Reviewer's report

Title: The effect of necrotic lesion size and orientation of femoral component on stress alteration of proximal femur in hip resurfacing - a finite element simulation

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Reviewer: Weng-Pin Chen

Reviewer's report:

This paper performed a finite element analysis to investigate the effects of femoral head necrotic sizes and orientations of implant on the stress alteration of proximal femur following hip resurfacing surgery. The results indicated that a larger lesion might induce more severe stress shielding. Furthermore, varus orientation of implant resulted in a larger displacement of the stem tip, which might lead to an increasing risk of implant loosening. Their results effectively explained why neck narrowing was observed from clinical follow-ups after hip resurfacing surgery.

Hip resurfacing surgery is an attractive concept as it preserves proximal femoral bone stock and offers inherent stability and optimal range of movement. Consequently, it has gained interest to treat young and active patients who have femoral head osteonecrosis. Therefore, this paper may provide wide interests to orthopedic surgeons. Overall, the question posed by the authors is well defined. The methodology for the two important requirements of an FE model such as, validation and verification, are well described. The limitations to the study are duly noted and the conclusions are supported by the data presented. However, in several places, the grammar of the manuscript is incorrect and typos still exist. A proper proof-reading should be further conducted. My specific comments are detailed below.

Minor Essential Revisions:

(1) Page 2, Results: “Stress shielding occurred at proximal femur after HRC”. Shouldn't it be "HRA" for the word "HRC"?

Please correct “HRC” to “HRA”.

(2) Page 4, Para 2, Lines 1-4: The authors state: "Hip resurface arthroplasty (HRA) has several advantages …… and the bone-conserving nature.”

Please provide some related references to support this statement.

(3) Page 6, Para 1, Lines 12-13: “Contact was not simulated as in previous studies no contact was found to occur between the stem and bone”

This statement is difficult to understand. Please re-phrase.

(4) Page 15, Legends, Correct the legend regarding “Figure 2 (b)”

(5) Please make sure that a proper proof-reading is conducted. Please have a native English speaker edit this manuscript.
Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

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

Declaration of competing interests:

I have no competing interests.