Author's response to reviews

Title: Bone mineral density of the proximal femur after hip resurfacing arthroplasty: 1-year follow-up study.

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Author's response to reviews: see over
Bone mineral density of the proximal femur after hip resurfacing arthroplasty: 1-year follow-up study.

Reviewer's report
Date: 18 August 2010
Reviewer: Amar Ranawat

This is an interesting study investigating the bone mineral density of the proximal femur after hip resurfacing arthroplasty at two days, 3, 6 and 12 months postoperatively. I recommend publication with minor essential revisions:

1. ABSTRACT: Background as written makes no mention of HRA

ANSWER: We have rewritten and expanded the “background” of the abstract. Hopefully, the revised text better leads the readers into the topic.

2. BACKGROUND: It should focus more on bone remodeling and justifying the importance of quantifying the bone density. There is no mention of neck resorption/thinning. The opening statements are too strongly worded. There is no consensus that HRA is THE primary treatment option in younger, active patients. There is no evidence that HRA eliminates stress shielding and osteolysis.

ANSWER: We have revised the introduction in the form that “Hip resurfacing arthroplasty (HRA) is a bone conserving procedure that provides an alternative to total hip arthroplasty (THA).”

3. In methods, there is a typo, BMI>27 and >30 (not less or <)
ANSWER: Corrected

4. The discussion should start with re-examining the question/hypothesis.

ANSWER: We have re-written the first paragraph of the discussion.
Reviewer's report
Date: 31 January 2011
Reviewer: Jonathan Lee

1. Is the question posed by the authors well defined?
   Thank you for the opportunity to review this interesting study. The question is well-defined. The authors wished to study the changes in the femoral neck BMD after hip resurfacing arthroplasty and they used DEXA in their analysis. OK

2. Are the methods appropriate and well described?
   The methods are appropriate but the descriptions are somewhat confusing and need to be more clearly and succinctly stated in grammatically correct English.
   As mentioned in the specific comments, please describe if your DEXA technique is novel or one that you have used before.
   **ANSWER:** The authors hope that the responses and modifications (see below) to the text will clarify this issue. The analysis protocol was custom made; however, the defined ROIs were based on Kishida et al (8) and Gruen et al (11). The appropriate clarifications have been made to the methods section.

3. Are the data sound?
   The DEXA data seem reasonable. I would appreciate a tabular or graphic presentation of the data; I believe this will help you express your conclusions. I also would suggest tables or figures for your other data (e.g. VAS scores).
   **ANSWER:** We have revised the first paragraph of the Results and reported part of the information in a table.
4. Does the manuscript adhere to the relevant standards for reporting and data deposition? The authors appear to have adhered to the relevant standards for reporting data. OK

5. Are the discussion and conclusions well balanced and adequately supported by the data? The discussion and conclusions seem reasonably well-balanced and adequately supported by the data. OK

6. Are limitations of the work clearly stated? Yes OK

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? n/a

8. Do the title and abstract accurately convey what has been found? Yes OK

9. Is the writing acceptable? The idea is excellent but some of the grammar/English needs to be re-worked. ANSWER: The manuscript was edited for English before submission to the journal, but some parts of the text appear to need some revising. We have taken this comment into account while revising the whole manuscript.

SPECIFIC COMMENTS:
1. Abstract, first sentence. The wording is awkward. I suggest, “In addition to implant-related stress-shielding factors, various other patient-related factors may have an effect on bone mineral density of the proximal femur in patients with hip resurfacing arthroplasty.” ANSWER: We have rewritten the first part of the abstract and revised the above mentioned sentence as suggested.
2. Abstract. “Methods” first sentence: I suggest changing the wording to, “Thirty three patient (9 females and 24 males) with mean (SD) age of 55 (9) years were included in the study.”
**ANSWER:** The sentence was revised as suggested.

3. Background, 1st sentence. Much too strongly worded. HRA is "a" treatment for OA in the young population, not "the" treatment.  
**ANSWER:** The authors have revised the first part of the introduction in a neutral form: “Hip resurfacing arthroplasty (HRA) is a bone conserving procedure that provides an alternative to total hip arthroplasty (THA)”. 

4. Background, 3rd paragraph, 1st sentence. Please consider changing the first part of the sentence to, “Although hip resurfacing methods have been used already...” 
**ANSWER:** The sentence was revised based on your suggestion.

5. Background, last sentence. Please consider changing to: “In addition, we sought to study how bone remodeling was affected by stem-neck angle, as well as some patient related factors such as physical activity.”
**ANSWER:** The sentence was revised as suggested.

6. Methods, 1st paragraph, 4th line. Please change “<” to “>” in “...and 21% were obese (BMI <30.0).”
**ANSWER:** corrected

7. Methods, DEXA analysis section, second paragraph: “ROIs 9 and 10 were positioned to medial and lateral upper femur including greater trochanter, respectively.” This needs to be re-worded so it better describes what you are trying to explain.  
**ANSWER:** Authors have now modified the second paragraph as follows: “In the dual femur BMD analysis ten custom made regions of interest (ROI) were defined: ROIs 1-6 were determined according to Kishida et al [8]; ROIs 1-3 corresponded to superolateral zones and ROIs 4-6 to inferior-medial zones. In addition, four larger regions were defined based on
Gruen et al [11]: ROI 7 corresponded roughly to Gruen zones 1+7 and ROI 8 to Gruen zones 2+6. ROIs 9 and 10 corresponded to the medial and lateral upper femur including the greater trochanter (Gruen zones 1+2 and 6+7), respectively."

8. Methods: Please make mention of whether or not your DEXA analysis technique is novel or not. Are these ROIs commonly used or is this a custom protocol for your study?

**ANSWER:** The authors recognize the text describing the analysis was incomplete. ROIs 1-6 were determined according to Kishida et al (2004). ROIs 7, 8, 9, and 10 were defined based on Gruen zones 1+7, 2+6, 1+2, and 6+7, respectively. Thus, the protocol used was custom made and developed for this study. This issue is now clarified in the text. In addition we have also added a recent reference about the reproducibility of the analysis used in the text.

9. Methods, Operative technique, 1st sentence. Please revise to, “The patients were operated on by one experienced orthopedic surgeon using a posterior approach with the Birmingham Hip Resurfacing (BHR) system.”

**ANSWER:** Again, thank you for helping us to improve our writing.

10. Methods, Operative technique, last sentence. Please consider revising to, “All the patients were allowed to bear full weight on the first post-operative day although a cane was recommended for 2 weeks after the operation to help with balance.”

**ANSWER:** The sentence was revised as suggested.

11. Results, 3rd paragraph, second-to-last line. Typo-O: “BMB” should be “BMD”

**ANSWER:** Corrected

12. Discussion, 2nd paragraph. The English should be re-worked here so the sentence structure is less awkward. I believe your point is that immediate weight-bearing, in your opinion, helps preserve BMD; please make this clear and support the statement with appropriate references.
ANSWER: We have revised the 2nd paragraph of the discussion to clarify the text and added new references as well.

13. Discussion, 3rd paragraph. As in the second paragraph, please re-work the English to more clearly state your point.
ANSWER: We have also revised the 3rd paragraph of the discussion.

Quality of written English: Not suitable for publication unless extensively edited
ANSWER: After revision of the manuscript we have consulted an English speaking editor.