Abstract: P4733

Risk of myocardial infarction with coronary artery bypass grafting versus percutaneous coronary intervention: a systematic review and meta-analysis of fifteen randomised trials

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Topic(s):
Cardiovascular Surgery – Coronary Arteries

Citation:

Background: It remains controversial whether coronary artery bypass grafting (CABG) or percutaneous coronary intervention (PCI) is more effective in the prevention of myocardial infarction (MI). MI has been evaluated only as a secondary endpoint without a focused systematic review in multiple meta-analyses.

Purpose: To compare the risk of MI at the latest follow-up available between CABG versus PCI with stents in patients with multivessel or left main coronary artery disease in a pairwise meta-analysis of randomised controlled trials (RCT).

Methods: We searched EMBASE, Cochrane, and Pubmed databases for articles comparing CABG versus PCI for the treatment of multivessel or left main disease. We utilised random-effects model to calculate pooled risk ratio (RR) and 95% confidence interval (CI). Fifteen trials with a total of 13,592 patients treated with either CABG (n=6,596) or PCI (n=6,996) were eligible and included. A multivariable random-effects meta-regression model, including variables such as age, sex, diabetes mellitus, publication year, follow-up duration, type of stent used, and type of coronary artery disease, was used to explore the source of potential heterogeneity of the primary result.

Results: After a weighted follow-up of 4.3 years, patients treated with CABG had a significantly lower risk of MI than patients treated with PCI (RR 0.75, 95% CI 0.58–0.96, P=0.024, I²=66%). The lower risk of MI with CABG as compared to PCI was more evident during a longer duration of follow-up (=3 years, RR 0.69, 95% CI 0.52–0.91, P=0.008; =5 years, RR 0.64, 95% CI 0.48–0.86, P=0.003) and in diabetic population (RR 0.55, 95% CI 0.44–0.70, P<0.001). There was a statistically meaningful trend toward fewer MIs with CABG with a similar magnitude of risk reduction across patients with left main disease (RR 0.74, 95% CI 0.47–1.15) and multivessel disease (RR 0.72, 95% CI 0.53–0.99). Moderate inter-study heterogeneity could not be explained by the clinical and trial-based variables tested in meta-regression, and is likely because of differences in definitions of MI, risk profile of enrolled patients, and procedural specifics.

Conclusions: In patients undergoing revascularization for multivessel or left main disease, the risk of MI was lower with CABG compared to PCI. The quality assurance for MI definition and treatment-specific procedures should be emphasized for future RCTs.
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