

Table S1 Pre-operative characteristics

	Minimally invasive aortic surgery			P value
	Total (167)	Without AVR (98)	With AVR (69)	
Time frames				
2011-2013	39 (23%)	20 (20%)	19 (28%)	0.28
2014-2018	128 (76%)	76 (78%)	52 (75%)	
Age (y.o.)	64.1±11.3	64.8±11.0	63.1±11.7	0.34
Male	117 (70%)	62 (63%)	55 (80%)	0.022
BMI	29.1±4.5	29.9±4.5	28.4±3.9	0.025
EuroSCORE II	2.58±3.26	2.47±3.24	2.73±3.29	0.61
Hypertension	120 (72%)	67 (68%)	53 (77%)	0.23
PHT	0 (0.0%)	0 (0%)	0 (0%)	NA
CAD	51 (31%)	26 (27%)	25 (36%)	0.18
COPD	14 (8%)	7 (7%)	7 (10%)	0.49
Diabetes	18 (11%)	8 (8%)	6 (9%)	0.90
CKD	16 (10%)	8 (8%)	8 (12%)	0.50
Previous MI	12 (7%)	8 (8%)	4 (6%)	0.56
Previous PCI	14 (8%)	6 (6%)	8 (12%)	0.21
Previous TIA/stroke	2 (1%)	2 (2%)	0 (0%)	0.39
Connective tissue disorder	1 (1%)	1 (1%)	0 (0%)	0.64
Ejection fraction (%)	57.5±8.6	58.3±6.2	57.0±9.4	0.28
0-20%	0 (0%)	0 (0%)	0 (0%)	NA
20-30%	2 (1%)	0 (0%)	2 (3%)	0.16
30-50%	20 (12%)	11 (11%)	9 (13%)	0.72
>50%	145 (87%)	85 (87%)	60 (87%)	0.97

AVR, aortic valve replacement; BMI, body mass index; PHT, pulmonary hypertension; CAD, coronary artery disease; COPD, chronic obstructive pulmonary disease; CKD, chronic kidney disease; MI, myocardial infarction; PCI, percutaneous coronary intervention; TIA, transient ischemic attack.

Table S2 Intra-operative characteristics

	Minimally invasive aortic surgery			P value
	Total (167)	Without AVR (98)	With AVR (69)	
AV disease				
AV stenosis	29 (17%)	0 (0%)	29 (42%)	<0.001
AV insufficiency	47 (28%)	5 (5%)	42 (61%)	<0.001
Bicuspid valve	12 (7%)	7 (7%)	5 (7%)	0.95
Aortic root				
Ascending aorta (mm)	6.00±0.46	5.74±1.24	6.14±1.42	0.053
Aortic surgery without AVR				
Supracoronary ascending aorta replacement	-	82 (84%)	-	-
David/Yacoub procedures	-	16 (16%)	-	-
Aortic surgery with AVR				
Supracoronary ascending aorta replacement +AVR	-	-	44 (64%)	-
Bioprosthesis	-	-	18 (41%)	-
Mechanical valve	-	-	26 (59%)	-
Bentall-de Bono procedures	-	-	25 (36%)	-
Bioprosthesis	-	-	18 (72%)	-
Mechanical valve	-	-	7 (28%)	-
Subcommissural annuloplasty	-	7 (7%)	-	-
Hemi-arch replacement	1 (1%)	1 (1%)	0 (0%)	0.64
ECC (min)	152.046.8	137.1±51.3	170.7±32.4	<0.001
X-clamp (min)	101.836.8	92.1±41.9	114.0±23.5	<0.001
Postoperative drainage (ml)	376.2±209.4	369.4±212.4	398.7±220.0	0.39
Inotropic support	77 (48%)	43 (44%)	34 (49%)	0.49
IABP	1 (1%)	1 (1%)	0 (0%)	0.64
ICU stay (days)	2.692.59	2.31±1.83	3.04±3.14	0.058
Transfusions				
RBC (U)	0.83±1.15	0.73±1.17	0.98±1.20	0.18
FFP (U)	1.72±1.58	1.63±1.62	1.86±1.63	0.37
PLT (U)	0.32±0.79	0.23±0.45	0.43±1.08	0.10
Conversion	1 (1%)	1 (1%)	0 (0%)	0.64

AVR, aortic valve replacement; ECC, extracorporeal circulation; ICU, intensive care unit; RBC, red blood cells; FFP, fresh frozen plasma; PLT, platelets.

Table S3 Complications

	Minimally invasive aortic surgery			Risk Ratio (95% CI)	P value
	Total (167)	Without AVR (98)	With AVR (69)		
30-day mortality	1 (1%)	1 (1%)	0 (0%)	2.12 (0.09-51.31)	0.644
Cardiac tamponade and/or rethoracotomy for bleeding	12 (7%)	8 (8%)	5 (7%)	1.13 (0.38-3.30)	0.83
Periprocedural MI	2 (1%)	1 (1%)	1 (1%)	0.70 (0.04-11.06)	0.80
Respiratory failure	7 (4%)	4 (4%)	3 (4%)	0.94 (0.22-4.06)	0.93
Prolonged ICU stay	3 (2%)	1 (1%)	2 (3%)	0.35 (0.03-3.81)	0.39
Neurologic complications	5 (3%)	2 (2%)	3 (4%)	0.47 (0.08-2.74)	0.40
Pulmonary embolism	1 (1%)	1 (1%)	0 (0%)	2.12 (0.09-51.31)	0.64
Multiorgan failure	3 (2%)	2 (2%)	1 (1%)	1.41 (0.13-15.22)	0.78
Gastrointestinal complications	3 (2%)	2 (2%)	1 (1%)	1.41 (0.13-15.22)	0.78
Acute kidney failure	8 (5%)	4 (4%)	4 (6%)	0.70 (0.18-2.72)	0.61
Sternal wound infection	2 (1%)	0 (0%)	2 (3%)	0.14 (0.01-2.90)	0.20
ECMO	3 (2%)	1 (1%)	2 (3%)	0.35 (0.03-3.81)	0.39
VAD	0 (0%)	0 (0%)	0 (0%)	NA	NA

AVR, aortic valve replacement; CI, confidence interval; MI, myocardial infarction; ICU, intensive care unit; ECMO, extracorporeal membrane oxygenation; VAD, ventricle assist device.

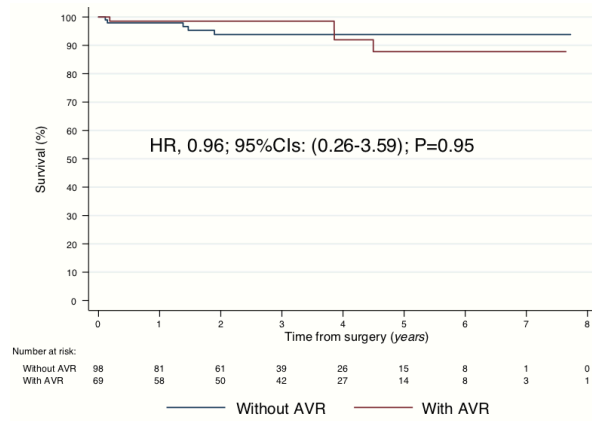


Figure S1 Kaplan-Meier curve for the analysis of overall survival in patients undergoing minimally invasive aortic surgery stratified by procedures with- and without AVR; AVR, aortic valve replacement. HR, hazard ratio; CI, confidence interval.