

## **Hierarchical Bayesian Meta-Analysis Comparison of Transradial and Femoral Approaches for PCI**

*Meerkin, David<sup>1</sup>; Joseph, Lawrence<sup>2</sup>; Joyal, Dominique<sup>3</sup>; Costerousse, Olivier<sup>4</sup>; Rao, Sunil<sup>5</sup>; Jolly, Sanjit<sup>6</sup>; Bertrand, Olivier<sup>4</sup>*

<sup>1</sup>Shaare Zedek Medical Center, Cardiology Department, Jerusalem, Israel; <sup>2</sup>McGill University, Statistics, Quebec, Canada; <sup>3</sup>McGill University, Cardiology, Quebec, Canada; <sup>4</sup>Quebec Heart & Lung Institute, Cardiology, Quebec City, Quebec, Canada; <sup>5</sup>Duke Clinical Research Institute, Cardiology, Durham, North-Carolina, USA; <sup>6</sup>Hamilton General Hospital, McMaster University, Cardiology, Hamilton, Ontario, Canada

**Background:** Despite lower risks of access-site related complications compared to the femoral approach (FA), the clinical benefit of transradial approach (TRA) for percutaneous coronary interventions (PCI) is uncertain. We conducted a systematic review and meta-analysis of all clinical studies comparing TRA and FA for PCI.

**Methods:** Randomized trials and observational studies (1993-2011) comparing TRA with FA for PCI with reports of ischemic and bleeding outcomes were included. Crude and adjusted (for age and sex) odds ratios (OR) were estimated by a hierarchical Bayesian random-effects model with prespecified stratification for observational and randomized designs. The primary outcomes were rates of death, combined incidence of death or myocardial infarction (MI), bleeding and transfusions, early ( $\leq 30$  days) and late after PCI.

**Results:** We collected data from 76 studies (15 randomized, 61 observational) involving a total of 761,919 patients. Compared with FA, TRA was associated with a substantial reduction in bleeding (OR 0.22, 95% CrI 0.16-0.29) and in transfusions (OR 0.20, 95% CrI 0.11-0.32). These findings were consistent in both randomized and observational studies. There was a strong association between TRA and mortality reduction early after intervention (OR 0.56, 95% credible interval (CrI) 0.45-0.67), although the effect was mainly due to observational studies (OR 0.52, 95% CrI 0.40-0.63, adjusted OR 0.49 (95% CrI 0.37-0.60)), with an OR of 0.80 (95% CrI 0.49-1.23) in randomized trials.

**Conclusion:** Our results combining observational and randomized studies showed that PCI performed by TRA is associated with substantially less risks of bleeding and transfusions compared to FA. Benefit on the incidence of death or combined death or MI is found in observational studies but remains inconclusive in randomized trials.