Postoperative Acute Kidney Injury in Abdominal Operations: a Critical Appraisal

Macaulay Amechi Chukwukadibia Onuigbo¹

Received: 7 June 2021 / Accepted: 3 July 2021 / Published online: 24 July 2021
© Association of Surgeons of India 2021

Dear Chief Editor,

We read with great interest and fascination the just published paper by Vasavada and Patel on postoperative acute kidney injury (AKI) in abdominal operations [1]. They reported AKI in 20 (5.37%) patients in a cohort of 372 patients who had undergone abdominal surgical procedures in their center in India [1]. On univariate analysis, AKI was associated with intraoperative hypotension ($p < 0.001$) [1]. However, on multivariate logistic regression analysis, intraoperative hypotension did not independently predict AKI [1]. The authors had surmised that one explanation for this disparity would be a better management of intraoperative hypotension by the anesthetic team [1].

In their paper, AKI was clearly defined according to acute kidney injury network classification [2, 3]. Nevertheless, intraoperative hypotension was defined as systolic arterial pressure below 80 mm Hg, a decrease in systolic arterial pressure by 20% below baseline, or vasopressors requirement [4]. Vasavada and Patel did not report on the minimum requisite duration of the periods of intraoperative hypotension in their study. Furthermore, whether these periods of intraoperative hypotension were mandatorily contiguous or interspersed would matter. In the cited Bijker report, all analyses were repeated using time variables of 5 and 10 min for the minimal episode of intraoperative hypotension duration [4]. In our previous reports, we demonstrated intraoperative hypotension as measured by systolic arterial pressure changes over contiguous periods sometimes exceeding 1–2 h [5, 6].

We argue that if and when the authors reviewed the data and incorporated the duration of intraoperative hypotension, they may be able to demonstrate a stronger cause-effect relationship between intraoperative hypotension and postoperative AKI. Whether they would still have enough AKI cases to power the regression analysis is open to question. Intraoperative hypotension must be avoided to mitigate postoperative AKI [4–6]. Postoperative AKI, as demonstrated in the study, drives cost of care and is associated with significant 90-day mortality [1].

Declarations

Conflict of Interest The author declares no competing interests.

References

1. Vasavada BB, Patel H (2021) Postoperative acute kidney injury in abdominal operations – a case series analysis. *Indian J Surg*. <https://doi.org/10.1007/s12262-021-02967-z>
2. Mehta RL, Kellum JA, Shah SV, Molitoris BA, Ronco C, Warnock DG, Levin A (2007) Acute Kidney Injury Network. Acute kidney injury network: report of an initiative to improve outcomes in acute kidney injury. *Crit Care* 11(2):R31
3. Kellum JA (2015) Diagnostic criteria for acute kidney injury: present and future. *Crit Care Clin* 31(4):621–632
4. Bijker JB, van Klei WA, Kappen TH, van Wolfswinkel L, Moons KG, Kalkman CJ (2007) Incidence of intraoperative hypotension as a function of the chosen definition: literature definitions applied to a retrospective cohort using automated data collection. *Anesthesiology* 107(2):213–220
5. Onuigbo MA, Agbasi N (2015) Intraoperative hypotension - a neglected causative factor in hospital-acquired acute kidney injury; a Mayo Clinic Health System experience revisited. *J Renal Inj Prev* 4(3):61–67
6. Onuigbo MAC, Agbasi N (2017) The ignored role of intraoperative hypotension in producing postoperative acute kidney injury: an obligatory appeal for more preventative nephrology. *Curr Hypertens Rev* 13(1):71–78

✉ Macaulay Amechi Chukwukadibia Onuigbo
macaulay.onuigbo@uvmhealth.org

¹ Division of Nephrology, Department of Medicine, The Robert Larner, M.D. College of Medicine, University of Vermont, UHC Campus, 1 South Prospect Street, Burlington, VT 05401, USA

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.