



Letter to the Editor

Comments on “The Impact of Mean Arterial Pressure during Cardiopulmonary Bypass on Postoperative Outcomes in Coronary Artery Bypass Graft Surgery”

Dear Editor,

We read with interest the article “The Impact of Mean Arterial Pressure during Cardiopulmonary Bypass on Postoperative Outcomes in Coronary Artery Bypass Graft Surgery” recently published in the Journal of Tehran University Heart Centre by Shamsi et al.¹ This study raises an important clinical issue by detailing the effects of mean arterial pressure (MAP) on outcomes after coronary artery bypass graft surgery.

The article shows that 2 groups with different intraoperative MAP levels were compared in terms of several laboratory parameters and cerebral oximetry values. The methodological approach of the study and the data collection techniques used provide important information for understanding the relationship between MAP and postoperative outcomes. However, in addition to the recording and statistical analysis of preoperative and postoperative cerebral oximetry values, we believe that intraoperative cerebral oximetry data should also be evaluated comprehensively.

It should be noted that intraoperative MAP target values may change for reasons such as inotropic support after cardiopulmonary bypass, which may affect postoperative cerebral oximetry values. These variables may not fully reflect the effects of cerebral oximetry monitoring during the intraoperative period. Therefore, monitoring cerebral oximetry data at specific intraoperative intervals may provide a more comprehensive interpretation of the findings and increase the validity of the results.

We appreciate the authors’ efforts to contribute to the scientific community. We believe that addressing these concerns will further strengthen the impact and clinical relevance of the study. A detailed examination of cerebral oximetry data throughout the intraoperative period may help us to better understand the effects of MAP on postoperative outcomes and provide valuable information for future studies.

We appreciate your contributions and attention to this

topic. We believe that your work will further enrich the existing literature on this important topic and contribute to the advancement of the field.

Yours truly,

References

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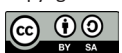
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Comments on “The Impact of Mean Arterial Pressure during Cardiopulmonary Bypass on Postoperative Outcomes in Coronary Artery Bypass Graft Surgery”: A Reply



Dear Editor,

We wish to extend our sincere gratitude to Dr GÜNER for his interest in our study and his meticulous and constructive critique. Indeed, his insights provide a great opportunity for deeper reflection and discussion on the complex relationship between mean arterial pressure (MAP) during cardiopulmonary bypass (CPB) and postoperative outcomes in patients undergoing coronary artery bypass graft (CABG) surgery.

Cerebral Oximetry Monitoring

Intraoperative cerebral oximetry monitoring is associated with patient outcomes. Our study focused on preoperative and postoperative cerebral oximetry values, which directly reflect the patient's overall neurological status pre- and postoperatively. Through this approach, we concentrated on the broader impact of mean arterial pressure (MAP) on long-term neurological outcomes and recovery, rather than intraoperative fluctuations.¹

The commentary correctly notes that intraoperative monitoring at multiple intervals could furnish more continuous data, potentially enabling real-time correlations between changes in MAP and cerebral oxygenation. While agreeing with this perspective, we need to underscore the rationale underpinning our selection of endpoints.²

Intraoperative cerebral oximetry readings are liable to significant variability due to such factors as fluctuations in anesthetic depth, perfusionist interventions, surgical maneuvers, and vasopressor or inotropic agent administration. These factors may considerably complicate efforts to correlate individual oximetry readings with long-term neurological outcomes directly.³

We acknowledge the significance of continuous intraoperative monitoring in providing a more in-depth understanding of cerebral perfusion during CPB. A considerable body of research has indicated that real-time cerebral oximetry monitoring can be beneficial in detecting episodes of cerebral hypoperfusion, which may not always result in postoperative neurological deficits but could still contribute to subclinical brain injury. We believe that future research could benefit from delving deeper into these intraoperative dynamics, particularly through the utilization of advanced monitoring technologies that can provide continuous, high-resolution data on cerebral oxygenation.⁴

The Influence of MAP on Postoperative Outcomes

The commentary raises another valid point regarding the potential variability in MAP due to the use of inotropic support and other factors during CPB. We acknowledge that intraoperative MAP management is highly dynamic and subject to various clinical factors, such as the patient's baseline cardiovascular status, surgical technique, and administration

of pharmacological agents like vasopressors and inotropes. This variability poses challenges in interpreting MAP as an independent predictor of outcomes.⁴

In our study, we sought to assess the impact of MAP on postoperative outcomes, while considering the possible occurrence of fluctuations. Inotropes and other agents may beget short-term MAP variations during CPB; nonetheless, our analysis aimed to capture the broader trends in MAP management and their association with outcomes such as neurological function, renal function, and mortality. Our rationale for focusing on the average MAP during CPB, rather than moment-to-moment variations, hinged on the assumption that long-term outcomes are more affected by sustained periods of hypotension or hypertension than by transient fluctuations.³

Another crucial aspect to consider is the individualized MAP targets in clinical practice. The optimal MAP during CPB may differ based on the patient's comorbidities, baseline blood pressure, and other physiological factors. Future research could explore the concept of personalized MAP targets during CPB, accounting for each patient's unique characteristics and their influence on postoperative outcomes.¹

Methodological Considerations

The commentary expresses concerns regarding the robustness of our study design, specifically concerning the control groups and the generalizability of our findings. We acknowledge that the intricate nature of CPB and its associated hemodynamic management presents challenges in establishing an optimally controlled environment for investigating the effects of MAP.² We, nevertheless, took several steps to minimize potential confounding factors, including adjusting for baseline patient characteristics and comorbidities in our statistical analysis. Regarding the generalizability of our findings, it is worthy of note that our study focused on a specific patient population undergoing elective CABG surgery. While our results provide valuable insights into the association between MAP and postoperative outcomes in this context, we recognize that further research is warranted to validate these findings in other surgical populations, such as patients undergoing more complex procedures or those with a higher burden of comorbidities. Additionally, we encourage future studies to explore the impact of MAP management across a broader range of settings, including emergency surgeries and high-risk patients.³

Conclusion

In conclusion, we would like to thank Dr GÜNER for his valuable and constructive feedback. His insights have highlighted several crucial areas for future research,



particularly the role of intraoperative cerebral oximetry monitoring and individualized MAP management during CPB. We are confident that these discussions will further our understanding of the complex relationship between hemodynamic management and postoperative outcomes in cardiac surgery.

As with any study, our findings constitute a progression in a field in flux, and we appreciate the opportunity for continued research and collaboration. We trust that our response elucidates the reasoning behind our study design and the interpretation of our results while also recognizing the limitations and avenues for future exploration highlighted by the commentary.

Yours truly,

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