Commentary: Multiple arterial grafting seems promising, but where is the proof of a long-term survival benefit in women?

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In most studies, arterial grafts have greater patency than venous grafts. A growing body of data supports improved survival with the use of multiple arterial grafting (MAG) in coronary bypass surgery (CABG) using either bilateral internal thoracic arterial conduits or radial artery in combination with left internal thoracic artery. Data have also demonstrated that women undergoing CABG have worse outcomes than men. Can women undergoing CABG with multiple arterial grafts have improved outcomes? This is where the data become scarce. Robinson and colleagues attempt to address this question in this edition of the Journal.

The authors performed a meta-analysis of propensity-matched CABG outcome studies in which both MAG was used and sex specified in results. Six existing studies met criteria and included a total of 32,793 women, of whom 25,714 received single arterial graft and 7079 MAG. The results lead the authors to conclude that women receiving MAG have an improved long-term survival rate and decreased rate of myocardial infarction without an increase in operative mortality.

Unfortunately, the limitations of the study prevent us from sharing this perspective. When analyzing the 3 largest included studies, which provide the bulk of the data used in the meta-analysis, the long-term survival benefit is not seen. The authors acknowledge this discrepancy and recognize that the survival benefit is directly dependent on the smaller trials. The largest trial included 13,146 women compared with a combined total of 2883 women in smallest 3 trials. If a survival benefit is seen only in the smallest trials that provide the minority of patients, are the studies comparable enough to derive meaningful conclusions?

As with all propensity-matched studies, there is an inherent risk of selection bias that can be amplified in the meta-analysis. Primary data from patients and randomized trials may provide more definitive answers. Within the included studies, discrepancies in the follow-up periods and multiple surgeons using different techniques complicate the conclusion. For example, in the study by Lawton and colleagues, radial T-grafts were used in all patients and procedures performed by a select group of surgeons. In comparison, Gaudino and colleagues used the New York database, which likely included numerous surgeons with multiple grafting techniques.

Use of the left internal thoracic artery has increased to become a standard conduit. Alternatively, MAG, including the use of radial arterial conduits, has not seen a similar increase in use despite data suggesting greater long-term patency than venous grafts and right internal thoracic artery conduits. The ability to definitively demonstrate an improved long-term survival remains elusive, as evidenced in the 10-year data from the Arterial Revascularisation Trial (ART), which did not demonstrate a survival benefit.

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Perhaps high-quality studies with rigorous, standardized criteria in technique and graft use will produce more actionable conclusions. While we do not believe this study to demonstrate a clear survival benefit in women undergoing CABG with MAG, we do believe that randomized trials are needed. The results of the ongoing ROMA trial (Randomized Comparison of the Clinical Outcome of Single vs Multiple Arterial Grafts) are eagerly awaited.8

References