Reviewer’s report

Title: Predictors and prevention of flow insufficiency due to limited flow demand

Version: 1
Date: 19 August 2014

Reviewer: Soichiro Kitamura

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Major Compulsory Revisions

The reviewer admits that this surgical research is trying to clarify the important points in order to understand the causes of graft failure; however, I believe that there are many more plausible descriptions and some analysis required.

1) Is there any scientific reason why FI is defined as 20 ml/min or less in this study without any consideration of flow patterns? If FI is defined as 10-15 ml/min, the predictive value will certainly increase and many surgeons admit a flow of 20 ml/min with a good phasic flow pattern in off-pump CABG.

2) There are no corrections for physiologic conditions at the time of flow measurements, for example heart rates, use of catecholamine and/or on pacing. Any reasons for not correcting flow volume by heart rates and others?

3) Any criteria for technical revision when flow is lower than your present criteria (<20 ml/min)?

4) Why was the MLD different for the LAD, LCX or RCA for each or the same graft material? How was the MLD measured? ; not described in the section of the method. In your theory, the SVG would be the best graft for any coronary arteries because there was no significant cut-off MLD for SVG. Is this all right with your research results?

5) What are the causes of IF except competitive flow (sufficient native coronary flow) in the situation that original coronary artery exists and is patent? Essentially graft failure occurs in the graft not required to meet the demand of the pertinent myocardial area, in this sense, competitive flow and insufficient demand are basically based on the same physiologic factor for arterial graft. What would you think? In the area of myocardial sear, the coronary artery supplying in the area is usually thin with a MLD of less than the cut-off values you described in this study, but graft failure may often ensue for such small coronary arteries, particularly with a SVG. What would you think?

6) In the section of “Results”, the most important messages, but it is very difficult or almost unable to understand the contents in Tables 3 and 4. The author should use the graphic presentations to make the readers understand better your
message instead of showing us very complicated tables.

7) On page 9, paragraph 2
Regarding conduit choice, Glineur and colleagues (19) only discussed the bypass graft to the RCA in the setting of SVG vs GEA. In general, the message cannot be extended to the left coronary artery system.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**
I declare that I have no competing interests