SUPPLEMENTAL MATERIAL

Paquin A, *et al. Open Heart* 2022; 9:e002046. doi: 10.1136/openhrt-2022-002046

Supplemental Methods:

Western Blot

Tissue pieces for Western Blot analyses were lysed with lysis buffer (150 mM NaCl, 25 mM Tris pH7.6, 1% Nonidet P-40, 1% Sodium deoxycholate, 0.1% Sodium dodecyl sulphate (SDS), 1 mM PMSF and protease and phosphatase inhibitor cocktail). Tissues were rotated at 4°C for 10 minutes and then the soluble fractions of cell lysates were isolated by centrifugation at maximum speed for 10 min at 4°C. Protein levels were then quantified using Bradford reagents and analyzed by Western blotting. Samples were prepared, boiled 15 min and loaded on 10% Tris-glycine precast gels (Life Technologies). Proteins were transferred to PVDF membranes. Membranes were blocked with TBS-tween containing 5% non-fat dry milk and incubated with either extra-cellular regulated kinase ERK1/2 (Millipore, ON, Canada) or collagen 1 (cell signaling, dilution 1:1000) primary antibodies overnight at 4°C. Membranes were then washed and incubated with HRP-labeled secondary antibodies (Cell Signaling, dilution 1:2000). Detection was done using clarity western ECL substrate (Bio-Rad). Images were acquired, and quantification analyses were performed using a ChemiDoc MP system (Bio-Rad).

PCR Quantification:

Total RNA was isolated from tissues using the RNeasy Plus Universal Mini Kit (Qiagen). The RNA concentrations were estimated by measuring the absorbance at 260 nm. cDNA synthesis was performed using a qScript cDNA SuperMix from Quanta (VWR). Quantitative real-time PCR (qPCR) was performed with SsoAdvanced Universal SYBR Green Supermix from Bio-Rad on the Rotor-Gene thermal cycler (Corbett Life Science) IDT (Coralville, Iowa)

Primer Assays (preoptimized specific primer pairs) were used. Gene expression was corrected for the expression level of the reference gene: ribosomal protein S9 (*RPS9).*

Paquin A, *et al. Open Heart* 2022; 9:e002046. doi: 10.1136/openhrt-2022-002046

Supplemental Tables:

Supplemental Table I. Follow-up Echocardiographic Measurements (First Follow-Up)

Echocardiographic Measurements	Acute MI n = 68	Previous MI n = 45	Control n = 101
AVA_i (cm^2/m^2)	0.61 ±0.17	0.56 ± 0.15	0.59 ± 0.16
AVA (cm^2)	1.13 ± 0.35	1.06 ± 0.30	1.08 ± 0.29
VTI ratio	0.292 ± 0.084	0.271 ± 0.081	0.299 ± 0.081
MG (mmHg)	19.4 ± 10.9	21.6 ± 10.2	21.9 ± 12.8
V_{peak} (m/s)	2.84 ± 0.67	3.07 ± 0.66	3.02 ± 0.73
LVEF (%)	52.6 ± 13.5	56.1 ± 14.2	65.5 ± 7.9
SV_i (mL/m^2)	37.8 ± 8.6	34.1 ± 14.2	38.7 ± 8.3

AVA, aortic valve area; *AVA_i,* aortic valve area index; *LVEF*, left ventricular ejection fraction; *MG,* mean aortic gradient; *MI,* myocardial infarction; *SV_i,* stroke volume index; *V_{peak},* peak aortic jet velocity; *VTI,* velocity-time integral.

Supplemental Table II. Univariate and Multivariate Linear Regression Models to Predict Annual Progression Rate of Aortic Valve Area Index

Parameter	Univariate Analysis		Multivariate Model 1		Multivariate Model 2	
	MD [95% CI]	p-value	MD [95% CI]	p-value	MD [95% CI]	p-value
Acute MI	-0.013 [-0.021 to -0.005]	0.001	-0.011 [-0.021 to -0.002]	0.022	-0.014 [-0.022 to -0.006]	0.0006
Previous MI	-0.003 [-0.012 to 0.006]	0.50	-0.003 [-0.013 to 0.006]	0.48	-0.004 [-0.013 to 0.005]	0.33
Age	0.000 [-0.001 to 0.001]	0.88	-	-	-	-
Sex (female)	-0.004 [-0.011 to 0.003]	0.29	-	-	-0.004 [-0.011 to 0.003]	0.23
Smoking history	-0.003 [-0.010 to 0.004]	0.43	-	-	-	-
Diabetes	-0.003 [-0.010 to 0.004]	0.41	-	-	-	-
Dyslipidemia	-0.000 [-0.008 to 0.008]	0.93	-	-	-	-
CKD	-0.003 [-0.011 to 0.005]	0.51	-	-	-	-
HTN	0.001 [0.008 to 0.009]	0.91	-	-	-	-
ACEI	-0.002 [-0.009 to 0.005]	0.52	-	-	-	-
ARB	0.002 [-0.006 to 0.010]	0.55	-	-	-	-
Statin	-0.002 [-0.011 to 0.007]	0.71	-	-	-	-
Bicuspid valve	-0.004 [-0.019 to 0.011]	0.63	-	-	-	-
LVEF	0.042 [-0.016 to 0.101]	0.16	0.004 [-0.069 to 0.076]	0.92	-	-
Baseline AVA_i	-0.076 [-0.116 to -0.035]	0.0003	-0.069 [-0.110 to -0.029]	0.0009	-0.068 [-0.107 to 0.028]	0.0009
Baseline SV_i	-0.001 [-0.001 to 0.000]	0.21	-	-	-	-
SV_i annual change	0.001 [-0.001 to 0.002]	0.27	-	-	0.001 [0.000 to 0.003]	0.043

ACEI, angiotensin-converting-enzyme inhibitor; *ARB,* angiotensin-2 receptor blocker; *AVA_i,* aortic valve area index; *CI*, confidence interval; *CKD*, chronic kidney disease; *HTN*, hypertension; *LVEF*, left ventricular ejection fraction; *MD,* mean difference; *MI,* myocardial infarction; *SV_i,* stroke volume index.

Model 1: parameters with p-value < 0.2.

Model 2: model with lowest AIC value using a stepwise regression method with an intercept term.

Model 3: inclusion of all parameters.

Model 4: inclusion of clinically relevant parameters (model used in the manuscript).

Supplemental Table II. *continued*

Parameter	Multivariate Model 3		Multivariate Model 4	
	MD [95% CI]	p-value	MD [95% CI]	p-value
Acute MI	-0.012 [-0.024 to -0.001]	0.038	-0.013 [-0.022 to -0.004]	0.004
Previous MI	-0.003 [-0.014 to 0.007]	0.54	-0.004 [-0.014 to 0.005]	0.39
Age	0.000 [-0.001 to 0.001]	0.88	0.000 [-0.001 to 0.001]	0.91
Sex (female)	-0.005 [-0.014 to 0.003]	0.21	-0.005 [-0.013 to 0.003]	0.20
Smoking history	-0.001 [-0.009 to 0.006]	0.73	-0.001 [-0.009 to 0.006]	0.71
Diabetes	-0.002 [-0.010 to 0.007]	0.71	-0.001 [-0.010 to 0.007]	0.73
Dyslipidemia	-0.001 [-0.010 to 0.008]	0.82	-0.001 [-0.010 to 0.008]	0.83
CKD	0.000 [-0.009 to 0.009]	0.96	0.000 [-0.009 to 0.008]	0.94
HTN	0.002 [-0.008 to 0.012]	0.73	0.002 [-0.008 to 0.011]	0.71
ACEI	0.001 [-0.008 to 0.010]	0.86	-	
ARB	-0.001 [-0.011 to 0.009]	0.84	-	
Statin	0.000 [-0.010 to 0.011]	0.97	0.000 [-0.010 to 0.010]	0.96
Bicuspid valve	0.001 [-0.015 to 0.017]	0.89	0.001 [-0.014 to 0.017]	0.89
LVEF	0.020 [-0.063 to 0.104]	0.63	-	
Baseline AVA_i	-0.070 [-0.117 to -0.022]	0.004	-0.068 [-0.109 to -0.026]	0.001
Baseline SV_i	0.000 [-0.001 to 0.001]	0.96	-	
SV_i annual change	0.001 [0.000 to 0.003]	0.07	0.001 [0.000 to 0.003]	0.07

ACEI, angiotensin-converting-enzyme inhibitor; *ARB,* angiotensin-2 receptor blocker; *AVA_i,* aortic valve area index; *CI*, confidence interval; *CKD*, chronic kidney disease; *HTN*, hypertension; *LVEF*, left ventricular ejection fraction; *MD,* mean difference; *MI,* myocardial infarction; *SV_i,* stroke volume index.

Model 1: inclusion of parameters with a p-value < 0.2 in the univariate regression model.

Model 2: model with the lowest Akaike information criterion (AIC) value using a stepwise regression method with an intercept term.

Model 3: inclusion of all parameters.

Model 4: inclusion of clinically relevant parameters (model used in the manuscript).

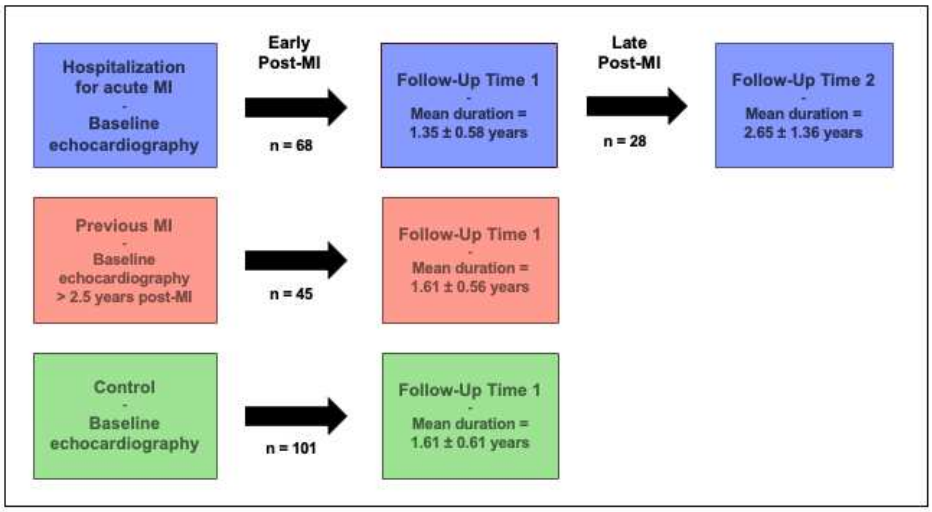
Supplemental Table III. Clinical Outcomes in Patients with Acute Myocardial Infarction

Event	n = 40
Aortic valve replacement (%)	11 (28%)
Death within 30 days of Follow-up Time 1 (%)	2 (5%)
Death within 1 year of Follow-up Time 1 (%)	10 (25%)
Total deaths (%)	30 (75%)
At least 1 event (%)	32 (80%)

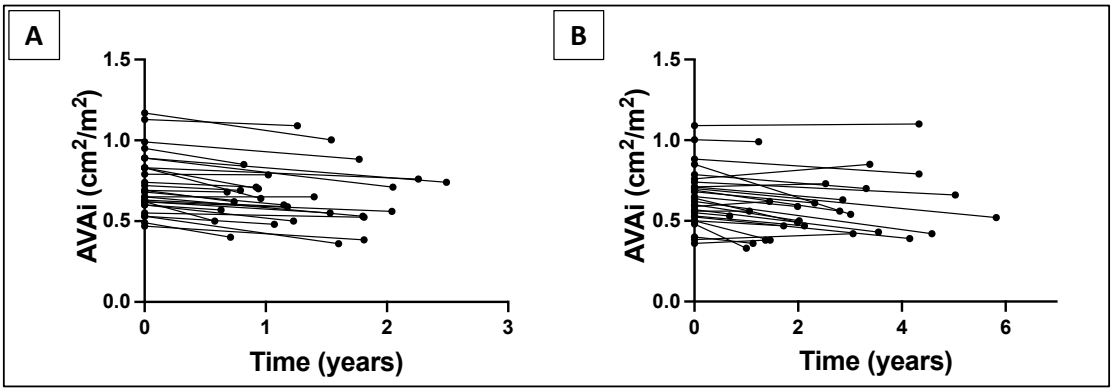
Paquin A, *et al. Open Heart* 2022; 9:e002046. doi: 10.1136/openhrt-2022-002046

Supplemental Figures:

Supplemental Figure I



Supplemental Figure II



Supplemental Figure Legends:

- **Supplemental Figure I: Study Flow Chart.** Illustration of the three studied groups and their different time points for their echocardiography assessment. (*MI*, myocardial infarction)
- **Supplemental Figure II:** Individuals in the acute myocardial infarction group with early and late follow-up echocardiography post-infarction: A) multiple line graph of indexed aortic valve area between baseline and early follow-up time, B) multiple line graph of indexed aortic valve area between early and late follow-up times. (*AVAi,* indexed aortic valve area)

Paquin A, *et al. Open Heart* 2022; 9:e002046. doi: 10.1136/openhrt-2022-002046