cardiac surgical community, helping with heart team discussions through a better understanding of the potential of CABG in preventing myocardial infarction, and suggesting practice changes to enable the life-prolonging effect of surgical collateralization.

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Commentary: The coronary artery bypass grafting advantage: Fake assertion or obvious reality

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Coronary artery bypass grafting (CABG) is an enduring procedure that has existed for more than 5 decades. The routine use of the internal thoracic artery (ITA) to bypass the left anterior descending (LAD) artery was fueled by a high profile article in 1986 that associated its use with superior graft patency and patient survival when compared with vein grafts.¹ The article was based on an observational study, not a randomized controlled clinical trial (RCT), but the results were decisively in favor of the ITA.

With regard to the comparative effectiveness of different treatments for coronary artery disease (CAD), Doenst and Sigusch² point out that RCTs with long-term follow-up

A patent left internal thoracic artery graft to the left anterior descending artery as the sole blood supply to the entire heart.

CENTRAL MESSAGE

Coronary artery bypass could offer future protection against myocardial infarction by offering an alternative pathway for blood that is unhindered by upstream native coronary disease.

have demonstrated superiority of CABG over medical management and percutaneous coronary intervention (PCI) in patients with significant atherosclerotic burden. They propose surgical collateralization as an explanation for CABG's edge over PCI. The premise here is that bypass grafts deliver blood beyond the proximal coronary segments that are usually diseased and are at risk for disease progression or development of de novo lesions.² Thus, in addition

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Disclosures: The author reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

Received for publication Oct 14, 2020; revisions received Oct 14, 2020; accepted for publication Oct 15, 2020; available ahead of print Oct 27, 2020.

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0022-5223/\$36.00

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<https://doi.org/10.1016/j.jtcvs.2020.10.070>

FIGURE 1. A patent left internal thoracic artery graft to the left anterior descending artery as the sole blood supply to the entire heart.

to the immediate benefit of CABG in treating existing lesions, CABG could offer future protection against myocardial infarction (MI) by furnishing an alternative pathway for blood that is unhindered by upstream native CAD. The authors provide some data to support this assertion,³ which, to many, is preexisting knowledge based on observation and intuition. The field protection is unique to CABG because PCI only treats the coronary segment where the stent is implanted with no prophylactic potential.

The importance of native coronary collaterals briefly touched upon by the authors cannot be overstated. Patients with chronic coronary ischemia develop collaterals that can feed myocardium that has lost its direct blood supply through a named vessel. For example, a patent left ITA to the LAD can supply the entire myocardium through collaterals in patients whose native circulation and vein grafts are occluded many years after CABG (Figure 1). This life-saving scenario cannot be feasibly achieved by PCI no matter how perfect the stent patency is because its coronary protection is limited by its finite physical length.

The LAD supplies 50% to 60% of the left ventricular mass and if bypassed by a durable conduit such as LITA a fatal MI becomes less likely, especially if native coronary

collaterals coexists with surgical collateralization. Supplementing the LITA to LAD with additional arterial grafts in patients with multivessel CAD can further diminish the odds of a fatal MI. Radial arteries are better than veins⁴ and the evidence, although not based on RCTs, supports the superiority of a second ITA over vein grafts.

With the excellent safety profile of modern-day CABG and its unparalleled long-term efficacy, it continues to be the gold standard treatment for multivessel CAD. Medical therapy and PCI are important complimentary treatments, but are no match for CABG as standalone therapies in most patients with advanced CAD. This assertion is based on logic, good scientific evidence, and clinical reality.

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