Reviewer's report

Title: Myocardial topical negative pressure of -25 mmHg increases myocardial microvascular blood flow

Version: 1 Date: 6 November 2007

Reviewer: Ghassan S Kassab

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The objective of this study is to demonstrate that topical pressure at the epicardial surface increases blood flow in normal and ischemic myocardium. Despite the significance of this study, it is unclear how this study is different than a recent study by the same group (Ann Thorac Surg. 2007; 84: 568-573). To my impression, the only difference is the use of a lower suction pressure (-25 mmHg). The contribution of this study must be highlighted to increase the impact of the present paper. A number of specific comments are outlined below:

1. What is the rationale for the various suction pressures.

2. What is the optimal suction pressure? This should be determined in this study. Otherwise, the contribution here seems rather incremental.

3. Pg. 11, Some explanation of why -150 mmHg does not increase but decreases coronary flow is warranted.

4. Pg. 12, How does TNP produce a mechanical shear stress. Please elaborate and justify.

5. What is a potential mechanism for the observed efficacy with suction.

6. Pg. 12, The concluding remarks make a leap regarding the translation of the results. How would this be applied in patients?

7. There are numerous grammatical and editorial errors.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions