

Supplemental Material

Table S1. Baseline Clinical Characteristics Between Culprit-Only PCI and Multi-stage MVR after Propensity-Score Matching.

	Culprit-only PCI vs. Multi-stage MVR				
	Culprit-only PCI (N=689)	Multi-stage MVR (N=311)	Total (N=1000)	<i>P</i> Value	SMD (%)
Demographics					
Age, years	66.3±12.3	65.0±11.6	65.9±12.1	0.109	-8.43
Male	492 (71.4)	237 (76.2)	729 (72.9)	0.133	9.15
Body mass index	24.0±3.4	23.9±3.3	23.9±3.4	0.824	0.11
Killip class 3	75 (10.9)	32 (10.3)	107 (10.7)	0.864	-2.39
Process of care index					
Symptom-to-door time, h	53.0±166.0	49.1±118.8	51.8±152.8	0.674	-2.65
Door-to-balloon time, min	24.1±42.8	19.9±33.9	22.8±40.3	0.092	-9.65
Cardiovascular risk factors					
Hypertension	405 (58.8)	176 (56.6)	581 (58.1)	0.562	-1.84
Diabetes mellitus	250 (36.3)	105 (33.8)	355 (35.5)	0.484	-7.38
Dyslipidemia	72 (10.4)	35 (11.3)	107 (10.7)	0.787	0.67
Current smoker	238 (34.5)	116 (37.3)	354 (35.4)	0.44	-2.21
Previous history of MI	61 (8.9)	23 (7.4)	84 (8.4)	0.518	-3.17
Previous history of PCI	62 (9.0)	24 (7.7)	86 (8.6)	0.589	-2.69
Previous history of CVA	60 (8.7)	25 (8.0)	85 (8.5)	0.819	-1.20
Familial history	44 (6.4)	16 (5.1)	60 (6.0)	0.534	-2.92
LVEF, %	52.4±11.5	51.3±11.4	52.1±11.5	0.177	-4.21
eGFR	82.0±39.1	85.3±31.2	83.0±36.9	0.151	9.17
Peak cardiac enzyme levels					
Troponin I, ng/ml	25.4±53.2	30.6±54.5	27.0±53.6	0.157	9.99
CK-MB, ng/ml	59.2±88.7	72.1±94.0	63.2±90.5	0.036	14.76
Medication at discharge					
Aspirin	689 (100)	309 (99.4)	998 (99.8)	0.179	-8.32
P2Y12 inhibitor	686 (99.6)	309 (99.4)	995 (99.5)	1.000	-4.16
ACEI or ARB	576 (83.6)	279 (89.7)	855 (85.5)	0.015	12.64
Beta-blocker	596 (86.5)	265 (85.2)	861 (86.1)	0.654	-3.85
Statin	657 (95.4)	296 (95.2)	953 (95.3)	1.000	-1.03

Values are mean ± SD, median (interquartile range), or n (%). ACEI indicates angiotensin-converting enzyme inhibitor; ARB, angiotensin-II receptor blocker; CK-MB, creatine kinase-myocardial band; CVA, cerebrovascular accident; eGFR, estimated glomerular filtration rate; MI, myocardial infarction; MVR, multivessel revascularization; LVEF, left ventricular ejection fraction; PCI, percutaneous coronary intervention.

Table S2. Procedural-Related Characteristics Between Culprit-Only PCI and Multi-stage MVR after Propensity-Score Matching.

	Culprit-only PCI vs. Multi-stage MVR				
	Culprit-only PCI (N=689)	Multi-stage MVR (N=311)	Total (N=1,000)	<i>P</i> Value	SMD (%)
Culprit lesion profiles					
Culprit vessel				0.002	
Left main artery	29 (4.2)	7 (2.3)	36 (3.6)		18.48
LAD	258 (37.4)	99 (31.8)	357 (35.7)		-
LCX	171 (24.8)	63 (20.3)	234 (23.4)		-1.59
RCA	231 (33.5)	142 (45.7)	373 (37.3)		14.81
Type B2/C lesion	594 (86.2%)	284 (91.3)	878 (87.8)	0.029	10.62
Small vessel*	248 (36.0)	97 (31.2)	345 (34.5)	0.159	-8.57
Long lesion†	309 (44.8)	163 (52.4)	472 (47.2)	0.032	13.62
Overall-lesion profiles					
Left main artery disease	68 (9.9)	30 (9.6)	98 (9.8)	1	0.00
3-vessel disease	260 (37.7)	170 (54.7)	430 (43.0)	0.001	13.52
Procedural characteristics					
Trans-radial approach	334 (48.5)	166 (53.4)	500 (50.0)	0.336	5.58
GP IIb/IIIa inhibitor	57 (8.3)	43 (13.8)	100 (10.0)	0.009	13.51
Thrombus aspiration	103 (14.9)	57 (18.3)	160 (16.0)	0.209	8.38
IRA treatment				0.582	
Bare metal stent	18 (2.6)	5 (1.6)	23 (2.3)		-
1st generation DES	7 (1.0)	3 (1.0)	10 (1.0)		0
2nd generation DES	621 (90.1)	289 (92.9)	910 (91.0)		6.84
POBA	43 (6.2)	14 (4.5)	57 (5.7)		-2.84
Total number of stents	1.3±0.6	2.0±0.9	1.5±0.8	<0.001	84.87
Pre-PCI TIMI 0-1 flow	295 (42.8)	160 (51.4)	455 (45.5)	0.014	-14.35
IVUS guided PCI	181 (26.3)	53 (17.0)	234 (23.4)	0.002	10.81
OCT guided PCI	11 (1.6)	0	11 (1.1)	0.056	8.91
Hemodynamic support					
IABP	3 (0.4)	0	3 (0.3)	0.589	5.67
ECMO	0	0	0	1.000	0.00
In-hospital complications					
Acute heart failure	26 (3.8)	20 (6.4)	46 (4.6)	0.09	9.26
Atrioventricular block	5 (0.7)	4 (1.3)	9 (0.9)	0.612	4.92
Ventricular tachycardia	9 (1.3)	5 (1.6)	14 (1.4)	0.932	1.61
Ventricular fibrillation	2 (0.3)	2 (0.6)	4 (0.4)	0.782	2.77

Values are mean ± SD, median [interquartile range], or n (%). ACC/AHA indicates American College of Cardiology/American Heart Association; DES, drug-eluting stent; ECMO, extracorporeal membrane oxygenation; GP, glycoprotein; IABP, intra-aortic balloon pump; IRA, infarct-related artery; IVUS, intravascular ultrasound; LAD, left anterior descending artery; LCX, left circumflex artery; OCT, optical coherence tomography; POBA, plain balloon angioplasty; RCA, right coronary artery; TIMI, Thrombolysis in Myocardial Infarction. *Small vessel: reference diameter ≤ 2.75 mm. †long lesion: length ≥ 28mm.

Table S3. Baseline Clinical Characteristics Between One-stage and Multi-stage MVR after Propensity-Score Matching.

	One-stage vs. Multi-stage MVR			<i>P</i> Value	SMD (%)
	One-stage MVR (N=818)	Multi-stage MVR (N=327)	Total (N=1145)		
Demographics					
Age, years	65.6±11.5	65.1±11.6	65.4±11.6	0.583	-1.31
Male	579 (70.8)	247 (75.5)	826 (72.1)	0.122	5.72
Body mass index	24.0±3.6	23.8±3.4	24.0±3.5	0.389	-2.95
Killip class 3	82 (10.0)	37 (11.3)	119 (10.4)	0.59	2.43
Process of care index					
Symptom-to-door time, h	49.9±118.6	49.1±121.4	49.7±119.4	0.921	-0.51
Door-to-balloon time, min	22.8±31.4	19.6±33.3	21.9±31.9	0.133	-6.48
Cardiovascular risk factors					
Hypertension	490 (59.9)	188 (57.5)	678 (59.2)	0.495	-1.95
Diabetes mellitus	276 (33.7)	109 (33.3)	385 (33.6)	0.95	-0.11
Dyslipidemia	104 (12.7)	38 (11.6)	142 (12.4)	0.684	-2.08
Current smoker	552 (67.5)	204 (62.4)	756 (66.0)	0.115	-6.09
Previous history of MI	66 (8.1)	23 (7.0)	89 (7.8)	0.639	-4.42
Previous history of PCI	41 (5.0)	14 (4.3)	55 (4.8)	0.712	-3.3
Previous history of CVA	71 (8.7)	26 (8.0)	97 (8.5)	0.778	-1.71
Familial history	49 (6.0)	17 (5.2)	66 (5.8)	0.705	-0.69
LVEF, %	52.9±10.9	51.1±11.7	52.4±11.2	0.016	-9.05
eGFR	85.2±37.2	85.1±31.9	85.2±35.7	0.967	-1.19
Peak cardiac enzyme levels					
Troponin I, ng/ml	22.7±80.4	30.2±53.2	24.9±73.7	0.066	6.83
CK-MB, ng/ml	62.4±207.3	73.0±93.7	65.4±182.3	0.235	6.77
Medication at discharge					
Aspirin	818 (100)	327 (100)	1145 (100)	1.000	0
P2Y12 inhibitor	818 (100)	327 (100)	1145 (100)	1.000	0
ACEI or ARB	686 (83.9)	289 (88.4)	975 (85.2)	0.064	9.46
Beta-blocker	713 (87.2)	280 (85.6)	993 (86.7)	0.551	-4.54
Statin	783 (95.7)	312 (95.4)	1095 (95.6)	0.944	-1.97

Values are mean ± SD, median (interquartile range), or n (%). ACEI indicates angiotensin-converting enzyme inhibitor; ARB, angiotensin-II receptor blocker; CK-MB, creatine kinase-myocardial band; CVA, cerebrovascular accident; eGFR, estimated glomerular filtration rate; MI, myocardial infarction; MVR, multivessel revascularization; LVEF, left ventricular ejection fraction; PCI, percutaneous coronary intervention.

Table S4. Procedural-Related Characteristics Between One-stage and Multi-stage MVR after Propensity-Score Matching.

	One-stage vs. Multi-stage MVR				
	One-stage MVR (N=818)	Multi-stage MVR (N=327)	Total (N=1145)	P Value	SMD (%)
Culprit lesion profiles					
Culprit vessel	26 (3.2)	7 (2.1)	33 (2.9)	0.004	
Left main artery	300 (36.7)	104 (31.8)	404 (35.3)		-3.91
LAD	212 (25.9)	67 (20.5)	279 (24.4)		-
LCX	280 (34.2)	149 (45.6)	429 (37.5)		-7.58
RCA	26 (3.2)	7 (2.1)	33 (2.9)		12.86
Type B2/C lesion	718 (87.8)	299 (91.4)	1017 (88.8)	0.094	8.26
Small vessel*	290 (35.5)	103 (31.5)	393 (34.3)	0.229	-4.63
Long lesion†	393 (48.0)	172 (52.6)	565 (49.3)	0.184	5.4
Overall-lesion profiles					
Left main artery disease	72 (8.8)	29 (8.9)	101 (8.8)	1	1.07
3-vessel disease	359 (43.9)	179 (54.7)	538 (47.0)	0.001	13.41
Procedural characteristics					
Trans-radial approach	411 (50.2)	176 (53.8)	587 (51.3)	0.545	4.19
GP IIb/IIIa inhibitor	70 (8.6)	44 (13.5)	114 (10.0)	0.017	7.68
Thrombus aspiration	76 (9.3)	60 (18.3)	136 (11.9)	0	11.83
IRA treatment				0.992	
Bare metal stent	11 (1.3)	5 (1.5)	16 (1.4)		-
1st generation DES	5 (0.6)	2 (0.6)	7 (0.6)		0.47
2nd generation DES	762 (93.2)	305 (93.3)	1067 (93.2)		0.99
POBA	40 (4.9)	15 (4.6%)	55 (4.8)		-1.72
Total number of stents	2.4±1.0	2.6±1.1	2.5±1.0	0.015	10.48
Pre-PCI TIMI 0-1 flow	342 (41.8)	168 (51.4)	510 (44.5)	0.004	-12.73
IVUS guided PCI	179 (21.9)	59 (18.0)	238 (20.8)	0.172	-7.61
OCT guided PCI	4 (0.5)	0	4 (0.3)	0.476	6.38
Hemodynamic support					
IABP	2 (0.2)	0	2 (0.2)	0.911	4.51
ECMO	0	0	0	1.000	0.00
In-hospital complications					
Acute heart failure	32 (3.9)	21 (6.4)	53 (4.6)	0.095	6.5
Atrioventricular block	3 (0.4)	4 (1.2)	7 (0.6)	0.208	6.08
Ventricular tachycardia	5 (0.6)	5 (1.5)	10 (0.9)	0.248	5.36
Ventricular fibrillation	3 (0.4)	2 (0.6)	5 (0.4)	0.943	3.3

Values are mean ± SD, median [interquartile range], or n (%). ACC/AHA indicates American College of Cardiology/American Heart Association; DES, drug-eluting stent; ECMO, extracorporeal membrane oxygenation; GP, glycoprotein; IABP, intra-aortic balloon pump; IRA, infarct-related artery; IVUS, intravascular ultrasound; LAD, left anterior descending artery; LCX, left circumflex artery; OCT, optical coherence tomography; POBA, plain balloon angioplasty; RCA, right coronary artery; TIMI, Thrombolysis in Myocardial Infarction. *Small vessel: reference diameter ≤ 2.75 mm. †long lesion: length ≥ 28mm.

Table S5. Baseline Clinical Characteristics Between Culprit-only PCI and One-stage MVR after Propensity-Score Matching.

	Culprit-only PCI vs. One-stage MVR				
	Culprit-only PCI (N=969)	One-stage MVR (N=969)	Total (N=1938)	<i>P</i> Value	SMD (%)
Demographics					
Age, years	66.1±12.0	66.3±11.5	66.2±11.8	0.715	1.7
Male	681 (70.3)	671 (69.2)	1352 (69.8)	0.656	-2.21
Body mass index	24.0±3.3	24.1±3.5	24.1±3.4	0.420	3.55
Killip class 3	98 (10.1)	91 (9.4)	189 (9.8)	0.646	-2.45
Process of care index					
Symptom-to-door time, h	41.2±111.7	45.3±115.0	43.3±113.3	0.421	3.61
Door-to-balloon time, min	29.1±60.4	27.5±47.3	28.3±54.2	0.515	-3.37
Cardiovascular risk factors					
Hypertension	575 (59.3)	574 (59.2)	1149 (59.3)	1.000	-0.21
Diabetes mellitus	352 (36.3)	342 (35.3)	694 (35.8)	0.670	-2.16
Dyslipidemia	117 (12.1)	117 (12.1)	234 (12.1)	1.000	0
Current smoker	658 (67.9)	690 (71.2)	1348 (69.6)	0.126	7.24
Previous history of MI	97 (10.0)	75 (7.7)	172 (8.9)	0.093	-8.67
Previous history of PCI	87 (9.0)	61 (6.3)	148 (7.6)	0.032	-9.13
Previous history of CVA	82 (8.5)	82 (8.5)	164 (8.5)	1.000	0
Familial history	62 (6.4)	63 (6.5)	125 (6.4)	1.000	0.41
LVEF, %	52.8±11.2	53.7±10.7	53.3±11.0	0.076	8.06
eGFR	83.9±39.1	84.8±37.1	84.3±38.1	0.594	2.37
Peak cardiac enzyme levels					
Troponin I, ng/ml	23.0±49.9	18.3±34.4	20.6±42.9	0.016	-6.81
CK-MB, ng/ml	58.2±120.3	52.9±86.6	55.5±104.8	0.264	-3.06
Medication at discharge					
Aspirin	969 (100)	969 (100)	1938 (100)	1.000	0
P2Y12 inhibitor	964 (99.5)	966 (99.7)	1930 (99.6)	0.723	4.21
ACEI or ARB	787 (81.2)	786 (81.1)	1573 (81.2)	1.000	-0.26
Beta-blocker	832 (85.9)	832 (85.9)	1664 (85.9)	1.000	0
Statin	908 (93.7)	928 (95.8)	1836 (94.7)	0.053	9.41

Values are mean ± SD, median (interquartile range), or n (%). ACEI indicates angiotensin-converting enzyme inhibitor; ARB, angiotensin-II receptor blocker; CK-MB, creatine kinase-myocardial band; CVA, cerebrovascular accident; eGFR, estimated glomerular filtration rate; MI, myocardial infarction; MVR, multivessel revascularization; LVEF, left ventricular ejection fraction; PCI, percutaneous coronary intervention.

Table S6. Procedural-Related Characteristics Between Culprit-only PCI and One-stage MVR after Propensity-Score Matching.

	Culprit-only PCI vs. One-stage MVR				
	Culprit-only PCI (N=969)	One-stage MVR (N=969)	Total (N=1938)	P Value	SMD (%)
Culprit lesion profiles					
Culprit vessel				0.347	
Left main artery	55 (5.7)	72 (7.4)	127 (6.6)		7.03
LAD	347 (35.8)	359 (37.0)	706 (36.4)		-
LCX	277 (28.6)	267 (27.6)	544 (28.1)		9.41
RCA	290 (29.9)	271 (28.0)	561 (28.9)		-4.37
Type B2/C lesion	808 (83.4)	828 (85.4)	1636 (84.4)	0.234	5.74
Small vessel*	363 (37.5)	364 (37.6)	727 (37.5)	1.000	0.21
Long lesion†	440 (45.4)	433 (44.7)	873 (45.0)	0.784	-1.45
Overall-lesion profiles					
Left main artery disease	97 (10.0)	128 (13.2)	225 (11.6)	0.33	9.66
3-vessel disease	303 (31.3)	347 (35.8)	650 (33.5)	0.39	9.42
Procedural characteristics					
Trans-radial approach	472 (48.7)	468 (48.3)	940 (48.5)	0.983	-0.83
GP IIb/IIIa inhibitor	49 (5.1)	64 (6.6)	113 (5.8)	0.175	6.17
Thrombus aspiration	101 (10.4)	65 (6.7)	166 (8.6)	0.004	-15.14
IRA treatment				0.002	
Bare metal stent	27 (2.8)	19 (2.0)	46 (2.4)		-
1st generation DES	10 (1.0)	7 (0.7)	17 (0.9)		-3.87
2nd generation DES	838 (86.5)	890 (91.8)	1728 (89.2)		19.38
POBA	94 (9.7)	53 (5.5)	147 (7.6)		-18.0
Total number of stents	1.2±0.7	2.3±1.0	1.8±1.0	<0.001	10.65
Pre-PCI TIMI 0-1 flow	368 (38.0)	356 (36.7)	724 (37.4)	0.605	2.59
IVUS guided PCI	235 (24.3)	262 (27.0)	497 (25.6)	0.176	6.33
OCT guided PCI	29 (3.0)	26 (2.7)	55 (2.8)	0.784	-1.8
Hemodynamic support					
IABP	4 (0.4)	9 (0.9)	13 (0.7)	0.266	5.78
ECMO	1 (0.1)	0	1 (0.1)	1.000	0
In-hospital complications					
Acute heart failure	41 (4.2)	36 (3.7)	77 (4.0)	0.642	-2.68
Atrioventricular block	7 (0.7)	6 (0.6)	13 (0.7)	1.000	-1.49
Ventricular tachycardia	9 (0.9)	6 (0.6)	15 (0.8)	0.604	-4.47
Ventricular fibrillation	3 (0.3)	1 (0.1)	4 (0.2)	0.617	-4.21

Values are mean ± SD, median [interquartile range], or n (%). ACC/AHA indicates American College of Cardiology/American Heart Association; DES, drug-eluting stent; ECMO, extracorporeal membrane oxygenation; GP, glycoprotein; IABP, intra-aortic balloon pump; IRA, infarct-related artery; IVUS, intravascular ultrasound; LAD, left anterior descending artery; LCX, left circumflex artery; OCT, optical coherence tomography; POBA, plain balloon angioplasty; RCA, right coronary artery; TIMI, Thrombolysis in Myocardial Infarction. *Small vessel: reference diameter ≤ 2.75 mm. †long lesion: length ≥ 28mm.

Figure S1. Covariate Balance Between Culprit-Only PCI and Multi-stage MVR – IPW.

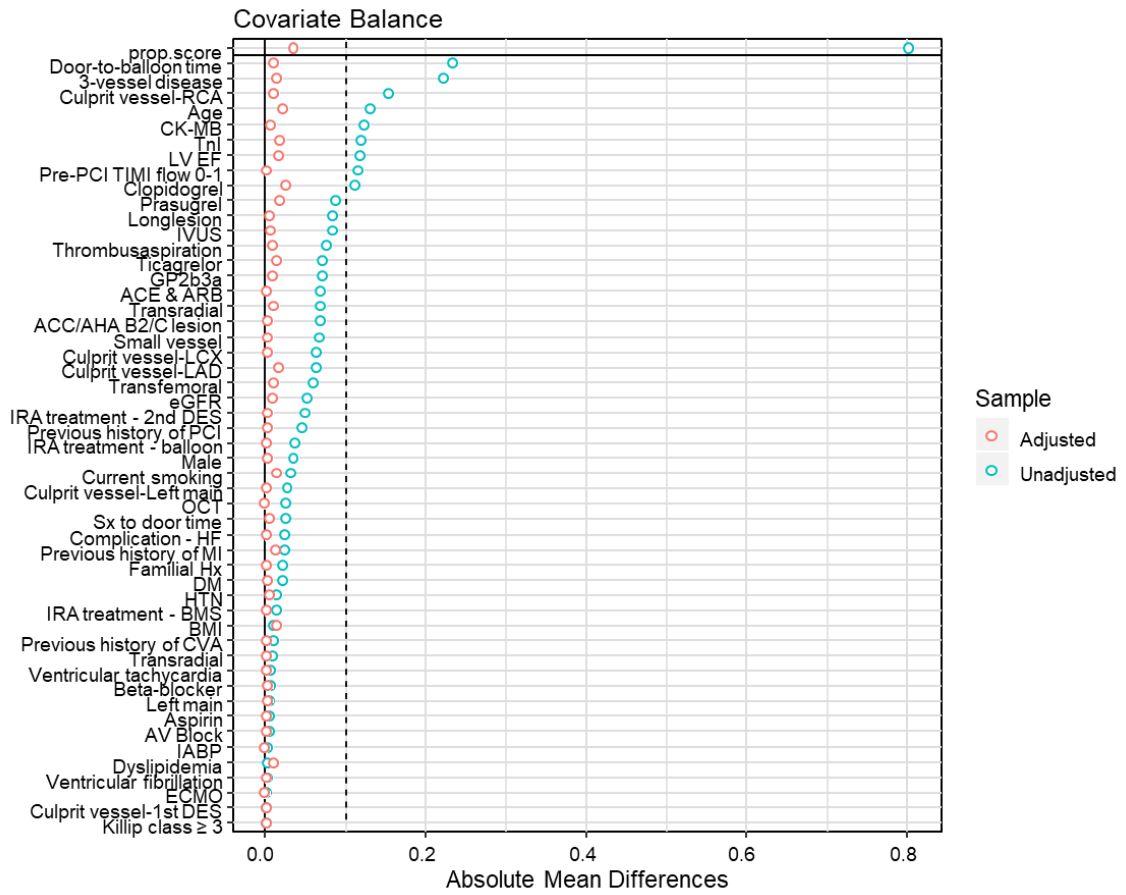


Figure S2. Covariate Balance Between One-stage and Multi-stage MVR – IPW.

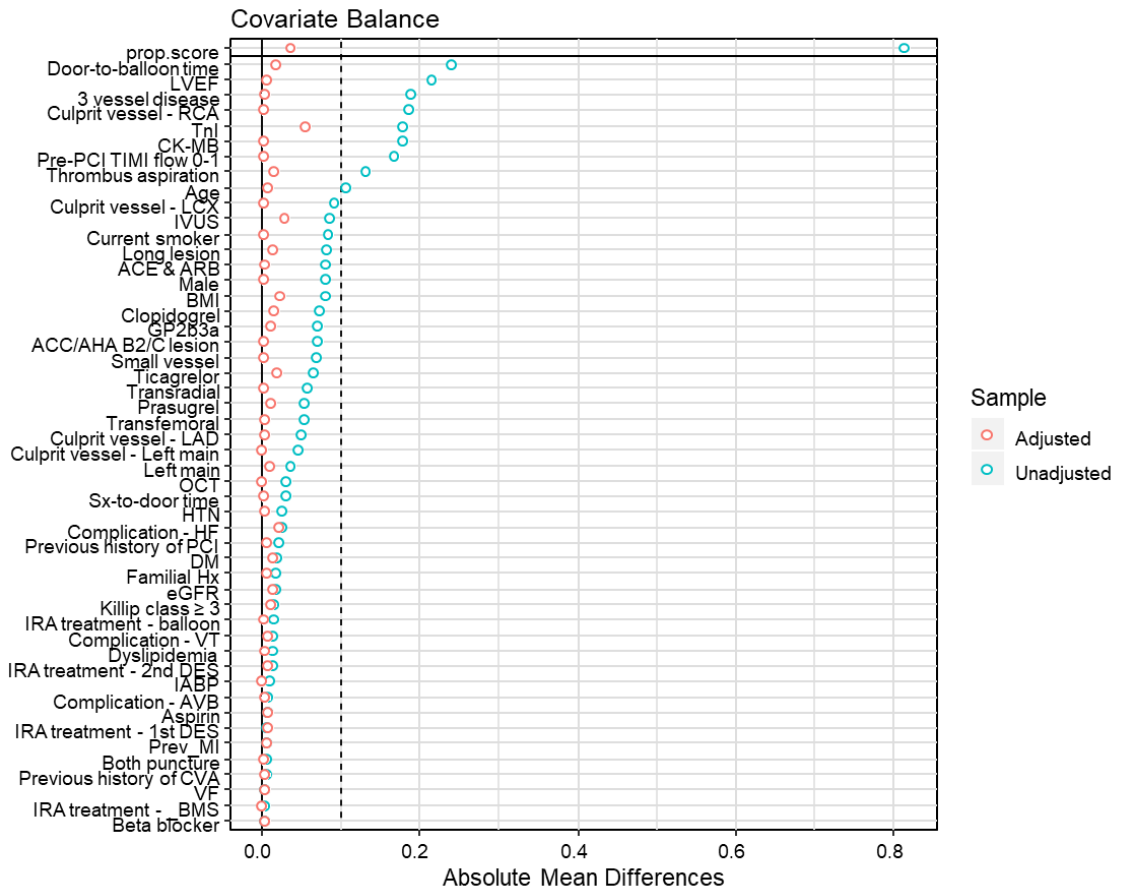


Figure S3. Covariate Balance Between Culprit only PCI and One-stage MVR – IPW.

