

Supplementary Table 1 Baseline characteristics by EF1 tertile					
	Overall	1st tertile (5.6-20.9%)	2nd tertile (21.0-28.6%)	3rd tertile (28.7-43.6%)	p value
n	149	50	49	50	
Age	70.0 [65.0, 76.0]	69.0 [66.0, 74.8]	72.0 [66.0, 78.0]	70.0 [57.8, 75.0]	0.42
Male sex	104 (69.8)	40 (80.0)	32 (65.3)	32 (64.0)	0.16
Hypertension	102 (68.5)	32 (64.0)	39 (79.6)	31 (62.0)	0.12
Hyperlipidaemia	67 (45.0)	26 (52.0)	18 (36.7)	23 (46.0)	0.31
Diabetes	21 (14.1)	5 (10.0)	6 (12.2)	10 (20.0)	0.32
Coronary artery disease	56 (37.6)	26 (52.0)	16 (32.7)	14 (28.0)	0.032
Systolic blood pressure (mmHg)	148.5 [137.0, 165.5]	145.0 [135.4, 161.4]	149.0 [137.5, 165.5]	153.0 [140.5, 170.4]	0.62
Diastolic blood pressure (mmHg)	84.0 [77.0, 92.0]	85.2 [78.0, 93.5]	85.0 [80.0, 92.0]	80.8 [76.0, 89.9]	0.20
NYHA					0.01
I	71 (47.7)	15 (30.0)	26 (53.1)	30 (60.0)	
II	49 (32.9)	19 (38.0)	18 (36.7)	12 (24.0)	
III	26 (17.4)	13 (26.0)	5 (10.2)	8 (16.0)	
IV	3 (2.0)	3 (6.0)	0 (0.0)	0 (0.0)	
AV Vmax (m/s)	3.8 [3.2, 4.3]	4.2 [3.9, 4.6]	3.5 [3.1, 4.0]	3.3 [2.6, 3.9]	<0.001
AV mean gradient (mmHg)	32.9 [20.7, 41.7]	41.0 [36.9, 47.1]	26.3 [20.0, 36.0]	23.0 [14.6, 35.2]	<0.001
AV area (cm ²)	0.9 [0.7, 1.1]	0.8 [0.7, 0.9]	0.9 [0.7, 1.1]	1.1 [0.8, 1.3]	<0.001
Valvuloarterial compliance (mmHg/ml/m ²)	4.0 [3.3, 4.4]	4.1 [3.4, 4.9]	4.1 [3.2, 4.5]	3.7 [3.3, 4.1]	0.07
Indexed LV mass (g/m ²)	87.0 [73.0, 99.0]	95.0 [83.0, 102.0]	86.0 [70.0, 98.0]	80.5 [69.2, 90.0]	0.004
Indexed stroke volume (ml/m ²)	47.0 [41.0, 54.0]	45.5 [38.8, 55.0]	47.0 [40.0, 53.0]	49.0 [42.2, 53.0]	0.48
Ejection fraction (%)	66.7 [63.0, 70.7]	67.1 [61.4, 71.6]	66.7 [64.1, 68.9]	66.2 [63.2, 71.4]	0.73
EF1 (%)	25.6 [17.7, 29.9]	14.6 [10.9, 17.6]	25.6 [24.4, 27.1]	31.2 [29.9, 34.4]	<0.001
Global longitudinal strain (%)	-17.9 [-20.1, -15.4]	-16.9 [-18.9, -14.4]	-18.1 [-20.4, -16.1]	-18.2 [-21.1, -15.7]	0.04
Native T1	1179.0 [1157.0, 1207.0]	1191.0 [1170.0, 1214.0]	1171.0 [1152.2, 1201.5]	1181.5 [1149.0, 1196.8]	0.09
ECV fraction (%)	27.6 [25.6, 29.1]	27.7 [25.5, 30.2]	27.7 [26.2, 29.0]	27.4 [25.5, 28.6]	0.60
iECV (ml/m ²)	22.3 [18.7, 26.2]	24.3 [20.2, 27.7]	21.9 [16.9, 27.3]	20.4 [17.5, 23.4]	0.008
Infarct LGE	21 (14.1)	14 (28.0)	6 (12.2)	1 (2.0)	0.001
Non-infarct LGE	36 (24.2)	17 (34.0)	14 (28.6)	5 (10.0)	0.01
hs-cTnI (ng/L)	6.6 [3.6, 12.4]	10.0 [5.0, 25.2]	4.9 [3.7, 10.2]	4.4 [3.1, 8.1]	0.002
BNP (ng/L)	26.8 [12.4, 54.2]	29.4 [13.6, 76.2]	29.4 [15.6, 53.4]	22.6 [8.0, 47.9]	0.17
Abbreviations: EF1, first-phase ejection fraction; NYHA, New York Heart Association; AV, aortic valve; LV, left ventricular; ECV, extracellular volume; iECV, indexed extracellular volume; LGE, late gadolinium enhancement; hs-cTnI, high-sensitivity cardiac troponin I; BNP, brain natriuretic peptide.					

Supplementary Table 2 Univariable linear regression models for EF1				
	Coefficient	95% CI	r²	p value
Age per 10 years	-0.03	-0.12, 0.06	0.003	0.53
Male sex	-0.13	-0.35, 0.08	0.009	0.24
Hypertension	0.05	-0.17, 0.27	0.001	0.67
Ejection fraction (log ₂)	0.62	0.02, 1.22	0.027	0.046
Aortic valve gradient			0.256	<0.001
Mean gradient 20-39 mmHg	-0.18	-0.43, 0.07		
Mean gradient ≥40mmHg	-0.73	-0.95, -0.5		
Mean gradient (log ₂)	-0.43	-0.55, -0.30	0.23	<0.001
Left ventricular mass index (log ₂)	-0.51	-0.81, -0.21	0.07	0.001
Valvuloarterial compliance (log ₂)	-0.34	-0.62, -0.06	0.038	0.017
Native T1 (log ₂)	-2.35	-4.39, -0.32	0.035	0.025
Extracellular volume fraction (log ₂)	-0.61	-1.38, 0.16	0.017	0.12
Indexed extracellular volume (log ₂)	-0.45	-0.70, -0.19	0.074	0.001
Late gadolinium enhancement (any)	-0.41	-0.61, -0.20	0.092	<0.001
Global longitudinal strain (log ₂)	-0.27	-0.48, -0.06		0.013
High-sensitivity cardiac troponin I (log ₂)	-0.08	-0.14, -0.01	0.038	0.019
Brain natriuretic peptide (log ₂)	-0.06	-0.13, 0.01	0.021	0.10

Supplementary Table 3 Baseline characteristics in those who had AVR stratified by fixed low baseline EF1 (<25%)			
	Fixed	Non-fixed	p value
n	11	46	
EF1 baseline (%)	18.5 [13.2, 22.2]	15.6 [12.0, 26.4]	0.98
EF1 post-AVR (%)	14.6 [12.6, 23.2]	28.1 [23.2, 32.3]	<0.001
Baseline echocardiogram to AVR (days)	159.0 [67.0, 649.0]	198.5 [63.8, 1051.5]	0.97
AVR to follow-up echocardiogram (days)	386.0 [264.5, 464.0]	340.5 [165.2, 389.8]	0.21
Age	74.0 [66.5, 76.0]	70.5 [65.0, 74.8]	0.39
Male sex	9 (81.8)	35 (76.1)	0.99
Hypertension	9 (81.8)	31 (67.4)	0.57
Hyperlipidaemia	6 (54.5)	23 (50.0)	1.00
Diabetes	1 (9.1)	4 (8.7)	1.00
Coronary artery disease	7 (63.6)	21 (45.7)	0.46
Systolic blood pressure (mmHg)	144.0 [138.5, 154.2]	143.0 [133.5, 163.8]	0.69
Diastolic blood pressure (mmHg)	84.5 [78.5, 92.5]	85.0 [77.0, 92.0]	0.94
NYHA			0.08
I	3 (27.3)	17 (37.0)	
II	6 (54.5)	16 (34.8)	
III	1 (9.1)	13 (28.3)	
IV	1 (9.1)	0 (0.0)	
AV Vmax (m/s)	4.0 [3.7, 4.5]	4.2 [3.9, 4.6]	0.20
AV mean gradient (mmHg)	37.7 [28.0, 44.8]	40.7 [36.4, 45.3]	0.28
AV area (cm ²)	0.9 [0.7, 0.9]	0.8 [0.7, 0.9]	0.45
Valvuloarterial compliance (mmHg/ml/m ²)	3.8 [3.5, 4.0]	4.0 [3.4, 4.9]	0.59
Indexed LV mass (g/m ²)	95.0 [84.0, 100.8]	92.5 [80.2, 102.0]	0.84
Indexed stroke volume (ml/m ²)	49.0 [47.2, 53.9]	48.0 [41.0, 55.0]	0.65
Ejection fraction (%)	65.6 [53.6, 68.9]	67.1 [65.6, 72.0]	0.20
Global longitudinal strain (%)	-18.2 [-19.0, -13.6]	-17.3 [-18.7, -15.5]	0.90
Native T1	1179.0 [1163.0, 1206.5]	1191.0 [1165.0, 1207.0]	0.61
ECV fraction (%)	27.8 [26.7, 28.8]	26.9 [25.3, 28.5]	0.49
iECV (ml/m ²)	22.8 [21.2, 27.3]	23.4 [19.5, 25.5]	0.63
Infarct LGE	7 (63.6)	4 (8.7)	<0.001
Non-infarct LGE	1 (9.1)	11 (23.9)	0.50
hs-cTnI (ng/L)	10.0 [7.1, 13.8]	6.7 [4.3, 13.7]	0.44
BNP (ng/L)	28.1 [20.5, 116.0]	25.6 [13.1, 64.8]	0.16
Abbreviations: EF1, first-phase ejection fraction; NYHA, New York Heart Association; AV, aortic valve; LV, left ventricular; ECV, extracellular volume; iECV, indexed extracellular volume; LGE, late gadolinium enhancement; hs-cTnI, high-sensitivity cardiac troponin I; BNP, brain natriuretic peptide.			

Supplementary Table 4 Univariable logistic regression models for fixed low EF1 after AVR				
	Coefficient	95% CI	Pseudo-r²	p value
Age per 10 years	0.36	-0.42, 1.14	0.02	0.36
Male sex	0.35	-1.33, 2.02	0.00	0.69
Hypertension	0.78	-0.87, 2.43	0.03	0.36
Coronary artery disease	0.73	-0.62, 2.09	0.03	0.29
Ejection fraction (log ₂)	-3.03	-6.17, 0.11	0.10	0.06
Mean gradient (log ₂)	-1.10	-2.91, 0.71	0.04	0.23
Left ventricular mass index (log ₂)	-0.07	-2.26, 2.11	0.00	0.95
Valvuloarterial compliance (log ₂)	-0.35	-2.13, 1.42	0.00	0.70
Native T1 (log ₂)	-8.56	-20.58, 3.47	0.06	0.16
Extracellular volume fraction (log ₂)	0.85	-4.08, 5.78	0.00	0.74
Indexed extracellular volume (log ₂)	0.08	-1.69, 1.85	0.00	0.93
Late gadolinium enhancement (infarct)	2.91	1.31, 4.51	0.36	<0.001
Late gadolinium enhancement (non-infarct)	-1.15	-3.31, 1.02	0.04	0.30
Global longitudinal strain (log ₂)	0.55	-1.08, 2.18	0.01	0.51
High-sensitivity cardiac troponin I (log ₂)	0.03	-0.38, 0.43	0.00	0.90
Brain natriuretic peptide (log ₂)	0.45	-0.08, 0.98	0.1	0.10