Peer Review File

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Reviewer A
Comments to the authors:
Comment: The title of the paper laparo-endoscopic hernia surgery in Sweden 2010-2020 suggests that laparo-endoscopic hernia repair was superior for the treatment of inguinal hernias or even on main interest of the authors

Answer: Our intention with the title was not to point out that laparoendoscopic techniques were superior. However, our objective was to write a review covering the best/most interesting publications from the Swedish Hernia Register involving laparoendoscopic techniques because this article was an invited article for laparoendoscopic surgical paper.

Comment: All the included five papers are without any doubt really relevant database studies. All the included papers are already published in relevant or even high impact journals. All database studies are beside of any methodological limitations of huge impact for daily practice, but they all should be scientifically proved by randomized trials.

Answer to comment: As the reviewer points out randomized controlled trials are the golden standard when studying the superiority of one method of operation above the other. RCT study the efficacy ie the results of a technique in the hands of experts under optimal circumstances and for selected patients. The only difference between the groups is the intervention or method which is a great strength of RCT.
National register studies on the other hand evaulates the effectiveness in routine care, i.e what happened when a technique scientifically proven by randomized controlled trials, is implemented in a country by several surgeons and for all patients. Take for example endoscopic techniques for men. In the hands of experts in randomized controlled trials we have seen excellent results. We can also see that some small units in Sweden are doing very well. However for the country as a whole the results are not of the same "good quality" since the register will also host the learning curve of all hernia surgeons that might be quite long for laparo-endoscopic repairs. Therefore, we believe register studies to be an important complement to RCT showing the results of national cohorts.

Comment: Why should some of these studies be published a second time? It seems to be not well defined what was the specific benefit to summarize them.

Answer: Thank you very much for this very important comment. We have tried to address the aim of the study in more detail: "The aim of this paper is to present five of the most innovative publications to reflect the quality of endo-laparoscopic hernia surgery in relation to open techniques from a national perspective based on data from the SHR published between 2010 *and 2020. A secondary aim is to address the specific nature of register studies*

and stress their strengths as well as weaknesses further when having a longer time perspective on the respective study as time has passed since their respective publication."

Comment: All the *papers were graded and five papers were selected because of their specific nature, quality of methodology or international interest. It is a selection of papers that have made a major impact on treatment strategies for different inguinal hernia conditions.*
Who was involved into the decision process? Who is in the Steering committee of the SHR? Was there a conflict of interest possible, because the Steering Committee of the SHR could be simultaneous an author or co-author of the selected papers.

Answer: We have now specified the process in more detail. This is of course very important. As we have written above, we were asked to write this review article with highlights from the swedish hernia register only. We do not, in any way, claim to have written a review covering the whole research area. In methods we have now added this section to clarify the methodology. "Members are elected to the steering committee because of their academic as well as their clinically interest and achievements within the field of hernia surgery in Sweden. Members are elected for 2 respective 4 years depending on their position in the committee. In a consensus meeting in March 2020 the steering committee discussed the papers having a Grade 1-3. Members were advised to refrain from the poll when biased because of any personal involvement in any of the articles."

Comment: The aim of this paper could be to make the treatment of groin hernias more simply. The involved papers and topics are very specific for some situations.
Because of so different inguinal hernias and conditions a simple way to treat all inguinal hernia patients with only one technique seems to be far away until now.

Answer: As we have written above register studies can be seen as a compliment to RCTs when figuring out what method can be used in what circumstance and for what patients. It is definitely not the whole truth.

Reviewer B
Comments to the authors:
This is an interesting review which gives an insight into the mindset behind the Swedish inguinal hernia database, which is the first nationwide hernia registry.
I have the following remarks

1. The purpose of the review is not clearly stated in the Introduction but instead appears in the Discussion line 263-265. It is mentioned the five selected papers were selected to mirror results after lap/endo repairs compared with open repairs. In my mind this a good purpose but should be stated in the end of the Introduction and should be the backbone of the revised Discussion sector.

Answer: Thank you for this important comment that have improved the manuscript. We have rephrased the aim accordingly: "The aim of this paper is to present five of the most

innovative publications to reflect the quality of endo-laparoscopic hernia surgery in relation to open techniques from a national perspective based on data from the SHR published between 2010 *and 2020. A secondary aim is to address the specific nature of register studies and stress their strengths as well as weaknesses further when having a longer time perspective on the respective study as time has passed since their respective publication".*

2. The review would improve if the authors were more careful not to appear (so) overconfident about their (fantastic, I admit) registry, it's achievement and the many publications. Throughout the paper the authors use words/sentences like: important, clinically relevant, major impact and on treatment strategies, high-quality data, data are unique, surgeons all over the world, vital importance, major impact on treatment strategies. It is all true, but the many superlatives may sound hollow and at least to me wrong when uttered by the author/steering group themselves (but conversely flattering when the praise comes from others). I therefore suggest that the authors lay out the facts, skip the somewhat self-centered enthusiasm and let the reader himself/herself think WOW!

Answer: Thank you for this important and for the authors a little bit embarrassing comment. We have now changed the manuscript and used less superlatives throughout the manuscript. In the introduction it now reads: "Up until today some 70 publications are based upon data from the SHR addressing patient related issues concerning the field of open and laparo-endoscopic groin hernia surgery".

3. I miss a more critical analysis regarding the limitations of registry data, - for instance in controlled registry studies (high risk of treatment bias etc).
   Answer: We have now added a more structured section in discussion where we discuss register study weaknesses.

"When reading or performing register studies one must be aware of the limitations. Register studies are in most cases observational and hence one has to consider potential bias of confounding variables. The coverage of SBR is 96% which is very high as opposed to many other registers. In registers with a low coverage of patients there is a risk that only the most skilled and interested surgeons participate and hence the results will be biased in terms of generalizability for a general surgeon in other settings. Register also have a limit for the extent of follow up. For example, examining all patients for a hernia recurrence within a register study is not possible. The large amount of patients prohibit personal interaction with all patients as well as a limit of how many variables that can be registered. However, in the case of hernia surgery reoperation for a recurrence has gained wide acceptance as a clinically important outcome. The coverage and correctness of the variables registered is also of vital importance for the conclusion you can draw. For the Swedish Hernia Register 10% of units are validated annually with respect to coverage and correctness of the variables registered".

4. I think the introduction would improve if focus was on internal (for instance RCTs vs external (for instance registry studies) validity.
Answer: Thank you. We have now added "The internal validity of these trials is often high, reflecting the fact that a well planned randomization makes all other things but the intervention equal. However, RCTs study the efficacy of an intervention performed by experts under optimal circumstances for selected patients in contrast to national register studies the effectiveness of routine care offering a high external validity.

5. The ref nr 3 is old. I suggest to refer to the updated Guidelines by the HerniaSurg group (Hernia 2018).
Answer: *The ref has been updated*

6. Suggest that line 63-64 is left out. Do not think it is necessary to point at oneself. Again, let the achievements and publications etc. speak for itself.
Answer: The lines are erased.

7. The author uses the term: Patient-oriented publications. Well, all clinical studies in hernia surgery are patient-oriented. I suggest not to use the term.
Answer: Thank you. The words are deleted.

8. I do not understand the many line on how the five papers were selected. Why a Pubmed search, MESH terms etc? The database keeps a publication list, do they not. From that the 10 years list of papers can be identified and picked out according to the defined selection criteria. Thus, I think the authors may unnecessarily complicate the selection process (line 97-112).
Answer: we have now rewritten it to be more transparent. "Members are elected to the steering committee because of their academic as well as their clinically interest and achievements within the field of hernia surgery in Sweden. Members are elected for 2 respective 4 years depending on their position in the committee. In a consensus meeting in March 2020 the steering committee discussed the papers having a Grade 1-3. Members were advised to put down their vote when bias because of any personal involvement in any of the articles."

9. In the Method section line 87-88 does in fact belongs to the Discussion section.
Answer. We agree with you and we have moved this sentence to discussion in the section for register study weaknesses.

10. One can discuss it, but I think Method subheading should be avoided. Keep the small subheading The WHR. Introduce another subheading: Selection of highlight papers. Keep the Result and Discussion Section
Answer: We have introduced another subheading to make method section easier to read.

11. I think that the Discussion section should be abbreviated to about on half. Instead

everyone of the five abstracts should have a dedicated discussion including originality, strength and limitations of the study.
Answer: We have now shortened the discussion and omitted two paragraphs

12. I miss a separate paragraph in the final part of the Discussion section: Future challenges.
Answer: We have now added a section for future perspectives/challenges.
"Given that RCT and register studies complement each other, a new methodological study design has emerged, called "register based randomized controlled trials". These studies have the advantage to enable rapid consecutive enrollment, longer follow up, being less costly, and be in line with Register Studies. The results seem to be more generalized to the general population. However, national quality registers enable us to find answer to many questions that are difficult to address in other scientific settings. The greatest challenge for the future will be to ask the clinically relevant questions that are of importance for the hernia patients per see."

Reviewer C
Comments to the authors:
Interesting and well-written paper, but it needs a little "fine-tuning" before it can be published.

1. The term "laparo-endoscopic" is a bit old-fashioned and has been replaced in most countries by the simple term "laparoscopic" I would therefore suggest that you change that throughout the paper (also in the title).
   Anser: We have used the word laparo-endoscopic because TEP is not strictly laparoscopic since the trocar does not enter the abdominal cavity. We will of course change if you feel otherwise.

   I would suggest that you add the word "scientific" before "highlights" in the title.
   Answer: Thank you. We have made that.

2. Reference style does not match that of the journal. Please correct.
   Answer: We have corrected this mistake.

3. Number style and separators should be correct English, e.g. in line 27, 83, 137, 175, 198, 199, 201, 202, 225, 227, 251, 309.
   Answer: Thank you for pointing this out. The numbers have been corrected.

4. There are numerous errors in the way you give references – sometimes before full stop, sometimes after, sometimes with a space after the sentence sometimes without.
   We have now referred in a coherent fashion.