

# Why acute kidney injury during partial nephrectomy matters

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We thank our colleagues for their interest in our paper assessing the association between acute kidney injury (AKI) during partial nephrectomy and renal function 1 year after surgery (1).

We agree with Rosiello and colleagues that partial nephrectomy has an intrinsic risk of AKI (2,3). It has been shown that approximately 1 in 5 patients are at risk of acute damage that may eventually result in chronic kidney disease (1,4,5). Even for experienced surgeons, identification of patients at risk of acute damage is of paramount importance and can be done using a number of predictive tools available in the literature (6,7). Moreover, we reiterate recommendations towards adequate postoperative management of these patients, including fluid resuscitation in case of volume depletion or avoiding nephrotoxic agents after surgery.

In addition, implementation of AKI criteria should be pursued, as suggested by Kim *et al.* (8). Several biomarkers have been proposed (9) which have the potential to improve stratification of patients before and after surgery. Awaiting future validations, we believe that the implementation provided by AKI duration has the clear advantage that the dimension of time is easy to calculate and does not necessitate additional data collection. When it comes to the optimal definition of AKI, Kim and colleagues (2) raised concerns about possible overestimation of AKI due to the lack of parenchymal mass reduction (10). As we elaborated elsewhere (11), our paper included sensitivity analyses using alternative criteria (12) which almost halved the incidence of AKI (11% *vs.* 20%), with no meaningful differences from our primary analyses. Accordingly, we are confident that our findings were not a consequence of overestimation of AKI.

Finally, Kim et al. (13) criticized the lack of long-term assessment of renal function, suggesting that the association between AKI and 1-year function might not hold true at longer follow-up. To test this hypothesis, they recommend the use of functional change ratio (FCR), defined as longterm estimated glomerular filtration rate (eGFR) (most recent value)/new baseline eGFR assessed 3 to 12 months after surgery (14). However, such construct deserves further consideration. In the original paper (14), while median creatinine 3 to 12 months after surgery was worse than median preoperative function (1.51 vs. 1.26 mg/dL), it was not that much different from median long-term function (1.54 mg/dL, median follow-up: 45 months) (14). This suggests that patients treated with partial nephrectomy are at risk of functional deterioration up to 1 year after surgery, but renal function remains substantially stable thereafter. Under this assumption, findings from Zabell et al. (14)

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actually corroborate our results suggesting that renal function 1 year after surgery is adequate to evaluate whether AKI translates into long-term damage (1,15).

In conclusion, our colleagues raised a number of interesting points. None have a substantive impact on our key finding that AKI is associated with renal function at 1 year, but they do provide insight to guide future research directions.

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## Footnote

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

*Ethical Statement:* The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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