

Peer Review File

Article Information: <https://dx.doi.org/10.21037/cdt-23-413>

Reviewer A

The manuscript entitled “Long-term follow-up of hybrid total arterial minimally invasive off-pump coronary revascularization and PCI strategy” was reviewed.

The authors reported the outcome in patients undergoing hybrid coronary revascularization (HCR). According to their single study experience, the authors showed that the HCR is safe and effective coronary revascularization approach. However, this reviewer raises some comment.

General comments

Comment 1: In the current study, substantial proportion of patients received urgent surgery. Moreover, 30 - 40% of all patients received reverse hybrid approach, probably due to acute coronary syndrome. Since the acute coronary syndrome is high risk population, it might be better to analyze the population who were chronic coronary syndrome.

Reply 1: Thank you for pointing this out. We eliminated patients who were receiving emergency surgery or who had had a myocardial infarction within three months of the procedure and examined their risk profile and postoperative results. This group was later labelled "chronic CAD," and it included fewer than half of the original cohort, 69 out of 138 people. The baseline characteristics, as well as the surgical and follow-up outcomes, were not significantly different. However, the overall PCI percentage in this subgroup was just 39.1%. By 3 years, this subgroup has higher rates of survival and MACCE free survival, but by 5 years, the rates are almost identical between the total cohort and the chronic CAD group.

Change 1: ‘A subsequent analysis was conducted in which patients undergoing emergent surgeries or who had experienced myocardial infarction within the three months prior to the procedure were excluded. This subset was categorised as having "chronic coronary artery disease." 69 patients made up this subpopulation. The EuroSCORE I additive was found to be lower than that of the entire cohort, and a lower proportion of patients (36.2% vs. 24.6%) had undergone PCI treatment prior to surgery. Conversely, the proportion of patients who reported a positive history of stroke was greater (6.5 % vs. 10.1%). The Syntax Score I was computed for the complete cohort. Tertiles are used to classify the SYNTAX score: low (≤ 16), intermediate (16-22), and high (>22). The mean Syntax Score of the patients comprising our study group was 22.9 ± 9.4 . The mean Syntax Score for the subgroup presenting with chronic CAD was marginally reduced to 22.2 ± 9.3 . Table 1 provides an overview of the demographic and baseline characteristics of both the entire cohort and the chronic CAD subgroup.’ Also please see Lines 229-230, 236-239, 242, 254-256, 262-263, 268-270, 296-304 and Tables 1 - 4.

Comment 2: Reverse hybrid approach might increase the risk of bleeding complication due to the need for antiplatelet therapy after percutaneous coronary stenting. Therefore, investigating the hybrid approach: first surgery, followed by PCI stenting of the not surgically treated territory might be desirable.

Reply 2: You are entirely correct, and I appreciate your comment. However, our study population's high proportion of patients receiving the reverse hybrid approach reflects reality, which is that collaboration between interventional cardiologists and cardiac surgeons needs to be much tighter, and that minimally invasive CABG surgery procedures still represent a smaller percentage of total CABG surgeries due to limited dissemination. As a result, in many cases, the cardiologist will choose PCI treatment first in order to treat the culprit lesion or the lesion that is most likely to cause the most muscle damage if left untreated.

Change 2: We added this comment to the discussion section, Lines 441-452.

Specific comment.

Comment 1: This study does not have a control group. Therefore, it is difficult to draw the results showing the advantage of HCR.

Reply 1: You are correct once more; we do not have a control group. Because only 50.7% of patients received the full hybrid treatment, it is impossible to draw any conclusions about the benefits of HCR. The study's goal was to reveal the long-term implications of this heterogeneous population treated using different hybrid approaches, as well as to try to identify the critical components required for the success of this evolving strategy. As a result of these outcomes in our centre during the last year, we were able to optimise, better structure, and ensure that the targeted hybrid procedure was accomplished.

Change 1: We added this drawback to the limitations section, Lines 457- 459.

Comment 2: Calculating and showing the SYNTAX score might enhance the study results.

Reply 2: This is a fantastic idea. We went back and calculated the Syntax Score for each patient individually.

Change 2: We incorporated the acquired data into Table 1, as well as the text, and commented on it in the discussion chapter; please see Table 1, Lines 73-74 (Abstract), 212-218 (Results), 290-293 (Discussion)

Reviewer B

I am happy to review this paper entitled “ Long term follow up of Hybrid total arterial

minimally invasive off pump coronary Revascularization and PCI strategy.

This is an accurate and quite interesting retrospective study on a promising strategy for coronary revascularization performed by an experienced surgical team.. Authors pointed out that even patients with high morbidity scores can undergo HCR with very good outcomes.

Figures and tables are nicely presented. Well written. Statistical analysis adequate.

Comment 1: Line 84 . tranplants should be changed with “conduits” or “grafts”

Reply 1: Thank you for this observation, we undertook the proposed change.

Change 1: ‘Cardiac surgeons must prioritise the superior long-term outcomes offered by high-quality grafts and reduce invasiveness, notwithstanding the rapid advancements in PCI and drug-eluting stents.’ (Lines 112-114).

While there are already a few papers on this subject the Authors focused on reviewing key factors essential for the success of this evolving strategy. Key points and technical factors are identified and well described ; common frequent questions on advantages and disadvantages of the strategy are discussed as well as data illustrating and supporting their clinical experience, that is supposed to be rich and very interesting .

Updating literature analysis selection is accurate , especially for long term results of MIDCAB and hybrid strategy.

Comment 2: Being the paper directed to surgeons and interventional cardiologists I'd suggest to implement the overview even with recent clinical experiences to show how hybrid coronary revascularization is becoming an intention –to- treat strategy rather than an alternative for high risk patients.

Reply 2: Your brilliant idea is greatly appreciated. Recent large-scale meta-analyses and review papers have been evaluated and incorporated into the discussion chapter.

Change 2: We have increased the quantity of documents under discussion by including more recent ones, please see Lines 377-381, 383-388, 398-418.

Comment 3: Moreover a comment on current limitations to hybrid strategy diffusion (lack of cooperation between interventional cardiologists and cardiac surgeons and limited diffusion of MIDCAB/OPCAB/RACAB in the surgical environment) would be of interest.

Reply 3: You are completely accurate, and I appreciate your input. The high proportion of patients in our study population who received the reverse hybrid approach reflects reality, which is that collaboration between interventional cardiologists and cardiac surgeons needs to be much tighter, and minimally invasive CABG surgery procedures still account for a small percentage of total CABG surgeries due to limited dissemination. As a result, the cardiologist may frequently choose PCI treatment first in order to treat the culprit

lesion or the lesion that is most likely to cause the most muscle damage if left untreated.

Change 3: Lines 441-452 of the discussion section now include this comment.

In conclusion a well-written paper, although without an high and original scientific value. Since hybrid strategy is not so diffuse among cardiac surgeons this manuscript should be considered for publication with some implementations .

Reply: Thank you for appreciating our paper and for your invaluable input!