

JACC: Cardiovascular interventions

Multivessel versus Culprit-Only  
Revascularization in STEMI and  
Multivessel Coronary Artery Disease:  
Meta-Analysis of Randomized Trials

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# Abstract

## Objectives:

The goal of this systematic review and meta-analysis was to provide a comprehensive evaluation of contemporary randomized trials addressing the efficacy and safety of multivessel versus culprit vessel-only percutaneous coronary intervention (PCI) among patients presenting with ST-segment elevation myocardial infarction and multivessel coronary artery disease.

## Background:

Multivessel coronary artery disease is present in about one-half of patients with ST-segment elevation myocardial infarction. Randomized controlled trials comparing multivessel and culprit vessel-only PCI produced conflicting results regarding the benefits of a multivessel PCI strategy.

## Methods:

A comprehensive search for published randomized controlled trials comparing multivessel PCI with culprit vessel-only PCI was conducted on ClinicalTrials.gov, PubMed, Web of Science, EBSCO Services, the

Cochrane Central Register of Controlled Trials, Google Scholar, and scientific conference sessions from inception to September 15, 2019. A meta-analysis was performed using a random-effects model to calculate the risk ratio (RR) and 95% confidence interval (CI). Primary efficacy outcomes were all-cause mortality and reinfarction.

## Results:

Ten randomized controlled trials were included, representing 7,030 patients: 3,426 underwent multivessel PCI and 3,604 received culprit vessel-only PCI. Compared with culprit vessel-only PCI, multivessel PCI was associated with no significant difference in all-cause mortality (RR: 0.85; 95% CI: 0.68 to 1.05) and lower risk for reinfarction (RR: 0.69; 95% CI: 0.50 to 0.95), cardiovascular mortality (RR: 0.71; 95% CI: 0.50 to 1.00), and repeat revascularization (RR: 0.34; 95% CI: 0.25 to 0.44). Major bleeding (RR: 0.92; 95% CI: 0.50 to 1.67), stroke (RR: 1.15; 95% CI: 0.65 to 2.01), and contrast-induced nephropathy (RR: 1.25; 95% CI: 0.80 to 1.95) were not significantly different between the 2 groups.

## Conclusions:

Multivessel PCI was associated with a lower risk for reinfarction, without any difference in all-cause mortality, compared with culprit vessel-only PCI in patients with ST-segment elevation myocardial infarction.

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