Real-world revascularization therapy in heart failure: It's a jungle out there!

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The ideal clinical trial aims to replicate the variability present in the real world within a prospectively controlled environment. To achieve this goal in interventional trials, multiple clinical sites (eg, academic centers as well as community hospitals) and different operators improve the generalizability of the trial findings. Unfortunately, clinical practice in the real world is often too “messy” (complex) to be replicated even by the best-intentioned trial design, and the findings end up not being relevant enough for the physician in the trenches to change practice. The Surgical Treatment for Ischemic Heart Failure (STICH) Trial addressed revascularization therapy in patients with variable degrees of heart failure.¹ The 5-year follow-up results demonstrated no significant difference between intensive medical therapy alone and medical therapy plus coronary artery bypass grafting (CABG) with respect to the primary end point of death from any cause. Patients assigned to CABG, however, had lower rates of death from cardiovascular causes and the composite of death from any cause or hospitalization for cardiovascular causes. Although CABG technically “won” on secondary outcome measures, the prevailing sentiment in the cardiovascular community was that STICH included a “mixed bag” of patients with heart failure and used a heterogeneous protocol for assessment of myocardial viability. As a result, many cardiologists (and perhaps a few surgeons as well) remain dubious of the long-term benefit of CABG in patients with heart failure, especially older patients.²

In their study reported in this issue of the *Journal*, Iribarne and colleagues³ sought to explore clinical outcomes for CABG and percutaneous coronary intervention (PCI) with heart failure in an observational analysis of the real world of bucolic New England by applying the STICH inclusion and exclusion criteria to their registry population during a 10-year period (2004-2014). Given that the STICH results were published during this time window, the study of Iribarne and colleagues³ may represent practice in a post-STICH climate. Again, CABG came out as the “winner,” this time relative to PCI, on account of improved long-

Central Message

Iribarne and coworkers use STICH inclusion and exclusion criteria and present evidence supporting consideration of CABG versus PCI in patients with multivessel CAD and HF, setting the stage for definitive randomized clinical trials.

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term survival, although with a higher rate of stroke. These findings are similar to what was recently noted for complex multivessel disease in a meta-analysis of randomized trials of CABG versus PCI.⁴ The question is the same as with STICH: Is this new and important piece of evidence going to change revascularization therapy practice for patients with multivessel coronary artery disease and heart failure with reduced ejection fraction? The sophisticated statistical analysis used by Iribarne and colleagues¹ does not allow for control of several key factors used in clinical practice to make practical daily decisions when choosing revascularization therapy, including SYNTAX score, Society of Thoracic Surgeons predicted risk of mortality, frailty, and myocardial viability. Unfortunately for us, none of these were collected in the Northern New England Registry, and their impact could not be analyzed. Furthermore, to be selected as an operator in STICH, surgeons had to provide data on at least 25 patients with an ejection fraction of 40% or less, demonstrating an operative mortality of 5% or less. The study of Iribarne and colleagues³ does not account for operator experience and outcomes for either CABG or PCI in this challenging cohort. It is thus possible that incorporation of this critical STICH variable may have influenced the final outcome of their analysis. There could also be several other unmeasured confounders accounting for selection of one modality of revascularization rather

than the other. Nevertheless, the stage is set for brave jungle explorers to design a definitive randomized, controlled trial!

References

1. Velazquez EJ, Lee KL, Deja MA, Jain A, Sopko G, Marchenko A, et al; STICH Investigators. Coronary-artery bypass surgery in patients with left ventricular dysfunction. *N Engl J Med*. 2011;364:1607-16.
2. McKellar SH, Fang JC. An age-old question. what is too old for coronary artery bypass grafting in heart failure? *Circulation*. 2016;134:1325-7.
3. Iribarne A, DiScipio AW, Leavitt BJ, et al. Comparative effectiveness of coronary artery bypass grafting versus percutaneous coronary intervention in a real-world Surgical Treatment for Ischemic Heart Failure trial population. *J Thorac Cardiovasc Surg*. 2018;156:1410-21.e2.
4. Bhatt DL. CABG the clear choice for patients with diabetes and multivessel disease. *Lancet*. 2018;391:913-4.