Peer Review File
Article information: https://dx.doi.org/10.21037/jtd-22-526

Reviewer A

A very impressive series that comprehensively presents the current possibilities of robotics in pediatric thoracic surgery.
Reply: Thanks very much for taking your time to review this manuscript. We really appreciate your generous comments.

Reviewer B

The authors describe a small series of pediatric patients undergoing lobectomy thoracoscopically vs robotically. This would be the first published series of its kind. The authors rightly acknowledge small sample size but it is informative nonetheless and follows STROBE guidelines. Great information about technique and pictures/diagrams are high quality. Impressive findings about benefits of reduced workload for robotic compared to thoracic.

I have a few comments below:

1) Authors state: "The approach using whether robotic surgery system or conventional thoracoscope was up to the guardian of the patients after the doctor gave the introduction." This is an interesting approach, can more detail be provided about how the options were presented to parents? It is interesting that more parents chose TPR, do the authors have a hypothesis as to why this would be?

Reply 1: Thanks very much for taking your time to review this manuscript. We are very grateful for your comments to the manuscript. Usually, we provided the guardian of the patients with a table as followed, which would illustrate main characteristics of the two approaches. The final choice belonged to the patient's guardian.

Table 1. General information of two approaches

Items	Robotic	Thoracoscopic
Incisions	One 12mm, two 8mm and one 5mm.	One10mm and two 5mm, or three 5mm incisions
Instruments	Robotic surgery has greater magnification, clearer images and more flexible and stable instruments	
Procedure	Almost the same	
Operation time	Robotic surgery had slightly longer total operation time, but the actual operative time was about the same.	

Costs	Robotic surgery costs about $2,500 more than the thoracoscopic.

Changes in the text: We added this point into our revised manuscript and the details can be found in table 1. (see Page 6,line 101,and table 1)

2) Hospital stay of 6 days seems long – for MIS lobectomy patients usually go home 1-2 days after surgery. Why was length of stay so long?

Reply 2: In our study, the hospital stay included the time for patients to complete preoperative examination at admission. Typically, patients were usually discharged in 2 to 4 days after operation (1-2 days after the drainage removal), similar to what has been reported in the literature (1,2).

References:

1. Clermidi P, Bellon M, Skhiri A, et al. Fast track pediatric thoracic surgery: Toward day-case surgery? J Pediatr Surg 2017;52(11):1800-5.

2.Tanaka Y, Uchida H, Kawashima H, et al. Complete thoracoscopic versus video-assisted thoracoscopic resection of congenital lung lesions. J Laparoendosc Adv Surg Tech A. 2013 ;23(8):719-22.

Changes in the text: Changes about this point was made in the results part and table 2. (see Page 10, line 194-195, and table 2)

3) What is rationale for excluding prior infection? Are those cases all done open?

Reply 3: We defined prior severe infection cases as those with a history of empyema, lung abscess or more than three episodes of pneumonia, which have a higher probability of conversion to open surgery with the rate about 30%. Even for cases not operated openly, the operative time and chest drainage time were significantly longer, and the blood loss was heavier. Data variability is large, which is not conducive to do comparison study. Near future, we plan to do research focusing on cases with severe infection.

Changes in the text: We have defined the “prior severe infection cases” in our manuscript. (see Page 6, line 101-102)

4) Can authors present a breakdown of diagnoses? I did not see this in the Table. Also, what was indication for segmental resection vs lobectomy?

Reply 4: Thank you for your suggestion, we will present a breakdown of diagnoses in the Table 2.

No consensus has been reached about the indication for segmental resection vs lobectomy (3,4). In our study, segmental resection was performed if the lesion was confined to the lung segment without severe infection, and lobectomy was performed if the lesion involved more than half volume of the corresponding lobe.

References:

3. Wong KKY, Flake AW, Tibboel D, et al. Congenital pulmonary airway malformation: advances and controversies. Lancet Child Adolesc Health.
2018 ;2(4):290-7.

4. Lee S, Kim DH, Lee SK. Efficacy of segmental resection in patients with prenatally diagnosed congenital lung malformations. Interact Cardiovasc Thorac Surg. 2017 ;24(3):425-9.

Changes in the text: We added some data about breakdown of diagnoses in the table 2. And our indications for segmental resection and lobectomy were added in the discussion section (see Page 11, line 215-219).

Reviewer C

Great study overall. Goal of study was clearly defined. Easy to read. The authors performed a retrospective study examining the outcomes of two different minimally invasive techniques for pulmonary resection (robotic vs thoracoscopic) as well as how this affected the surgeons performing the operation. Study showed no difference in major post-operative outcomes and a favorable pure operative time for robotic vs thoracoscopic surgery. Sample size was a bit small but this is not uncommon for pediatric surgical studies. A few minor revisions/clarification:

1. Please cite the Shapiro Wilk test, NASA-TLX and the SCAR scale at their first mention in the manuscript.

Reply 1: Thanks for your kind suggestion. The Shapiro-Wilk test (1) is a common statistical test method. As for NASA-TLX and the SCAR scale, we would cite the related literatures in the manuscript and modified reference list (2, 3).

References:

1. Wei J. The adoption of repeated measurement of variance analysis and Shapiro-Wilk test. Front Med. 2022 Jul 1.
2. Tubbs-Cooley HL, Mara CA, Carle AC, et al. The NASA Task Load Index as a measure of overall workload among neonatal, paediatric and adult intensive care nurses. Intensive Crit Care Nurs. 2018;46:64-9.
3. Kantor J. The SCAR (Scar Cosmesis Assessment and Rating) scale: development and validation of a new outcome measure for postoperative scar assessment. Br J Dermatol. 2016 ;175(6):1394-6.

Changes in the text: We cited the related literatures in the manuscript and modified reference list. (see Page 7, line 124 and Page 9, line 166,173)

2. How were post-op complications defined and were these kept consistent? Please provide a table with definitions and include relevant time frames that are generally agreed upon in the literature.

Reply 2: For patients without any symptoms, chest x-ray was administered before discharge, 1-2 days after drainage removal. Then pneumothorax was defined there. Generally, about 50% of all patients present with at least minor air leaks after lung resections and the majority of these leaks stop spontaneously after a few hours up to

three days (4). The definition for the term prolonged air leak (PAL) varies in multiple published studies and proposed definitions of PAL range from an air leak lasting four days to greater than ten days postoperatively. Based on recent literature several authors have recommended defining a PAL as an air leak lasting beyond postoperative day 5, which is an average length of stay after pulmonary lobectomy (5). We also defined other complications based on literatures in table 3.

Table 3. Definitions of post-op complications

Complications	Definition
Pneumothorax	Defined as air present in the pleural space (4). Diagnosed by chest radiograph following chest tube removal. The thorax space is compressed by more than 20% (5).
Hemothorax	Bloody fluid drained through chest tube for more than 3 days (6).
Air leak	Different amount of air bubbles present on coughs or spontaneous respiration. The air leak lasting beyond postoperative day 5 is defined as persistent air leak (7,8).
Atelectasis	Diagnosed by chest radiograph following chest tube removal (9,10).
Residual lesions	Diagnosed by CT scan at 3 months' follow-up in clinics.

References: 4. Hallifax R, Janssen JP. Pneumothorax-Time for New Guidelines? Semin Respir Crit Care Med. 2019;40(3):314-22.
5. LaGrasta C, McLellan M, Connor J. Clinical descriptors of pneumothorax following chest tube removal in paediatric cardiac surgery. Cardiol Young. 2021;31(1):121-4.
6. Miyahara S, Iwasaki A. Diagnosis and Treatment of Hemothorax. Kyobu Geka. 2015;68(8):650-3.
7. Bronstein ME, Koo DC, Weigel TL. Management of air leaks post-surgical lung resection. Ann Transl Med 2019;7(15):361.
8. Singhal S, Ferraris VA, Bridges CR, et al. Management of alveolar air leaks after pulmonary resection. Ann Thorac Surg 2010;89:1327-35.
9. Lagier D, Zeng C, Fernandez-Bustamante A, et al. Perioperative Pulmonary Atelectasis: Part II. Clinical Implications. Anesthesiology. 2022;136(1):206-236.
10. Liu J, Chen SW, Liu F, et al. The diagnosis of neonatal pulmonary atelectasis using lung ultrasonography. Chest. 2015 Apr;147(4):1013-9.
Changes in the text: We have added this point in the method section to modified our text. (see Page 6, line 113-114)

3. Were the nurses who used the SCAR scale consistent for all patients? If different nurses graded the scars, how did you account for this variability?

Reply 3: All the measurements were recorded by the same two nurses using the SCAR scale and the mean value was used for analysis to eliminate variability.

Changes in the text: We have modified our text to described this point in more detail in the method section. (see Page 9, line 165-168)

4. Please clarify how many surgeons are involved in the study. Did they have comparable levels of training and experience on robotic surgery? How did you account for variability in surgeon training and the possibility of that impacting the post-op outcomes and also their responses to the NASA-TLX.

Reply 4: In our study, all the procedures were performed by the same surgeon and the same assistant. One NASA-TLX questionnaire was completed by the chief surgeon in 24 h of each procedure.

Changes in the text: We have modified our text to described this point in more detail in the method section. (see Page 6, line 103)

5. Please clearly state in methods section why you chose 8kg as the weight cut off for robotic surgery.

Reply 5: Sorry we didn't state clearly in manuscript. 8Kg is not a statistic weight cut off value for robotic surgery. The minimum weight of the patient on whom we successfully completed operation was 8Kg.

Changes in the text: We have modified our text to state clearly this concept when we explained the limitations of this study. (see Page 14, line 293-295)

6. Figure 1- please spell out or define TPR so that figure can be interpreted independently. Do the same for CPAMs in Figure 4.

Reply 6: Thank you for your suggestion. we would spell out the TPR and CPAMs in the figure legends.

Changes in the text: We have modified our text as advised in "Figure legends" part. (see Page 20, line 419-420 and Page 21, line 431-432)