cardiopulmonary bypass and cardioplegic arrest with an open left atrium.

It is clear that surgical ablation of lone atrial fibrillation can help many patients, and the minimally invasive approach seems to be attractive. But of course, most important are the results and patient safety. If we achieve excellent results, much better than catheter ablation results with uneventful and safe surgery, we will have a lot of referrals for surgery and help many patients.

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Commentary: What is the measure of success for atrial fibrillation ablation? Is a reduction in arrhythmia burden sufficient?

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In this issue of the *Journal*, Li and colleagues¹ follow a small cohort of patients with paroxysmal atrial fibrillation (PAF) and previous cerebrovascular or peripheral thromboembolism, without previous intervention, who underwent stand-alone thoracoscopic pulmonary vein isolation and left atrial appendage excision. They compared these patients with a smaller group who opted for medical management. After controlling for CHA₂DS₂-VASC score (ie,

Sisyphus: Is success how often he makes it to the top or how far he climbs each time?

CENTRAL MESSAGE

The way we monitor for atrial fibrillation is changing to intermittent rhythm strips, which will yield determinations of burden. Physicians will need to determine new definitions of success.

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congestive heart failure; hypertension; age ≥ 75 years; diabetes mellitus, stroke, or transient ischemic attack; vascular disease; age 65-74 years; sex category), the authors found that pulmonary vein isolation delayed progression of PAF.

This study has serious limitations, hindering applicability. The control group comprised patients who refused surgery and therefore were not equivalent controls. The study group did not meet indications for stand-alone ablation, as they were not refractory to drug therapy and had not failed catheter ablation.² Because few surgeons would perform stand-alone ablation on these patients, study applicability is questionable. The authors justified operating by

stating that the patients had high HAS-BLED scores and would be at risk from anticoagulation on medical therapy. There are problems with this justification. First, balancing stroke against bleeding, patients with greater HAS-BLED scores still derive net benefit from anticoagulation.^{3,4} Second, patients with high CHA₂DS₂-VASc scores and previous stroke should be anticoagulated for life.^{5,6} Finally, decisions regarding anticoagulation should be based on patient's stroke risk, not success or failure of ablation.⁵

Despite these shortcomings, there are some intriguing lessons here. The authors used a success end point of delay in the progression of PAF. Although there is now a catheter ablation study looking at delay in progression of PAF,⁷ this end point is extremely uncommon in surgical literature and not accepted by the current consensus statements as valid. Our first reaction would be to reject this as an objective of surgical ablation. However, we know from longitudinal studies⁸ that "success" by the Consensus Statement definition² diminishes over time. Further, we know that success defined as "less than 30-seconds of continuous AF, atrial flutter, or atrial tachycardia" is arbitrary and impractical. Already there are calls to change the way we quantify atrial fibrillation.⁹ Sophisticated methodologies have been developed to quantify atrial fibrillation burden from daily rhythm strips.¹⁰

More importantly, the way we assess rhythm is changing and being driven more by industry (direct-to-consumer products)¹¹ and patient choice than by societal guidelines. Wearable health monitoring technology is being developed¹² and adopted in an exponential fashion.¹³ Patients can now easily and economically record intermittent rhythm strips.¹⁴⁻¹⁷ Electrophysiologists are struggling to deal with the volume of patient-generated data.¹⁸ Not only is wearable technology available, but intermittent rhythm assessment can be acquired more economically than continuous monitoring. Undoubtedly, the way we judge outcomes will change. However, it is critically important that our professional societies develop new universally accepted measures of success to compare different ablation strategies. This is a clarion call to develop a new consensus and a broader set of ablation end points. Will we adopt a definition of success for which the only end point is complete elimination of the arrhythmia? Or will we be like Sisyphus, settling for getting closer each time but resigned to not always reaching the plateau of arrhythmia elimination?

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