Peer Review File

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Reviewer A:

This study is a case series of percutaneous stent placement in young infants and children with congenital heart disease.

First of all, I would like to congratulate the authors for performing a very complex procedure in very small patients in critical conditions successfully and safely. Certainly, this type of procedure is very unusual and rarely performed in this age group. There are some minor changes I would like to suggest.

Reply: Thank you, we are grateful for your kind words.

Page 5, line 131: The description of the procedure. It would be nice to point out what types of sheaths and sizes the authors used for this procedure, maybe add to the table 3.

Reply:

Thank you for the suggestion. The type and size of sheaths we used were added to the coronary stent implantation (CSI) procedure under the methods section.

Changes in the text:

We have added the following sentence in the text: " A 4-French sheath (Cordis, Miami Lakes, Florida, USA) was used if body weight <10 kg, and a 5-French sheath was used if body weight ≥ 10 kg."

Page 5, line 144: Please explain the strategy why the authors did not use the guiding catheters and coronary vasodilators. Certainly, coronary vasospasm can occur especially in small patients with very small coronary artery.

Reply:

We thank the reviewer for raising such an important point. In fact, the reviewer mentioned the reason behind not using guiding catheters and coronary vasodilators.

Changes in the text:

We have added the following sentence in the text: "…as coronary vasospasm can occur especially in small patients with very small coronary arteries."

Page 5, line 150: I would suggest the authors to explain the reasons behind different stent choices.

Reply: Thank you for the suggestion.

We have added the following sentence in the text:

"CSI was performed on an emergency basis, and choosing the stents depended on the availability of the type and size of the required stent."

Page 9, line 274 – page 10, line 284: I do not think we can draw any association in a very small case series without appropriate statistical calculations. I would suggest changing these 2 paragraphs and just stating the facts and percentage without mentioning association.

Reply:

We do agree with the reviewer. We have changed the two paragraphs as suggested.

Changes in the text:

We have modified the paragraphs to be as follows:

"Both patients who had late coronary events 63 and 105 days after cardiac surgery survived hospital discharge. The younger patient (2.5 months) required ECMO support, but the older patient (9 years) didn't even need mechanical ventilation. There was no in-hospital mortality among the two patients who required stenting of only the RCA. On the other hand, we reported mortality in 4 out of 7 patients (57.1%) who had LMCA stenting. A bio-absorbable stent and a bare-metal stent (BMS) were used in two patients who survived hospital discharge (patient 3 and patient 9, respectively). The four patients who required more than 120 minutes to complete the procedure had early mortality, Table 3,4."

Page 14, line 398: Yes, the authors had patients with follow up data up to 1695 days without intervention, is this because the stents are still patent or just simply because of collateral development even without stent patency? Do the authors have any evidence of stent patency on imaging such as CTA? I would clarify that.

Reply:

We thank the reviewer for raising this question; however, whether the clinical improvement and the freedom of intervention were due to stent patency or collateral development can only be answered by performing coronary angiography or CT angiography for these patients. In fact, we did not have clinical indications to subject those patients to additional procedures.

Changes in the text:

We have added the following sentence in the text as follows:

"However, whether the clinical improvement and the freedom of intervention were due to stent patency or collateral development can only be answered by performing coronary angiography or CT angiography for these patients. In fact, we did not have clinical indications to subject those patients to additional procedures."

Abstract:

With all my above suggestions, I would also revise the abstract in the results section. I don't think the authors should use the word "associated". Also, I would suggest changing word "should" in conclusion to perhaps "could" instead.

Reply:

We agree with the reviewer, and we have modified the abstract:

Changes in the text:

We have edited a paragraph in the results section to be as follows:" Both patients who had late coronary events after cardiac surgery survived hospital discharge. There was no in-hospital mortality among the two patients who required stenting of only the right coronary artery. The four patients who required more than 120 minutes to complete the procedure had early mortality."

Reviewer B:

There is scarcity of data on the topic and this is a great addition.

Reply: Thank you for your kind words.

Few comments and questions:

1. Introduction, page 4, paragraph 4: "Earlier, PCI was generally..." This paragraph makes it sound as if PCI was not a management option, but "recent" guidelines have made modifications to it. Please rewrite this paragraph. The "recent" guideline that is being mentioned is from 2011 and it's 12 years old, it is not

recent. The recommendation that is being quoted is talking about coronary angiography and not PCI.

Reply:

We do thank the reviewer for his valuable suggestions.

We have omitted the Word Recently from the text.

Changes in the text:

We have made the following changes to the text:

"Percutaneous coronary interventions (PCI) are rare interventional procedures in children, and studies describing short- and long-term outcomes are missing. PCI in the pediatric population is demanding and requires extensive theoretical and practical expertise. The small vessel size contributes to the procedural difficulty and the high risk of coronary interventions at this young age. [4,6] According to the guidelines of the American Heart Association, cardiac catheterization, and coronary angiography can be beneficial in the unexpectedly complicated postoperative course, including an unexplained requirement for mechanical circulatory support.[7] (Class IIa recommendation, Level of Evidence: C) Selective coronary angiography is considered the diagnostic gold standard in such cases of postoperative CAO.[8]"

2. Paragraph 5 requires editing. The second sentence is incomplete.

Reply: Thank you for the remarks.

Changes in the text:

We have edited the paragraph as follows:

"Accordingly, the available data describing patient characteristics, mode of presentation, diagnostic standards, and outcomes of CSI in children is limited.[1]"

3. Page 6, paragraph 2, please correct grammar.

Reply:

We thank the reviewer for the remarks, and the paragraph was corrected.

Changes in the text:

"Unlike adult and older pediatric coronary interventions, we had never used guiding catheters, coronary vasodilators, or engaged the catheter into the coronary ostium as coronary vasospasm can occur, especially in small patients with very small coronary arteries."

4. Page 9, Paragraph 2, second sentence: Please review the number of patients that are being discussed: 6 of 10 patients needing ECMO were decannulated, 4 of the 5 patients who underwent decannulation survived hospital discharge...what happened to the 6th patient?

Reply:

We thank the reviewer for raising our attention to it. It was a writing error and was corrected in the text.

Changes in the text:

"6 out of 10 patients who required ECMO support were successfully decannulated, and 4 out of the six patients who underwent successful decannulation survived until hospital discharge."

5. Page 10, paragraph 3, last sentence. Please discuss why 4 patients required more than 120 mins to complete the procedure? was it hemodynamic instability, complications, need for different stent that what initially inserted, difficulty cannulating the coronary with a wire? This would help the author understand how increased procedure time is related to potential increase in mortality risk?

Reply: Thank you for the comment.

Changes in the text:
We have added the following sentence in the text as follows:
"The procedure was prolonged in some cases because of the time needed for a complete hemodynamic study to identify the cause of clinical deterioration, multidisciplinary discussion with pediatric cardiology and cardiac surgery teams for choosing the appropriate intervention, and sometimes the difficulty in cannulating the coronary artery with a wire."

6. For the 6 patients who survived to hospital where there advanced imaging to assess the patency of coronary artery stents? CTA, stress MR, surveillance coronary angiography? The stenting in these patients did potentially help patients short term status and discharge from hospital, but did the stent remain patent?
Reply:
We thank the reviewer for raising this question; however, whether the clinical improvement and the freedom of intervention were due to stent patency or collateral development can only be answered by performing coronary angiography or CT angiography for these patients. In fact, we did not have clinical indications to subject those patients to additional procedures.
Changes in the text:
We have added the following sentence in the text as follows. "
"However, whether the clinical improvement and the freedom of intervention were due to stent patency or collateral development can only be answered by performing coronary angiography or CT angiography for these patients. In fact, we did not have clinical indications to subject those patients to additional procedures."

7. Based on this cohort, with only 3 patient surviving at most recent follow up with 1 at 295 days and 1 at 1695 days, it's overreaching to claim "short and midterm outcomes of CSI after pediatric cardiac surgery. Please modify.
Reply:
We agreed with the reviewer, and we modified the text accordingly.
Changes in the text:
"This study aimed to analyze the feasibility, indications, procedural technique, risk factors, and short-term outcomes of CSI performed to treat CAO after pediatric cardiac surgery."

Reviewer C:
This submission describes 11 patients with congenital heart disease who have undergone a surgical procedure, and have coronary stenosis. The authors describe the use of coronary artery stenting for this indication.
The authors do not adequately describe the statistical testing used including corrections for multiple comparisons. With 11 patients the K-M survival curve is not really helpful.
Reply:
Thank you for the valuable remarks. We agree with the reviewers that we can't draw comparisons or associations in such a small case series without appropriate statistical calculations. We edited the results section focusing on stating the facts and percentages without mentioning associations.
The statistical methods section was modified, and the Kaplan-Meier survival curve was removed from the manuscript.

Changes in the text:
"Statistical Analysis: The numeric data was presented as a median and interquartile range, and the nominal/categorical variables were expressed as numbers or numbers and percentages."

Other feedback is noted in the text.
Reply:
Thank you for the comments. Please also find the authors' responses in the same PDF file attached.
Comment 1: Highlighted text in the statistical method: " Jamovi software was used for the statistical analysis"
Reply: Thank you for pointing this out. The section on statistical analysis was edited.
Changes in the text:
"Statistical Analysis: The numeric data was presented as a median and interquartile range, and the nominal/categorical variables were expressed as numbers or numbers and percentages."

Comment 2: There is no mention of correction for multiple comparisons?
Reply: We agree with the reviewers that we can't draw comparisons or associations in such a small case series without appropriate statistical calculations. We edited the results section and statistical methods focusing on the numbers and percentages without mentioning associations or comparisons.

Comment 3: I think it would be also helpful to describe whether there were any patients who did NOT have coronary reimplantation (e.g. the DKS patient?). Otherwise, this is just saying that all patients had reimplantation as the likely reason for post-op stenosis.
Reply: Thank you for the suggestion.
Changes in the text:
The following statement was added to the text:
"All the procedures included coronary arteries reimplantation except DKS and Konno procedures."

Comment 4: This is visually assessed, no FFR, correct? " excellent revascularization that was documented by post-procedural angiograms."
Reply: Yes

Comment 5: I think this is an overly broad recommendation. The mechanism as to why patients who did not have surgical coronary manipulation had coronary stenosis is not described, which is key to making this recommendation. Did the authors review pre-op imaging and make sure the stenosis was not just unrecognized from before?
Reply: Thank you for pointing this out. The highlighted statement was quoted from a previous report that concluded with this recommendation based on the provided data.
We edited the text to clarify that Goldsmith and colleagues provided the mentioned recommendation.
The mechanism of coronary artery obstruction in each of our patients was unclear. However, the potential mechanism of coronary artery obstruction after ASO, for example, has been described in a previous study and mentioned in the second paragraph of the introduction.
In this study, preoperative images were reviewed for all patients to rule out preoperative coronary stenosis.
Changes in the text:
The following statement was edited as follows:

"Goldsmith and colleagues recommended a high index of suspicion for acute CAO when the patient has an unexpectedly complicated postoperative course, irrespective of the primary diagnosis.[1]"

Comment 6: I think it's a bit of a reach to put in a survival curve where past 30 months the range is 0-0.8. Given the low number of patients, I would consider removing. However I applaud the team for having both confidence intervals and remaining patients at risk.
Reply: We agree with the reviewer. The Kaplan-Meier survival curve was removed from the manuscript.

Reviewer D:
The authors have described a nice clinical experience. However, I have a few comments.

1.Can the authors comment on surgical options/outcomes in their experience for the same lesions? That would place the results in context.
Reply: Thank you for your remarks. In the first and the third paragraph of the discussion section, we highlighted the therapeutic options for coronary artery obstruction after pediatric cardiac surgery, including myocardial revascularization through coronary artery bypass graft surgery (CABG). Unfortunately, none of our pediatric patients underwent surgical intervention for coronary artery obstruction after cardiac surgery.

2.In the methods when it is mentioned "Unlike adult....inside." This is true, but not for older pediatric patients. I would temper that statement to expand on that.
Reply:
We thank the reviewer for the recommendation we have modified the text accordingly.
Changes in the text:
"Unlike adult and older pediatric coronary interventions, we had never used guiding catheters, coronary vasodilators, or engaged the catheter into the coronary ostium."

3.The major issue with this experience is the follow up. Survival was only 27%. Given that, more data on reasons for mortality in all patients is beneficial (some has been provided). It would be helpful to have some follow up on the coronary stents in the survivors and any patients before they died. That is key for this article. Currently it is mentioned that the survivors " didn't require reintervention...", but that does not reflect the status the stents or coronary arteries. Again, this is important to know for the survivors and non survivors if they had any imaging etc of the coronary arteries before they died.
Reply:
We thank the reviewer for the important remarks; however, whether the clinical improvement and the freedom of intervention were due to stent patency or collateral development can only be answered by performing coronary angiography or CT angiography for these patients. In fact, we did not have clinical indications to subject those patients to additional procedures.
Changes in the text:
We have added the following sentence in the text as follows. "
"However, whether the clinical improvement and the freedom of intervention were due to stent patency or collateral development can only be answered by performing coronary angiography or CT angiography for these patients. In fact, we did not have clinical indications to subject those patients to additional procedures."