

## Peer Review File

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### Review Comments

#### Reviewer A

**Comment 1:** I would like to congratulate the authors on their manuscript entitled “Enhanced Recovery after chest wall resection and Reconstruction: a clinical practice review”. The manuscript is well-written and provides an excellent overview of current literature on ERAS with an explicit emphasis on thoracic surgery. Furthermore, it provides a complete overview on its possible effects on various aspects of perioperative care in chest wall resections. This work is of great value for JTD’s special series on chest wall resections and reconstructions.

**Reply 1:** We would like to thank this reviewer for his nice comment on our manuscript.

**Changes in the text:** No change.

#### Reviewer B

The authors provide a review of the principles of an enhanced recovery after surgery (ERAS) protocol for chest wall resection (CWR). They apply the principles of ERAS and extract prior work completed for pulmonary resection to offer guidance in the development of ERAS protocols for CWR. A concise review of the history and principles of ERAS are provided in the introduction.

**Comment 1:** As a general theme the manuscript could be more meaningful if the authors commented on the challenges of developing ERAS for an operation with significant variability.

**Reply 1:** We would like to thank this reviewer for this interesting and relevant comment. We agree that CWR procedures include a wide variety of interventions that present different postoperative outcomes depending on the size and site of chest wall resection and associated pulmonary resection. However, ERAS programs are based on simple interventions and recommendations covering the entire patient’s journey in the hospital and thus can be easily standardized for all kind of CWRs.

**Changes in the text:** We added precisions in the “benefits of ERAS on chest wall resection surgery” section.

**Comment 2:** The authors discuss the size and location of the defect in terms of reconstruction. Acknowledging the lack of literature for ERAS for CWR, the authors should comment on the impact on size and location on post operative expectations. Elahi et al. (reference (6)) have reported increased morbidity based on size and location of resection. Postoperative care for patients identified at high risk for morbidity needs to be considered separately from patients undergoing smaller CWR. For example, perhaps there is an ERAS for “small CWR” which differs from “large CWR”. A patient undergoing a large anterior chest wall resection would be expected to remain in hospital

longer than a patient undergoing resection of one or two ribs laterally. Although ERAS aims to standardize care, the physiological assault for CWR is high variably compared to other operations where ERAS has been developed (i.e. lobectomy). The manuscript could be strengthened by commenting on this as a challenge to development of ERAS for CWR and suggesting possible novel solutions.

**Reply 2:** This is again an interesting and relevant comment. As mentioned above (reply 1), ERAS programs are made of simple interventions. Thus, it can be applied to all kind of CWRs. However, it is true that specific adaptations with focus on pain, respiratory physical therapy, etc. is necessary in these patients and can be prolonged in major resections. We think that a standardized ERAS protocol can be developed for all CWRs with added specific adaptations as previously mentioned, since all principles of perioperative care are covered.

**Changes in the text:** See answer to the comment 1.

**Comment 3:** Similar to variability based on size and location of chest wall defect, the impact of enbloc pulmonary resection is also a consideration in development of ERAS for CWR. The authors should comment on expected challenges in patients with concurrent anatomic pulmonary resection. Comments on whether or not these patients are best managed with CWR or pulmonary resection ERAS protocols would also enhance the manuscript.

**Reply 3:** We agree that a specific mention should be made for CWRs associated with concomitant pulmonary resections. Indeed, removing a part of the lung changes postoperative outcomes by exposing patients to other complications, such as air leak or bronchopleural fistula. Consequently, a mix between ERAS protocols for CWRs and lung resections should be introduced, although the two look alike.

**Changes in the text:** We changed the manuscript accordingly to our reply 3.

**Comment 4:** In lines 183-84, the statement "...which confirms that even for delicate surgical interventions technical improvements yield large benefits to patients." is confusing. This is likely a true statement however it is not clear how this is supported by the statements and references in lines 180-182. Typically, CWR would not be consider the most "delicate" of operations performed in thoracic surgery. The authors should consider rewording lines 180-184.

**Reply 4:** We would like to thank this reviewer for this interesting comment, and we agree that our phrase was not clear. We rephrased it.

**Changes in the text:** We reworded the statement mentioned above by replacing "delicate" with "high-risk".

**Comment 5:** In lines 185-87, the authors give physiologic mechanisms for pulmonary complications after CWR. Pain should also be included in this list. Pain is later covered in the manuscript, but pain cannot be neglected as a contributor to pulmonary complications from CWR.

**Reply 5:** Thank you for this interesting comment. As you proposed, we added the word pain to the list.

**Changes in the text:** We added the word pain to the list as mentioned in the comment.

**Comment 6:** In lines 205-08, the authors comment on the importance of all members of the clinical team attending a meeting to prepare for the operation. This is certainly desirable but may not be practical in many centers. Instead of meeting, perhaps the authors would consider changing the wording to suggest their “adequate communication” between all members of the clinical team expected to care from the patient before, during and after the operation.

**Reply 6:** We understand that organization of meeting might not be possible in every center, even though we think that this is important for the sustainability of the program by keeping motivation and cohesion between team members. But as you proposed, we changed this in the manuscript.

**Changes in the text:** We changed the word “meeting” with “good communication” as mentioned in the comment.

**Comment 7:** In line 224, a period after “vomiting” is missing.

**Reply 7:** We added this period.

**Changes in the text:** A period was added after “vomiting” as mentioned in the comment.

Overall, the manuscript reads well and will contribute to the thoracic literature.

### **Reviewer C**

I congratulate the authors for the interesting work focusing on ERAS applied to chest wall surgery. Nowadays, ERAS is for sure a hot topic, and I think that its application to chest wall surgery is an appealing challenge. The references list is quite complete.

Anyway, I have some concerns, which I hope can be addressed to improve the manuscript.

**Comment 1:** the manuscript is entitled a clinical practice review of ERAS after chest wall surgery, but no paper on this topic is cited in the manuscript, since literature lacks. First, I would suggest to further underline this lack in literature. Secondly, I would suggest comparing this with other reconstructive fields of application of ERAS, e.g. abdominal wall reconstruction (Sartori A, Botteri E, Agresta F, Gerardi C, Vettoreto N, Arezzo A, Pisanu A, Di Saverio S, Campanelli G, Podda M. Should enhanced recovery after surgery (ERAS) pathways be preferred over standard practice for patients undergoing abdominal wall reconstruction? A systematic review and meta-analysis. *Hernia*. 2021 Apr;25(2):501-521. doi: 10.1007/s10029-020-02262-y), breast reconstruction (e.g. Tan YY, Liaw F, Warner R, Myers S, Ghanem A. Enhanced Recovery Pathways for Flap-Based Reconstruction: Systematic Review and Meta-Analysis. *Aesthetic Plast Surg*. 2021 Oct;45(5):2096-2115. doi: 10.1007/s00266-021-02233-3.), head and neck surgery (e.g. Bertelsen C, Hur K, Nurimba M, Choi J, Acevedo JR, Jackanich A, Sinha UK, Kochhar A, Kokot N, Swanson M. Enhanced Recovery After Surgery-Based Perioperative Protocol for Head and Neck Free Flap

Reconstruction. OTO Open. 2020 Jun 2;4(2):2473974X20931037. doi: 10.1177/2473974X20931037.).

**Reply 1:** We thank you for this relevant comment. Effectively, it might be interesting to mention that other surgical specialties developed ERAS protocols for resection-reconstruction surgeries.

**Changes in the text:** We added the proposed references in our introduction section.

**Comment 2:** something in literature is reported on ERAS applied to sternal surgery (Nuss/Ravitch), I would suggest adding this in the manuscript. (e.g. Mangat S, Hance L, Ricketts KJ, Phillips MR, Mclean SE. The impact of an enhanced recovery perioperative pathway for pediatric pectus deformity repair. *Pediatr Surg Int.* 2020 Sep;36(9):1035-1045. doi: 10.1007/s00383-020-04695-z.).

**Reply 2:** Indeed, pectus deformity repair is kind of part of chest wall surgeries. However, our manuscript focusses on chest wall resection and reconstruction for adults and not pediatric population and not esthetical procedures. However, we mentioned the reference in the introduction section.

**Changes in the text:** We added the mentioned reference.

**Comment 3:** please consider shifting the "Enhanced recovery after surgery" chapter from main body to introduction, reducing the number of words and without going off topic, since the ERAS protocol and the benefits of its application to lung resection are already well known and they should not be the focus of the main body.

**Reply 3:** We thank you for this interesting suggestion. However, we gave an introduction about ERAS protocol in the introduction section and further developed this subject in the main body. We think that it is important to develop the principles of ERAS programs and their benefits since our manuscript describe the potential added value of such protocols for CWRs surgeries.

**Changes in the text:** No change.

Congrats again, wish you good luck!