Author’s response to reviews

Title: National Survey of Enhanced Recovery After Thoracic Surgery Practice in the United Kingdom and Ireland

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Author’s response to reviews:

Dear Vipin Zamvar

RE: JCTS-D-20-00020

Please find our reply to the reviewer’s comments for our manuscript, “National Survey of Enhanced Recovery After Thoracic Surgery Practice in the United Kingdom and Ireland”, which has been considered for publication in the Journal of Cardiothoracic Surgery following revision. We very much thank the reviewers for their time and have addressed each point in turn with reference to amended manuscript. We have also highlighted the changes and submitted the amended manuscript.

Reviewer reports:

Reviewer #1: Assimilating the guidelines and applying them into practice especially in surgery where avoidance can be fatal, it is an obligation. In our case, the ERAS guideline is a reassembly of principles of thoracic surgery which have been followed for decades by thoracic surgeons and subsequently formulated in a guide in order to unify best practices in the treatment of patients of thoracic surgery.

The above study would indeed be an observation to show how much this guideline has been absorbed by thoracic surgeons in the UK. These results would have feedback for the ESTS to evaluate the effectiveness of the guidelines that has developed and the capacity that this association has had to pass on to its members.

From this study I expect suggestions for further improvement of this guideline as explicitly reflects a particular reality such as thoracic surgery in the UK

Response #1: This audit aimed to capture variation in current practice and identify potential barriers to ERAS guidelines implementation at national level. Although we were able to suggest strategies to improve adherence to ERAS, this audit was not designed to look at how the guidelines can be
improved. Highlighting variation can lead to improvement as units reflect on practice but on a national and international level understanding enablers and barriers to ERAS implementation can also help in guiding improvements to guidelines.

Reviewer #2: I congratulate the Authors for the choice to report the UK and Ireland experience on ERAS. Although interesting, this paper does not present advantages and disadvantages of applying the ERAS protocol. The importance or not of the application of ERAS should be translated into statistical terms. I think that a complete rework should be done to turn the paper into a letter.

Response #2: As our aim was to provide a snap-shot on how ERAS pathway is implemented across units in the UK and Ireland, this national audit was not designed to look at advantages and disadvantages of applying ERAS. Benefits of ERAS protocols are described extensively in the literature. Our paper gives an insight into compliance and barriers and enablers to its implementation. As such this qualitative piece of work can not be used assess the clinical impact of ERAS statistically.

Reviewer #3: This manuscript described the real life about adherence to ERAS. For lobectomy, nutritional screening, fasting periods, chest drain management, postoperative analgesia and early mobilization are aspects that can be improved. Smoking cessation, prehabilitation, regional anaesthesia and surgical technique require a more complex intervention.

Goal of operations, balanced with ease on adhere to ERAS program including time and work force, come out as the real-life practice. As lung tumor are the most common diagnosis for patients scheduled for lobectomy, both surgeons and patients could not wait 4-weeks smoking cessation or after nutritional support. Mostly surgical teams run by weekly schedule that may let the service availability around the operation hardly to operate because some of them have to work on weekends. The fast-track practice is much easier to adhere for more practice is performed during admission such as postoperative physiotherapy, early mobilization and early oral intake.

The role and the choice of regional analgesia on thoracic surgery are changing for VATS operations, followed by less chest tube drainage and less postoperative analgesic requirements. However, as more regional anesthesia besides epidural analgesia have been applied such as paravertebral blocks or intercostal nerve blocks, I suggest the authors list all kinds of regional anesthesia for thoracotomy and VATS lobectomy in their manuscript. In table 3, were the postoperative analgesics used in all thoracic operations or for thoracotomy? If regional anesthesia is really less and less applied in lobectomy, please discuss more about the lower application rate of regional anesthesia than that suggested in ERAS. On the other hand, is it time to look back for the ERAS program? Why more strong opioids were used rather than regional analgesia? Does multimodal analgesia cost more or need more nursing care?

One more point is that the surgical team has its own regular meeting or communications about the perioperative managements and surgical outcomes. Without outcome feedbacks, the surgical team members do not recognize the benefits on adhering ERAS program but work on their preference.

Response #3: Thank you for your comments, please see the amendments below

Amended in Discussion (line 236-250) : Other methods of regional anaesthesia used in thoracic surgery are muscular plane blocks (such as serratus anterior plane block and erector spinae block) and selective nerve blocks (such as pectoralis nerve and intercostal nerve block). Although the anatomy of these planes has been well known, the use of ultrasound has made visualizing the muscular plane/nerves much easier, thus reducing the rates of complications and increasing the success rate of the nerve block[18]. Intrapleural local anaesthesia, infiltration of local anaesthetic in the surgical incision, intercostal and subcostal drainage tube insertion sites are also useful in cardiothoracic surgery[19]. As the use of epidural is decreasing, it is likely that HCPs use a combination of other methods of regional anaesthesia such as paravertebral block and weak/strong opioids. This could partly
explain why so many respondents report they use strong opioids. Another explanation would be the lack of resources, as in order to deliver multimodal anaesthesia, hospitals across the country need healthcare professionals that are trained in dealing with various nerve/muscle blocks. As several countries report they are battling an “opioid epidemic”, this aspect of ERAS warrant’s further research. Amended in Table 3 (line 409): * Postoperative analgesic used in all lobectomies (VATs and open approach)

Reviewer #4: 1. This study is an online survey of multi-centers in the United Kingdom and Ireland. Targeting at lobectomy, doctors and nurses in each department of the cardiothoracic surgery, according to the contents of the ERAS questionnaire, see the actual implementation and recommendations of each center as to whether to modify ERAS for more suitable for clinical needs.
2. The research design of this study is rigorous, the data statistics are logical, and it took a lot of effort. The conclusions belong to the results of multiple centers, and the results have sufficient reference value.
3. However, this study involves the collection of clinical data from patients in each center. Whether a common IRB should be signed is based on research ethics. From the article, whether or not each center uses ERAS cannot be confirmed as a prospective or retrospective investigation, so it cannot be said whether the use or implantation of ERAS can reflect the actual situation.
4. There has been some literature that could be surveyed in the 2018-2019 PubMed on the effectiveness of care using ERAS as lobectomy, which can be provided for reference, and a short description and discussion are also recommended.
5. Although many studies are currently discussing the effectiveness of ERAS in different procedures, the conclusions of this study can be used as a guideline for revision. If it can be designed as a prospective study, it should be more valuable.

Response #4: Thank you for your comments, please see the amendments below.
Point 3. Amended in Material and methods (line 85-89) We performed a retrospective analysis of prospectively collected data. As this project was carried out as an audit into current ERAS practice, intended to measure practice of the participating units, following internal review and after using the NHS Research Ethics committee approval tool[9], we decided an IRB was not required.
Point 4. Amended in Discussion (line 277-293) Due to the complexity of the interventions, high quality data supporting ERAS in patients undergoing lobectomy is lacking. A randomised control trial would be very challenging, but current literature supports further investigation, be it in the form of traditional clinical outcomes or by integrating patient reported outcomes or even implementation science[23]. By using a population based approach, one might be able to identify the high risk populations and gain more insight into how cost-effective an ERAS programme is. For example, a study[24] showed that adhering to ERAS has outcome benefits regardless of age or surgical approach and that ERAS adherence is a stronger predictor of length of stay than age. Another study[25] evaluating the application of ERAS to lung cancer patients showed outcomes benefits as well as improved nursing satisfaction when following ERAS principles. Furthermore, a 2018 study[26], showed that an ERAS programme for VATS anatomical lung resection is not only cost effective, but also associated with a reduced length of stay and lower complications rate.
This multitude of approaches demonstrates that ERAS contribution to outcomes is far more complex than current research is able to define. As compliance is related to the clinical effectiveness of ERAS[27], one has to ask the question: to what degree does compliance matter in an optimal ERAS protocol?
Point 5. Amended in Material and methods (line 85-86) We performed a retrospective analysis of prospectively collected data.
We hope following these major amendments that this article will be suitable for publication in the Journal of Cardiothoracic Surgery.

Yours sincerely,

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