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Comparative Study

Radial-Artery or Saphenous-Vein Grafts in Coronary-Artery Bypass Surgery

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Abstract

Background:

The use of radial-artery grafts for coronary-artery bypass grafting (CABG) may result in better postoperative outcomes than the use of saphenous-vein grafts. However, randomized, controlled trials comparing radial-artery grafts and saphenous-vein grafts have been individually underpowered to detect differences in clinical outcomes. We performed a patient-level combined analysis of randomized, controlled trials to compare radial-artery grafts and saphenous-vein grafts for CABG.

Methods:

Six trials were identified. The primary outcome was a composite of death, myocardial infarction, or repeat revascularization. The secondary outcome was graft patency on follow-up angiography. Mixed-effects Cox regression models were used to estimate the treatment effect on the outcomes.

Results:

A total of 1036 patients were included in the analysis (534 patients with radial-artery grafts and 502 patients with saphenous-vein grafts). After a mean (\pm SD) follow-up time of 60 ± 30 months, the incidence of adverse cardiac events was significantly lower in association with radial-artery grafts than with saphenous-vein grafts (hazard ratio, 0.67; 95% confidence interval [CI], 0.49 to 0.90; $P=0.01$). At follow-up angiography (mean follow-up, 50 ± 30 months), the use of radial-artery grafts was also associated with a significantly lower risk of occlusion (hazard ratio, 0.44; 95% CI, 0.28 to 0.70; $P<0.001$). As compared with the use of saphenous-vein grafts, the use of radial-artery grafts was associated with a nominally lower incidence of myocardial infarction (hazard ratio, 0.72; 95% CI, 0.53 to 0.99; $P=0.04$) and a lower incidence of repeat revascularization (hazard ratio, 0.50; 95% CI, 0.40 to 0.63; $P<0.001$) but not a lower incidence of death from any cause (hazard ratio, 0.90; 95% CI, 0.59 to 1.41; $P=0.68$).

Conclusions:

As compared with the use of saphenous-vein grafts, the use of radial-artery grafts for CABG resulted in a lower rate of adverse cardiac events and a higher rate of patency at 5 years of follow-up. (Funded by Weill Cornell Medicine and others.).

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