98	75.32 ± 18.69	<0.001
Distance of Left main coronary to basal ring (mm) (mean ± SD)	13.66 ± 3.85	14.35 ± 2.74	0.03
Distance of Right Coronary artery to basal ring (mm) (mean ± SD)	11.48 ± 7.12	14.52 ± 1.96	<0.001
Distance of right Brachiocephalic artery to annulus (mm) (mean ± SD)	63.12 ± 46.04	85.88 ± 30.71	<0.001
Aorta angulation (mean ± SD)	13.58 ± 16.18	15.83 ± 15.86	0.13
Brachiocephalic artery to annulus distance to height ratio (mean ± SD)	0.37 ± 0.27	0.51 ± 0.18	<0.001
Sinus of valsalva horizontal diameter (mm) (mean ± SD)	10.51 ± 15.71	9.58 ± 15.56	0.56
Sinus of valsalva mean diameter(mm) (mean ± SD)	11.36 ± 15.79	9.52 ± 15.29	0.25
Sinus of valsalva area (cm²) (mean ± SD)	2.81 ± 4.21	2.56 ± 4.23	0.56
Sino-tubular junction mean diameter (mm) (mean ± SD)	10.36 ± 14.1	7.98 ± 13.15	0.10
Sino-tubular junction area (cm²) (mean ± SD)	2.33 ± 3.34	2.84 ± 9.54	0.35
LVOT diameter horizontal (mm) (mean ± SD)	8.01 ± 13.05	16.86 ± 14.33	<0.001
LVOT diameter vertical (mm) (mean ± SD)	6.11 ± 10.01	12.35 ± 10.64	<0.001
LVOT diameter mean (mm) (mean ± SD)	6.89 ± 11.26	14.25 ± 12.22	<0.001
LVOT area (cm²) (mean ± SD)	1.33 ± 2.23	2.68 ± 2.4	<0.001
Ascending aortic atherosclerosis burden n (%)	68 (14.6)	17 (10)	0.13
Right common iliac artery minimum diameter (mm) (mean ± SD)	4.05 ± 4.26	4.45 ± 4.38	0.33

Right external iliac artery minimum diameter (mm) (mean ± SD)	3.94 ± 3.73	3.84 ± 3.7	0.79
Right common femoral artery minimum diameter (mm) (mean ± SD)	3.86 ± 3.75	3.72 ± 3.7	0.7
Left common iliac artery minimum diameter (mm) (mean ± SD)	4.1 ± 4.29	4.24 ± 4.25	0.71
Left external iliac artery minimum diameter (mm) (mean ± SD)	3.95 ± 3.77	3.08 ± 3.81	0.67
Left common femoral artery minimum diameter (mm) (mean ± SD)	3.76 ± 3.71	3.73 ± 3.69	0.93
Iliac artery calcification n (%)	287 (61.7)	97 (57.4)	0.32
Iliac artery atherosclerosis degree n (%)			
Mild	142 (30.5)	56 (32.9)	0.03
Moderate	174 (37.4)	77 (45.3)	
Severe	91 (19.6)	28 (16.5)	
Abdominal aorta atherosclerosis degree n (%)			
Mild	92 (19.8)	41 (24.1)	0.03
Moderate	165 (35.6)	74 (43.5)	
Severe	103 (22.2)	31 (18.2)	
Abdominal artery atherosclerosis n (%)			
Calcified	164 (35.3)	60 (35.3)	0.09
Non-calcified	151 (32.5)	66 (38.8)	
Mixed	48 (10.3)	21 (12.4)	
TVT-Location n (%)			
Cardiac catheterization lab	188 (39.1)	65 (36.9)	<0.001
Hybrid catheterization lab suite	247 (51.4)	67 (38.1)	
Hybrid or suite	46 (9.6)	44 (25)	
Procedure Status n (%)			
Elective	456 (94.8)	163 (92.6)	0.28
Urgent	25 (5.2)	13 (7.4)	
TVT-Procedure Indication			
Primary aortic stenosis	432 (89.8)	171 (97.2)	0.002
Other	49 (10.2)	5 (2.8)	
Valve-in-Valve Transcatheter aortic valve replacement n (%)	49 (10.2)	6 (3.4)	0.005
Valve-in-Valve Transcatheter aortic valve replacement status n (%)			
None	432 (89.8)	170 (96.6)	0.005
Other	49 (10.2)	6 (3.4)	
Operator Reason n (%)			

High risk	201 (41.8)	107 (96.6)	<0.001
Other	280 (58.2)	69 (39.2)	
Anesthesia Type n (%)			
Moderate Sedation	30 (6.2)	29 (16.5)	<0.001
General Anesthesia	451 (93.8)	147 (83.5)	
Ventricular rate (mean ± SD)	72.1 ± 14.2	70.5 ± 14.1	0.23
PR (mean ± SD)	183.09 ± 36.6	194.1 ± 48.6	0.006
QRS (mean ± SD)	106.7 ± 24.2	115.4 ± 28.4	<0.001
QT (mean ± SD)	416.6 ± 40.9	427.1 ± 45.1	0.005
Corrected QT interval (mean ± SD)	450.02 ± 33.6	456.2 ± 35.1	0.044
Right Bundle Branch Block n (%)	48 (10)	51 (29)	<0.001
Left Bundle Branch Block n (%)	38 (7.9)	12 (6.8)	0.64
1st Degree Atrioventricular Block n (%)	88 (18.3)	53 (30.1)	0.001
Left anterior Fascicular Block n (%)	22 (4.6)	25 (14.2)	<0.001
Valve Size (mm) (mean ± SD)	25.86 ± 2.84	26.64 ± 3.41	0.004
2nd Degree Atrioventricular Block n (%)	0.002 ± 0.046	0.006 ± 0.075	0.45
Dementia n (%)	0 (0)	0 (0)	1.00
Chronic Obstructive Pulmonary Disease n (%)	255 (53)	96 (54.5)	0.72
Connective Tissue Disease n (%)	33 (6.9)	14 (8)	0.63
Peptic ulcer disease n (%)	0 (0)	0 (0)	1.00
Liver Disease n (%)			
Mild	10 (2.1)	2 (1.1)	0.46
Moderate-Severe	6 (1.2)	4 (2.3)	
Hemiplegia n (%)	0 (0)	0 (0)	1.00
Solid Tumor n (%)	0 (0)	0 (0)	1.00
Leukemia n (%)	0 (0)	0 (0)	1.00
Lymphoma n (%)	0 (0)	0 (0)	1.00
Acquired Immunodeficiency Syndrome n (%)	0 (0)	0 (0)	1.00
Charlson Comorbidity Index (mean ± SD)	6.23 ± 1.55	6.53 ± 1.6	0.036
Estimated 10-year survival (mean ± SD)	12.19 ± 20.89	11.22 ± 20.1	0.59
Fall within 6 months n (%)	81 (16.8)	46 (26.1)	0.008

TVT- Transcatheter Valve Therapy

LVOT- Left Ventricular Outflow Tract