

TABLE E1. Pre-procedural patient characteristics, stratified by aortic root procedure

Characteristic	Composite graft								P value
	Valve preservation (n = 261)		Biologic (n = 297)		Mechanical (n = 156)		Allograft (n = 243)		
	n*	No. (%) or mean ± SD	n*	No. (%) or mean ± SD	n*	No. (%) or mean ± SD	n*	No. (%) or mean ± SD	
Demographics									
Age (y)	261	48 ± 14	297	66 ± 11	156	47 ± 11	243	53 ± 14	<.0001
Male	261	208 (80)	297	242 (81)	156	132 (85)	243	187 (77)	.16
Height (cm)	261	181 ± 10	297	176 ± 9.9	156	179 ± 9.6	243	175 ± 10	<.0001
Body mass index (kg/m ²)	236	28 ± 5.6	271	28 ± 4.9	143	29 ± 5.7	205	28 ± 4.9	.3
NYHA functional class	261		297		156		243		<.0001
I		142 (54)		133 (45)		69 (44)		64 (26)	
II		95 (36)		116 (39)		68 (44)		143 (59)	
III		23 (8.8)		38 (13)		17 (11)		28 (12)	
IV		1 (0.38)		10 (3.4)		2 (1.3)		8 (3.3)	
Aorta and aortic valve									
Aorta dimensions (cm)									
Sinus of Valsalva diameter†	216	4.7 ± 0.67	207	4.7 ± 0.80	102	4.7 ± 1.0	111	4.4 ± 0.95	.0009
Mid-ascending diameter†	237	4.2 ± 0.99	266	4.4 ± 0.94	125	4.5 ± 1.2	207	3.9 ± 0.86	<.0001
Aortic valve									
Morphology									
Unicuspid	248	0 (0)	296	4 (1.4)	155	11 (7.1)	243	3 (1.2)	<.0001
Bicuspid	248	26 (10)	296	72 (24)	155	45 (29)	243	30 (12)	<.0001
Tricuspid	248	222 (90)	296	219 (74)	155	99 (64)	243	210 (86)	<.0001
Quadricuspid	248	0 (0)	296	1 (0.34)	155	0 (0)	243	0 (0)	.5
Pathology									
Aortic root dilatation from ascending aortic aneurysm	261	250 (96)	297	162 (55)	156	108 (69)	243	117 (48)	<.0001
Degenerative	261	9 (3.4)	297	126 (42)	156	45 (29)	243	112 (46)	<.0001
Hemodynamics									
Mean gradient (mm Hg)	101	9.1 ± 7.3	189	20 ± 14	93	21 ± 15	177	27 ± 20	<.0001
Peak gradient (mm Hg)	105	17 ± 11	191	35 ± 23	93	37 ± 25	178	48 ± 36	<.0001
Pathophysiology									
Stenosis	261	2 (0.77)	297	66 (22)	156	27 (17)	243	103 (42)	<.0001
Regurgitation	261	180 (69)	297	261 (88)	156	141 (90)	243	201 (83)	<.0001
Regurgitation grade	260		296		156		243		<.0001
0		81 (31)		35 (12)		15 (9.6)		42 (17)	
≥1		31 (12)		21 (7.1)		6 (3.8)		19 (7.8)	
≥2		60 (23)		48 (16)		26 (17)		37 (15)	
≥3		54 (21)		83 (28)		51 (33)		62 (26)	
≥4		34 (13)		109 (37)		58 (37)		83 (34)	
Cardiac comorbidities									
Mitral valve regurgitation	261	68 (26)	297	104 (35)	156	44 (28)	243	73 (30)	.13
Tricuspid valve regurgitation	261	48 (18)	297	74 (25)	156	30 (19)	243	44 (18)	.15
Left ventricular ejection fraction (%)	245	55 ± 6.1	280	52 ± 8.8	132	53 ± 7.5	225	52 ± 9.8	.0006
Left ventricular mass index (g/m ²)	219	119 ± 38	246	150 ± 54	116	143 ± 48	178	146 ± 44	<.0001
Left atrial diameter (cm)	221	3.9 ± 0.76	254	4.1 ± 0.80	117	4.0 ± 0.74	200	4.0 ± 0.75	.05
Right ventricular estimated systolic pressure (mm Hg)	173	34 ± 6.6	211	37 ± 9.9	76	35 ± 8.9	150	37 ± 8.8	.0001
No. of diseased coronary artery systems (≥50% stenosis)	229		269		120		155		<.0001
0		202 (88)		183 (68)		102 (85)		111 (72)	
1		15 (6.6)		42 (16)		11 (9.2)		26 (17)	
2		9 (3.9)		25 (9.3)		3 (2.5)		12 (7.7)	
3		3 (1.3)		19 (7.1)		4 (3.3)		6 (3.9)	

(Continued)

TABLE E1. Continued

Characteristic	Composite graft								
	Valve preservation (n = 261)		Biologic (n = 297)		Mechanical (n = 156)		Allograft (n = 243)		P value
	n*	No. (%) or mean ± SD	n*	No. (%) or mean ± SD	n*	No. (%) or mean ± SD	n*	No. (%) or mean ± SD	
Atrial fibrillation or flutter	235	4 (1.7)	270	25 (9.3)	142	5 (3.5)	205	7 (3.4)	.0004
Complete heart block or pacer	235	2 (0.85)	270	3 (1.1)	142	3 (2.1)	205	3 (1.5)	.8
Ventricular arrhythmia	235	12 (5.1)	270	16 (5.9)	142	7 (4.9)	205	16 (7.8)	.6
Heart failure	261	13 (5.0)	297	52 (18)	156	16 (10)	243	37 (15)	<.0001
Noncardiac comorbidities									
Peripheral arterial disease	261	2 (0.77)	297	17 (5.7)	156	2 (1.3)	243	6 (2.5)	.002
Carotid disease	261	35 (13)	297	66 (22)	156	13 (8.3)	243	26 (11)	<.0001
Stroke	261	9 (3.4)	297	16 (5.4)	156	4 (2.6)	243	3 (1.2)	.06
Hypertension	261	152 (58)	297	208 (70)	156	81 (52)	243	127 (52)	<.0001
Diabetes mellitus, pharmacologically treated	258	6 (2.3)	295	17 (5.8)	155	8 (5.2)	240	9 (3.8)	.2
COPD	261	27 (10)	297	33 (11)	156	7 (4.5)	243	20 (8.2)	.10
History of smoking	259	116 (45)	294	157 (53)	156	62 (40)	240	116 (48)	.03
Creatinine (mg/dL)	261	0.95 ± 0.20	294	1.0 ± 0.29	156	0.99 ± 0.23	242	1.0 ± 0.62	.001
Blood urea nitrogen (mg/dL)	261	16 ± 4.5	294	19 ± 6.4	155	16 ± 5.4	242	17 ± 6.3	<.0001
Bilirubin (mg/dL)	257	0.68 ± 0.36	281	0.77 ± 0.41	148	0.75 ± 0.42	221	0.77 ± 0.45	.002
Total cholesterol (mg/dL)	202	184 ± 34	234	183 ± 35	124	189 ± 43	170	189 ± 40	.4
Triglycerides (mg/dL)	201	150 ± 99	235	123 ± 72	124	160 ± 125	169	144 ± 126	.0007
Hematocrit (%)	254	42 ± 4.9	282	41 ± 5.3	150	42 ± 4.8	221	40 ± 4.3	.0001

SD, Standard deviation; NYHA, New York Heart Association; COPD, chronic obstructive pulmonary disease. *Patients with data available. †These are internal echocardiographic sizes that are expected to be 2 to 3 mm smaller than true or computed tomography external diameters.

TABLE E2. Label valve size

Valve size (mm)	Composite graft		
	Biologic (n = 297)	Mechanical (n = 156)	Allograft (n = 243)
	No. (%)	No. (%)	No. (%)
17	—	—	1 (0.43)
18	—	—	—
19	8 (2.7)	1 (0.64)	5 (2.1)
20	—	—	10 (4.3)
21	23 (7.7)	8 (5.1)	65 (28)
22	—	—	68 (29)
23	57 (19)	23 (15)	21 (8.9)
24	—	—	16 (6.8)
25	127 (43)	51 (33)	17 (7.2)
26	—	—	11 (4.7)
27	68 (23)	44 (28)	15 (6.4)
28	—	2 (1.3)	3 (1.3)
29	14 (4.7)	21 (13)	3 (1.3)
30	—	—	—
31	—	5 (3.2)	—
32	—	—	—
33	—	1 (0.64)	—

TABLE E3. Propensity-score risk-adjusted comparison of time-related reoperation among aortic root procedure groups

Factor	Coefficient ± SE	P value
Early hazard phase		
Surgical strategy		
Valve preservation vs allograft	3.01 ± 1.2	.02
Composite graft		
Biologic vs allograft	2.2 ± 1.2	.05
Mechanical vs allograft	1.4 ± 1.2	.3
Late hazard phase		
Surgical strategy		
Valve preservation vs allograft	-2.3 ± 0.86	.008
Composite graft		
Biologic vs allograft	-0.22 ± 0.63	.7
Mechanical vs allograft	-2.7 ± 1.1	.009

Three propensity scores were incorporated into each hazard phase for risk adjustment. This is the primary analysis for results presented in Table 4, which uses a different reference group. SE, Standard error.