Letter to the Editor

Minimally invasive direct coronary artery bypass versus stenting

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We read with great interest the article by Boodhwani et al. [1] titled ’Mortality and myocardial infarction following surgical versus percutaneous revascularization of isolated left anterior descending artery disease: a meta-analysis’. Randomized studies demonstrated a beneficial effect of surgery compared to percutaneous therapy on mid-term (1 month to 5 years) major adverse cardiac events (MACE) with a risk ratio (RR) of 0.33 (95% confidence interval [CI]: 0.24, 0.46). In the meta-analysis by Boodhwani et al. [1], however, there was substantial qualitative heterogeneity in trial design: surgical treatment was conventional coronary artery bypass grafting (CABG) in two trials, minimally invasive direct coronary artery bypass (MIDCAB) in five trials and CABG/MIDCAB in one trial; percutaneous treatment was angioplasty without stent in two trials, with stent in five trials, and with drug eluting stent in one trial. As stated by Boodhwani et al. [1], type of surgical treatment and type of percutaneous treatment were significant predictors of MACE. Therefore, we conducted a meta-analysis of randomized controlled trials of MIDCAB versus stenting for isolated left anterior descending (LAD) artery disease.

All randomized controlled trials of MIDCAB versus stenting enrolling patients with isolated LAD disease were identified by means of searching MEDLINE between January 1966 and December 2005. Keywords included stent, stenting, minimally invasive coronary artery bypass, MIDCAB, and randomized controlled trials. Studies considered for inclusion met the following criteria: the design was a prospective randomized controlled clinical trial; the study population was patients with isolated LAD disease; patients were randomly assigned to MIDCAB versus stenting; and main outcomes included MACE.

Our search identified five randomized controlled trials of MIDCAB versus stenting enrolling patients with isolated LAD disease: trials by Diegeler et al., Reeves et al., Cisowski et al. [2], Drenth et al. [3] (refs. [6,9], updated refs. [5,7] of the article by Boodhwani et al. [1]), and Kim et al [4]. Mean duration of follow-up was 1.6 years (6 months to 4 years). Two of the five individual trials demonstrated a statistically nonsignificant benefit of MIDCAB over stenting for MACE (RR [95% CI]: 0.33 [0.10,1.16] in the trial by Kim et al. [4] and 0.50 [0.10, 2.61] in the trial by Reeves et al.). The other three trials demonstrated a statistically significant MACE reduction with MIDCAB over stenting (RR [95% CI]: 0.25 [0.08, 0.83] in the trial by Cisowski et al. [2], 0.36 [0.14, 0.92] in the trial by Drenth et al. [3], and 0.47 [0.28, 0.80] in the trial by Diegeler et al.). Pooled analysis of the five trials, representing 622 patients, demonstrated a statistically significant 59% reduction in MACE with MIDCAB relative to stenting (RR [95% CI]: 0.41 [0.27, 0.60]) in a random-effect model. There was neither trial heterogeneity of results (P = 0.8860) nor publication bias (P = 0.6242). In sensitivity analyses, exclusion of any single trial from the analysis did not substantively alter the overall result of our analysis.

In conclusion, we found that, based on a meta-analysis, MIDCAB is likely effective in reduction of mid-term MACE in patients with isolated LAD disease.

References


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