Reviewer’s report

Title: Retention of metals in periprosthetic tissues of patients with metal-on-metal total hip arthroplasty is reflected in the synovial fluid to blood cobalt transfer ratio in the presence of a pseudotumour

Version: 0 Date: 10 Jun 2020

Reviewer's report:

PEER REVIEWER ASSESSMENTS:

OBJECTIVE - Full research articles: is there a clear objective that addresses a testable research question(s) (brief or other article types: is there a clear objective)?
Yes - there is a clear objective

DESIGN - Is the current approach (including controls and analysis protocols) appropriate for the objective?
Yes - the approach is appropriate

EXECUTION - Are the experiments and analyses performed with technical rigor to allow confidence in the results?
No - there are minor issues

STATISTICS - Is the use of statistics in the manuscript appropriate?
Yes - appropriate statistical analyses have been used in the study

INTERPRETATION - Is the current interpretation/discussion of the results reasonable and not overstated?
Yes - the author's interpretation is reasonable

OVERALL MANUSCRIPT POTENTIAL - Is the current version of this work technically sound?
If not, can revisions be made to make the work technically sound?
Yes - current version is technically sound

PEER REVIEWER COMMENTS:

GENERAL COMMENTS:
This paper examined the relation between implant positioning (from radiographs), presence of pseudotumors (from MRI) and metal concentrations in tissues and blood of 60 patients with THA replacements.

This is a clinically important question since many patients operated decade(s) earlier necessitate an evidence based prognosis for their implants now.
The authors have done a great job I think. The paper reads very nicely. It is concise but detailed. Methods and data are perfectly described. The text is overall excellent and it was a real pleasure to read this work.

I was surprising to read that even with perfectly positioned implants the metal concentrations can be high and interested in that the concentrations depend on the pseudo tumor type.

REQUESTED REVISIONS:
Surprisingly the data relative to the second aim of the paper, ie "distribution of metals in relation to presence or absence of pseudotumors" is missing and is not discussed either. The authors have skipped this aim and went directly to analyze the effect pseudotumor type on metal concentrations. The analysis of metals vs dichotomised pseudotumor data (present absent) should be added and shortly discussed before the subanalysis with pseudotumor type.

In the discussion lines 282-291, the message that even well placed cup can have elevated metals, maybe the authors could add briefly the concept that wear results from a badly placed cup relative to the femoral component. Maybe in these patients with well placed cups but high metals, the cups may be well placed but the femoral component could have sub-optimal version, offset, or angle? Did the authors categorize the quality of femoral component placement? Can they discuss shortly this aspect of placement relative to the femoral component? It is friction after all. It requires two parts.

In the conclusion line 346-347, "even optimal implant orientation does not prevent adverse tissue reactions" is a little alarming. This is a sub-group of patients that were selected because of the need for revision. The number of patients with well placed cups in this cohort should be put in perspective to the total number of patients with well placed cups who did not need revision.

ADDITIONAL REQUESTS/SUGGESTIONS:
See above. Otherwise excellent.

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

No

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

No

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

Yes
Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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