

Peer Review File

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**Reviewer A**

The authors conducted good prospective research showing that obesity affects the complication and outcomes in multi-level fusion thoracolumbar fusion.

Thank you: No modifications advised

**Reviewer B**

Interesting topic, however some fundamental issues regarding outcome parameters, statistics and limitations as well as discussion;

Abstract line 36 please explain ASD as first mentioned

Agree: Modified

Introduction: no structure, the passages are not linked to each other (ll 65-82).

Thank you for this comment. In order to better link these paragraphs we have extended the sentence to “While multiple factors influence outcome, the effect of obesity and its influence on successful outcomes and complications of surgery remains unclear” and moved this to the second paragraph. Furthermore we have combined the second and third paragraphs as they essentially focus on the same point. We thank the reviewer for the opportunity to significantly improve our paper.

Hypothesis and aim is (llines 84-88) is good

Agree: No modifications advised.

Methods

line 92 -> retrospective analysis of prospectively collected data? If so, please mention.

We agree: We have modified this accordingly.

line 94 -> please provide a Ethics Committee Number

We agree: Modified accordingly.

ll. 110-113; please describe measurements of radiographic parameters, which sagittal parameters, which frontal; were they all combined or single (sagittal or frontal) deformities included? Single or double curve? Lumbar or thoracic curve?

Agree: Partially modified. Inclusion criteria (lines 96-100 cover this), however we agree with the measurements (106-108) which has been modified accordingly.

Single observer measurement? Always the same or different observer?

Agree: Modified accordingly thank you.

How far upwards regarding thoracic levels were the deformities?

T2 was the most cranial level.

t-test require normal distribution, are you sure that all outcome parameters are normally distributed? Even more important for Chi-2?

Please give detailed description.

We agree: Gaussian distribution was checked with the Kolmogorov-Smirnov test. We have added this to the text.

Regarding clinical outcome parameters and tests: How were they implemented? Self-assessment? Assessment by doctor/ single observer? Multiple?

Please give detailed description

Agree: Modified accordingly thank you.

Please give information, why a severe complication of proximal junctional kyphosis is seen more in non-obese subjects.

The reviewer makes an interesting point, thank you. In essence we don't know as we would think it would be more in obese patients but obviously results not significantly different due to low numbers. Perhaps the screw pull-out is a more likely event due to body habitus and in the thinner people they fail above the construct. Ultimately this study methodology cannot address this question.

Tables:

Table 1: There is no p value of 0.000 -> Please give correct value or <0.05? <0.01?

Thank you for pointing this out – we have amended this to P<0.01.

Table 1: not enough detail of radiographic parameters.

We thank the reviewer for the opportunity to reflect upon this however we feel that we have recorded preoperative Cobb angle, the coronal balance, sagittal balance and the PI-LL mismatch expressed as mean and standard deviations as the pertinent radiographic factors.

Table 2: not enough detail of parameters: which segments included?

Radiographic parameters only over 6 months? In-text the authors mentioned at least follow up of 2 years? The radiographic parameters after 6 months are not long enough to answer the question raised.

We thank the reviewer for pointing this out to us. The Cobb angle refers to that of the major curve, the coronal balance is from the C7Plumbline to CSVL, the lumbar lordosis refers to the superior margin of T12 to S1. We have added this clarification into the text. With respect this study is examining the effect of obesity on functional outcomes and complication rates up to 2 years following surgery therefore we respectfully content that reporting the radiographic measurements at the 6 months stage following surgery is of value.

language:

1. 97 - Thoracic

Agree: Modified