

Peer Review File

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Reviewer A

Comments to the authors:

Dear authors. Thank you for an interesting manuscript. There is no doubt that you have put a lot of work in the study. However, there are some things to consider in order to improve the manuscript.

Abstract in general: I miss the red thread between your purpose and the conclusion. Can it be clearer and more specific? I am sitting with the feeling that what you are writing as introduction and aim is not the topic you have investigated and conclude on.
Answer: Our main purpose is to evaluate the reoperation rate and the 30-day postoperative complication rate after our standardized TEP repair with macroporous LWM fixed with the fibrin adhesive. (first and second aim, line 26-28, conclusion line 43-45).

Line 41: “Follow up date was collated until December 2019, including reoperations for any recurrences.” I do not understand this sentence.

Answer: This sentence is now revised (line 30-33).

Line 43: You write about use of mesh since 2005. But your data goes from 2012-2019. That is confusing.

Answer: This sentence is now erased.

Introduction: In the introduction you write about light weight mesh vs. heavy weight mesh in terms of postoperative pain, increased patient comfort and quality of life. What about risk of recurrence? That is your primary outcome so this should clearly be mentioned in the introduction. In general, I would like a more clear argumentation in the introduction that leads to your aim.

Thank you very much for this important comment.

The introduction now focuses more on recurrence and reoperation (based on our TEP method) - is LWM in TEP a risk factor for reoperation? Can fibrin fixation reduce that risk? Now we also comment that recurrence differ in gender (line 55-56). Importance

of technical performance (line 52), depending on the quality of the surgeon's technique and caseload per surgeon (line 53-54) and the type of hernia (line 58).

Line 68: This reference is an update on guidelines. You should also include the actual guideline published in 2011. It holds, for instance, recommendations regarding choice of mesh and recurrence.

This reference is added (line 52, 64) Reference number 2 (line 244).

Line 93: You also investigate 30 day postoperative complication. Maybe write that as a secondary aim?

We have decided to have 30 day postoperative complication as a secondary aim (line 27-28 and 79-80).

Line 100-101: "A retrospective review was undertaken of the patients that had a recorded reoperation with the purpose of identifying possible contributing risk factors for recurrence." **Lines 125-126:** "All patients that underwent reoperation were males with lateral hernia and three had at least one risk factor for recurrence at the primary operation." I do not think it is completely clear what risk factors you are talking about? Reference to Table 1?

Line 124 – 127 (Table 2 and 3) has been revised.

Section "materials": It is not quite clear to me what variables come from the SHR and what variables from your own department. Do you have the mesh information from SHR or from your own records? Can you specify?

All variables come from SHR including mesh information (which can be further specified at our department - we have only two different types of meshes for TEP).

Line 119: The numbers in the figure do not add up to 1615?

Thank you. The Figure 1 is now revised.

141-151: You do not discuss why your reoperation rate is so much lower than the rest of Sweden. This should clearly be considered. One reason could be that you only have reoperations registered at Mora hospital. What about patients having their primary repair at Mora and the reoperation at another hospital? Are they registered in your study?

If not, it is a major limitation underestimating the true reoperation rate.

These questions have been answered (line 82-84) (197-200).

All patients are recorded with a personal identity number unique for each Swedish citizen. This means that regardless of where in Sweden any reoperation is carried out, this can be traced in SHR. It is also connected to The Migration and The Cause of Death registers in Sweden. The SHR is validated and 10% of the aligned units are checked independently every year.

Limitations: There is no assessment of limitations whatsoever. In my opinion this is an essential part of the discussion.

Thank you. We have now added ... the problem with quality of data in register (line 141 – 142). One limitation is that SHR only registered patients undergoing hernia surgery and not everyone with a recurrence, another issue is that no planned postoperative examinations are performed. (line 144-146).

Tables: I miss a “classic” table 1 describing patient characteristics of your participants, i.e. the 1,457 TEP repairs.

Thank you for pointing that out. We have added a “classic” Table 1.

Reviewer B

Comments to the authors:

Thank you for your reporting on a case series of patients that underwent TEP repair at Mora hospital.

From reading your manuscript there seems to be, in addition to the outcome data from your institution, four key messages that should be focused upon within the narrative:

1. Lightweight mesh with increased coverage
2. Atraumatic fixation
3. Number of female hernia repairs
4. Training hospital

We have focuses more on our aims, recurrence and reoperation (based on our TEP method).

These seem to be the most novel points that will appeal to any readership. My concern is that, at present, the manuscript is too long (introduction and discussion sections) and the desired narrative is lost among other comments that do not pertain significant

relevance to the data that you are presenting e.g. speculation over causes of hernia recurrence. *We tried to clarify*

The introduction section contains some comments that could be contended e.g. “The most important causes of hernia recurrence after TEP are considered to be mesh migration and mesh bulging due to insufficient abdominal adhesions as a result of mesh interaction with the abdominal wall.”

We have revised this line 66 -68 (ref. 1, 10)

Similarly in the discussion section e.g. “If the cord lipoma is left during the primary repair, the result may be a persisting groin lump and it may be difficult to distinguish from a true hernia, which will unfortunately increase the risk of an unnecessary recurrent surgical procedure.

” *This has been revised (Reference: 20 Köckerling F, Schug-Pass C. Spermatic Cord Lipoma-A Review of the Literature. Front Surg. 2020;7:39. Published 2020 Jul 23)*

Materials section and results section could benefit from additional time spent on ensuring clarity of the information presented, e.g. use of tables without the duplication of information in both format. *Thank you for pointing that out. This has been revised. We have for example added Figure 1 and Table 1 to ensure clarity. Tried to delete duplicate information especially in the results section.*

Overarching comment would be to hone the narrative and ensure clarity of desired message from this set of useful case series data.

We have considered your comments and will focus more to ensured clarity of the main messages.

Reviewer C

Comments to the authors:

The authors present a large case consecutive series of a single institution over 7 years and are commended on their efforts. The results add to the literature on TEP repair inguinal hernias, in particular with morbidity rates producible by large series. The tables and video 1 are appropriate.

A few major and a number of minor issues are detailed below.

Major

- Hernia reoperation is used as a proxy for recurrences. This is a major limitation. What steps have the authors taken to find patients who did not have reoperations for recurrence or had their reoperations done in another hospital? This is the concern of data validity in registries.

Thank you very much for this important comment.

All Swedish citizens have a unique personal identity number (PIN) which make every patient in SHR that has undergone a reoperation traceable no matter what hospital the operation has been performed at (line 82 – 84).

- The retrospective nature of this study and use of a proxy for hernia recurrence should also be stated as a significant limitation to this study in the discussion.

Line (144-146.) “Examining all patients for recurrence is not possible for a register. In our field reoperation for recurrence has gained acceptance as a clinically acceptable surrogate outcome”

- According to the results, all patients had a follow-up period of at least 12 months. Were there any patients lost to follow-up in this series?

No, all patients were followed up at least 12 months (1 – 7 year) for any reoperation under this study period. We also get information if someone dies or emigrates.

Minor

- The manuscript is littered with grammatical errors and would benefit from formal English language editing.

The manuscript has been checked grammatically by Peter Cox and Aali Sheen (line 209 – 210).

- ABSTRACT: Consider abbreviating “totally extraperitoneal hernia” repairs to TEP repair within the abstract. The term is used five times.

This is revised.

- ABSTRACT (Line 54): Reconsider the choice of keywords. MeSH terms relevant to the topic include ‘laparoscopic surgery’, ‘inguinal hernia’, and ‘registries’. ‘Fibrin sealant’ and ‘recurrence’ appropriate terms. If TEP is used, it should be written out in full.

Revised (46-47)

- INTRODUCTION (Line 56): The term ‘totally extraperitoneal hernia repair’ should be kept as lower case
This has been revised (49) and throughout in the article.
- INTRODUCTION (Line 60 and 62): ‘Lightweight’ and ‘Heavyweight’ should be in the lower case.
Revised (60, 62).
- INTRODUCTION (Line 79): Tacks.
Revised (76)
- INTRODUCTION (Line 80): Suggest replacing the phrase ‘can result in an increased vessel-or nerve damage as well as potential harm to the surrounding viscera such as the bladder’ to ‘can result in increased risk of neurovascular damage or injury to surrounding structures, including the bladder’.
Thank you. Revised (75-77)
- INTRODUCTION (Line 84): “... conventional surgical techniques ARE ineffective or impractical”.
This sentence has been removed.
- INTRODUCTION (and through the manuscript where appropriate): The term ‘mesh with large pores’ is used frequently. The term ‘macroporous’ is preferred.
Thank you for pointing that out. Revised throughout the article.
- METHODS (Line 103): It is unclear why the term ‘study’ is highlighted.
It was a mistake, it is revised.
- In addition, the Declaration of Helsinki should be cited.
Revised (Reference 12) (line 98).
- MATERIALS (Line 108 and 110): 2.7mm and 2.5mm. Not 2,7mm and 2,5mm.
Revised (103,105)
- MATERIALS (Line 112) Tisseel Baxter company details should have been listed in introduction (line 82), where it is first mentioned.
Revised. The section about Tissel has been omitted in the introduction. Therefore first mentioned in Line 107 in the materials section.
- RESULTS (Line 133-4): Does this mean, only superficial surgical site infections and no deep SSI’s or mesh infections were seen? This needs to be made clear.
Table 4 has been revised. We did not have any mesh infections (line 132).
- DISCUSSION (Line 155): The authors mention endoscopic operations. Please clarify.

Revised, TEP or TAPP (Line 159).

- TABLE 3: Clarify what is meant by ‘urinary tapping’
Table 4 has been revised, intermittent catheterization.
- Were any TEP repairs converted to TAPP or open in this series?
No, Figure 1

Reviewer D

Comments to the authors:

I have with great interest read the above mentioned manuscript.

Thank you so much.

Abstract:

Well written and to the point. I would like information on completeness of follow-up.

Thank you, revised.

Introduction:

- The authors argue that fibrin sealant has the advantage of hemostasis. However, I don't believe that hemostasis is a major issue in inguinal hernia repair, furthermore, hemostasis should be achieved before insertion of mesh.

I agree that hemostasis is not a major issue in TEP repair (Table 4) but Tisseel has advantage if bleeding occurs over conventional techniques in the “Triangle of pain” peroperative. (line 188-189)

- I don't think the *Laparoscopic Surgery reporting checklist* is a well known reporting guideline. Should not be mentioned in the aim/introduction.

Revised (The sentence is omitted) We present the following article in accordance with the STROBE reporting checklist (line 79-80).

Methods:

- Figure 1 belongs in the result section, not the method section.

Revised, it is now Figure 2.

- In figure 1 1615 repairs are excluded, but only about 150 are accounted for.

Revised (Figure 2) Lichtenstein dropped out, it was a mistake.

- Reasons for exclusion of the remaining repairs should be added to the figure.

The Lichtenstein repairs accidentally dropped out when Figure 1 (now Figure 2) was created.

- The video is a great aid for understanding the technique.

Thank you!

- All patients are operated on the same center. If possible, please provide details about the center (caption area, expertise, etc) and also details regarding the operating surgeons. Are all patients operated by a few very experienced surgeons or are some operated by less experienced surgeons? The results indicate that the surgeons are highly trained in this technique.

All repairs are operated on the same centre at Mora hospital. Informations about the surgeons have been added in Line 114-115.

Mora is located in the county of Dalarna (area 29.086 km²), Sweden. Two hospitals are situated in the catchment area that include 300.000 inhabitants (line 85). Only our unit in Mora do the TEP repairs and take care of the reoperations for recurrent hernia.

- How did you assess complications? Systematically? Are all patients seen at the hospital after surgery or is it only complications registered in the medical files?
A 30-day follow-up is performed by controlling all medical files (line 92-93).
- How are patients selected for TEP vs TAPP vs open surgery? This is important, as it could lead to selection bias.

Thank you. We try to follow the Hernia Surg Guidelines. See Figure 1.

Results:

- The first paragraph in the result section could benefit from a table. The text is difficult to follow.

Revised, results starts on line 113 See Table 1

- Table 1, some patients were undergoing very long operating times. More than 2 hours for a primary inguinal hernia seems too long.

New Table 2, four of the patients had bilateral hernias (Table 2), which explains the operation time. It was one sliding hernia that took a very long time. Mostly at each operation, we have a resident/trainee who performs all or part of the operation.

Typography:

There are a lot of line-shift in the manuscript, breaking the text into many very short

paragraphs.

Revised

The manuscript needs minor editing of the language. *Revised*

Please don't start sentences with numbers. *Revised, thanks for all the valuable comments.*