The importance of atrial fibrillation at the time of coronary artery bypass grafting: Join in the chorus

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In this issue of the *Journal*, Saxena and colleagues¹ apply the cumulative influence of a 12-paper meta-analysis to further illustrate the importance of preoperative atrial fibrillation (AF) on mortality after coronary artery bypass grafting (CABG). Preoperative AF in patients undergoing CABG was associated with increased major morbidity, such as stroke and renal failure, as well as an increased risk of early and late mortality (odds ratio, 1.64, and hazard ratio [HR], 1.74, respectively). These increased rates of AF-associated mortality and complications were similar irrespective of on-pump or off-pump revascularization.

Among all patients currently presenting with AF at the time of cardiac surgery, only 33% receive concomitant surgical ablation (SA) at the time of CABG.² This represents the largest cohort of patients with AF yet the lowest SA rate of all concomitant operations. It is now recognized that the performance of concomitant SA is not only safe and without increased operative risk, it is protective of risk-adjusted mortality at 30 days² and at 1 year.³ Regarding the growing importance of addressing AF at the time of CABG, this elegant meta-analysis on the impact of preoperative AF from our Australian colleagues¹ provides this concept with an exclamation mark.

As with all meta-analyses, the results of the current study¹ are dependent on the adequacy of risk adjustment, data acquisition, and completeness of the primary studies. Several of the studies assessed were performed with decade-old data, when statistical models and risk adjustment may not have been as fully developed. Nevertheless, the 2009 study⁴ that provided 72% of the sample size of this meta-analysis had a clear AF-associated risk-adjusted mortality odds ratio of 1.3. This was similar to the separate risk model analysis by Shahian and colleagues⁵ that identified a risk-adjusted 30-day mortality HR of 1.28, and a late HR of 1.40 was associated with preoperative AF. It is becoming clear from multiple sources that preoperative AF is a significant early and late risk factor for CABG mortality.

Surgical ablation of AF at the time of CABG reduces 1-year risk-adjusted mortality.

Central Message

Atrial fibrillation at the time of CABG is associated with increased 30-day and 1-year mortality. The performance of concomitant surgical ablation can reduce mortality and should be considered.

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Yet in daily clinical practice, the question remains—does the addition of SA at the time of CABG alter outcomes? In a mixed study using propensity matching for risk adjustment that contained 255 patients with isolated CABG, conversion to sinus rhythm after SA was found to improve late survival.⁶ In a more recent Cox-proportional hazard analysis of 3745 Medicare beneficiaries with AF who underwent CABG, patients receiving SA experienced improved late survival with a 42% risk-adjusted mortality reduction at 1 year (Figure 1).³ In the studies described, it is likely that

FIGURE 1. Unadjusted mortality over 1 year for Medicare recipients with atrial fibrillation having CABG with or without surgical ablation. Risk-adjusted mortality was reduced by 42% at 1 year ($P = .03$). CABG, Coronary artery bypass grafting. Adapted from Rankin and colleagues.³

most patients with CABG received only pulmonary isolation. As knowledge grows regarding the effective matching of lesion set to atrial pathoetiology and AF mechanism, it is plausible that results may improve even further.

Our Sydney and Melbourne colleagues “join the chorus” against ignoring AF (also the fight song of the North Melbourne Football Club), illustrating that AF is not an innocuous problem but associated with significant increases in early and late mortality. As the drum beat on the importance of AF on CABG outcomes grows louder, so should the thoughtful expansion of concomitant SA as an essential area for quality improvement.

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