

Response to Letters Regarding Article, "Second Internal Thoracic Artery Versus Radial Artery in Coronary Artery Bypass Grafting: A Long-Term, Propensity Score-Matched Follow-Up Study"

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Response to Letters Regarding Article, “Second Internal Thoracic Artery Versus Radial Artery in Coronary Artery Bypass Grafting: A Long-Term, Propensity Score-Matched Follow-Up Study”

We thank Drs Ahmed and Edelman for their interest in our article.¹ They expressed concerns about a possible bias toward radial artery (RA) use in comparison with right internal thoracic artery (RITA), because more than two thirds of multiple arterial revascularization (MAR) cases have a RA as a second arterial conduit.

The proportion of RA and RITA patients directly reflects the current epidemiological distribution of RA and RITA grafts used. In the United States, the RA is used more than twice as frequently as a RITA graft.² When applying the inclusion criteria of our study, our institutional MAR rate has been 35% during the past 9 years, reflecting high experience with MAR on a daily routine basis. Only 4 surgeons performed MAR during the whole study period, and there was a high fluctuation of surgeons during this period. Moreover, this further underlines the fact that MAR can be easily performed by surgeons routinely but not exclusively performing coronary surgery, irrespective whether using a RA or a RITA. We limit our results to the shortcomings of an observational study; however, results from randomized, controlled trials are missing. Significant shortcomings exist in randomized, controlled trials, namely unreal overselection of patients, heterogenous surgical techniques (regarding on- and off-pump strategy, in situ grafts and t grafts, pedicle/skeletonized), and the problem of crossover is due to intention-to-treat analysis.^{3,4}

Previous studies have shown that the level of stenosis has an impact on graft patency for arterial grafts. In our study, arterial grafts were exclusively grafted to target areas with at least 80% stenosis (otherwise conventional coronary artery bypass grafting was performed by using a saphenous vein graft not to waste an arterial graft); furthermore, the degree of stenosis was not different in our study within both treatment groups. In addition, moderate suprathreshold distension of the RA after harvesting was performed in all cases.

Cardioembolic stroke, as a complication of cardiac surgery, has a tremendous impact on quality of life, leaving a significant proportion of patients with remaining disability. Our study has clearly shown that a reduction of central aortic anastomoses can reduce the risk of aortic plaque rupture in patients undergoing coronary artery bypass grafting. Therefore, the use of 2 in situ internal thoracic artery grafts might possibly be protective, especially for patients with severe aortic sclerosis. Hence, as we have previously shown, modification of surgical technique to produce less aortic manipulation (either on-pump with single-crossclamp or off-pump procedures) in case of heavily calcified aorta should be a mandatory approach in all coronary artery bypass grafting procedures.⁵

However, off-pump coronary surgery has a significant limitation. Many previous large studies and meta-analyses have shown off-pump surgery to be associated with reduced long-term survival and an increased risk for subsequent revascularization and incomplete revascularization, further limiting any long-term benefit of coronary revascularization.⁶ Despite mounting evidence of the long-term benefit of MAR, it is still predominately performed in younger patients with low comorbidity level and preserved left ventricular function. Therefore, it should be a major goal to offer the optimal long-term solution for these patients. Complete anaortic off-pump coronary artery bypass grafting would be a favorable option if we only consider the reduction of stroke.⁵ However, because most

patients require more than 2 bypass grafts, additional grafts such as saphenous vein graft or the RA are required in addition. The use of excessive sequential and t grafting to the internal thoracic artery to avoid aortic anastomoses, however, has raised some concerns about graft patency and flow reserve of composite conduits.⁷

Disclosures

None.

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