Reviewer's report

Title: Analysis of renal dysfunction in orthopaedic patients

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Reviewer: Thomas Nickolas

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Comments for Manuscript “Analysis of renal dysfunction in orthopaedic patients”:

This is a retrospective study examining the incidence and risk factors for post-operative renal dysfunction in patients undergoing orthopaedic procedures. This study answers interesting questions regarding pre-op risk factor assessment for post-op AKI. Ultimately, the study could be improved with the following:

Goal: is stated to assess pre-op risk assessment but it seems that incidence rates for AKI in this population are unknown and are also being reported in this study. I would redefine the goal of this study to determine the incidence of AKI and to identify pre-op risk factors for post-op AKI.

Definitions:
Acute Kidney Injury is the preferred term for ARF and I would change the terminology accordingly.

1025 patients were admitted to the hospital and 893 had surgery.

RD: Please change ‘renal’ to ‘kidney’ and use KD

AKI: the definitions quoted that define AKI as a rise in scr of 0.5 mg/dL seem arbitrary and should be referenced. Definitions have been established by AKIN and RIFLE and these should be used.

In general, this study uses RD too liberally and it is confusing to know when the authors mean AKI, CKD or AKI on CKD. Please use specific language when describing these diseases.

Methods:

1025 admission due to trauma were admitted, 893 orthopedic procedures were performed; patients with known renal injury were excluded:

1. Please define kidney injury: acute or chronic. Also, I disagree that patients with pre-op CKD should be excluded as they may be at higher risk of post-op AKI. If the authors do not want to include them in the main analyses than a subset analyses of their risk should be conducted.

2. The criteria used to define AKI are not listed. Please delineate the exact criteria that were used

3. Please define the peri-op complications
4. Please define the types of AKI that were identified: pre-renal AKI, intrinsic AKI, ATN, AIN, etc.

5. Please provide information on the patients who were excluded from this analysis, in particular:
   a. Reasons for exclusion
   b. Comparisons to the study population

Results and Discussion:

1. Please re-order the paragraphs. The electrolyte abnormalities seem inconsequential and should be presented after the main findings. Also, the relevance of a low BUN is unclear – is the suggestion that BUN is a poor diagnostic marker of AKI? If that is the case, this is not novel and already well known. A more interesting finding would be to report the degree of elevation in serum creatinine for patients with pots-op AKI.

2. The follow-up time is not reported. Several clinical outcomes are reported, such as the persistence of kidney dysfunction requiring dialysis. However, the reader needs to know the duration of follow-up.

3. It is not clear if ‘irreversible’ renal dysfunction means the progression to ESRD. If this is the case than please make that statement.

4. Please define dehydration and if this in reference to pre-renal AKI? Do the authors mean volume depletion? Did the patients who had ‘dehydration’ really have hemodynamic collapse?

5. The authors do not make a compelling enough summary and conclusion of their own data. Their study demonstrates that many modifiable risk factors for post-op AKI are present, including better management of fluid status, selection of pain control methods, use of RAS inhibition. These should framed in the conclusion as important clinical factors to be assessed in the pre-op period by the orthopedic surgeon.

6. It would also be instructive to know if patient management was influenced by the level of serum creatinine versus eGFR. It is very well known that scr is a poor marker of kidney function. I would assume that since this population is elderly, that scr might mislead orthopedic surgeons to believe pre-op kidney function might have been OK rather than poor. This analysis might enhance the goal of this study to identify pre-op risk assessment tools.

7. Did patients with sustained AKI, compared to transient AKI, have higher mortality?

Tables:

1. Table 3: Is known how many patients had pre-renal versus intrinsic AKI?
2. Table 4 seems superfluous
3. Table 5: please do not use ‘success’ and ‘failure’. Please tell us the outcome. Also, the table is not clear, I am not sure what the variables in the far left column represent.
Level of interest: An article of importance in its field

Quality of written English: Not suitable for publication unless extensively edited

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