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OUTCOME BENEFITS AFTER CORONARY ARTERY BYPASS GRAFT IN LOW- VERSUS HIGH-VOLUME CENTERS: IS IT ALL ABOUT THE SURGERY?

To the Editor:

We have read with great interest the recently published study by Kim and colleagues.¹ They show that in-hospital adverse events and all-cause mortality after coronary artery bypass graft (CABG) surgery have decreased over the years. In a multivariate logistic regression analysis, however, low hospital volume of CABG surgery was an independent predictor of in-hospital all-cause mortality (adjusted odds ratio, 1.39; 95% confidence interval, 1.24-1.56; $P < .001$), as compared with the outcome in high-volume centers. A detailed examination of the postoperative complications among elective referrals, respiratory failure ($P < .001$), postoperative bleeding ($P < .001$), and acute renal failure ($P = .02$) showed significantly higher rates in low-volume centers than in high-volume centers. As a consequence, the authors advocate more intensive assessments of the quality of surgical care in low-volume institutions.

In our view, this claim focuses on only part of the problem and its remedy. Besides the importance of the surgeon and his performance, other aspects such as preoperative assessment and scheduling, intraoperative management by the theatre team (eg, surgeon, nurses, perfusionist, anesthesiologist), and especially a sound postoperative treatment in the intensive care unit (ICU) are also important. Moreover, early recognition, prevention strategies, and troubleshooting capabilities in postoperative care most likely complete the bundle of high-class health care. To focus only on the experience of the surgeon in the low-volume centers might be an unjustified simplification of a multidisciplinary complex procedure.

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Indeed, this notion is undermined by a multitude of publications. In a systematic review and meta-analysis, for example, Nguyen and colleagues² showed that critically ill patients after surgery for cardiovascular conditions benefit from care in high-volume centers. Sasabuchi and colleagues³ reported that a higher hospital volume of ICU patients and a higher ICU-to-hospital bed ratio were independently associated with lower mortality. In another study dealing only with a cardiac surgery population, Kogan and colleagues⁴ found a significant reduction of morbidity and mortality after implementation of quality-improving tools such as multidisciplinary ICU rounds, a glucose control protocol, sepsis treatment protocols, a ventilator bundle, early nutritional support, and so forth. Failure to properly react to problems was addressed in a retrospective study that included 119,434 patients who underwent high-risk cardiac surgery. The higher the volume of patients passing through the hospital, the less frequently failure to rescue occurred; a finding that directly translated into improved survival in high-volume centers despite the complication rates not correlating with the volume of patients.⁵

Thus, results after CABG must not solely be defined by the preoperative risk factors, the surgeon's performance, or the volume of the institutions; the ICU volume of a given center and the standard of care provided throughout the perioperative flow by the multiprofessional team must also be considered.

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