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Commentary: Delayed gratification and optimism bias: Navigating quality and quantity of life with revascularization in patients with ischemic cardiomyopathy

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Revascularization for coronary artery disease arguably is one of the most studied and scrutinized fields in medicine. Percutaneous coronary intervention (PCI) continues to provide the most significant benefit in the setting of acute coronary syndrome, where it is lifesaving. Yet, and despite advances in technology, PCI has failed to match the benefits of coronary artery bypass grafting (CABG) in terms of mortality, need for revascularization, and major adverse cardiac and cerebrovascular events (MACCEs) in stable coronary artery disease. Recent large randomized clinical trials have shown CABG to be superior in the long run in patients with unprotected left main disease and those with more than single-vessel disease, especially in patients with diabetes.¹⁻⁵

However, patients with ischemic cardiomyopathy have been notably absent from these studies, and all trials investigating newer stent technology for that matter. In this edition of the *Journal*, Bianco and colleagues⁶ report a single-institution comparative effectiveness study of PCI and CABG in 2000 patients with reduced ejection fraction <50% (mean 35%). After propensity-score matching, they identified 324 pairs in which they compared the 2 treatment strategies. In this matched cohort, they show a significant disadvantage of PCI over CABG at 3 years of follow-

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CENTRAL MESSAGE

This study corroborates findings of large RCTs, providing further evidence that CABG is superior to a PCI first strategy in a rapidly growing population of patients with ischemic cardiomyopathy.

up for all-cause mortality (37.4% vs 21.3%), ≥ 1 hospital re-admission (24.1% vs 12.9%), MACCEs (41.4% vs 23.8%), and repeat revascularization (6.5% vs 2.6%). In models adjusting for age, race, several comorbidities, and importantly, completeness of revascularization, they also show substantially better freedom from MACCEs, repeat revascularization, and survival with CABG at 1 and 5 years.

These differences between PCI and CABG are not subtle and should give clinicians pause when evaluating patients with ischemic cardiomyopathy. Furthermore, MACCEs all tend to independently increase the risk for a subsequent event of the same category; for that reason and since the authors modeled only the risk to a first event, one must assume that the true effect may be even bigger.

The study has some noteworthy limitations. While propensity-score matching has become enormously popular, its weaknesses and potential for introducing imbalance, inefficiency, model dependence, and bias are also increasingly being recognized.⁷ Yet, the study findings are credible and provide actionable evidence for clinical practice. The results are consistent with the mortality benefit of CABG over medical treatment alone demonstrated in the STICH (Surgical Treatment for Ischemic Heart Failure)⁸ and a recently published study confirming a significant benefit of CABG over PCI.⁹

CABG has consistently been associated with improved survival, fewer myocardial infarction events, and revascularization and, for most patients, an equivalent stroke rate over the long term, compared with PCI. The study by Bianco and

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colleagues provides valuable evidence that benefit may be accentuated in patients with ischemic cardiomyopathy. The benefits of PCI naturally prevail over gained lifetime in frail patients, a limited life expectancy, or otherwise limited goals of care. The more challenging task remains to convey the average long-term benefits of a big surgery to an otherwise functional individual to whom the actual outcome remains unknown. The human tendency to assimilate positive information and rationalize away negative information is well established and plays a vital role in these decision processes.¹⁰ The specific challenge is perhaps best met with a team of multiple specialties providers.

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Commentary: Coronary revascularization in patients with left ventricular systolic dysfunction

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Rosemary F. Kelly, MD

In this issue of the *Journal*, Bianco and colleagues¹ present compelling evidence that coronary artery bypass grafting (CABG) offers improved long-term survival, decreased risk of readmission, increased freedom from combined

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CENTRAL MESSAGE

Use a multidisciplinary approach to choose between coronary artery bypass grafting and percutaneous coronary intervention for coronary artery disease with reduced left ventricular ejection fraction.

major adverse cardiac and cerebrovascular events, and decreased need for revascularization when compared with percutaneous coronary intervention (PCI). The authors are

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