Author's response to reviews

Title: The effects of anterior vacuum disc on surgical outcomes of degenerative versus spondylolytic spondylolisthesis: at a minimum two-year follow-up

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Author's response to reviews: see over
Dear Editors and Reviewers:

Thank you for the comments concerning our manuscript entitled "The effects of anterior vacuum disc on surgical outcomes of degenerative versus spondylolytic spondylolisthesis: at a minimum two-year follow-up" (MS: 5405397251170378). We are pleased to have an opportunity to revise our paper. We have carefully considered the valuable comments and have made correction which hopefully will meet with approval for publication. In addition, a language editor has made revision of the manuscript to improve the writing quality. The detail description of changes in the revised manuscript was underlined, and the response to each reviewer’s question was listed point-to-point:

Reviewer: Gabriel Gutman

Major Compulsory Revision
1. Comparison between DS and IS is debatable because are different pathologies as stated in the discussion.
2. The instability caused by the disc is mainly because of the disc space height rather than the vacuum phenomenon. I think this issue should be addressed in more detail.
3. Background: Last paragraph. Hypothesis: To compare whether PLF rate is reduced in anterior Vacuum disc it should be compared vs PLF rate without vacuum or with PLF + IBF (interbody fusion)

Discretionary Revisions:
1. Results: The incidence of the vacuum phenomenon was significantly higher in the IS group (P<0.001): Not clear to me. according to the inclusion criteria all patients were with vacuum phenomenon.
2. Clinical Results: The success rate was higher in the cage group, but without a significant difference (75.0% vs. 59.1% p=0.164). Not clear. According to Inclusion Criteria and methods no patients underwent cage.
3. Discussion: however, controversy regarding instrumentation and noninstrumentation still exists.[19]: I think that this is correct for the 2004, but in 2014 it is clearly demonstrated in several trials (ex. SPORT) that instrumented fusion is better.
4. Discussion: Second paragraph. ref 21-23: How these studies evaluated fusion? If in these studies fusion was evaluated by CT, may be the fusion rates are higher.
Reviewer: Sharon Brennan

Reviewer's report:

Major compulsory revisions:
I have concerns about comparing DS and IS due to differing pathologies – indeed, the authors themselves acknowledge this. Please discuss this, especially in the limitations section.
Did the 42 patients provide their informed consent to participating in this study?

Minor essential revisions:
There are some grammatical and spelling errors throughout, including in Table 1 column heading.
Response:
Major Compulsory Revision

1. Comparison between DS and IS is debatable because are different pathologies as stated in the discussion.

Response: this is a limitation of comparison between DS and IS. We mentioned in the first paragraph of discussion and revised this point in the "limitations" section of discussion. (line 12th in page 12 to line 6th in page 13; and line 12 to 17th in page 17)

2. The instability caused by the disc is mainly because of the disc space height rather than the vacuum phenomenon. I think this issue should be addressed in more detail.

Response: the issue was revised on the discussion section. (line 18th in page 14 to line 4th in page 15) In this study, narrower disc height in the IS group, but not found to lead to a poor fusion rate. Some factors could explain this result. (line 4th in page 15 to line 12 in page 16):
1. Matsunaga et al (reference 25). demonstrated that when disc height is collapsed, there is a natural tendency to restabilize the motion segment; (more collapsed, more stable)

Matsunaga et al (reference 25) They found that severe disc degeneration was less significantly related to angular displacement, and had a tendency to stabilize the motion segment
2. the dynamic motion of spondylolisthesis (angle change) in the IS group was more stable compared with that in the DS group (our finding)
3. In addition, dynamic slippage change was longer in the DS group (our finding)

3. Background: Last paragraph. Hypothesis: To compare whether PLF rate is reduced in anterior Vacuum disc. it should be compared vs PLF rate without vacuum or with PLF + IBF (interbody fusion)

Response: the hypothesis we used was unsuitable for this article, because we compare DS and IS with vacuum. Due to No "interbody fusion" was performed for these cases, we deleted the sentence of hypothesis.

Discretionary Revisions:

1. Results: The incidence of the vacuum phenomenon was significantly higher in
the IS group (P<0.001): Not clear to me. according to the inclusion criteria all patients were with vacuum phenomenon. 

Response: All patients in both groups had a vacuum signs on extension view radiographs. No patient in the DS group, but 8 in the IS group had a vacuum sign on flexion view. (p<0.001). The result was found by radiography evaluation, and the article had been revised. (line 11 to 12th, page 9)

2. Clinical Results: The success rate was higher in the cage group, but without a significant difference (75.0% vs. 59.1% p=0.164). Not clear. According to Inclusion Criteria and methods no patients underwent cage.

Response: There was a error : The success rate was higher in the IS group, but the difference was not significant (75.0% vs. 59.1%, p = 0.164). (revised: line 13 to 14th in page 11)

3. Discussion: however, controversy regarding instrumentation and noninstrumentation still exists.[19]: I think that this is correct for the 2004, but in 2014 it is clearly demonstrated in several trials (ex. SPORT) that instrumented fusion is better.

Response: yes, the update information showed that instrumented fusion is better. The reference had been replaced and the article had been revised. (line 7 to 10th in page 13)

4. Discussion: Second paragraph. ref 21-23: How these studies evaluated fusion? If in these studies fusion was evaluated by CT, may be the fusion rates are higher.

Response: All these study evaluated fusion by radiography. We believe these 22 patients with vacuum discs in the spondylolisthesis segment in our study were in an unstable condition, if compared to other study groups. This was mentioned in discussion (line 10 to 19th in page 13)
Reviewer: Sharon Brennan

Reviewer's report:

Major compulsory revisions:
I have concerns about comparing DS and IS due to differing pathologies – indeed, the authors themselves acknowledge this. Please discuss this, especially in the limitations section.
Did the 42 patients provide their informed consent to participating in this study?

Minor essential revisions:
There are some grammatical and spelling errors throughout, including in Table 1 column heading.

Response:
1) We mentioned the differing pathology in the first paragraph in the discussion section. (line 10 in page 12 to line 6th in page 13) In addition, the limitation of comparing DS and IS had been discussed, in limitation section of Discussion. (line 12 to 17th in page 17)
2) Yes, this study had IRB, and all 42 patients provided their informed consent
3) The grammatical and spelling errors had been checked and revised, including all Table s;
**Editorial Requirements:**

We strongly urge you to make these changes promptly, as we cannot proceed to the next process until we have received a version containing the changes.

1. By way of a section ?Acknowledgements?, please acknowledge anyone who contributed towards the article by making substantial contributions to conception, design, acquisition of data, or analysis and interpretation of data, or who was involved in drafting the manuscript or revising it critically for important intellectual content, but who does not meet the criteria for authorship. Please also include the source(s) of funding for each author, and for the manuscript preparation. Authors must describe the role of the funding body, if any, in design, in the collection, analysis, and interpretation of data; in the writing of the manuscript; and in the decision to submit the manuscript for publication. Please also acknowledge anyone who contributed materials essential for the study. If a language editor has made significant revision of the manuscript, we recommend that you acknowledge the editor by name, where possible.

The role of a scientific (medical) writer must be included in the acknowledgements section, including their source(s) of funding. We suggest wording such as 'We thank Jane Doe who provided medical writing services on behalf of XYZ Pharmaceuticals Ltd.'

Authors should obtain permission to acknowledge from all those mentioned in the Acknowledgements section.

**Response:** the Acknowledgements section was completed and we obtain permission from all of them. (line 12 to 16th in page 20)

A language editor has made revision of the manuscript, including all Tables to improve the writing quality.