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Reviewer A

This article is a systematic review regarding surgical complications associated with lumbar discectomy. This is an interesting systematic review, but before resubmitting the article I request some major and minor changes as follows.

Major point:

1) Please indicate statistical value between the results of each group.

- No statistical values have been provided as this is a systematic review without meta-analysis. Hence the values provided are in line with calculating complication rates. This is in keeping with the other systematic reviews looking at complication rates of lumbar discectomy without calculating statistical significance.

Minor points;

1) P4, line 120. Please clarify the reason for the following determination: Studies published before 1997 were excluded as MIS techniques were not yet widely used. 1997 seems to be too early.

- The research before 1997 is scant and the techniques were not in widespread use at this point – please see citation to support this argument in main document. It is also to avoid historical bias.

2) This is my personal interest. If the authors analyze only using the studies assessed "good" by the Newcastle-Ottawa Quality assessment, are the results similar to that including the studies assessed "poor"?

- Yes, results were similar between studies of variable risk of bias. Please see discussion, P10, line 319-324 as it states that studies assessed "good" and "poor" were included for analysis.

3) Two abbreviations (FED, FE) are used for full-endoscopic discectomy. Please unify the abbreviation.

- Correction made.

4) P10, line 288. Low infection rate of FED might be not only depending on the size of incision but also depending on continuous irrigation during the operative procedure.

- Perhaps, although I was unable to find evidence to support the claim.

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Reviewer B

The current study conducted a systematic review on different types of discectomy for lumbar disc herniation. Authors aimed to identify if complication profiles are different in MIS groups compared to open or micro-discectomy. Thirty-five articles met the inclusion criteria and were analyzed in the review. Several complications and their incidences were reported, and authors have concluded that trends are similar between different approaches.

Comments:
Methods
Did the authors search EMBASE database?

- Only medline was searched. This was due to time constraints in completing the review and having only one reviewer available to conduct screening and data extraction.

Authors need to construct a PICO table. Also please use the standard PRISMA chart.

- Completed. See Appendix 1 and Figure 1 respectively.

In any review, at least 2 reviewers are needed to conduct screening and data extraction. This allows for resolving any bias in inclusion/exclusion of the studies as well as controlling the data accuracy during collection.

- Unfortunately, in this study this was not possible. This is discussed in the limitations section (4.1). I cannot rectify this retrospectively.

Page 5 lines 133-136, please clarify. As it reads it looks like some studies are included and excluded at the same time.

- The sentence was removed as it contradicts itself and doesn't add to the paper; the results will not be altered, hence clarifying or amending the point would be inconsequential and will not affect the outcome.

Data analysis – how did the authors assess which studies and numbers can be pulled together?

- As stated in the data analysis section – all studies which mention a particular complication (i.e. durotomy) for a discectomy technique are included (including studies *mentioning* a complication but with 0 cases). The no. of patients identified with complication 'X' are pulled together as the numerator over the total no. of patients in the included studies as the denominator.

How about the heterogeneity in patient populations between different groups?

- Heterogeneity was difficult to account for as included studies lacked clinical detail (as mentioned in 4.1 – limitations). Furthermore, studies generally included patients from a narrow cohort demographic i.e. patients with degenerative disc disease, therefore heterogeneity was difficult to prioritize

within this review.

What RoB tool was used for the RCTs? Information is missing. For non-RCTs why did the authors use Newcastle-Ottawa Quality assessment form and not MINORs?

- The Newcastle-Ottawa Scale is a perfectly valid tool to assess the quality for non-randomized studies included within systematic reviews and evidence has been cited in section 2.5 – bias risk assessment, P5, line 139 (citation no. 17). For the purpose of this review all RCTs were classified as having a low risk of bias when *compared and included* with non-randomised studies due to their status as a higher level of evidence in evidence hierarchy. The lack of RoB tool for the RCTs will be acknowledged within the discussion section as a drawback of this study – see p10-11, line 324-326 & p12, line 378-380.

Have the authors done any statistical analysis to confirm that differences in complication incidence are significant.

- No as this study was a systematic review and not a meta-analysis. Statistical analysis was not performed as the study only looked at synthesizing results from included studies to identify complication rates and not the statistical significance of the findings.

Results

Analysis of RoB for all RCTs has to be redone as the above tool is not to be used for RCTs.

- Please see the above point.

Please add a % to number of patients for each type of an approach.

Authors need to address questions above regarding the population heterogeneity and how samples were pooled together.

- Please see the above point

What happened if some studies did not report on re-operations or re-herniations? Was it clear that those outcomes were assessed? Same question for other complications.

- This point has been addressed in the limitations and discussions of this study. Studies that did not report on a complication were not included in the denominator when calculating the rate of that complication.

Results section needs to be re-done to address those points.

Discussion

Please address points above and revise the conclusions, as they might not be supported with the current data analysis.

- Please see the points made above.

Several other reviews that were not mentioned in the current study have looked at different approaches and outcomes. Here are few examples:

https://pubmed.ncbi.nlm.nih.gov/29548960/

https://pubmed.ncbi.nlm.nih.gov/28803171/

- Only papers from 1997 and Feb 2020 were included within this review.

Reviewer C

Suggest making the distinction between "systematic review" versus a "meta-analysis." Your study is a systematic review; are there any standards guiding such reviews, such as the PRISMA for meta-analyses? If so, or even if not, please add this to the paper, and make the distinction clear between a systematic review versus a meta-analysis. I think adding a few sentences clarifying these points will add to an otherwise very well written paper.

- Please see lines 76-82, page 3.