Author's response to reviews

Title: Myocardial Revascularization using on-pump Beating Heart among patients with Left Ventricular Dysfunction

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Author's response to reviews: see over
Dear Sir,

Thank you for your recent e-mail. All points mentioned by the reviewers were taken into consideration and some points were changed accordingly. We hope that you will find the changes and comments appropriately. I would like to thank you for your time and effort. Looking so forward to hear from you.

Best Regards,

Ahmad Darwazah PhD, FRCS(Ed)

Reviewer: Omar Lattouf

A1) Instead of the word (significantly higher) it was changed to significantly more.

A2) The word (pump) was added after different.

There are different pump techniques used during myocardial revascularization (CONCAB, OPCAB, ONCAB/BH). Each technique can be used for different situation and for different patient. We do not have a single best method which can be used for all patients.

A3) A reference was added to the text.

A4) The present retrospective study did not include patients who were converted from OPCAB to ONCAB/BH. The selection of either technique was based intraoperatively by looking at target vessels and hemodynamic status. Any patient who was planned to have OPCAB and converted to ONCAB/BH was excluded.

A5) A sentence was added (without hemodynamic deterioration) ,,,,,,,,,after manipulation of the heart.
A6) Standard aortic and single dual stage venous cannulation ............ Changed to Standard cannulation of the aorta and right atrium.

A7) Partial occluding clamp was applied

A8) Foot was deleted

A9) Starfish

A10) Ejection fraction varies from 10-35................. it was changed from 10-34 (as all patients EF was below 35).

A11) Total morbidity.................... it was changed to (Total major morbidity)

It includes Myocardial infarction, resp failure, renal failure, CVA, mediastinitis, use of multiple antiarrythmic medication, complication related to IABP, and the use of multiple inotropic support

A12) Yes I agree 100%.

Ventricular arrhythmias was put with the incidence of blood loss as both had a significant between the two groups.

Giving blood or its products is a morbid event. But in the total morbidity, we were concerned about major morbidity, this is why the incidence of blood transfusion was excluded.

A13) The use of cardioplegia to arrest the heart during myocardial revascularization using CONCAB is associated with enzymatic and treponin elevation as proved by various studies. So protection of myocardial ATP by cardioplegic arrest cannot be achieved 100%.

A14) Manipulation of the heart of the heart during OPCAB especially among patients with low EF is not easy. Our major fear is the development of hemodynamic deterioration which can put the patient at great risk. Avoiding such deterioration lead to reduce number of grafts used.

A15) Explained by the above statement

A16) A sentence was added (technique for myocardial revascularization) after the word on-pump BH

A17) The incidence of MI among our patient was more among patients who had on-pump BH

The statement in your comment “ irreversible myocardial injury “ this was found in the study of Pegg and colleagues.

A18) The percentage of failure of Circumflex and PDA?
Concerning Circumflex artery the failure was 15% for the on-pump BH and 34% for the OPCAB.

Regarding PDA, the failure rate was 8% for On-pump BH and 36% for OPCAB.

A19) The comparison here was made only to show the importance of other associated risk factors beside low EF i.e. The importance of euroSCORE.

A20) I agree with you that the sample of patients in the study is too small. Preoperative demography of patients in the two groups were similar. We expect that the outcome is related to the method of bypass used.

A21) Yes I agree that the difference in outcome between the two groups is related to many co-morbid factors. Our two groups of patients had similar EF and euroSCORE.

The only difference was the technique used. In the On-pump BH, the bypass machine was used, we already know that its use is associated with extensive inflammatory effect contrary to OPCAB which has a minimal inflammatory changes.

Our patients who had On-pump BH had better myocardial revascularization. So, logically speaking they should do better than OPCAB, but this was not the case. We presumed that the effect is probably related to the inflammatory changes triggered by the bypass machine.

A22) I agree that the study was performed among a small number of patients. This was mentioned in the limitation of the study.

We expect that on using on-pump BH technique is to have a better results than OPCAB. Our expectations was based on the fact that the support given by the bypass machine gave us a sense of security to manipulate the heart to perform more grafts. Our expectations were wrong as seen from our results.

A23) The word ‘Alternative technique’ was removed.

Our conclusions were very precise that the technique can be used among patients with low EF.

Yes, we had reservations about the technique. It is not that safe as some surgeons believe. As we mentioned that the results obtained among low risk patients with normal EF was good and
comparable to conventional bypass and OPCAB. But in low EF, the technique was associated with myocardial injury even when the heart is supported with the bypass machine.

Reviewer: Oner Gulcan

1) All English mistakes were corrected.

2) Abbreviations were stated.

3) The first sentence in the introduction was united with the second one.

4) Straightforward

5) In page 7 The sentence was written correctly.

6) Obstacle corrected

7) The sentence was corrected to

    Pegg and coworkers (12), confirmed these findings, by reporting that the incidence of new irreversible myocardial injury among patients with impaired left ventricular function was significantly higher among ONCAB/BH patients when compared with conventional bypass.

8) Yes we did find patients with huge heart (increase ESD and EDD) whom we had to switch from OPCAB to ON-pump BH. But, this is not always the case. Some patients with huge heart can be manipulated without hemodynamic deterioration. Other factors seems to be involved as the number and degree of coronary vessel involvement and the presence or absence of main stem lesion.

9) I agree completely that some patients with bad heart may remain distended even with On-pump BH. These patients are better managed by left ventricular venting.
Reviewer: Imad Tabry

1) Spelling mistakes were corrected.

2) Paragraph 3 page 5 corrected to

Grafting of the LAD by left internal mammary artery was the first to be performed. However, in some patients with huge hearts grafting of the diagonal followed by RCA and circumflex arteries were performed first leaving the LAD to be grafted at the end to avoid stretching and kinking of LIMA during rotation of the heart.

3) An abbreviation system was included as recommended OFF-pump BH changed to OPCAB and ON-pump BH changed to ONCAB/BH

4) I agree that grafting both cx and RCA among OPCAB patients was less than ONCAB/BH. This was not because we were reluctant to do them, but it was due to difficulty to perform such anastomosis without hemodynamic deterioration. Even with the use of Starfish, manipulation of the heart was not easy. In some patients we were concerned to avoid both mortality and morbidity at the expense of revascularization.

In page 10, a paragraph was added

In our study, the mortality rate was 7.7% which was high compared to other studies. The high mortality among our group of patients was related to the impaired left ventricular dysfunction. Other factors contributing to the mortality of patients were the preoperative association of heart failure and myocardial infarction, the failure to revascularize both circumflex artery in 15% and RCA in 8% of patients and lower percentage of patients receiving LIMA graft.

5) The number of references was reduced.