



Beyond Function: Did Anesthetic Choice Influence Subclinical Kidney Injury Rather Than Estimated Glomerular Filtration Rate? [Letter]

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Dear editor

We read with interest the randomized controlled trial by Zhang et al comparing propofol and sevoflurane anesthesia in elderly patients undergoing hip fracture surgery, which demonstrated a superior early postoperative estimated glomerular filtration rate (eGFR) with propofol.¹ We commend the authors for addressing an important and clinically relevant question regarding anesthetic-related renal effects. While this observation is valuable, we propose that the findings may be better understood in the context of subclinical acute kidney injury (AKI), and that the methodological approach merits further discussion.

The reliance on serum creatinine (sCr)-based eGFR as a primary endpoint in the dynamic perioperative period is methodologically limited. sCr is an insensitive, delayed marker of renal function, not real-time injury, and its concentration is easily confounded by perioperative hemodilution.^{2,3} Furthermore, the comparison of absolute group mean eGFRs may not be the most robust analytical approach. A single patient with severe outcome can disproportionately skew the mean. Analyzing the intra-patient change from their own baseline eGFR would likely provide a more precise and clinically relevant assessment of the true anesthetic effect on an individual level.

We hypothesize that the core issue is not a transient functional difference, but rather an unmeasured cellular insult. The findings in the sevoflurane group—lower urine output and elevated plasma renin—signal a state of significant renal cellular stress. This is the definition of subclinical AKI. While statistically non-significant due to the small sample size, the single case of a patient requiring renal replacement therapy in the sevoflurane group may serve as an important clinical signal, underscoring that such underlying cellular stress, although often subclinical, can manifest as severe organ dysfunction in vulnerable individuals.

To truly delineate the renal impact of these anesthetics, a methodological refinement is needed. Future trials should not only incorporate early damage and stress biomarkers (eg, NGAL, KIM-1, [TIMP-2]•[IGFBP7]),^{4,5} but also consider analytical strategies that focus on individual patient trajectories rather than simple group means.

In conclusion, the crucial question raised by Zhang et al's work may not be whether propofol appears to preserve a transient functional marker better, but whether sevoflurane contributes to greater subclinical renal stress—a concern highlighted by the single severe adverse event.

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Disclosure

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