SEARCHING FOR THE SECOND BEST GRAFT FOR CORONARY ARTERY BYPASS SURGERY: A NETWORK META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

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Objectives: Additional arterial conduits such as the right internal mammary artery (RIMA), radial artery (RA) and gastroepiploic artery (GEA) have been proposed as second best conduits after the left internal mammary artery (LIMA) in the search for a graft that would achieve a better patency than the saphenous vein graft (SVG). However, it remains unknown which of these conduits should be considered as the best second conduit for coronary artery bypass grafting (CABG). We aimed to identify the second best conduit by means of a network meta-analysis of all published direct comparisons.

Methods: PubMed and the Cochrane Library were searched for randomized controlled trials (RCTs) comparing the angiographic patency (less than 70% stenosis) of second conduits including RIMA, RA, GEA and SVG. A Bayesian meta-analysis was conducted for occlusion and failure (more than 70% stenosis) rate using published RCTs. Data were extracted and analysed via indirect comparisons using random effects Bayesian models in WinBUGS version 1.4.3.

Results: A total of seven RCTs involving 1736 patients were included: two studies compared RIMA vs RA, five studies compared RA vs SVG; one RCT compared GEA vs SVG and RIMA vs SVG. When the occlusion rate was the outcome of interest, only the RA was found to be significantly superior to SVG (OR vs SVG: RA 0.35 [0.13-0.94]; RIMA 0.37 [0.07-2.00]; GEA 1.03 [0.16-6.80]). However, none of the arterial conduits was significantly superior to SVG in terms of failure rate (OR vs SVG: RA 0.59 [0.25-1.40]; RIMA 0.58 [0.13-2.55]; GEA 0.95 [0.17-5.42]). RIMA was not superior to RA in terms of overall occlusion rate (OR 0.51 [0.20-1.26]) and failure rate (OR 0.91 [0.18-4.44]).

Conclusions: According to the best available evidence to date, the RA emerges as the second best conduit for CABG. Further randomized controlled trials are needed to confirm this finding.