Table 1: Baseline participant characteristics variables by coronary perforation status

Variable	No perforation (n=525,359)	Perforation (n=1,762)	p-value
Age (years)	64.8±11.8	68.9±11.1	<0.001
Male	388,723 (74%)	1,154 (65%)	<0.001
Smoking status			<0.001
Never smoked	168,993 (37%)	578 (38%)	
Ex-smoker	181,699 (39%)	695 (45%)	
Current smoker	110,110 (24%)	261 (17%)	
BMI (kg/m^2)	28.3±5.1	28.0±5.0	0.093
Family history of CAD	205,100 (46%)	637 (44%)	0.123
Hypertension	266,498 (52%)	1,042 (61%)	<0.001
Hypercholesterolaemia	278,443 (55%)	1,034 (60%)	<0.001
Diabetes	96,919 (19%)	332 (20%)	0.598
Previous MI	138,973 (28%)	585 (37%)	<0.001
Previous stroke	19,230 (4%)	88 (5%)	0.003
Peripheral vascular disease	23,416 (5%)	125 (7%)	<0.001
Valvular heart disease	6,446 (1%)	26 (2%)	0.359
Renal disease	13,196 (3%)	66 (4%)	0.001
Previous PCI	113,876 (23%)	435 (26%)	0.001
Previous CABG	31,575 (8%)	176 (14%)	<0.001
LV function category			<0.001
>50%	185,637 (73%)	691 (66%)	
30-49%	54,125 (21%)	266 (25%)	
<30%	15,249 (6%)	88 (8%)	
Cardiogenic shock	10,555 (2%)	48 (3%)	0.020
Circulatory support	10,067 (2%)	144 (9%)	<0.001
Mechanical ventilation	6,695 (1%)	18 (1%)	0.421
Antiplatelet therapy			<0.001
Clopidogrel	419,250 (93%)	1,459 (94%)	
Prasugrel	18,186 (4%)	38 (2%)	
Ticagrelor	12,114 (2%)	57 (4%)	
Warfarin	5,142 (1%)	24 (1%)	0.095
Stent diameter (mm)	3.3±0.6	3.4±0.7	0.002
Stent length (mm)	24±13	33±22	<0.001

Comment [d1]: Added

Comment [d2]: Added

Year			0.359
2006	47,006 (9%)	137 (8%)	
2007	55,308 (11%)	167 (9%)	
2008	62,859 (12%)	202 (11%)	
2009	65,883 (13%)	223 (13%)	
2010	68,688 (13%)	245 (14%)	
2011	72,024 (14%)	250 (14%)	
2012	76,089 (14%)	275 (16%)	
2013	77,502 (15%)	263 (15%)	
Indication for PCI			<0.001
Stable angina	218,824 (42%)	843 (48%)	
NSTEMI	192,051 (37%)	618 (35%)	
STEMI	108,509 (21%)	285 (16%)	

Table 2: Procedural variables by coronary perforation status

Variable	No perforation (n=525,359)	Perforation (n=1,762)	p-value
Bivalirudin	16,562 (3%)	47 (3%)	0.267
Glycoprotein IIb/IIIa inhibitor	116,206 (24%)	289 (18%)	<0.001
Vessel attempted			
Vein graft	21,779 (4%)	88 (5%)	0.107
Left main	17,474 (3%)	135 (8%)	<0.001
LAD	240,583 (48%)	794 (46%)	0.182
Circumflex	123,108 (24%)	373 (22%)	0.008
Right coronary	185,106 (37%)	737 (43%)	<0.001
Post-procedural TIMI flow			<0.001
0	16,325 (7%)	127 (17%)	
1	2,542 (1%)	24 (3%)	
2	7,883 (3%)	42 (6%)	
3	222,526 (89%)	545 (74%)	
Radial access	243,622 (48%)	811 (47%)	0.502
Stent implanted			<0.001
No stent	49,965 (10%)	403 (23%)	
Bare metal stent	118,475 (23%)	284 (17%)	
Drug eluting stent	347,231 (67%)	1,031 (60%)	
Rotational atherectomy	8,047 (2%)	103 (6%)	<0.001
Laser angioplasty	890 (0.2%)	18 (1%)	<0.001
Cutting balloon	16,990 (3%)	59 (4%)	0.584
Chronic occlusion	25,195 (5%)	363 (21%)	<0.001
Surgical cover			0.148
None or off site	177,921 (35%)	589 (37%)	
On-site	324,701 (65%)	997 (63%)	

Table 3: Significant associations between covariates and coronary perforation

Variable	Odds ratio (95% CI)	p-value
Age per year	1.03 (1.02-1.03)	<0.001
Male gender	0.76 (0.67-0.87)	<0.001
Hypercholesterolaemia	1.16 (1.01-1.33)	0.035
Diabetes	0.84 (0.71-0.98)	0.028
Previous CABG	1.44 (1.17-1.77)	<0.001
Shock	0.60 (0.38-0.92)	0.021
Circulatory support	4.22 (3.22-5.54)	<0.001
Left main stem PCI	1.54 (1.21-1.96)	0.001
Chronic occlusions	3.96 (3.28-4.78)	<0.001
Stent		
Bare-metal	0.37 (0.30-0.46)	<0.001
Drug eluting	0.43 (0.37-0.51)	<0.001
Rotational atherectomy	2.37 (1.80-3.11)	<0.001
Cutting balloon	0.62 (0.43-0.89)	0.010
Side branch occlusion	4.07 (2.93-5.67)	<0.001
Coronary dissection	3.31 (2.78-3.94)	<0.001
NSTEMI indication	1.26 (1.07-1.47)	0.004

Potential predictors in the model: age, gender, smoking status, body mass index, family history of coronary artery disease, hypercholesterolaemia, hypertension, diabetes, previous myocardial infarction, previous stroke, peripheral vascular disease, valvular heart disease, renal disease, previous PCI, previous CABG, left ventricular function, cardiogenic shock, ventilator use, circulatory support, radial access, surgical cover, year, vessel of PCI, chronic occlusion, stent type used, rotational atherectomy, laser angioplasty, cutting balloon, side branch occlusion, coronary dissection and diagnosis.

Table 4: Outcomes by coronary perforation status

Variable	No perforation (n=525,359)	Perforation (n=1,762)	p-value
In-hospital MACE	10,705 (2%)	406 (26%)	<0.001
In-hospital mortality	5,490 (1%)	145 (8%)	<0.001
Mortality at 30 days	10,586 (2%)	185 (11%)	<0.001
Mortality at 1 year	24,485 (5%)	244 (15%)	<0.001
Mortality at 5 years	57,897 (25%)	402 (47%)	<0.001
In-hospital bleed	3,171 (0.6%)	246 (14.0%)	<0.001
Re-infarction	3,032 (0.6%)	87 (5.6%)	<0.001
Emergency CABG	903 (0.2%)	42 (2.7%)	<0.001
Stroke	833 (0.2%)	20 (1.3%)	<0.001
Cardiac tamponade	248 (0.05%)	222 (14.18%)	<0.001
Side branch occlusion	3,658 (0.7%)	51 (2.9%)	<0.001
Coronary dissection	19,001 (3.6%)	225 (12.8%)	<0.001

Table 5: Adjusted odds of adverse outcomes by coronary perforation status

Adverse outcome	Multiple logistic regression adjusted odds ratio (95% CI)	p-value	Inverse probability weighting by propensity score odds ratio (95% CI)	p-value
In-hospital MACCE	13.20 (11.13-15.65)	<0.001	20.22 (15.43-26.49)	<0.001
30-day mortality	4.86 (3.84-6.15)	<0.001	6.54 (4.40-9.71)	<0.001
1-year mortality	2.54 (2.08-3.09)	<0.001	4.01 (2.87-5.61)	<0.001
5-year mortality	1.37 (1.04-1.80)	0.025	2.93 (2.12-4.06)	<0.001
In-hospital re-infarction	4.61 (3.46-6.14)	<0.001	11.41 (7.16-18.19)	<0.001
In-hospital emergency CABG	5.34 (3.35-8.51)	<0.001	11.65 (5.24-25.91)	<0.001
In-hospital cardiac tamponade	220.06 (169.24-286.14)	<0.001	513.14 (342.83-768.05)	<0.001
In-hospital stroke	4.30 (2.42-7.64)	<0.001	6.75 (2.48-18.34)	<0.001
In-hospital bleed	20.86 (17.21-25.28)	<0.001	30.87 (22.81-41.77)	<0.001

Adjusted for age, gender, smoking status, body mass index, family history of coronary artery disease, hypercholesterolaemia, hypertension, diabetes, previous myocardial infarction, previous stroke, peripheral vascular disease, valvular heart disease, renal disease, previous PCI, previous CABG, left ventricular function, cardiogenic shock, ventilator use, circulatory support, antiplatelet therapy, warfarin, glycoprotein IIb/IIIa inhibitor, bivalirudin use, radial access, surgical cover, year, vessel of PCI, chronic occlusion, post procedure TIMI flow, stent type used, rotational atherectomy, laser angioplasty, cutting balloon, side branch occlusion, coronary dissection and diagnosis.

Table 6: Predictors of 30-day mortality in patients who experienced a coronary perforation

Variable	Adjusted odds ratio (95% CI)	p-value
Age per year	1.05 (1.03-1.08)	<0.001
Diabetes	1.78 (1.02-3.11)	0.043
Previous myocardial infarction	2.08 (1.25-3.46)	0.005
Renal disease	4.03 (1.76-9.26)	0.001
Ventilatory support	8.83 (1.69-46.15)	0.010
Circulatory support	6.58 (3.72-11.63)	<0.001
Glycoprotein IIb/IIIa inhibitor use	2.02 (1.19-3.44)	0.010
Post-procedure TIMI flow 3	0.41 (0.23-0.75)	0.004
Stent type		
Bare metal	3.70 (1.74-7.88)	0.001
Drug eluting stent	2.27 (1.14-4.51)	0.020

Potential predictors in the model: age, gender, smoking status, body mass index, family history of coronary artery disease, hypercholesterolaemia, hypertension, diabetes, previous myocardial infarction, previous stroke, peripheral vascular disease, valvular heart disease, renal disease, previous PCI, previous CABG, left ventricular function, cardiogenic shock, ventilator use, circulatory support, antiplatelet therapy, warfarin, glycoprotein IIb/IIIa inhibitor, bivalirudin use, radial access, surgical cover, year, vessel of PCI, chronic occlusion, post procedure TIMI flow, stent type used, rotational atherectomy, laser angioplasty, cutting balloon, side branch occlusion, coronary dissection and diagnosis