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Commentary: Coronary artery bypass grafting in midrange ejection fraction: Charting unknown waters

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Ischemic heart failure with a reduced ejection fraction (HFrEF) is a common but morbid consequence of untreated coronary disease. The definition of HFrEF as those patients with a left ventricular ejection fraction (LVEF) <40% leaves a cohort of patients in whom LVEF exceeds 40% but is lower than the normal value of 55%. Outcomes following surgical coronary revascularization in patients with HFmrEF (HF with mid-range LVEF: 40% to 55%) remain incompletely reported.

How best to characterize patients with HFmrEF remains a point of discussion in the literature. Previous studies have found that HFrEF patients closely resemble patients with heart failure with preserved ejection fraction (HFpEF) in age and comorbidities.¹ Importantly however, HFpEF may represent a distinct entity in which diastolic dysfunction leads to heart failure symptoms.² HFmrEF patients have been shown to have coronary artery disease at a rate more similar to cohorts of HFrEF patients.³ But how do HFmrEF patients compare to patients with severe coronary disease without clinical symptoms of heart failure?

In this issue of the *Journal*, Deo and colleagues⁴ present a retrospective examination of isolated coronary artery bypass grafting (CABG) in this cohort, with outcomes including length of stay, rehospitalization for heart failure and mortality. In their study, patients with HFmrEF more closely resembled patients with HFrEF in both 10-year

CENTRAL MESSAGE

Patients with mid-range ejection fraction (40% to 55%) are understudied. This analysis shows that coronary artery bypass grafting (CABG) surgery in patients with mid-range ejection fraction is associated with higher mortality and readmission risk than CABG in patients with normal ejection fraction.

adjusted mortality (odds ratio [OR], 1.31 for HFmrEF vs 1.46 for HFrEF) and rehospitalization for heart failure (OR, 22.4% vs 30.5%) compared with patients with normal ventricular function.

Importantly, the authors point out that patients with HFmrEF were less likely to be discharged on mainstays of goal-directed medical therapies, including angiotensin- and aldosterone-blocking agents. Although many of the studies that reported efficacy of these agents excluded patients with HFmrEF, the rate of hospital readmission for heart failure after CABG may indicate room for improvement in managing heart failure in these patients.⁵⁻⁷ Further work is needed to better characterize optimal management of patients with HFmrEF.

Another factor relevant to the discussion of CABG patients with HFmrEF is the trajectory of their cardiac function, clinical heart failure, and subsequent need for advanced heart failure therapy, such as cardiac transplantation or implantation of a durable left ventricular assist device. Whether the aforementioned medical therapy can favorably adjust these trajectories remains to be elucidated. Early consultation with an advanced heart

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Disclosures: Dr Kilic reported serving on the Medical Advisory Board for Medtronic. Dr Pope 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 Jan 20, 2021; revisions received Jan 20, 2021; accepted for publication Jan 21, 2021; available ahead of print Jan 21, 2021.

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0022-5223/\$36.00

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<https://doi.org/10.1016/j.jtcvs.2021.01.079>

failure cardiologist may be an important step in improving outcomes in this patient cohort. These benefits may relate not just to active medical management of the patient, but also to the ability to longitudinally follow the patient and assess their need for more advanced therapy.

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