Reviewer's report

Title: Biomechanical Comparison of Unilateral and Bilateral Pedicle Screws Fixation for Transforaminal Lumbar Interbody Fusion After Decompressive Surgery- A Finite Element Analysis

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Reviewer: Yasuchika Aoki

Reviewer's report:

The authors clearly describe the biomechanical disadvantages of unilateral pedicle screw fixation, and usefulness of supplementary facet screw fixation using finite element model. Although there is slight difference, authors pointed out the different stability between ogival-shaped cage and moon-shaped shape. The model used seems to be well validated and the methodology is well-explained. The data are partly consistent with the data from previous studies and some of the data are new and of clinical importance. This paper is well-written and contains important information, thus, seems to be worth being published after several points are revised.

Major points

1. Spondylolisthesis most frequently occurs at L4-L5 level. Please explain why the author chose L3-L4 in the study.

2. The authors showed the usefulness of supplementary facet screw fixation with unilateral pedicle screw fixation. The proposal is reasonable, however, in case of severe spondylolisthesis, there is a possibility that facet screw doesn’t work effectively. Spinal fusion is usually indicated to the patient with significant instability (ex. facet dislocation), thus, facet screw insertion is, in some cases, inadequate.

Minor points

1. Background, Page 4, line 16: “spar the spinal process ligament”? do you mean “spare the spinal....”?

2. Table 2: Chen [3] and Shirazi-Adl [31], are the references correct? Please check the reference number.

3. Figure legend for figure 6: this figure shows the data of unilateral pedicle screw, but there is no explanation. Please explain the use of unilateral or bilateral screw.

4. Figure 7 (data about Flexion): It seems that stress increased after adding the supplementary facet screw. Please comment on the unexpected result in the Results or Discussion section.

5. Figure 7: In the explanatory notes, 1-TLITo+f should be TLIFo+f.

Level of interest: An article of importance in its field
Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests