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Commentary: Concomitant atrial fibrillation ablation: The juice is worth the squeeze

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In this issue of the *Journal*, Bakir and colleagues¹ present a propensity-matched analysis of patients with versus those without concomitant Cox-Maze IV (CMP-IV) ablation for atrial fibrillation (AF). Their primary outcomes of interest were acute kidney injury (AKI) and renal failure. In a well-balanced cohort with 308 patients in each group, the authors demonstrate a higher incidence of AKI (32% vs 16%; $P < .001$) based on The Kidney Disease Improving Global Outcomes (KDIGO) classification. After further risk adjustment with regression modeling to adjust for operation and cross-clamp time, CMP-IV was still independently associated with AKI (odds ratio, 1.89; $P = .017$). The authors go on to demonstrate that patients with perioperative AKI have worse medium-term survival ($P < .001$), at a median follow-up of 3 years. However, this effect was overcome by the survival benefit of CMP-IV ($P = .001$) in this cohort of patients with preoperative AF.

This work builds on previous research from this well-known group at Washington University exploring the incremental risk of concomitant CMP-IV for patients undergoing cardiac surgery with preoperative AF. Their 2013 study demonstrated no increased operative mortality despite longer cross-clamp times.² Rankin and colleagues³ took this one step further, using the Society of Thoracic Surgeons (STS) National Adult Cardiac Surgery Database and reporting reduced risk-adjusted operative mortality

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CENTRAL MESSAGE

Concomitant Cox-Maze IV ablation is associated with increased acute kidney injury but superior long-term survival in patients with preoperative atrial fibrillation undergoing cardiac surgery.

with concomitant AF ablation during mitral valve surgery.³

Several retrospective studies have examined the issue of increased morbidity associated with additional procedures, but this study provides valuable information on renal-related complications. It is believed that renal injury is related to the increased cross-clamp and cardiopulmonary bypass times, but an independent association between CMP-IV and AKI remains even after adjusting for these factors in regression modeling on the matched data. The authors suggest ablation-induced cardiac necrosis and release of inflammatory mediators or cytokines as areas of future research into the mechanism of AKI with CMP-IV.

Another important finding of this study paper is that 57% of patients with preoperative AF did not undergo concomitant AF ablation. The 2017 STS clinical practice guidelines recommend concomitant AF ablation during mitral valve surgery, with the strongest level of evidence (level 1A) based on randomized controlled data from the Cardiothoracic Surgical Trials Network study demonstrating a survival benefit.^{4,5} Although the present study included patients undergoing all types of cardiac surgery with dates spanning 2008 to 2018, the rate of 57% is lower than expected from a high-quality center of excellence for AF ablation. Previous work by our group has demonstrated wide variability in the rate of concomitant AF ablation during mitral valve surgery in a contemporary statewide cohort despite STS guidelines.⁶ The present study provides

important data to support the long-term benefit despite a small increased short-term risk associated with the additional procedure.

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