

# Restrictive versus liberal fluid therapy for major abdominal surgery: is the evidence strong?

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We have read with great interest the original study by Myles *et al.* (1), in which the authors claimed a restrictive fluid regimen during and up to 24 hours after major abdominal surgery was associated with higher rate of acute kidney injury. This international, randomized, assessor-blinded trial compared the following outcomes between restrictive and liberal intravenous-fluid regimen: disability-free survival at 1 year, acute kidney injury at 30 days, renal-replacement therapy at 90 days, septic complications, surgical-site infection, and death. The perioperative fluid management is of great clinical significance, the results demonstrated by Myles *et al.* provide high-level evidence with dedicate design and adequate case volume, serving as potential reference to guidelines of surgical patient care. Shortly after its online publication, the article has drawn tremendous attention and caused extensive discussion among surgeons world-wide.

However, there are several concerns we'd like to address. The study aim was to discuss the fluid therapy for major abdominal surgery, including esophageal or gastric, hepatobiliary, colorectal, etc. But liver resection was excluded in patient selection, which might cause confusion as the authors failed to clarify which procedures were included by hepatobiliary surgery, if hepatectomy is ruled out. More importantly, liver resection is a crucial part of abdominal surgery, the fluid control of such patients is definitely worth discussing. It is possible that liver resection was excluded because most

patients were under strict fluid/CVP limits in place and randomization wasn't easy. However, Correa-Gallego *et al.* (2) described the method which could randomize patients undergoing liver resection to goal-directed therapy group and standard perioperative resuscitation group. In addition, the authors reported that a restrictive fluid regimen was associated with a higher rate of acute kidney injury. Acute kidney injury was defined according to the criteria of the Kidney Disease: Improving Global Outcomes group (3), on a scale of 1 to 3, with higher values indicating increased severity. The clinical significance of temporary increase of serum creatinine in postoperative patients, especially in the elderlies, is questioning. And no irreversible kidney injury was reported due to the transient increase of creatinine. We wonder if the acute kidney injury defined in this article was accurate in this postsurgical setting. Using this index as one key secondary outcome is a potential over-interpret. Finally, the authors identified a higher rate of surgical-site infection in the restrictive fluid group, and explained that hypoperfusion was the possible reason. However, this is not convincing as it's believed that fluid-induced edema impairs wound healing. Further investigation is begged to further understand the phenomenon.

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## Footnote

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

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