

Radial versus femoral access for coronary angiography and interventions: a systematic review and meta-analysis of randomized trials

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Background: The presence of any benefits associated with radial or femoral access among patients undergoing coronary angiography and percutaneous coronary interventions (PCI) is still debated.

Purpose: Our aim is to provide a comprehensive quantitative appraisal of the effects of access site on the risks of stroke, myocardial infarction, and major bleeding in patients undergoing coronary angiography with or without PCI.

Methods: In January 2020, we searched PubMed, Embase, and meeting abstracts for randomized trials comparing radial versus femoral access for coronary angiography with or without subsequent PCI. Odds ratios (OR) were used as metric of choice for treatment effects with random-effects models. Co-primary efficacy endpoints were stroke and myocardial infarction. Primary safety endpoint was major bleeding. Secondary endpoints were all cause mortality and vascular complications. Heterogeneity was assessed with the I-squared index. This study is registered with PROSPERO.

Results: We identified 31 trials, including 30,414 patients. Risks of stroke (OR 1.11, 95% CI 0.76–1.64, I²=0%) and myocardial infarction (OR 0.90,

95% CI 0.79–1.03, I²=0%) were comparable between radial and femoral access. Radial access was associated with a reduction for the risk of major bleeding as compared to femoral access (OR 0.53, 95% CI 0.42–0.67, I²=3.3%) with a number needed to treat of 92. Findings were consistent regardless clinical features and procedure performed, with the only exception of an increased benefit of the radial access in patients with chronic coronary syndrome (p for interaction=0.005). The risk for all-cause mortality (OR 0.73, 95% CI 0.61–0.89, I²=0%) and vascular complication (OR 0.32, 95% CI 0.23–0.44, I²=16.7%) was significantly lower in the radial compared to femoral access group.

Conclusions: In patients undergoing coronary angiography with or without PCI, radial compared to femoral access did not reduce the risk of stroke and myocardial infarction, with no impact on the effect estimates of clinical presentation, age, gender, or subsequent PCI. Whereas, radial access is associated with a significant risk reduction of major bleeding as compared to femoral access. The benefit favoring radial access is of important clinical relevance in view of the relatively low number needed to treat to prevent a major bleeding and the significant impact on mortality.