Author's response to reviews

Title: Extension of the right internal thoracic artery with the radial artery in extensive re-do coronary artery bypass grafting

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Rebuttal Letter

We thank the reviewers for their valuable contribution and we hope to answer in the following all points in accordance.

Response to Referee 2; Toshihiro Fukui

Question 1: Please define clearly the indications for this method in the Methods section. How many re-do patients did the authors treat during the same time period? Of those, what led them to use this method? How about other patients?

Answer to Question 1: We used this method in selected patients only. They were only found suitable for this operation if they had no pathologies in their radial artery in Doppler diagnostics. Approximately 5 percent of the CABG operations performed between 2005 and 2011 (in total 6025) were re-do operations and only a minority received the approach using the extended RITA. In the other cases we used either venous bypass grafts and or, if feasible, LITA or RITA grafts.

Question 2: The number of anastomosed vessels is listed in Table 2 but the details of anastomosed vessels should be described in the same table.

Answer to Question 2: We included a table indicating all performed anastomoses.

Question 3: Were LITAs in all patients used in previous procedures? Were all of them patent at the latest procedure? The information of previous procedures should also be described in the Methods section.

Answer to Question 3. The LITA was not used in all patients previously. In fact, 2 patients had received pervious venous bypass grafts only. However, in those patients, the LAD did not have a significant stenosis, therefore the approach using the extended RITA was chosen. The LITA-LAD graft was patent in most of the patients. However, in 6 patients, this bypass was impaired and therefore we used the extended RITA as bypass material. However, in general or approach was used in patients with open LITA grafts.

Question 4. Figures 2 and 3 are not in the manuscript even though the authors commented on them in the Results section.

Answer to Question 4: We apologize for this mistake, the text was changed accordingly.

Question 5. A representative postoperative angiogram would be valuable.

Answer to Question 5: We did not perform a routine postoperative coronary angiogram. However, we would like to refer to the published case report by Ismail et al which includes a postoperative computed tomography showing a patent bypass graft. We admit that the lack of postoperative coronary angiogram is a drawback for our study; however the usual care for patients receiving CABG does not include a
postoperative control. We included picture of an unplanned postoperative CA in one patient with postoperative slightly elevated cardiac enzymes.

**Question 6.** During follow-up, two patients had angina class 3–4. Did they receive further medication or percutaneous coronary intervention?

**Answer to Question 6:** We included a short segment in the text.

**Question 7.** A possible weak point of this composite and sequential graft is that flow is dependent on one in situ RITA. The authors should discuss this drawback.

**Answer to 7 Question 7:** We added a passage in the discussion and that the reviewer for this valuable contribution

Response to Referee 2; Di Bartolomeo:

The introduction should improved informing the readers from the beginning that this technique require a patent left internal mammary artery (LIMA) on left anterior descending (LAD), in fact it's not mentioned in all the manuscript except than in the conclusion.

*We thank the reviewer for mentioning this. In fact, this technique is mainly implemented in patients with an open LITA-LAD graft. However, the LITA was not used in all patients previously. In fact, 2 patients had received pervious venous bypass grafts only. However, those patients, the LAD did not have a significant stenosis therefore the approach using the extended RITA was chosen. The LITA-LAD graft was patent in most of the patients. In 5 patients, this bypass was impaired and therefore we used the extended RITA as bypass material. However, in general or approach was used in patients with open LITA grafts.*

Moreover they mentioned in the methods that with this technique is possible to reach all three major vessels, but is not clear what they mean with “three vessels” considering that in the abstract's conclusion all patients had a patent LIMA on LAD.

*We included a table (Table 3) where we gave detailed information about the anastomosed vessels.*

Data presentation is controversial and need to be revised: there are conflictual results about the number of the off pump cases, cardiopulmonary bypass cases, fibrillating heart, and clamped aorta.

*We thank the valued reviewer for this. We apologize for the mistakes; we revised the text accordingly with the exact numbers.*

The discussion is poor, there are no report of other centres experience with different techniques for redo in coronary bypass with their statistics reports, with few references that need to be increased. Moreover the first part of the discussion may be included in the results.
We improved our discussion and added results from other centres with their experience in re-do cases.