

Supplementary

Table S1 Number of participants with missing data at baseline in each variable

	Number of missing (n)	Missing rate (%)
Barthel index	5	0.4
Creatinine	7	0.6
Body mass index	8	0.7
Hemoglobin	20	1.7
Platelet	20	1.7
Triglyceride	41	3.4
LDL-c	41	3.4
Uric acid	50	4.2
PTA	77	6.4
NT-pro BNP at admission	122	10.2

LDL-c, low-density lipoprotein cholesterol; PTA, prothrombin activity.

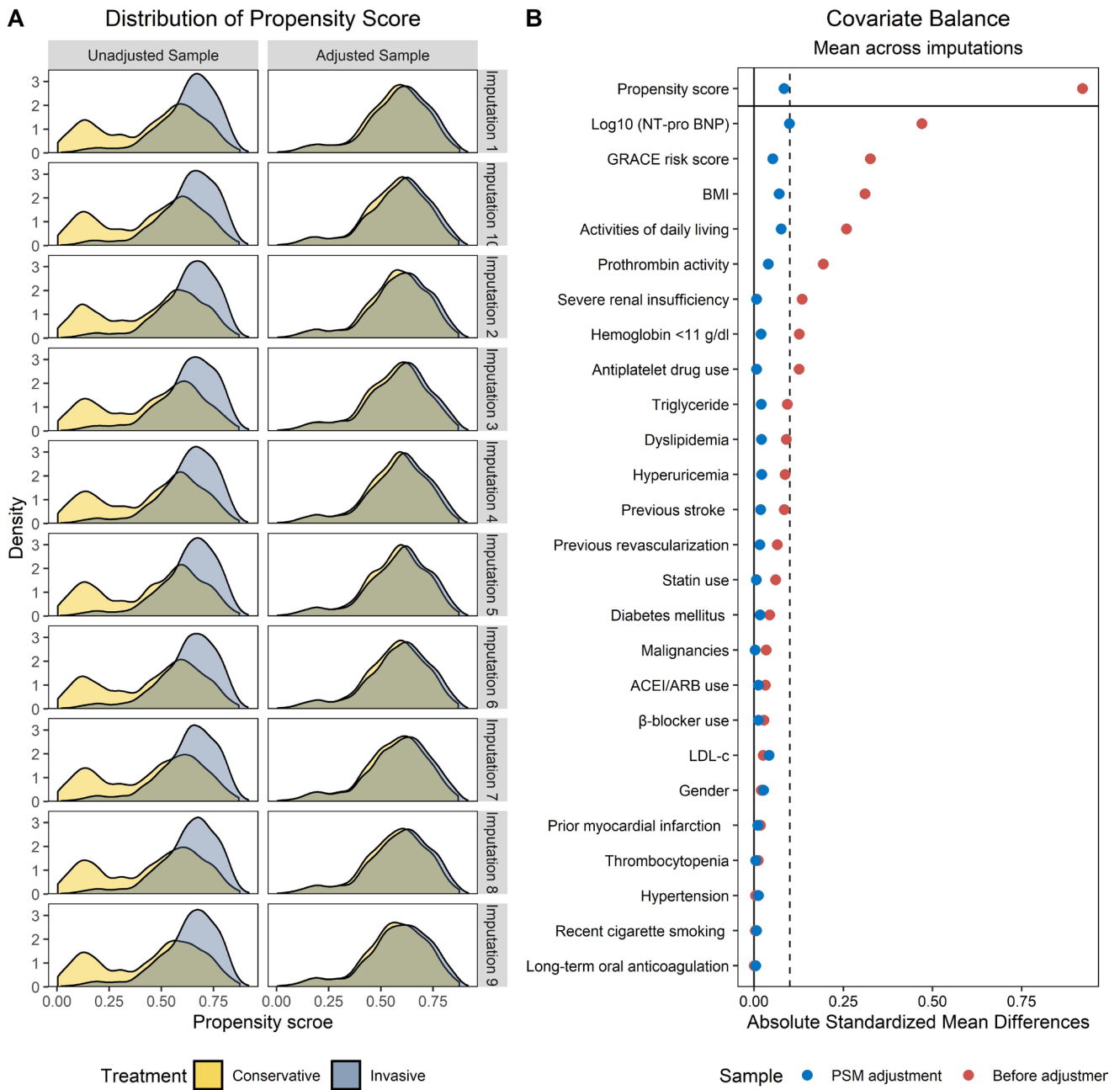


Figure S1 (A) The distribution of propensity score of two treatment group before and after propensity score matching in 10 imputations. (B) the covariates balance before and after propensity score matching. The absolute standardized mean difference (ASMD) was present as mean across imputations in each covariate and $ASMD \leq 0.1$ indicated a good balance between the two groups. ACEI, angiotensin-converting-enzyme inhibitor; ARB, angiotensin II receptor blocker; BMI, body mass index; CABG, coronary artery bypass grafting; LDL-c, low-density lipoprotein cholesterol.

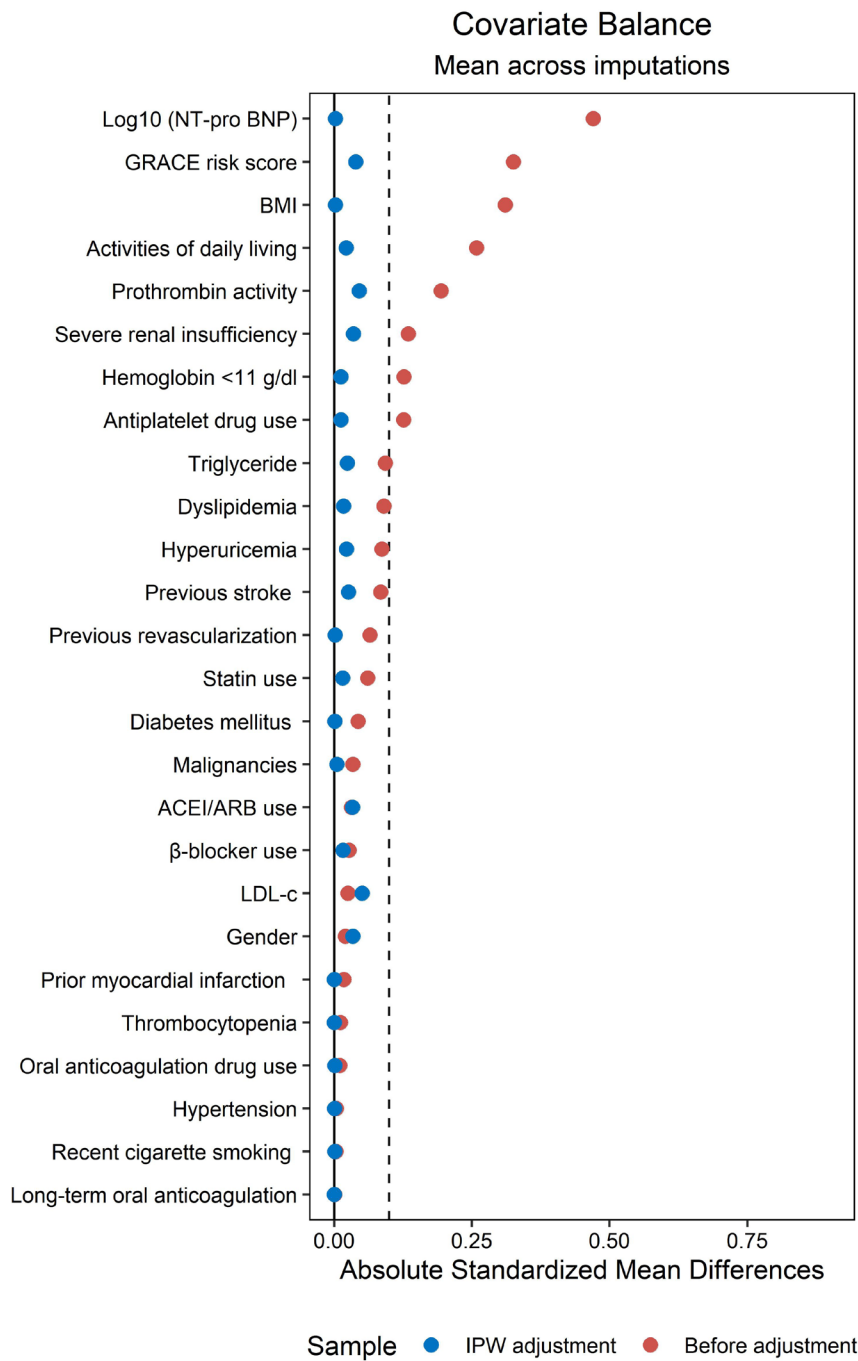


Figure S2 ASMD across covariates before and after IPW between invasive and conservative groups. The ASMD was present as mean across imputations in each covariate and ASMD ≤ 0.1 indicated a good balance between the two groups. ASMD, absolute standardized mean differences; IPW, inverse probability weighting; ACEI, angiotensin-converting-enzyme inhibitor; ARB, angiotensin II receptor blocker; BMI, Body mass index; CABG, coronary artery bypass grafting; LDL-c, low-density lipoprotein cholesterol.

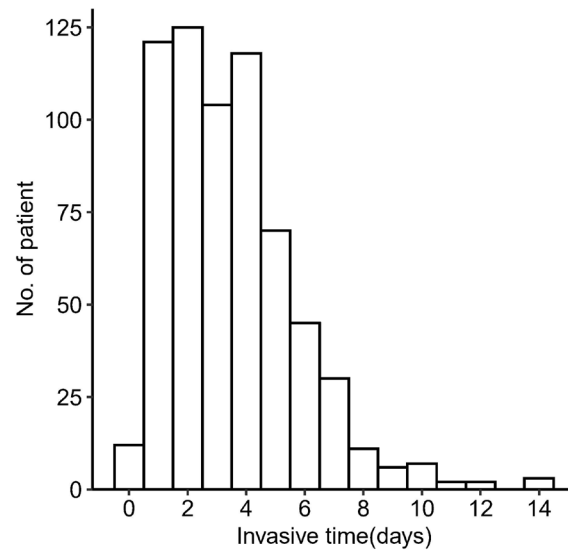


Figure S3 Distribution of the number of days from admission to invasive management among invasive group patients.

Table S2 Baseline characters, coronary angiography, treatment and follow-up in NSTEMI-ACS patient ≥80 years underwent invasive treatment

	Overall (n=656)	Timely invasive (n=172)	Delayed invasive (n=484)	P
Female, n (%)	337 (51.4)	84 (48.8)	253 (52.3)	0.493
Age, years, median [IQR]	82.0 [81.0, 84.0]	82.0 [81.0, 83.0]	82.0 [81.0, 84.0]	0.316
Body mass index, kg/m ²	25.15 (3.37)	24.97 (3.17)	25.21 (3.44)	0.423
Medical history				
Prior Myocardial infarction, n (%)	81 (12.3)	17 (9.9)	64 (13.2)	0.313
Prior revascularization, n (%)	192 (29.3)	50 (29.1)	142 (29.3)	1.000
Prior PCI, n (%)	176 (26.8)	48 (27.9)	128 (26.4)	0.786
Prior CABG, n (%)	23 (3.5)	5 (2.9)	18 (3.7)	0.798
Dyslipidemia, n (%)	335 (51.1)	89 (51.7)	246 (50.8)	0.906
Hypertension, n (%)	526 (80.2)	133 (77.3)	393 (81.2)	0.326
Diabetes mellitus, n (%)	268 (40.9)	70 (40.7)	198 (40.9)	1.000
Previous stroke, n (%)	154 (23.5)	36 (20.9)	118 (24.4)	0.417
Malignancies, n (%)	8 (1.2)	3 (1.7)	5 (1.0)	0.438
Recent cigarette smoking, n (%)	84 (12.8)	22 (12.8)	62 (12.8)	1.000
Long-term oral anticoagulation, n (%)	10 (1.5)	1 (0.6)	9 (1.9)	0.416
Barthel Index, median [IQR]	85 [60, 90]	85.00 [65.00, 91.25]	80.00 [60.00, 90.00]	0.665
Findings on admission				
SBP, mmHg, median [IQR]	135 [123, 149]	139 [126, 151]	134 [121, 148]	0.097
SBP<100mmHg (n,%)	18 (2.7)	11 (6.4)	7 (1.4)	0.002*
Heart rate, bpm, median [IQR]	69 [62, 77]	68 [62, 76]	69 [62, 78]	0.437
Heart rate >100 bpm, n (%)	16 (2.4)	5 (2.9)	11 (2.3)	0.861
Killip class (n,%)				
I	229 (34.9)	85 (49.4)	144 (29.8)	<0.001*
II	340 (51.8)	72 (41.9)	268 (55.4)	
III	73 (11.1)	11 (6.4)	62 (12.8)	
IV	14 (2.1)	4 (2.3)	10 (2.1)	
Elevated troponin levels, n (%)	178 (27.1)	50 (29.1)	128 (26.4)	0.572
Hemoglobin, g/L (mean (SD))	125.4 (14.2)	126.0 (14.8)	125.2 (14.0)	0.537
Hemoglobin <110 g/L, n (%)	86 (13.1)	19 (11.0)	67 (13.8)	0.423
Platelet, 10 ⁹ /L, median [IQR]	198 [163, 237]	196 [163, 232]	198 [163, 237]	0.842
Thrombocytopenia, n (%)	7 (1.1)	1 (0.6)	6 (1.2)	0.772
Triglyceride, mmol/L, median [IQR]	1.19 [0.87, 1.66]	1.12 [0.87,1.58]	1.21 [0.88, 1.69]	0.275
LDL-c, mmol/L, median [IQR]	2.21 [1.75, 2.64]	2.21 [1.77, 2.57]	2.22 [1.75, 2.69]	0.568
NT-pro BNP at Admission, pg/ml, median [IQR]	528.0 [242.8, 1570.3]	452.2 [228.0, 946.3]	572.0 [245.0, 1734.0]	0.078
Log10 (NT-pro BNP at admission), median [IQR]	2.72 [2.39,3.20]	2.66 [2.36,2.98]	2.76 [2.39, 3.24]	0.078
PTA, %, median [IQR]	94.71 [86.33, 103.90]	94.69 [86.47,102.73]	94.71 [86.10, 104.48]	0.849
Uric acid, mmol/L, median [IQR]	338.0 [286.0, 402.0]	336.0 [293.5, 384.0]	338.00 [285.0, 415.0]	0.367
Hyperuricemia, n (%)	207 (31.6)	49 (28.5)	158 (32.6)	0.362
Creatinine, umol/L, median [IQR]	85.1 [71.9, 100.0]	85.9 [71.1, 99.1]	84.9 [72.2, 100.7]	0.488
eGFR, mL/min/1.73m ² , median [IQR]	55.83 [46.46, 65.40]	56.82 [46.93, 65.22]	55.41 [46.39, 65.49]	0.185
Severe renal insufficiency, n (%)	19 (2.9)	3 (1.7)	16 (3.3)	0.428
GRACE risk score, median [IQR]	164 [146, 184]	160 [138, 181]	165 [149, 186]	0.006*
>140, n (%)	543 (82.8)	121 (70.3)	422 (87.2)	<0.001*
108-140, n (%)	112 (17.1)	51 (29.7)	61 (12.6)	
<108, n (%)	1 (0.2)	0 (0.0)	1 (0.2)	
Invasive treatment				
Coronary angiography result, n (%)				
Normal	2 (0.3)	2 (1.2)	0 (0.0)	0.143
One-vessel disease	71 (10.8)	16 (9.3)	55 (11.4)	
Two-vessel disease	84 (12.8)	24 (14.0)	60 (12.4)	
Three-vessel /LM disease	499 (76.1)	130 (75.6)	369 (76.2)	
Revascularization, n (%)				
CABG	21 (3.2)	5 (2.9)	16 (3.3)	0.174
No revascularization	255 (38.9)	57 (33.1)	198 (40.9)	
PCI	380 (57.9)	110 (64.0)	270 (55.8)	
Number of stent implantation				
0 [†]	30 (7.9)	6 (5.5)	24 (8.9)	0.435
1	162 (42.6)	48 (43.6)	114 (42.2)	
2	126 (33.2)	34 (30.9)	92 (34.1)	
≥3	62 (16.3)	22 (20.0)	40 (14.8)	
Unsuccessful PCI procedural	5 (0.8)	3 (1.7)	2 (0.4)	0.116
Pharmacological treatment				
Antiplatelet therapy, n (%)				
Single-APT	234 (35.7)	53 (30.8)	181 (37.4)	0.253
Dual-APT	412 (62.8)	117 (68.0)	295 (61.0)	
None	10 (1.5)	2 (1.2)	8 (1.7)	
ACEI/ARB, n (%)	372 (56.7)	95 (55.2)	277 (57.2)	0.715
β-blocker, n (%)	444 (67.7)	117 (68.0)	327 (67.6)	0.987
Statin, n (%)	585 (89.2)	157 (91.3)	428 (88.4)	0.373
Oral anti-coagulation drug, n (%)	10 (1.5)	1 (0.6)	9 (1.9)	0.468
Follow-up				
Follow-up years, median [IQR]	3.02 [1.22, 4.10]	3.03 [1.90, 4.09]	3.02 [1.11, 4.10]	0.462
Death during follow-up, n (%)	115 (17.5)	28 (16.3)	87 (18.0)	0.700
Death per 100 patient-years	5.8	5.3	6	0.500

[†], including 5 unsuccessful PCI procedures and 25 balloon angioplasties; *, P<0.05. ACEI, angiotensin-converting-enzyme inhibitor; APT, anti-platelet therapy; ARB, angiotensin II receptor blocker; CABG, coronary artery bypass grafting; eGFR, estimated glomerular filtration rate; GRACE, global registry of acute coronary events; IQR, interquartile range; LDL-c, Low-density lipoprotein cholesterol; LM, left main coronary artery; NT-pro BNP, N-terminal pro-brain natriuretic peptide; PCI, percutaneous coronary intervention; PTA, prothrombin activity; SBP, systolic blood pressure.

Table S3 Associations between timing of invasive and long-term mortality for NSTEMI patients ≥ 80 years old who underwent invasive intervention

Model	Hazard ratio	95% CI	P value
Unadjusted	1.137	0.74-1.75	0.555
Model 1	0.986	0.64-1.52	0.95
Model 2	1.014	0.66-1.57	0.949
Model 3	1.001	0.64-1.57	0.995
Model 4	0.979	0.62-1.54	0.926
Model 5	0.92	0.57-1.47	0.725
IPW	0.89	0.60-1.33	0.569

Model 1 adjusted for GRACE risk score (age, systolic blood pressure, heart rate, Killip class, creatinine, ST-segment deviation and elevated troponin). Model 2 = Model 1 plus gender, body mass index, dyslipidemia hypertension, diabetes mellitus, LDL-c at admission and recent cigarette smoking. Model 3 = Model 2 plus hemoglobin < 11 g/dl, long-term oral anticoagulation, severe or end-stage chronic kidney disease, thrombocytopenia, previous stroke, active malignancies and prothrombin activity. Model 4 = Model 3 plus antiplatelet drug, ACEI/ARBs, β -blockers and statins use. Model 5 = Model 4 plus prior myocardial infarction, prior coronary revascularization, NT-pro BNP at admission, triglyceride, hyperuricemia, Barthel index and coronary angiography result. Variates in model 5 were used for IPW adjustment. CI, confidence interval; IPW, Inverse probability weighting; PSM, propensity score matching.

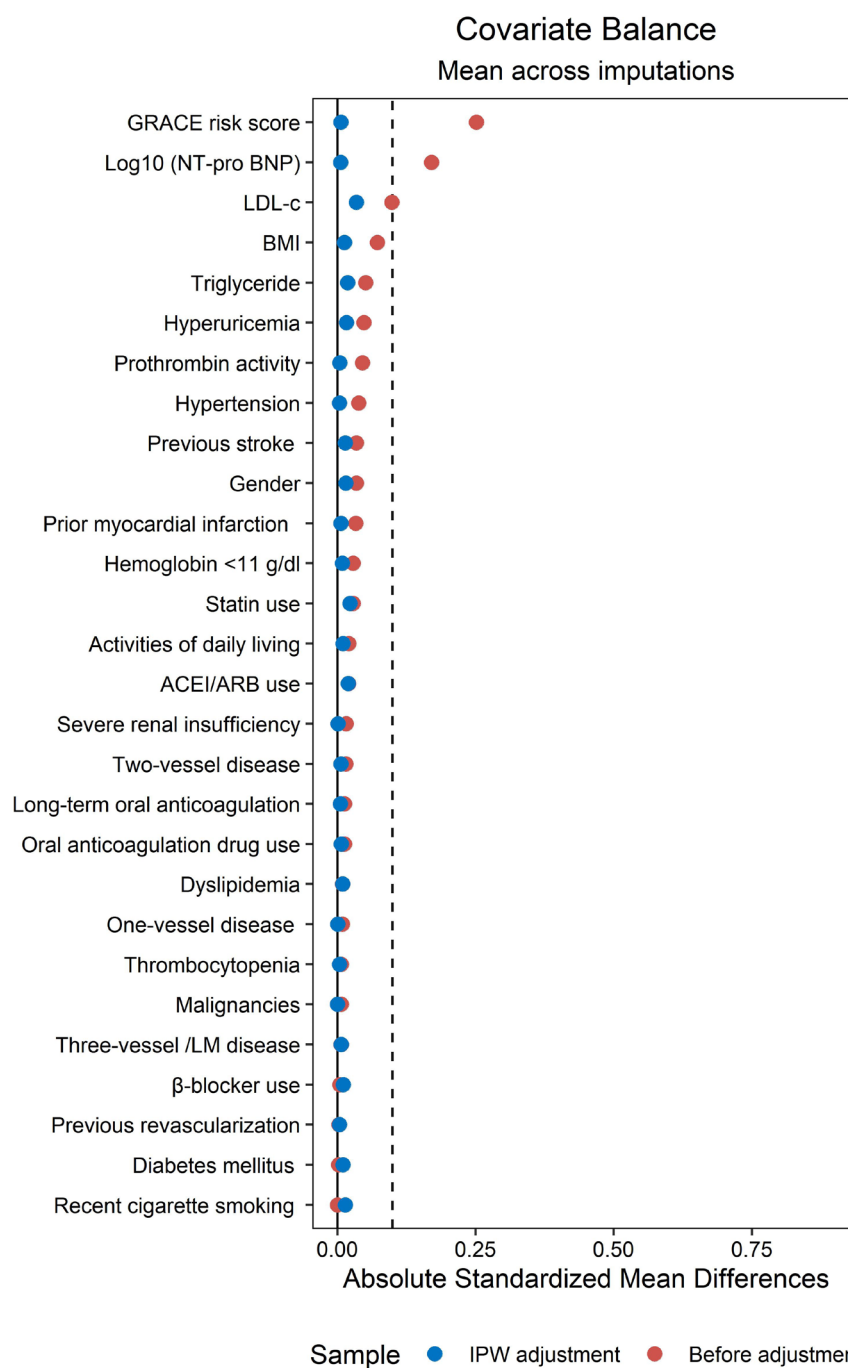


Figure S4 ASMD across covariates before and after IPW between timely and delayed invasive groups. The ASMD was present as mean across imputations in each covariate and ASMD ≤ 0.1 indicated a good balance between the two groups. ASMD, absolute standardized mean differences; IPW, inverse probability weighting; ACEI, angiotensin-converting-enzyme inhibitor; ARB, angiotensin II receptor blocker; BMI, body mass index; CABG, coronary artery bypass grafting; LDL-c, low-density lipoprotein cholesterol; LM, left main.

Table S4 Baseline characters, coronary angiography, treatment and follow-up in NSTEMI-ACS patients ≥80 years who underwent coronary arteriography and showed at least one-vessel lesions, stratified by further procedures.

	Overall (n=654)	CAG only (n=258)	Revascularization (n=396)	P
Female, n (%)	335 (51.2)	143 (55.4)	192 (48.5)	0.098
Age, years, median [IQR]	82.00 [81.00, 84.00]	82.00 [81.00, 83.00]	82.00 [81.00, 84.00]	0.498
Body mass index, kg/m ²	24.95 [22.87, 27.34]	25.30 [23.04, 27.68]	24.77 [22.86, 26.99]	0.019*
Medical history				
Prior myocardial infarction, n (%)	81 (12.4)	30 (11.6)	51 (12.9)	0.724
Prior revascularization, n (%)	192 (29.4)	90 (34.9)	102 (25.8)	0.016*
Prior PCI, n (%)	176 (26.9)	83 (32.2)	93 (23.5)	0.018*
Prior CABG, n (%)	23 (3.5)	9 (3.5)	14 (3.5)	1.000
Dyslipidemia, n (%)	333 (50.9)	139 (53.9)	194 (49.0)	0.254
Hypertension, n (%)	524 (80.1)	220 (85.3)	304 (76.8)	0.010*
Diabetes mellitus, n (%)	267 (40.8)	101 (39.1)	166 (41.9)	0.533
Previous stroke, n (%)	152 (23.2)	64 (24.8)	88 (22.2)	0.503
Malignancies, n (%)	8 (1.2)	3 (1.2)	5 (1.3)	1.000
Recent cigarette smoking, n (%)	84 (12.8)	29 (11.2)	55 (13.9)	0.384
Long-term oral anticoagulation, n (%)	10 (1.5)	6 (2.3)	4 (1.0)	0.311
Barthel index, median [IQR]	85.00 [60.00,90.00]	85.00 [75.00, 90.00]	80.00 [53.75, 90.00]	<0.001*
Findings on admission				
SBP, mmHg, median [IQR]	135.00 [122.25, 148.00]	134.50 [121.25, 148.00]	135.00 [123.00, 150.00]	0.754
SBP<100 mmHg, n (%)	18 (2.8)	4 (1.6)	14 (3.5)	0.149
Heart rate, bpm, median [IQR]	69.00 [62.00, 77.00]	68.50 [62.00, 78.00]	69.00 [62.75, 77.00]	0.474
Heart rate >100 bpm, n (%)	16 (2.4)	6 (2.3)	10 (2.5)	1.000
Killip class, n (%)				
I	228 (34.9)	73 (28.3)	155 (39.1)	0.022*
II	339 (51.8)	150 (58.1)	189 (47.7)	
III	73 (11.2)	31 (12.0)	42 (10.6)	
IV	14 (2.1)	4 (1.6)	10 (2.5)	
Elevated troponin levels, n (%)	178 (27.2)	37 (14.3)	141 (35.6)	<0.001*
Hemoglobin, g/L, mean (SD)	125.5 (14.2)	125.4 (13.6)	125.5 (14.7)	0.982
Hemoglobin <110 g/L, n (%)	85 (13.0)	31 (12.0)	54 (13.6)	0.629
Platelet, 10 ⁹ /L, median [IQR]	198.00 [163.25, 237.00]	198.00 [165.00, 229.00]	197.50 [163.00, 240.00]	0.697
Thrombocytopenia, n (%)	7 (1.1)	3 (1.2)	4 (1.0)	1.000
Triglyceride, mmol/L, median [IQR]	1.19 [0.87, 1.66]	1.20 [0.87, 1.69]	1.19 [0.87, 1.60]	0.902
LDL-c, mmol/L, median [IQR]	2.21 [1.75, 2.64]	2.09 [1.67, 2.59]	2.26 [1.82, 2.70]	0.008
NT-pro BNP at admission, pg/mL, median [IQR]	527.00 [242.26, 1573.44]	390.00 [192.73, 1113.25]	657.62 [291.00, 1751.00]	<0.001*
Log10 (NT-pro BNP at admission), median [IQR]	2.72 [2.38, 3.20]	2.59 [2.28, 3.05]	2.82 [2.46, 3.24]	<0.001*
PTA, %, median [IQR]	94.70 [86.17,103.90]	94.80 [86.58, 105.30]	94.43 [86.05, 103.40]	0.245
Uric acid, mmol/L, median [IQR]	338.00 [286.00, 402.00]	331.00 [284.25, 401.00]	339.00 [288.00, 408.50]	0.745
Hyperuricemia, n (%)	206 (31.5)	81 (31.4)	125 (31.6)	1.000
Creatinine, umol/L, median [IQR]	84.95 [71.82, 100.05]	82.90 [71.20, 99.85]	85.95 [72.90, 100.60]	0.352
eGFR, mL/min/1.73 m ² , median [IQR]	55.87 [46.49, 65.46]	55.57 [46.93, 65.81]	55.93 [46.46, 65.24]	0.977
Severe renal insufficiency, n (%)	19 (2.9)	6 (2.3)	13 (3.3)	0.635
GRACE risk score, median [IQR]	164 [146, 184]	160 [138, 181]	165 [149, 186]	0.006*
>140, n (%)	542 (82.9)	208 (80.6)	334 (84.3)	0.306
108-140, n (%)	111 (17.0)	50 (19.4)	61 (15.4)	
<108, n (%)	1 (0.2)	0 (0.0)	1 (0.3)	
Invasive treatment				
Coronary angiography result, n (%)				
One-vessel disease	71 (10.9)	59 (22.9)	12 (3.0)	<0.001*
Two-vessel disease	84 (12.8)	57 (22.1)	27 (6.8)	
Three-vessel /LM disease	499 (76.3)	142 (55.0)	357 (90.2)	
Revascularization, n (%)				
CABG	21 (3.2)	0 (0.0)	21 (5.3)	NA
PCI-successful	375 (57.3)	0 (0.0)	375 (94.7)	
PCI-unsuccessful	5 (0.8)	5 (1.9)	0 (0.0)	
No revascularization	253 (38.7)	253 (98.1)	0 (0.0)	
Pharmacological treatment				
Antiplatelet therapy, n (%)				
Single-APT	233 (35.6)	203 (78.7)	30 (7.6)	
Dual-APT	412 (63.0)	48 (18.6)	364 (91.9)	
None	9 (1.4)	7 (2.7)	2 (0.5)	0.116
ACEI/ARB, n (%)	371 (56.7)	144 (55.8)	227 (57.3)	0.764
β-blocker, n (%)	442 (67.6)	170 (65.9)	272 (68.7)	0.509
Statin, n (%)	584 (89.3)	237 (91.9)	347 (87.6)	0.114
Oral anti-coagulation drug, n (%)	10 (1.5)	7 (2.7)	3 (0.8)	0.096
Follow-up				
Follow-up years, median [IQR]	3.02 [1.22, 4.10]	3.04 [1.81, 4.24]	2.98 [1.12, 4.09]	0.153
Death during follow-up, n (%)	115 (17.6)	42 (16.3)	73 (18.4)	0.547
Death per 100 patient-years	5.8	5.2	6.3	0.3

*, P<0.05. ACEI, angiotensin-converting-enzyme inhibitor; APT, anti-platelet therapy; ARB, angiotensin II receptor blocker; CAG, coronary angiography; CABG, coronary artery bypass grafting; eGFR, estimated glomerular filtration rate; GRACE, global registry of acute coronary events; IQR, interquartile range; LDL-c, Low-density lipoprotein cholesterol; LM, left main coronary artery; NT-pro BNP, N-terminal pro-brain natriuretic peptide; PCI, percutaneous coronary intervention; PTA, prothrombin activity; SBP, systolic blood pressure.

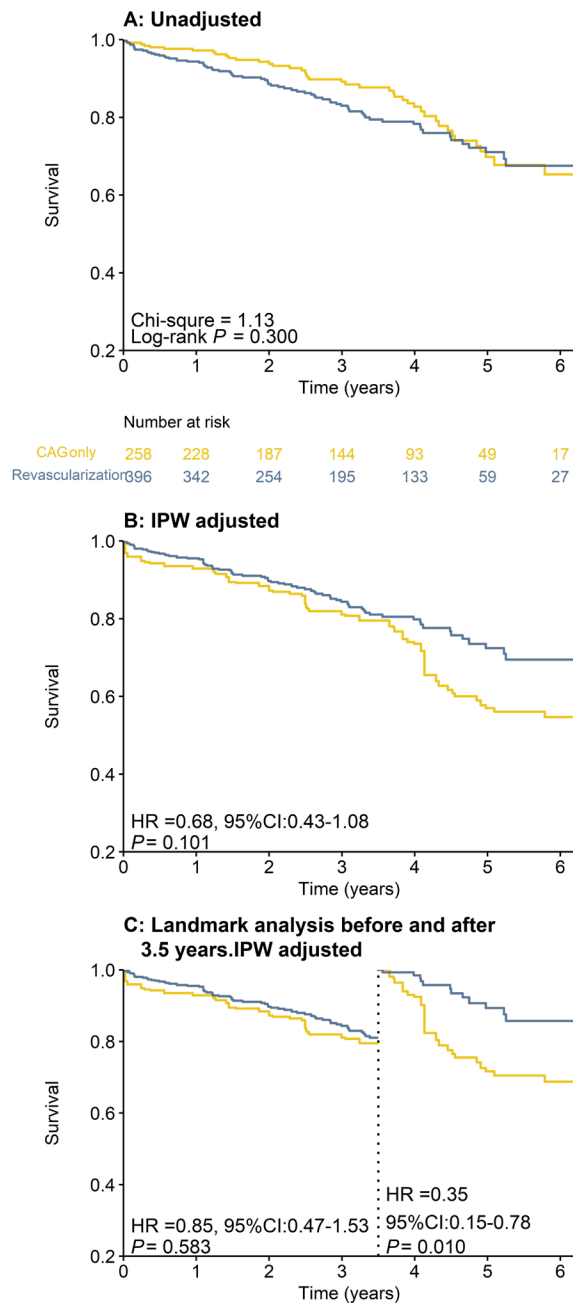


Figure S5 A comparison of unadjusted and adjusted survival curve of patients ≥ 80 years who underwent coronary arteriography and showed at least one-vessel lesion stratified by following procedure. (A) Unadjusted Kaplan-Meier curve. (B) Inverse probability weighted Kaplan-Meier curve. (C) Landmark analysis discriminating between events occurring before and after 3.5 year of follow-up. Adjusted for GRACE risk score, gender, body mass index, dyslipidemia, hypertension, diabetes mellitus, LDL-c at admission, recent cigarette smoking, hemoglobin < 110 g/L, long-term oral anticoagulation, severe or end-stage chronic kidney disease, thrombocytopenia, previous stroke, active malignancies, prothrombin activity, antiplatelet drug, ACEI/ARBs, β -blockers, statins, prior myocardial infarction, prior coronary revascularization, NT-pro BNP at admission, triglyceride, hyperuricemia, Barthel index and coronary angiography result. The weight for each patient was calculated through the average propensity score in all imputations. In general, patients who had elevated troponin, higher NT-pro BNP levels, higher GRACE risk scores, and more complex coronary artery lesions were more likely to require further revascularization (Table S4). The unadjusted Kaplan-Meier curve showed no significant difference in mortality during the follow-up period. After adjusting covariates and landmark analysis, the revascularization group showed a lower mortality rate after 3.5 years (Figure S5).