Reviewer's report

Title: Metal ion levels in large-diameter total hip and resurfacing hip arthroplasty - Preliminary results of a prospective five year study after two years of follow-up

Version: 2 Date: 10 February 2012

Reviewer: Paul Zalzal

Reviewer's report:

Thank you for the opportunity to review the article “Metal ion levels in large-diameter total hip and resurfacing hip arthroplasty Preliminary results of a prospective five year study after two years of follow-up.”

The topic is current and of interest to many arthroplasty surgeons. The questions posed by the authors are generally well defined. There are a few queries regarding the methods section as described below. The data appears sound for the most part, however some concerns are mentioned below. The discussion section in my opinion is too long. The conclusion section is well balanced and adequately supported by data.

The limitations are addressed. The authors relate their research to previously published data. The title and abstract convey what has been found. The writing needs some improvement in some areas as described below.

Major Revisions:

1. Page 3 under Background section: it is stated “In case of large diameter hip arthroplasty devices the acetabular component is identical to the one used in standard hip arthroplasty.” This is not true for all manufacturers.

2. Page 5 under methods: “during the study period 4 patients of the THA group required replacement of the contralateral hip....” did they get metal on metal or metal on poly? Do any patients have metal on metal on the other side?

3. “All blood samples were collected on equal setting conditions” on page 5. What does that mean?

4. Page 5 under radiological analysis, a figure should be used to define inclination angle and arc of cover.

5. Page 7 under statistical analysis. Were the resurfacing cases and THA cases pooled together when looking for correlation between inclination and coverage and ion level?

6. Page 8 under results “Consequently, there were not significant correlations between the concentrations of metal ions in the serum, the inclination of the acetabular component ...” This statement is misleading. It leads the reader to believe that it there exists no correlation between these values however the sample size was too small to prove there are no correlations. The authors have identified that they were not powered to prove no correlation. The study “failed to show” a correlation, possibly because it was under powered. Again in the
discussion on page 11 it is stated “On the other hand the recent study showed no
correlation between the metal ion levels in the serum, the inclination of the
acetabular component, and the arc of cover.” If this refers to the current study,
this statement is not true. The study was not powered to show that no correlation
exists.

7. Discussion page 11 “a relationship between increase wear of the
metal-on-metal articular surface and the incidence of soft tissue lesions...” This
topic is not related to the current study and this section of the discussion is not
necessary in my opinion.

Minor Essential Revisions:
1. Page 3. “total hip replacement” is abbreviated to THA. It should be total hip
arthroplasty abbreviated to THA or total hip replacement as THR.
2. Page 3: “...within the hip joint, the periarticular soft tissues, systemically and in
the liquor” this does not make sense.
3. Page 6 “A second tube was stored at the department at -20 Celsius furthering
order to .....” this sentence is not well written and is confusing.

Discretionary revisions
1. The Discussion section is too long.

**Level of interest:** An article whose findings are important to those with closely
related research interests

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

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

'I declare that I have no competing interests’