Reviewer’s report

Title: Maintenance of bone mineral density after implantation of a femoral neck hip prosthesis

Version: 1 Date: 2 August 2007

Reviewer: Eric A Nauman

Reviewer’s report:

General

The authors present an interesting study designed to examine the clinical outcomes of using a short-neck hip implant. The question is a fruitful one as FEA models have demonstrated distinct advantages of the short-neck or stemless implants. The predicted stress distribution was much closer to that of normal bone, especially when compared to more traditional implant designs. Unfortunately, short-neck implants have made few inroads into the clinical market. The results certainly suggest the worthiness of future work in this area.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

Background: In the background section, the authors should describe the demand for a short-neck implant. While it provides a more natural stress distribution, many clinicians claim that there is little or no need to modify the design of current implants. The authors should summarize rates of implant loosening and/or the percentage of implants required for younger patients.

Methods: The methods appear to be well-described and the clinical methods are repeatable. Based on the description of the statistical analysis, it appears that the authors are comparing the change in outcome as measured by the Harris Hip Score, WOMAC, and BMD change to the initial values.

Please describe the Harris Hip Score and WOMAC in more detail. What are the maximum values and typical values for patients prior to surgery?

Are there other studies that perform sub-segmental analyses of the BMD that can be cited to validate the technique? If not, it seems that there is substantial room for error depending on differences in femur size between patients and it should be quantified.

Results: Please match the labels of the figure captions to those of the actual figures. The tables are complete, but it is difficult to assess the images due to their small size.

Discussion:
Line 5: “extend” should be “extent”

In the discussion of the stress and strain distribution, the authors should consider the work of Joshi et al., (2000) Journal of Biomechanics.


The most important feature of the work is the comparison of the authors’ results with those obtained for conventional implants. Unfortunately, there are no data provided for the convention implants. Ideally, the authors would have had the same surgeon implant 20 more traditional implants for comparison. In lieu of this, the authors should perform a meta-analysis to compare to other studies.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

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