Factors Affecting Graft Patency: The Operating Room and Beyond

To the Editor:
Zacharias and colleagues report improved survival with radial artery conduits versus vein graft in coronary artery bypass graft (CABG) surgery with left internal mammary artery to left anterior descending artery, as well as better radial patency. This study reinforces previous findings demonstrating superior patency of arterial conduits over vein grafts. Nonetheless, graft patency and improved survival outcomes extend beyond the boundaries of the operating room.

The pathogenesis of saphenous vein graft closure includes acute thrombosis, subacute intimal hyperplasia, and chronic graft atherosclerosis. However, arterial grafts, thought to be more resistant to atherosclerosis, have exhibited early atherosclerotic signs in radial artery grafts (RAGs) without apparent influence on RAG patency and endothelial function. In addition, it is known that RAGs demonstrate a proclivity to vasospasms, which reportedly occur in at least 5% to 10% of RAGs. RAG patency has been reported to be sensitive to both target location and quality on radial artery grafts, with RAGs to the right coronary artery or arteries with moderate stenosis being particularly susceptible to a high risk of failure.

Non-surgical factors affecting graft patency include hypercholesterolemia, risk factor modification, such as diet and smoking cessation, and discharge therapies (including antiplatelets and lipid-lowering agents). A recent investigation revealed underutilization of such discharge therapies after CABG, with CABG patients being less likely to receive prescriptions for lipid-lowering agents (34.7% versus 55.7%, \( P<0.0001 \)) than patients who did not undergo CABG. The lack of such prescriptions may be attributed to underestimation of the clinical significance of such therapies, as well as lack of appropriate discharge planning. In many hospitals, CABG patients are managed postoperatively by the surgical team, who may not consider initiation of statin therapy as a priority during hospitalization or on discharge, or who may not want the responsibility of ensuring follow-up after prescribing such therapy. However, improved postoperative outcomes require a multidisciplinary approach with the involvement of other clinicians, particularly those who perform routine and long-term follow-up. Graft patency rates may be improved with implementation of clinical pathways to ensure appropriate discharge therapies.

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Response

We thank Drs Chen-Scarabelli and Scarabelli for their comments regarding our article. We concur with their observations on the multiple factors that influence graft patency of the graft are correct. In the response to Dr Raja’s letter, we addressed the issues of radial vasoreactivity and the role of coronary target location and quality on radial patency. We will not repeat them here, but we reiterate the importance of considering these factors by surgeons during patient selection, harvesting, and utilized operative techniques.

We also agree that non-surgical factors including beyond the operative room care cannot be overlooked and should be optimized in all coronary artery bypass grafting patients. In our service, surgeons are responsible for patient discharge in virtually 100% of the cases. As a result, we are responsible for the implementation of the critical pathways and, on discharge, all patients and families are oriented regarding diet, cardiac rehabilitation, and smoking cessation. Unless contraindicated, all patients are started early postoperatively and are discharged on aspirin, a statin, an angiotensin-converting enzyme inhibitor, and β-blockers. Cooperation with the internists and cardiologists will increase the awareness of the importance of these measures in the overall treatment and long-term results in these patients.

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