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REPLY: Is Pump the Answer to Heart Failure With Preserved Ejection Fraction?

We thank Drs. Guha and Estep very much for their endorsement of our concept to explore the use of mechanical circulatory support (MCS) as a treatment for heart failure with preserved ejection fraction (HFpEF) (1). As ours is a concept paper, its publication was largely intended to initiate discussions on the multitude of issues that will be encountered during the development of this approach, including issues related to device optimization and patient selection. We agree with Drs. Guha and Estep's suggestion to include objective parameters, such as the degrees of left atrial (LA) dysfunction and pulmonary hypertension, into risk stratification scores to help identify patients with HFpEF who are potentially appropriate for MCS therapy.

Regarding Drs. Guha and Estep's second point, LA enlargement is a hallmark of HFpEF, regardless of etiology, making LA sourcing of blood for MCS as employed by the CircuLite system (HeartWare, Framingham, Massachusetts) a seemingly ideal approach. As they appropriately noted, it is possible that chronic unloading of the LA may result in reverse LA remodeling with reduction of LA size, leading to conditions vulnerable to suction events and thrombus formation. However, LA size reduction was not noted as a significant problem in our experience of using the CircuLite system with properly placed inflow cannula tip for MCS in patients with reduced ejection fraction heart failure (HFrEF) (2). Nevertheless, our ongoing bench and animal studies to improve the system include efforts to further optimize inflow cannula tip design and position to minimize occurrences of LA suction. Incorporation of a suction algorithm will further help mitigate such issues.

As more is known about mechanisms underlying HFpEF in specific subgroups the more likely it will be that efforts to develop medical therapies for HFpEF will be successful. However, as for HFrEF, it is also likely that medical therapies will delay, not prevent disease progression or cure the disease. For those patients, we believe the development of an MCS option may prove beneficial. We hope that in addition to Drs. Guha and Estep, others will join the discussion early and help in this effort so that we can arrive at a solution in a timely manner.

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