Reviewer's report

Title: Fluid management guided by a novel continuous non-invasive arterial pressure device is associated with decreased postoperative morbidity in patients undergoing total knee and hip replacement - a randomized study

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Reviewer: Karim Lakhal

Reviewer's report:

Thank you for giving me the opportunity to read this interesting paper entitled « Fluid management guided by a novel continuous non-invasive arterial pressure device is associated with decreased postoperative morbidity in patients undergoing total knee and hip replacement – a randomized study »

In this study, including patients undergoing total knee and hip replacement, patients (n=40) included in a peroperative protocol-guided fluid management including noninvasive PPV (GDFT group) had less complications during their hospital stay than control patients (CONTROL group, n=40) included earlier (before-after design), and underwent a liberal fluid strategy.

A third group of patients (n=40) also undergoing peroperative protocol-guided fluid management with continuous noninvasive arterial pressure monitoring (CNAP device) but not including noninvasive PPV (PRESSURE group) was associated with an intermediate rate of post-operative complications.

The topic is of interest. The paper is well written (even though a slight language editing is necessary), the methodology is good (and rigorous for several points) and the conclusions are sufficiently cautious. It fits the CONSORT guidelines. The presentation of the results is clear.

Here are my other comments:

MAJOR COMMENTS:

- The Title is misleading (« a randomized study »). Actually, the main objective and the main findings of this study rely on comparisons between the GDFT and the CONTROL groups. These comparisons are made on the basis of a BEFORE-AFTER design, not a randomized one. Please correct the title (this point is already well discussed by the authors as a limitation).

- As discussed by the authors, CONTROL patients tended to be sicker, even if there were no statistical between-groups differences for ASA score and other co-morbidities. This may be due to lack of statistical power. This point is, of course, of importance. So, please, in Table 1, may you provide the respective p values in each row (as the authors did in Table 2 and 3).

- Tables 2 and 3: I guess that the provided p values refer to comparisons
between CONTROL and GDF2T groups (please modify the column title). Please provide the p value for the comparisons between the CONTROL and the PRESSURE groups.

- Table 2: There is statistical difference in the number of patients receiving transfusion. Is there any difference in the amount of red blood cell transfused? Please, add a row to provide this information (the authors already provided this information for crystalloids and colloids).

- Table 2: In addition to the mean value of Lactate, the number of patients with an abnormal lactate level (>2.0 mmol/l e.g.) could be informative.

- The between-groups difference in outcome is mostly due to a difference in the rate of INFECTIOUS complications. This important finding may deserve more development in the manuscript: please discuss the quite high rate of infections in the CONTROL group (57.5%), please provide the infected sites (this information has been probably collected by the authors, as Additional File 2 appears extensive). How was infection defined? (initiation of antimicrobial therapy? Fulfilling of a priori defined standardized criteria?).

MINOR COMMENTS
- When defining PPV for the first time, please add « respiratory » (respiratory variations of pulse pressure).
- Table 2: some units are lacking.
- Figure 2A: « MAP below 20% ». Please replace by « decrease in MAP >20% » or other more specific term.

I hope the authors will judge my comments helpful to improve their very interesting work.

Karim Lakhal (France)

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 declare that I have no competing interests