

## Peer review file

**Article information:** <http://dx.doi.org/10.21037/jtd-20-1065>

### Reviewer A

Comment 1: Correct spelling throughout the manuscript should be "video" not "vedio."

Reply 1: Sorry for our spelling mistakes. The “vedio” were all changed into “video” in the revision.

Changes in the text: The “vedio” were all changed into “video” in the revision.

Comment 2: I would recommend the authors have a special English review as there are multiple grammatical errors throughout the manuscript.

Reply 2: A native English speaker who is professional in thoracic surgery was invited to review our manuscript.

Comment 3: Why choose endpoints like white blood cell count elevation and drop in hemoglobin level? These do not necessarily reflect the overall clinical course. How were meaningful short-term endpoints selected? Literature review? This should be mentioned.

Reply 3: The endpoints like white blood cell count elevation and drop in hemoglobin level were selected according to the study reported by Dr. Yong Won Seong. However, the study compared the short-term clinical outcomes between robot-assisted surgery and conventional sternotomy. Therefore, the clinical outcomes like white blood cell count elevation and drop in hemoglobin level were removed in the revision. The other meaningful short-term endpoints were selected according to literature review.

Changes in the text: The early clinical outcomes of surgery included duration of chest tube insertion, median volume of drainage, postoperative hospital stay and postoperative complications. The short-term endpoints were selected according to literature review.

Comment 4: I would disagree that patient consent or official exemption from review is needed. The authors should provide formal documentation that ethical review is not

needed.

Reply 4: This study was approved by the Ethics Committee of Jingling Hospital. The ethics committee waived the need for informed consents from those patients since our study was a retrospective cohort analysis and analyzed anonymously.

Changes in the text: No artificial intervention or different treatment methods were deliberately implied for patients to obtain a certain group of data since this is a retrospective study. All patients were treated according to the actual clinical needs. This study was approved by the Ethics Committee of Jingling Hospital. The ethics committee waived the need for informed consents from those patients since our study was a retrospective cohort analysis and analyzed anonymously.

Comment 5: The propensity-matched cohorts are very small (n=60). Additionally, there is no data to show that these cohorts were well-matched (either through standardized mean differences or the histograms showing the distribution of propensity scores)

Reply 5: Thank you for your useful suggestions. A histogram showing the distribution of propensity scores was added in the revision.

Changes in the text: A histogram showing the distribution of propensity scores was added in the revision.

Comment 6: What was the original hypothesis for the study? Why was this not stated out right?

Reply 6: The original hypothesis was that RATT might have the advantages over VATT in terms of progression-free survival.

Changes in the text: In clinical practice, we found it is easier to remove the superior poles and upper border of thymus and lymph nodes by using robotic technique comparing to thoracoscopic technique. Meanwhile, the robotic system could present more elaborate dissection of thymic epithelial tumors compared with thoracoscopic technique, which could better maintain the membrane integrity. Therefore, we expected longer PFS in the robot group due to more radical dissection of the peripheral tissue and lymph nodes and preferably maintaining the membrane integrity.

Comment 7: I would advocate that the authors should make a stronger argument as to

[why their manuscript is practice changing.](#)

Reply 7: Thank you for your suggestions. We will do our best to make the manuscript suitable for being published in the JTD.

### **Reviewer B**

That is an interesting manuscript to evaluate the short-term clinical outcomes and progression-free survival in patients undergoing RATT by comparing the matched RATT and VATS groups. The Authors explained that there are few studies that compared the clinical outcomes in patients undergoing RATT with those undergoing VATS, meanwhile, no study reported the impact of the use of RATT on survival time.

[Comment 1: I would like to suggest to include and discuss also this systematic review which explained that data suggest that robotic thymectomy is superior to open surgery and comparable to a VATS approach.](#)

[Katie E. O’Sullivan et al. A systematic review of robotic versus open and video assisted thoracoscopic surgery \(VATS\) approaches for thymectomy, recently published in Annals of Cardiothoracic Surgery.](#)

Reply 1: Thank you so much for your suggestions. This systematic review was included and discussed in the revision.

Changes in the text: Recently, Katie E. O’Sullivan et al. conducted a systematic review and meta-analysis to compare the short-term clinical outcomes between VATS and RATT. The results showed that there was no significant difference between two techniques in surgical time, estimated blood loss, length of hospital stay, conversions to open, intraoperative complications, postoperative complications or mortality.

[Comment 2: I would also like to suggest to perform an English editing.](#)

Reply 2: Thank you for your suggestion. A native English editor who is professional in thoracic surgery has been invited to improve our English expression.

[Comment 3: Of course, even long-term follow-up will be important to further delineate oncological outcomes.](#)

Reply 3: Thank you for your comments. Long-term follow-up could be important to

further delineate oncological outcomes.

### **Reviewer C**

This study is interesting and valuable for investigating perioperative and longtime outcome compared between VATT and RATT. However, there are several questions and important issues about this paper. The following questions and suggestions should help to further strengthen the study.

#### Major problem

Comment 1: Title: I think it is better to show that the objects of this study were thymic epithelial tumors in the title because there were some reports of thymectomy between RATT and VATT for non-thymomatous myasthenia gravis.

Reply 1: Thank you for your suggestion. The title has been revised.

Changes in the text: Comparison of the progression-free survival between robot-assisted thymectomy and video-assisted thymectomy for thymic epithelial tumors: a propensity score matching study

Comment 2: You mentioned this study was using data of thymoma. Please tell me why you included type C? Type C is thymic carcinoma, which is significantly different from thymoma in clinical and biological characters as like a background, treatment method, outcome and PFS, too. When you compare perioperative outcome, it will be suitable using all thymic epithelial tumors' data, but PFS should be estimated in only thymoma cases.

If the thymic cancer cases are included, the information about status of lymph node dissection, pathological examination result, stage and adjuvant therapy in thymic cancer group should be described because the cases of thymic cancer on early stage has relatively good prognosis.

Reply 2: Thank you for your suggestions. And sorry for my misunderstanding of the word "thymoma". In this study, we aim to compared the progression-free-survival between robot-assisted thymectomy and video-assisted thymectomy for thymic epithelial tumors. According to your suggestion, we have compared the perioperative outcomes using all thymic epithelial tumors' data. And PFS were estimated in

thymoma cases.

Changes in the text: The primary endpoint of this study was progression-free survival. And the secondary endpoints were the early clinical outcomes of surgery including duration of chest tube insertion, median volume of drainage, postoperative hospital stay and postoperative complications. The short-term endpoints were selected according to literature review. We compared the perioperative outcomes using all thymic epithelial tumors' data. And PFS were estimated in only thymoma cases.

[Comment 3: There was no description about definition of progression-free-survival. What event do you define as progression, only radiological imaging or biopsy?](#)

Reply 3: Thank you for your suggestions. The definition of progression-free survival was added in the revision.

Changes in the text: Whenever recurrence was suspected, we attempted to obtain histological or unequivocal radiological proof. Recurrence was classified in to loco-regional recurrence and distal metastasis. Progression-free survival was defined as the time form the data of operation to recurrence.

[Comment 4: How about resection status and recurrent type were? I'd like to know the details of recurrence. In thymic cancer, complete resection is the prognostic factor and distant metastasis, which lead to poor prognosis, is more often than thymoma.](#)

Reply 4: Thank you for your suggestions. The resection status and recurrent type were added in the revision.

Changes in the text: There were 2 additional resections in RATT group and 4 in VATT group. Loco-regional recurrence and distal metastasis were detected in 4 patients with thymoma and 1 patient with thymic carcinoma in RATT group and in 25 patients with thymoma and 3 patients with thymic carcinoma in VATT group before matching. However, no lymph node recurrence or distal metastasis was identified in type A, AB, or B1 thymomas in RATT group. Only 2 patients with type B1 thymoma in VATT group was detected with loco-regional recurrence and no lymph node recurrence or distal metastasis was identified in type A or AB thymomas.

Loco-regional recurrence and distal metastasis were detected in 4 patients with thymoma and 1 patient with thymic carcinoma in RATT group and in 8 patients with thymoma and 1 patient with thymic carcinoma in VATT group after matching. PFS

were estimated in only thymoma cases.

Comment 5: In discussion, it is not sufficient that RATT showed better prognosis only in the point that the amount of resection was enough. It should be described what type of recurrence was often. I think dissemination is not associated with residue of thymus. I hope for deeper consideration.

Reply 5: PFS in the robot group due to more radical dissection of the peripheral tissue and lymph nodes and preferably maintaining the membrane integrity

Changes in the text: As to progression-free survival, type B2 and B3 thymomas showed significantly higher rate of loco-regional recurrence and distal metastasis than type A, AB, and B1 thymomas in this study. Loco-regional recurrence was only detected in 2 patients in VATT group with B1 thymoma. And no distal metastasis was identified in type A, AB, and B1 thymoma in this study. In clinical practice, we found it is easier to remove the superior poles and upper border of thymus by using da Vinci Surgical Robotic System comparing to thoracoscope. Meanwhile, RATT is found to be easier to remove the superior poles and upper border of thymus by using da Vinci robot system comparing to thoracoscope. Furthermore, RATT showed superiority in the aspect of the dissection of anterior mediastinal fat and adipose tissue over VATT. Therefore, we expected a longer PFS in the robot group due to its more radical dissection of the peripheral tissue, the remnant of which is regarded as the risk factor of the recurrence of thymoma (11). Meanwhile, the robotic system could present more elaborate dissection of tumor compared with thoracoscopic technique, which could better maintain the membrane integrity, the destruction of which could result in the dissemination of thymic epithelial tumor. And the results of this study showed that the PFS in RATT group (n = 55) intended to be longer than that in VATT group (n = 58) after matching (5-year PFS rate: 81.5% and 72.6%, respectively; Log-rank P = 0.086). Lymph node dissection could be another potential prognostic factor of progression-free survival after surgery. However, lymph node dissection was not implied in our institution between 2009 and 2014.

Minor problem

Abstract

Comment 1: You should not use abbreviations in the first word as RATT and VATT.

Reply 1: Thank you for your suggestion.

Changes in the text: However, whether robot-assisted thymectomy (RATT) could replace video-assisted thymectomy (VATT) and be considered as a superior treatment for thymic epithelial tumors is still controversial.

Comment 2: The content of “Introduction” are aims and methods. Please describe the details of background of your study.

Reply 2: Thank you for your suggestion. The details of background of our study were added in the revision.

Changes in the text: Robotic system was recently introduced to assist surgeons in performing thymectomy. However, whether robot-assisted thymectomy (RATT) could replace video-assisted thymectomy (VATT) and be considered as a superior treatment for thymic epithelial tumors is still controversial.

Comment 3: Please show these procedures were carried out in the Methods.

Reply 3: Thank you for your suggestion. The procedures were carried out in the Methods.

Changes in the text: Figure 1 and 2 were added in the revision.

Text

Comment 1: Numerals should be spelt out in full from one to nine (except when referring to a measurement), and when beginning a sentence (as in L152).

Reply 1: Thank you for your suggestion.

Changes in the text: The mistakes were revised in the revision.

Comment 2: In your department, is there the standard when you minimally invasive approach select?

Reply 2: Thank you for your suggestion. The selection criteria were added in the revision.

Changes in the text: The selection criteria of minimally invasive approach in our institution are listed as follows: (1) the size of thymic epithelial tumor is shorter than 10cm; (2) the macro vessels are not invaded by the thymic epithelial tumor; (3) the

tumor invasion in lung or pericardium is resectable.

Comment 3: In VATT, which method is used, sternum lifting or artificial pneumothorax?

Reply 3: In VATT, artificial pneumothorax was used.

Changes in the text: In VATT, artificial pneumothorax was used.

Comment 4: In L234, what means the MS?

Reply 4: MS means median sternotomy.

Changes in the text: MS was revised into median sternotomy in the revision.

Comment 5: In L239, you describe “few studies”, please add the references.

Reply 5: Sorry for our poor English expression. Originally, we wanted to show that there was no study comparing the 5-year progression-free survival between RATT and VATT.

Changes in the text: And there was no study comparing the 5-year progression-free survival between RATT and VATT.

Comment 6: In L244-248, the sentence was repeated 3 times in Introduction and Discussion. Please make more concise.

Reply 6: Thank you for your suggestion.

Changes in the text: The sentence was deleted in Introduction and revised in discussion.

Figure

Comment 1: Please state the patient at risk in Figure 3 and 4.

Reply 1: Thank you for your suggestion.

Changes in the text: The patient at risk were added in Figure 3 and 4.

Table

Comment 1: The numbers were incorrect of Masaoka stages in Table1 and 4. Why is there only 58 cases?

Reply 1: Sorry for the mistake we made when collecting the clinical data. The correct

numbers were in the revision.

Changes in the text: The correct numbers were in the revised Table 1 and 4.

[Comment 2: In Table5, surgical time is mistyped.](#)

Reply 2: Sorry for the careless mistake.

Changes in the text: The mistyped word was revised in the revision.