**Table 1:** Baseline characteristics and procedural details of patients undergoing left and right radial percutaneous coronary intervention in United Kingdom

|  |  |  |  |
| --- | --- | --- | --- |
|  | Right Radial access n=328,495 | Left Radial access  n=14,311 | P value |
| Age (y), mean (SD) | 63.8±11.8 | 66.2±11.0 | <0.001 |
| Male, n(%) | 249,974 (76.1%) | 10,572 (73.9%) | <0.001 |
| BMI mean, (SD) | 28.5±5.16 | 29.1±5.61 | <0.001 |
| Hypercholesterolemia (%) | 167,993 (54.3%) | 8,995 (66%) | <0.001 |
| Hypertension (%) | 163,160 (52.7%) | 8,840 (64.8%) | <0.001 |
| Diabetes (%) | 57,616 (18.2%) | 3,848 (27.7%) | <0.001 |
| Previous CABG (%) | 11,169(4.9%) | 3,413 (33.2%) | <0.001 |
| Previous CVA (%) | 12,463 (4.0%0 | 1,014 (7.4%) | <0.001 |
| Peripheral vascular disease (%) | 14,003 (4.5%) | 1,747 (12.8%) | <0.001 |
| Previous AMI (%) | 75,204 (24.4%) | 6,393 (47.6%) | <0.001 |
| Previous PCI (%) | 63,413 (19.9%) | 5,413 (39%%) | <0.001 |
| LVSD (%) | 53,320 (30.1%) | 3,058 (36.0%) | <0.001 |
| Smoking (%) |  |  | <0.001 |
| Never smoked | 107,671(35.9%) | 4,480(34.2%) |  |
| Current smoker | 82,931(27.6%) | 2,658(20.2%) |  |
| Ex-smoker | 109,457(36.4%) | 5,961(45.5%) |  |
| Renal Failure (%) | 2,293 (0.74%) | 215 (1.6%) |  |
| Indication for PCI |  |  | <0.001 |
| Stable Angina (%) | 112,998 (34%) | 6,508(46.1%) |  |
| STEMI (%) | 82,872 (25.7%) | 1,500 (10.6%) |  |
| UA/NSTEMI | 129,269 (39.6%) | 6,100 (43.2%) |  |
| Operator status |  |  | <0.001 |
| Consultant | 200,251 (68.7%) | 8,380 (65.9%) |  |
| Trainee | 91,083 (31.2%) | 4,331 (34.0%) |  |
| Multi vessel PCI (%) | 43,685 (13.5%) | 2,063 (14.6%) | <0.001 |
| Cardiogenic Shock (%) | 3,874 (1.84%) | 165 (2.2%) | 0.02 |
| Pharmacological Inotropes | 1.246 (0.4%) | 69 (0.5%) | 0.05 |
| Intra-aortic balloon pump device (%) | 2,122 (0.68%) | 80 (0.6%) | 0.19 |
| Left main stem PCI (%) | 9,216 (2.85%) | 892 (6.3%) | <0.001 |
| Mechanical ventilation (%) | 2,484 (0.87%) | 179 (1.4%) | <0.001 |
| PCI to Grafts | 5,166 (1.6%) | 2,216(15.7%) | <0.001 |
| Chronic total occlusion PCI | 17,553 (5.7%) | 897 (6.7%) | <0.001 |
| Stent Use |  |  | <0.001 |
| No Stents (%) | 21,180 (6.7%) | 1,495 (10.8%) |  |
| BMS only (%) | 63,479 (20%) | 2,236 (16.2%) |  |
| DES only (%) | 222,017 (70.0%) | 9,632 (70.0%) |  |
| BMS & DES (%) | 10,203 (3.2%) | 385 (2.8%) |  |
| Bivalirudin (%) | 13,316 (4.4%) | 249 (1.9%) | <0.001 |
| GP2b3a use (%) | 77,681 (25.0%) | 2,248 (16.7%) | <0.001 |
| Ticagrelor (%) | 23,271 (7.7%) | 900 (6.8%) | <0.001 |
| Prasugrel (%) | 16,647 (5.5%) | 484 (3.66%) | <0.001 |
| Warfarin (%) | 3,418(1.1%) | 375 (2.8%) | <0.001 |
| Length of stay (days), median (IQR) | 1 (0-2) | 1 (0-1) | <0.001 |
| In hospital death (%) | 2,206 (0.7%) | 120 (0.9%) | 0.01 |
| MACE (%) | 4,234 (1.33%) | 225 (1.62%) | 0.004 |
| Major Bleeding (%) | 1,305 (0.41%) | 75 (0.54%) | 0.02 |
| In hospital Stroke | 363 (0.11%) | 11 (0.08%) | 0.230 |
| 30-day mortality (%) | 3,881 (1.47%) | 211 (1.88%) | <0.001 |

MACE=major adverse cardiovascular events defined as composite of in-hospital mortality, in-hospital myocardial infarction or re-infarction and revascularization- emergency percutaneous coronary intervention or CABG, LVSD= left ventricular systolic dysfunction, CABG= coronary artery bypass grafting, AMI= acute myocardial infarction, PCI= percutaneous coronary intervention

**Table 2:** Predictors of Left radial access

|  |  |  |
| --- | --- | --- |
| Predictors | Odds ratio (95%CI) | p-value |
| Previous CABG | 9.32 (7.72-11.24) | <0.001 |
| Female | 1.27 (1.10-1.46) | <0.001 |
| Repeat Procedures | 1.09(1.05-1.35) | <0.006 |
| Previous AMI | 1.29 (1.11-1.51) | <0.001 |
| Peripheral vascular disease | 1.81 (1.48-2.22) | <0.001 |
| Mechanical ventilation | 2.61 (1.64-4.15) | <0.001 |
| PCI to vein graft | 2.10 (1.61-2.74) | <0.001 |
| Renal Failure | 2.65(1.63-4.30) | <0.001 |

CABG= coronary artery bypass grafting, AMI= acute myocardial infarction, PCI= percutaneous coronary intervention

**Table 3:** Adjusted outcomes following Left radial versus right radial access:

|  |  |  |
| --- | --- | --- |
| Clinical outcome | Odds ratio (95%CI) | p-value |
| In hospital death | 1.19 (0.90-1.57) | 0.20 |
| Major bleeding | 1.22 (0.87-1.71) | 0.24 |
| In hospital stroke | 0.45 (0.16-1.26) | 0.13 |
| MACE | 1.06 (0.86-1.32) | 0.56 |
| 30- day mortality | 1.17 (0.93-1.47) | 0.16 |

MACE=major adverse cardiovascular events defined as composite of in-hospital mortality, in-hospital myocardial infarction or re-infarction and revascularization- emergency percutaneous coronary intervention or CABG

**Table 4:** Propensity score matching analysis on 10 imputed datasets, reporting average treatment effects (ATE)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Right v Left Radial access | N | Coefficient | 95% confidence interval | | P value |
| In hospital death | 153027 | 0.002324 | -0.004819 | 0.009468 | 0.64 |
| Major bleeding | 152,956 | 0.002506 | -0.003093 | 0.008106 | 0.89 |
| In hospital stroke | 152,956 | 0.000977 | -0.001654 | -0.00299 | 0.005 |
| MACE | 152,956 | 0.003680 | -0.004376 | 0.011737 | 0.90 |
| 30 day mortality | 131,778 | 0.009475 | -0.003708 | 0.022658 | 0.15 |

MACE=major adverse cardiovascular events defined as composite of in-hospital mortality, in-hospital myocardial infarction or re-infarction and revascularization- emergency PCI or CABG

**Figure 1: Flow diagram of study selection**

Total PCI performed in United Kingdom from 2007-2014

n= 669279

Procedure via femoral, brachial, ulnar access = 325554

Total procedure via radial access from 2007-2014

n= 343725

Missing information on gender = 529 & age= 390

Procedures via radial access

n=342806

Procedures via right radial access n= 328495

Procedures via left radial access n= 14311

**Figure 2:** Use of left radial access from 2007 to 2014 in United Kingdom

**Figure 3a:** Overallproportions of left radial access procedures across different primary care trusts in United Kingdom.

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**Figure 3b:** Proportions of left radial access procedures across different primary care trusts in United Kingdom from 2007-2014.

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**Figure 4a,b,c,d:** Left Radial access by Ethnicity, history of CABG, Indication of PCI and patient’s height.

4a)

4b)

4c)

4d)

**Figure 5:** Access site switch in patients undergoing repeat percutaneous coronary intervention after right radial access in United Kingdom

**Figure 6a:** Access site switch in males undergoing repeat percutaneous coronary intervention after right radial access in United Kingdom

**6b:** Access site switch in females undergoing repeat percutaneous coronary intervention after right radial access in United Kingdom

**Figure 7a:** Access site switch in patients age <75 year undergoing repeat percutaneous coronary intervention after right radial access in United Kingdom

**7b:** Access site switch in patients age >75 year undergoing repeat percutaneous coronary intervention after right radial access in United Kingdom

Figure 8: Relationship between access site used and clinical outcomes

Figure 9: Predictor of Left radial access