Table S1: Assessment of multicollinearity for variables in the multivariable logistic regression model for force reversal

Variable	VIF	Tolerance
Anterior STEMI	1.500	0.666
GLS	3.204	0.312
GCS	13.298	0.075
LVEF	17.238	0.058
IS	1.727	0.579
MVO	1.499	0.667

A VIF value < 5 was considered to indicate no significant multicollinearity. GCS and LVEF exhibited a high correlation (VIF > 10 when included in the same model) and were therefore tested in separate regression models.

STEMI, ST-segment elevation myocardial infarction; GLS, global longitudinal strain; GCS, global circumferential strain; LVEF, left ventricular ejection fraction; IS, infarct size; MVO, microvascular obstruction; VIF,variance inflation factor.

Table S2 Spearman's correlation coefficients between hemodynamic forces parameters and infarct size

Parameter	IS
HDFs：entire heart cycle	
A-B (%) (RMS)	-0.23*
L-S (%) (RMS)	-0.07
L-S / A-B HDFs ratio (%)	0.24*
Angle φ (°)	-0.29*
HDFs: systole	
A-B (%) (RMS)	-0.24*
L-S (%) (RMS)	-0.02
L-S/A-B HDFs ratio (%)	0.25*
Angle φ (°)	-0.23*
Systolic impulse (%)	-0.27*
Systolic peak (%)	-0.25*
HDFs: sys-diastolic transition	
A-B (%) (RMS)	-0.23*
L-S (%) (RMS)	-0.18*
L-S/A-B HDFs ratio (%)	0.09
Angle φ (°)	-0.08
LV suction (%)	0.24*
HDFs: diastole	
A-B (%) (RMS)	-0.22*
L-S (%) (RMS)	-0.06
L-S/A-B HDFs ratio (%)	0.18*
Angle φ (°)	-0.23*

* At the 0.05 scale (two-tailed), the correlation is significant.

HDFs, hemodynamic forces; RMS, root mean square; A-B, apex-base; L-S, latero-septal; IS, infarct size.

Table S3: Intra- and inter-observer agreement for hemodynamic forces measurements

Parameters	Inter-observer agreement	P value	Intra-observer agreement	P value
HDFs: entire heart cycle				
A-B (%) (RMS)	0.93 (0.89-0.99)	0.001	0.96 (0.91-0.99)	0.001
L-S (%) (RMS)	0.91 (0.86-0.97)	0.003	0.90 (0.86-0.97)	0.001
L-S/A-B HDF ratio (%)	0.89 (0.82-0.97)	0.001	0.86 (0.70-0.98)	0.002
Angle φ, (°)	0.93 (0.85-0.98)	0.001	0.91 (0.73-0.97)	0.001
HDFs: systole				
A-B (%) (RMS)	0.92 (0.80-0.98)	0.001	0.95 (0.83-0.99)	0.001
L-S (%) (RMS)	0.82 (0.46-0.95)	0.012	0.85 (0.54-0.91)	0.002
L-S/A-B HDF ratio (%)	0.94 (0.80-0.97)	0.001	0.82 (0.33-0.95)	0.02
Angle φ, (°)	0.87 (0.40-0.94)	0.001	0.81 (0.31-0.93)	0.004
Systolic impulse (%)	0.85 (0.37–0.93)	0.001	0.87 (0.42–0.94)	0.015
Systolic peak (%)	0.83 (0.28–0.93)	0.001	0.92 (0.84–0.98)	0.003
HDFs: sys-diastolic transition				
A-B (%) (RMS)	0.95 (0.86-0.97)	0.001	0.91 (0.82-0.96)	0.001
L-S (%) (RMS)	0.78 (0.36-0.93)	0.003	0.81(0.44-0.94)	0.014
L-S / A-B HDFs ratio (%)	0.78 (0.27-0.90)	0.027	0.89 (0.56-0.96)	0.006
Angle φ, (°)	0.83 (0.57-0.93)	0.001	0.84 (0.61-0.97)	0.013
LV suction (%)	0.79 (0.46-0.92)	0.016	0.82 (0.53-0.96)	0.007
Force reversal (%)	0.82 (0.60-0.94)	0.012	0.85 (0.65-0.96)	0.006
HDFs: diastole				
A-B (%) (RMS)	0.96 (0.90-0.98)	0.001	0.94 (0.89-0.98)	0.001
L-S (%) (RMS)	0.79 (0.24-0.92)	0.017	0.83 (0.37-0.95)	0.005
L-S/A-B HDF ratio (%)	0.78 (0.45-0.95)	0.032	0.90 (0.61-0.97)	0.021
Angle φ , (°)	0.88 (0.41-0.97)	0.001	0.93 (0.68-0.97)	0.001

HDFs, hemodynamic forces; RMS, root mean square; A-B, apex-base; L-S, latero-septal

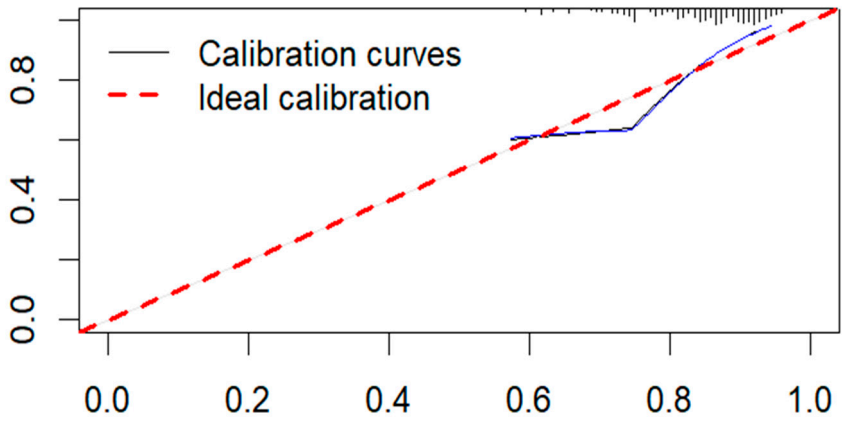


Figure S1. The calibration curve of Model 6 for predicting HF with a follow-up of 1 year