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Commentary: External stenting of saphenous vein grafts—reinVESTing to achieve best returns in coronary artery bypass grafting

Alex Nantsios, MD, Thin Xuan Vo, MD, MSc, and Marc Ruel, MD, MPH

Alex Nantsios, MD (left), Thin Xuan Vo, MD, MSc (middle), and Marc Ruel, MD, MPH (right)

CENTRAL MESSAGE

External stents have been proposed to reduce saphenous vein graft failure. While they may improve angiographic outcomes, focus should remain on surgical technique and optimal medical therapy.

Coronary artery bypass grafting (CABG) remains the standard of care for left main and multivessel coronary disease. Although multiarterial revascularization correlates with benefits, the saphenous vein graft (SVG) remains the ubiquitous conduit (in addition to left internal mammary artery) due to ease of harvest, flexibility of application, and accommodating potential for flow. A significant limitation of SVGs is graft failure. Early SVG failure is generally related to technical factors, whereas late failure is attributable to intimal hyperplasia (IH) and progression of atherosclerosis.^{1,2} There have been numerous efforts to improve SVG patency, as graft failure correlates with poorer outcomes.^{3,4} Pharmacologic measures, including aspirin⁵ and statins,^{6,7,8} have led to improved survival. Clopidogrel may provide an additive benefit,^{9,10} especially in off-pump CABG.¹¹ Surgically, focus on “no-touch” SVG harvesting, use of novel preservation solutions, and various grafting configurations have also been studied.¹ External stents have been proposed as a technique to maximize graft patency by reducing shear stress and IH. In the randomized trial, VEST III, Taggart and colleagues¹² investigated the effectiveness of SVG external stenting in reducing SVG failure. The authors found that patency rates were similar between stented and nonstented SVGs. However, Fitzgibbon patency scores, which indicate the severity of intimal irregularities, were significantly improved after external stenting at 2-year follow-up, and IH was reduced on intravascular ultrasound.

The authors should be commended for this well-designed trial studying an emerging technology to prevent SVG disease

progression. However, the adoption of SVG stenting as an adjunctive therapy must be cautioned at this time. First, SVG stenting was designed to improve long-term patency but fell short of this clinical benefit at 2-year follow-up. Although intimal irregularities measured by the Fitzgibbon patency score may predict subsequent graft occlusion,¹³ they have yet to be linked to clinical outcomes apart from repeat revascularization.³ Based on its within-patient control design, this study was not designed to show whether these anatomic differences translate into clinical end points. Furthermore, the majority of graft occlusions occurred during the first 6 months (68.4%), generally attributed to technical shortcomings, highlighting opportunities for surgical improvement. Notably, the mean age in this patient cohort was 66.6 ± 7.9 years with a mean body mass index of 28.6 ± 4.4 and low rate of diabetes (29.5%), suggesting these patients might have benefitted from further arterial revascularization.

Our current focus should therefore be realigned to areas in which differences can be made to fully benefit patients undergoing CABG. Multiple arterial grafting with appropriate conduits, including the addition of a radial artery graft, and careful target selection should be used for all possible candidates. Uncompromised surgical technique with minimal manipulation of the SVG and confirmation of graft runoff with intraoperative flow assessment are essential¹⁴ in preventing early SVG failure. To prevent disease progression, surgeons should continue to institute careful post-CABG guideline-directed medical therapy, including antiplatelet and statin therapy,⁸ in addition to smoking cessation¹⁵ and aggressive management of

From the Division of Cardiac Surgery, University of Ottawa Heart Institute, Ottawa, Ontario, Canada.

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Address for reprints: Marc Ruel, MD, MPH, University of Ottawa Heart Institute, Suite 3402, 40 Ruskin St, Ottawa, Ontario K1Y 4W7, Canada (E-mail: mrue@ottawaheart.ca).

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hypertension and diabetes, using modern therapies that may confer additional cardiovascular benefit (ie, GLP1 inhibitors, SGLT2 inhibitors). Although Taggart and colleagues¹² provide compelling early anatomic results, the long-term reduction in SVG failure brought on by vesting remains unknown, and subsequent clinical outcomes will need to be ascertained. We are nonetheless grateful and better informed as a result of their mechanistic findings and look forward to longer-term outcomes from the VEST III trial.

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Commentary: A device solution for the saphenous vein graft's infamous foible?

Brittany A. Zwischenberger, MD,^a and
Mario Gaudino, MD, PhD, MSCE^b

The choice of graft in coronary artery bypass grafting (CABG) beyond the sturdy left internal mammary artery

From the ^aDivision of Cardiovascular and Thoracic Surgery, Department of Surgery, Duke University, Durham, NC; and ^bDepartment of Cardiothoracic Surgery, Weill Cornell Medicine, New York, NY.

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Address for reprints: Mario Gaudino, MD, PhD, MSCE, Division of Cardiovascular and Thoracic Surgery, Department of Cardiothoracic Surgery, Weill Cornell Medicine, 525 E 68th St, New York, NY 10065 (E-mail: mfg9004@med.cornell.edu).

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Brittany A. Zwischenberger, MD (left), and Mario Gaudino, MD, PhD, MSCE (right)

CENTRAL MESSAGE

In patients undergoing coronary artery bypass grafting with saphenous vein grafting, external stenting of the vein grafts may reduce late degeneration.

remains a challenge as surgeons weigh the risks, benefits, and scientific evidence surrounding radial artery, right