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Commentary: Why not MAG-nify the benefit in patients with diabetes?

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In their recent review, Akhrass and Bakaen¹ nicely detail why patients with diabetes and multivessel coronary artery disease benefit from coronary artery bypass grafting (CABG) as the coronary revascularization method of choice. Benefits include prolonged survival and reduced cardiovascular events. These have been suggested since the first Bypass Angioplasty Revascularization Investigation trial in 1996² and strongly reinforced by the more contemporary Future Revascularization Evaluation in Patients with Diabetes Mellitus: Optimal Management of Multivessel Disease trial^{3,4} reported in 2012 and 2019. Akhrass and Bakaen¹ also summarize the data supporting the use of multiple arterial grafting (MAG) and the resultant added benefits associated with their use in patients with diabetes.

Diabetes is a significant risk factor for cardiovascular disease that is especially magnified in women.^{5,6} Patients with diabetes are known to have more diffuse coronary artery disease that is often associated with smaller vessels and significant calcification. Patients with diabetes are known to represent a high-risk group when undergoing CABG. Multiple large, retrospective studies with long-term follow-up have documented benefit with use of MAG in the setting of diabetes.⁷⁻¹⁰ Patients with diabetes have largely been evaluated as subgroup analyses of randomized controlled trials and meta-analyses comparing revascularization strategies (eg, percutaneous intervention vs CABG)^{11,12}; however, use of MAG remains low in Europe (3.8%-34.2%) and North America (9.9%-27.8%).¹³ Thus, comparisons

CENTRAL MESSAGE

Patients with diabetes and multivessel coronary artery disease have better outcomes with CABG for revascularization. This benefit can be further MAG-nified with the addition of multi-arterial grafting.

between MAG and single arterial grafting in patients with diabetes are difficult.

The obvious question is do we need a large randomized trial of MAG versus single arterial grafting in patients with diabetes to determine whether or not incremental benefit is obtained? Perhaps the Randomized Comparison of the Outcome of Single versus Multiple Arterial Grafts trial will add to this body of data.¹⁴ It seems intuitive that MAG should provide the same benefits (or greater) to patients with and without diabetes based on the physiologic differences between arterial and venous grafts and the diffuse disease found in patients with diabetes. Internal thoracic artery grafts are known to have superior patency due to resistance to atherosclerosis. Arterial grafts are associated with endothelial nitric oxide production and less progression of native atherosclerotic disease within the proximal left anterior descending artery after grafting, they remain elastic at arterial pressures, and they are more sensitive than veins to vasodilators.^{15,16}

There are barriers to the use of arterial grafts in patients with diabetes, including perceived increased risk of sternal wound infection (although this may be largely mitigated by skeletonization of grafts), increased time and technical complexity, concerns for spasm, concerns for hand complications, lack of desire to teach trainees, lack of qualified assistant to harvest, concerns regarding adequate flow or size, subclavian stenosis, chest wall radiation, and patient preference. However, strong evidence now supports that the use of

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FIGURE 1. Awareness of current data supporting arterial grafting in patients with diabetes will lead to better care.

arterial grafting is associated with improved patency, prolonged survival, and reduced cardiovascular events compared with venous grafting. Thanks to the excellent review by Akhrass and Bakaeen,¹ we now know better and can do better for our patients (Figure 1). Increased surgeon awareness of the current data supporting arterial grafting in patients with diabetes will lead to prolonged survival and better care.

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