Reviewer’s report

Title: Degeneration of three or more lumbar discs significantly decreases lumbar spine/hip ROM ratio during position change from standing to sitting in AVN patients before THA

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Reviewer: Chun Kee Chung

Reviewer's report:

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The authors tried to investigate the influence of lumbar intervertebral disc degeneration on the spinofemoral movement from standing to sitting on patients planning for total hip arthroplasty (THA).

They enrolled 138 consecutive patients preparing for total hip arthroplasty due to avascular necrosis of femoral head (AVN FH). They divided the patients into the 2 groups; the lumbar degenerative disc disease (LDD) group of 3 or more discs with UCLA disc degeneration score \gt; 1, and control group. They analyzed and compared the differences of the sagittal parameters between the 2 groups of patients. There was no significant difference in height, weight, BMI and AVN staging between groups. The LDD group had more female and older patients. On standing, the LLD group had 5° less LL, 5° more PT and larger SVA. From standing to sitting, in the LDD group, the total flexion was 7° less, spine flexion was 16°less, hip flexion was 7° more, L1 slope change was 6° less, SS change was 8° less than control group. The spine/hip flexion ratio was significantly lower in LDD group (0.3 compare to 0.7 in control) \( P \lt 0.001 \).

Patients with LDD leaned more forward than patients without LDD on standing. They had larger pelvis posterior tilt angle for compensation. On sitting, the LDD group had a less lumbar spine/hip flexion ratio, demonstrating less spine flexion and more hip joint flexion. In combination with less posterior pelvis tilt, they had higher risks of posterior dislocation.

This manuscript is an extension of the previous studies which analyzed an increased risk of hip prosthetic dislocation in patients with lumbar diseases. Their results are in line with the previous reports.

However, I have several concerns for the manuscript.

1. Their conclusion of higher posterior dislocation in less posterior pelvic tilt may sound too much, particularly considering its lack of the clinical data.

2. Age and sex were different between LDD group and control group. However, they did not control this difference.

Also there are numerous misspelling all over the manuscript, which makes reading a bit difficult. Below are examples, which are not comprehensive.
1. Page 4, line 52. 'life' may be omitted.
2. Line 55. 'lewinneck' be 'Lewinneck'
3. Line 65. 'round' may be 'around'
4. Page 5, line 82. 'arthroplasty' may be 'arthroplasty'
5. Line 84. 'surgery;' may be 'surgery'
6. Line 92. 'previously used in previous studies' may be 'used in previous studies'
7. Page 6, line 99. 'osteophtes' may be 'osteoophytes'
8. Page 7, Line 135. 'Table 1' may be 'Table 2'. The main text has 2 tables. However, attached tables are 3. Which one is correct?
9. Page 8, line 146. 'pelvis' may be 'pelvis'
10. Page 9, line 165. 'Christina's research as well [15]' Reference 15 has no name of Christina.
11. Line 174. 'increased increased' may be 'increased'
12. Page 11, line 185. 'spine' may be 'spine'
13. Line 189. ' combination' may be 'combination'
14. Line 193. 'decreaseament' may be 'decrease'
15. Page 12, line 201. 'decresed' may be 'decreased'

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No
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If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

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Please indicate the quality of language in the manuscript:

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