
Abstract:

Percutaneous coronary intervention (PCI) with drug-eluting stents is the standard of care for treatment of native coronary artery stenoses, but optimum treatment strategies for bare metal stent and drug-eluting stent in-stent restenosis (ISR) have not been established. We aimed to compare and rank percutaneous treatment strategies for ISR. We did a network meta-analysis to synthesise both direct and indirect evidence from relevant trials. We searched PubMed, the Cochrane Library Central Register of Controlled Trials, and Embase for randomised controlled trials published up to Oct 31, 2014, of different PCI strategies for treatment of any type of coronary ISR. The primary outcome was percent diameter stenosis at angiographic follow-up. This study is registered with PROSPERO, number CRD42014014191. We deemed 27 trials eligible, including 5923 patients, with follow-up ranging from 6 months to 60 months after the index intervention. Angiographic follow-up was available for 4975 (84%) of 5923 patients 6-12 months after the intervention. PCI with everolimus-eluting stents was the most effective treatment for percent diameter stenosis, with a difference of -9·0% (95% CI -15·8 to -2·2) versus drug-coated balloons (DCB), -9·4% (-17·4 to -1·4) versus sirolimus-eluting
stents, -10.2% (-18.4 to -2.0) versus paclitaxel-eluting stents, -19.2% (-28.2 to -10.4) versus vascular brachytherapy, -23.4% (-36.2 to -10.8) versus bare metal stents, -24.2% (-32.2 to -16.4) versus balloon angioplasty, and -31.8% (-44.8 to -18.6) versus rotablation. DCB were ranked as the second most effective treatment, but without significant differences from sirolimus-eluting (-0.2% [95% CI -6.2 to 5.6]) or paclitaxel-eluting (-1.2% [-6.4 to 4.2]) stents. These findings suggest that two strategies should be considered for treatment of any type of coronary ISR: PCI with everolimus-eluting stents because of the best angiographic and clinical outcomes, and DCB because of its ability to provide favourable results without adding a new stent layer.