Survivor Selection after CABG: Why Early Events Still Matter in Five-Year Mortality Estimates

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Dear Editor,

I reviewed with great interest the article titled "Five-Year Mortality among Survivors of Coronary Artery Bypass Graft Surgery: A Retrospective Study from a Tertiary Center," authored by Moreira et al.[1] The authors should be commended for addressing a clinically relevant question by reporting five-year all-cause and cause-specific mortality among patients discharged after coronary artery bypass grafting (CABG). The linkage of institutional clinical data with governmental mortality records and the simultaneous evaluation of clinical, echocardiographic, and procedural factors provide a useful framework for interpreting long-term risk after surgical revascularization. The reported five-year all-cause mortality of 12.9% and cardiovascular mortality of 5.7% are therefore valuable for post-discharge risk stratification and follow-up planning.[1]

However, I believe that one point deserves particular emphasis: the denominator in this study is not all patients undergoing CABG, but those who survived the index hospitalization. In daily clinical practice, when cardiologists and surgeons discuss the prognosis of CABG with patients and families, the early postoperative period is inseparable from the long-term outcome. Therefore, the reported mortality rates should be interpreted as five-year post-discharge mortality among CABG survivors, rather than overall five-year mortality after CABG. This distinction is not a limitation by itself, but it changes the clinical meaning of the result. Once in-hospital deaths are excluded, the remaining cohort inevitably represents a selected population that has already survived the first major physiological and surgical stress.

This issue becomes more relevant when the characteristics of excluded patients are considered. In the article, the included population was younger, had a lower prevalence of chronic kidney disease, and had a higher left ventricular ejection fraction than excluded patients.[1] These differences suggest that the analyzed cohort may represent a relatively lower-risk subgroup of the original CABG population. In this context, additional sensitivity analyses or a separate description of early mortality could help clinicians understand how much of the total CABG risk is hidden before discharge.

Another important point is the interpretation of surgical strategy. The authors reported that on-pump surgery was associated with lower all-cause mortality, although this association was borderline and was not similarly observed for cardiovascular death.[1] In real-world CABG practice, the decision to perform on-pump or off-pump surgery is rarely random. It may be influenced by coronary anatomy, aortic calcification, hemodynamic status, frailty, target vessel quality, completeness of revascularization, technical complexity, and surgeon preference. This creates a classic risk of confounding by indication in observational studies.[2] Randomized evidence also remains nuanced: the CORONARY trial showed no significant difference in major five-year outcomes between off-pump and on-pump CABG, whereas ROOBY-FS reported lower five-year survival and event-free survival after off-pump CABG.[3,4] Therefore, the present finding should be interpreted as hypothesis-generating rather than as evidence favoring one surgical technique.[5]

Finally, postoperative length of stay was independently associated with mortality. This is clinically meaningful, but it should probably be viewed as more than a simple prognostic variable. In practice, prolonged hospitalization after CABG often reflects postoperative complications, acute kidney injury, bleeding, infection, atrial fibrillation, respiratory problems, frailty, or delayed recovery. Therefore, length of stay may function as a surrogate marker of early postoperative morbidity rather than a baseline determinant of long-term risk. Future analyses incorporating postoperative complications or landmark approaches may better clarify this relationship.

In conclusion, Moreira et al.[1] should be congratulated for providing valuable long-term data after CABG. Their findings reinforce the importance of structured follow-up in patients with diabetes, renal dysfunction, impaired ventricular function, and prolonged hospitalization. At the same time, careful interpretation of survivor selection, early postoperative events, and residual procedural confounding is essential when translating these results into clinical practice.

Keywords

Coronary Artery Bypass; Mortality; Postoperative Complications

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Reply

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Dear Editor,

I thank the authors of the letter for their thoughtful remarks and for raising points that genuinely improve the interpretation of our findings.

I fully agree that our results should be read as post-discharge mortality among CABG survivors, not overall mortality after CABG. This is not merely a semantic distinction: as the authors note, the excluded population differed meaningfully from the analyzed cohort, and our study was not designed to quantify what happens between surgery and discharge. We agree that a separate description of in-hospital and early mortality, ideally with sensitivity analyses comparing included and excluded patients, would help clinicians gauge how much risk is concentrated in that early window. We see this as a natural next step rather than a flaw to be defended, and we hope future work — ours or others' — takes it on.

Practically, this means our data should not be used to weigh the decision to operate, but rather to guide management after the patient has already survived surgery. Framed this way, surgical revascularization concentrates its risk at the time of the procedure while its benefit accrues over subsequent years. We use the term "survivor" here strictly in its epidemiological sense — denoting a post-event cohort — rather than as any commentary on the surgery itself, which remains, for most patients, a highly effective and life-prolonging intervention. Our study speaks only to identifying which survivors remain at higher risk and may warrant more intensive medical therapy.

We also agree that the factors associated with mortality in our analysis — on- versus off-pump surgery, length of stay, and grafting selection — are hypothesis-generating and should not be read as causal. The more conservative interpretation, that they function as markers of poorer underlying health or a more complicated postoperative course, is warranted, and is most clearly the case for length of stay. On/off-pump status and grafting selection, in particular, are prone to confounding by indication, as these choices are themselves shaped by coronary anatomy, hemodynamic status, and surgeon judgment rather than assigned at random. Indeed, some of these markers have no direct analogue in the general CAD population, since they only arise as a consequence of having undergone surgery — as such, they may capture a distinct dimension of risk, tied to frailty and postoperative course rather than the classic atherosclerotic factors used to stratify CAD at large. Even so, a marker need not be causal to be clinically useful, much as C-reactive protein remains informative for cardiovascular risk despite not being a proven cause of atherosclerosis.[1]

We thank the authors again for a careful and constructive reading of our work.

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