

# Response to Letter to the Editor: “Impact of preoperative troponin levels on cardiac function following coronary surgery for myocardial infarction”

Nicholas Hess<sup>1</sup> and Arman Kilic<sup>2</sup>

<sup>1</sup>University of Pittsburgh Medical Center

<sup>2</sup>Medical University of South Carolina

May 3, 2021

## **Response to Letter to the Editor: “Impact of preoperative troponin levels on cardiac function following coronary surgery for myocardial infarction”**

Nicholas Hess MD<sup>1</sup>, Arman Kilic MD<sup>2</sup>

<sup>1</sup>*Division of Cardiac Surgery, University of Pittsburgh Medical Center, Pittsburgh, PA*

<sup>2</sup>*Division of Cardiothoracic Surgery, Medical University of South Carolina, Charleston, SC*

**Running Title:** Preoperative Troponin Before CABG

**Word Count:** 498

### **Correspondence and Reprint Requests :**

Arman Kilic, MD

Division of Cardiothoracic Surgery

Medical University of South Carolina

30 Courtenay Drive, MSC 295, Suite BM279

Charleston, SC 29425

Email: [kilica@musc.edu](mailto:kilica@musc.edu)

Tel: 843-876-4841

Fax: 843-876-4866

We appreciate the thoughtful concerns and comments from Miyauchi and colleagues to our manuscript titled “Impact of preoperative troponin levels on cardiac function following coronary surgery for myocardial infarction”.<sup>1</sup> Their commentary has highlighted important limitations to our study that must be considered, as well as the scope of which this study’s results must be contextualized.

A key concern to this study made by Miyauchi *et al* is the definition assigned to “peak” troponin concentrations. As stated, patients presenting with acute coronary syndrome often have few troponin levels drawn prior to intervention. As such, the true troponinemia curve, along with true troponin peak may not be captured. This study analyzed pre-intervention troponin levels using the highest serum levels recorded, which may not be representative of the “true peak” levels - a limitation we have mentioned in our manuscript. Therefore, this study’s findings must be placed within the context of usual patient care, which is, the highest

troponin concentration collected prior to surgical revascularization is largely unpredictable of short and long-term outcomes. In order to definitively assess the impacts of troponinemia upon postoperative outcomes, a protocolized method of collecting serial troponin levels must be instituted in order to capture the “true peak” on these patients. While such methods may best assess these associations, they may also result in unwanted disruptions in the usual conduct of patient care and introduce delays in revascularization.

Another valid concern of the authors is the exclusion of patients without troponin elevation, which may dilute the implications of troponin elevation. The presence of troponin elevation prior to coronary revascularization, both percutaneous intervention and coronary artery grafting, has been previously shown to be related to worse outcomes in comparison to those without troponinemia.<sup>2-7</sup> As this relationship has been well established, we were largely interested in evaluating the significance of the degree of troponin elevation among those with pre-revascularization troponinemia. The authors have also mentioned the importance of consideration of timing between onset of acute coronary syndrome and surgical revascularization when evaluating outcomes. Our models, both for postoperative mortality and major adverse cerebrovascular and cardiovascular events (MACCE), were adjusted for the peak troponin to surgical revascularization time interval.

Lastly, agree that long-term survival and MACCE are meaningful and often-studied outcomes, but they do not tell the whole story. Long-term echocardiographic data, as well as long-term heart failure readmission and/or need for advanced heart failure therapies would be very important to fully assess the long-term effects of troponin elevations.

### Disclosures and Conflicts of Interest

Arman Kilic, MD is on the medical advisory board for Medtronic, Inc. This affiliation is not in conflict with the contents of this letter

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