**Table S1: Trial and Baseline Patient Characteristics and Interventions of Studies.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Study** | **Year** | **Design** | **Centers, n** | **Location** | **Enrollment Period,**  **year** | **Follow-up, months** | **Patients, n** | **Age, years** | **Male,**  **%** | **BMI, kg/m2** | **Diabetes,**  **%** | **Hypertension,**  **%** | **Dyslipidemia,**  **%** |
| **Finn.M.T[14]** | **2018** | Non-RCT | 1 | US | 2014-2016 | 12 | 157 | 64±9 | 87 | NA | 32 | 92 | 96 |
| **Sabbah.M[15]** | **2018** | Non-RCT | 1 | Japan | 2011-2012 | 12 | 157 | 69 | 86 | 25±4 | 10 | 19 | 16 |
| **Maeremans.J[16]** | **2018** | Non-RCT | 13 | UK | 2014-2015 | 12 | 1067 | 66±11 | 85 | NA | 26 | 60 | 67 |
| **Azzalini.L[11]** | **2017** | Non-RCT | 4 | Italy/US/Canada/Spain | 2010-2016 | 12 | 924 | 65±10 | 90 | 30±6 | 43 | 76 | 82 |
| **Wilson.W.M[17]** | **2017** | Non-RCT | 7 | UK | 2012-2014 | 12 | 805 | 65±11 | 79 | 29±5 | 27 | 70 | 68 |
| **Hasegawa.K[18]** | **2017** | Non-RCT | 30 | Japan | 2012 | 12 | 323 | NA | NA | NA | NA | NA | NA |
| **Amsavelu.S[21]** | **2016** | Non-RCT | 1 | US | 2012-2015 | 12 | 173 | 65±8 | 98 | NA | 60 | 91 | 93 |
| **Muramatsu.T[19]** | **2014** | Non-RCT | 27 | Japan | 2010-2011 | 12 | 156 | 65±10 | 88 | NA | 35 | 67 | 71 |
| **Rinfret.S[20]** | **2014** | Non-RCT | 1 | Canada | 2010-2013 | 18 | 187 | 65±10 | 81 | 29±5 | 34 | 67 | NA |
| **Godino.C[22]** | **2012** | Non-RCT | 1 | Italy | 2005-2008 | 24 | 355 | 61±9 | 87 | NA | 30 | 73 | 71 |
| **Valenti.R[23]** | **2012** | Non-RCT | 1 | Italy | 2003-2011 | 12 | 802 | 68±11 | 85 | NA | 25 | 60 | 57 |
| **Tanaka.H[24]** | **2010** | Non-RCT | 1 | Japan | 2005-2009 | 8 | 159 | NA | NA | NA | NA | NA | NA |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Study** | **Year** | **Prior MI,**  **%** | **Prior PCI,**  **%** | **Prior CABG,**  **%** | **LVEF,**  **%** | **In-stent occlusion,**  **%** | **Target CTO vessel** | | | **Retrograde,**  **%** | **Prior CTO attempt,**  **%** | **IVUS use,**  **%** | **DR techniques** |
| **LAD,**  **%** | **LCX,**  **%** | **RCA,**  **%** |
| **Finn.M.T[14]** | **2018** | 33 | 70 | 35 | 53 | NA | 34 | 20 | 46 | 25 | 20 | 100 | Crossboss/Stringray/rCART |
| **Sabbah.M[15]** | **2018** | 65 | NA | 4 | NA | NA | 40 | 15 | 45 | 36 | 14 | 100 | CART/rCART |
| **Maeremans.J[16]** | **2018** | 38 | 57 | 17 | 54（EF>50%） | 10 | 23 | 16 | 61 | 26 | 21 | NA | Crossboss/Stringray/STAR/LAST |
| **Azzalini.L[11]** | **2017** | 45 | 58 | 23 | 52±12 | 13 | 28 | 21 | 51 | 16 | 18 | NA | LAST（17%）、STAR（6%）、CART（4%）、rCART（46%）、Crossboss/Stringray（27%） |
| **Wilson.W.M[17]** | **2017** | 55 | NA | 22 | 34（EF<55%） | 8 | 28 | 15 | 56 | 31 | 20 | NA | ADR (Crossboss73%/Stringray58%);  RDR |
| **Hasegawa.K[18]** | **2017** | NA | NA | NA | NA | NA | NA | NA | NA | 25 | NA | 16 | rCART |
| **Amsavelu.S[21]** | **2016** | 47 | 54 | 31 | 49±14 | 17 | NA | NA | NA | 21 | 7 | NA | Crossboss/Stringray/rCART(The majority)  LAST/STAR/CART |
| **Muramatsu.T[19]** | **2014** | 40 | NA | 11 | NA | NA | 29 | 12 | 59 | 63 | 20 | 43 | rCART |
| **Rinfret.S[20]** | **2014** | 51 | 65 | 29 | 55±11 | 12 | 21 | 20 | 59 | 52 | 33 | NA | Knucle/Crossboss/Stringray/rCART |
| **Godino.C[22]** | **2012** | 51 | 50 | 21 | 53±9 | 12 | 29 | 25 | 46 | NA | 18 | NA | Guided-STAR |
| **Valenti.R[23]** | **2012** | 50 | 36 | 11 | 44±12 | NA | 31 | 22 | 41 | NA | NA | NA | STAR |
| **Tanaka.H[24]** | **2010** | NA | NA | NA | NA | NA | NA | NA | NA | 100 | NA | NA | r-CART |

Abbreviations: BMI: body mass index; RCT: randomized controlled trial; CTO: chronic total occlusion; PCI: percutaneous coronary intervention; DR: dissection and re-entry; ADR: antegrade dissection and re-entry; RDR: retrograde dissection and re-entry; STAR: subintimal tracking and re-entry; LAST: limited antegrade subintimal tracking; rCART: reverse controlled antegrade and retrograde tracking; MI: myocardial infarction; CABG: coronary artery bypass graft; IVUS: intravascular unltrasound; LVEF: left ventricular ejection fraction; LAD: left anterior descending; LCX: left circumflex artery; RCA: right coronary artery