

Peer review file

Article information: <https://dx.doi.org/10.21037/jtd-21-902>

Reviewer A

Comment 1: The authors investigated the changes in hemodynamical parameters, obtained through right and left heart catheterization, before and after septal myectomy for obstructive HCM. Most significant finding was the decrease in Tau value, leading to their conclusion that “septal myectomy improved left ventricular diastolic function”. The study is unique and the findings are interesting. The manuscript is well written and easy to follow. The limitations are reasonably well stated. I have the following comments.

The patient selection appears rather arbitrary. Please elaborate more on the selection process. Was the enrollment offered prior to surgery? Was it offered to everyone who met the inclusion/exclusion criteria? If so, how many patients were screened? What was the study period?

Reply 1:

Thank you for your comments. The preoperative investigation was done in all patients who met the criteria. A total of 32 patients had preop study over the 8 months following the first enrollment. However, only 12 patients came back for postoperative test. Some patients had their postop follow-up with their local cardiologists. Some scheduled postop examinations were cancelled due to the outbreak of COVID-19 and related travel restrictions during the study period.

Changes in the text: We have revised the sentence (line 121-122, page 6 in the revised manuscript).

Comment 2: The postop studies were done in a variety of time points after surgery. How was the timing determined? This could be another source of a bias.

Reply 2:

The postop studies were scheduled 3-6 months after discussion with enrolled patients. We believe at this time point the hemodynamics and myocardium have recovered to a stable stage after surgery.

Changes in the text: No change.

Comment 3: Medications might have impact on the hemodynamics. Please provide the relevant data.

Reply 3:

Preoperative medications that can affect all hemodynamic parameters was shown in Table 1 (beta-blockers, calcium channel blockers, diuretics and vasodilating agents). However, it should be noted that the preop medications were continued after septal myectomy with some changes in dosages.

Changes in the text: No change.

Comment 4: Regarding the statistics, how were the data tested for their distribution? The variables that are not normally distributed should be presented with a median and IQR.

Reply 4:

Thank you. The normality of data was tested with the Kolmogorov-Smirnov test. We have presented the skewed data with median (IQR). We detailed this in the methods section in the revised manuscript.

Changes in the text: We added this detail in the methods section (line 112-113, page 6 in the revised manuscript).

Comment 5: Figure 3 presents the main finding of the study. It seems that Tau went down in half of the patients and remained the same in the other half. Also the patients with higher preop Tau had their Tau reduced postop. Can the authors elaborate more on these findings?

Reply 5:

Tau went down in 7 of the 12 patients and remained the same in the other 5 patients. It seems that the 7 patients with higher preop Tau had their Tau reduced significantly postop. We also found that the 7 patients with higher prep higher Tau seems to have higher LVOT gradient before surgery. We speculate patients with worse diastolic function and higher LVOT gradient may benefit more from myectomy surgery, and the Tau decreased more significantly postop. Though we need to prove our speculation by

increasing the sample volume. We added a table to compare 7 patients with Tau decreased postop with 5 patients with Tau non-decreased postop.

Changes in the text: We added a table to compare two groups with different change trend of postop Tau in the revised manuscript (Table 4). We also added sentences in the discussion section (line 220-227, page 10 in the revised manuscript). .

Comment 6: In Figure 2, please add scales to Y axes.

Reply 6:

We have added scales to Y axes in revised Figure 2. Thank you for reminding.

Changes in the text: We have added scales to Y axes in revised Figure 2.

Comment 7: Also in Figure 2, the legend says “the upper right panel shows the part of the pressure tracings in LV relaxation”. Which part was shown?

Reply: In Figure 2, the upper right panel shows the part of the pressure tracings in LV isovolumic relaxation period, i.e. the phase from the closure of the semilunar valve to the opening of the atrioventricular valve.

Changes in the text: No change.

Reviewer B

Comment 1: Small sample numbers and predictable results is not suitable for publication.

Reply 1:

The study volume was small due to its invasive nature and other reasons. However, the research methods are solid and the difference is statistically significant. With your permission, we believe our study is worth publishing. Thank you.

Changes in the text: No change.

Reviewer C

The authors presented the diastolic function using cardiac catheterization in patients

with obstructive hypertrophic cardiomyopathy (HCM) before and after septal myectomy. They revealed the improvement of left ventricular diastolic function and the relief of right ventricular congestion.

I have several comments and questions regarding the manuscript.

Comment 1: Page 8, line 173-175: I think the authors would show why the improved diastolic function may cause the increased functional capacity following the myectomy.

Reply 1: Thank you very much for your comments. We have added sentences to explain why improved diastolic function might be associated with increased functional capacity.

Changes in the text: We added sentences in the revised manuscript (lines 180-181, page 10).

Comment 2: Page 9, line 203: “Prolonged diastolic duration after myectomy also improves perfusion”.

As the left ventricle Tau decreased after surgery, the diastolic duration must be shortened. I think the statement was not consistent with the result.

Reply 2:

Thank you. We have deleted this sentence. Decreased Tau indicates a more rapid LV relaxation and better myocardial compliance. This reflects an improvement of the early LV filling (LV suction, E wave in echo), which contributes most of the filling volume during diastole. The total diastolic duration is predominantly associated with heart rate. The plateau and late (atrial contraction, A wave in echo) diastole may not be affected significantly by change of LV relaxation.

Changes in the text: We have deleted the sentence “Prolonged diastolic duration after myectomy also improves perfusion ”(line 209, page10) in the revised manuscript.

Comment 3: Regarding the figure 3, the tau value decreased in 7 patients and slightly elevated or not changed in 5 patients although the p-value was less than 0.05. I think it may be hard to conclude that the left ventricular tau improved after surgery from this result. Were there any differences between the 7 and 5 patients? It may be interesting

to review the two groups.

Reply 3:

Thank you. The preop Tau was 79.8 ± 18.9 in the 7 Tau decreased patients and 42.3 ± 17.7 in the 5 non-decreased patients. In some patients, Tau did not change significantly due to a relatively lower baseline value. We have changed the sentence as “Septal myectomy decreased the Tau, especially in those who had an increased baseline Tau.”

Changes in the text: We added sentences in the revised manuscript (lines 172-179, page 10, and line 240-241, page 11).