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Letters to the Editor

Controversies in Fluid Management During Abdominal Surgery[☆]



Controversias sobre el manejo de la fluidoterapia en cirugía abdominal

Dear Editor,

In the August issue, *CIRUGÍA ESPAÑOLA* published an Editorial about fluid therapy, concept and use. Along with the authors, we also believe that there is undesirable variability in the administration of fluids among hospitals, anesthesiologists and even surgeons at the same medical center.¹

The general perioperative management of patients undergoing elective surgery is experiencing a process of change. Until a few years ago, the approach was based on what was taught in medical school and the experience attained during medical practice instead of on scientifically demonstrated facts. It fundamentally involved waiting for the recovery of physiological functions that had been modified by the aggressions of surgery and pharmacological agents, according to the organic reserve, with minimal intervention throughout the entire perioperative process. Enhanced Recovery After Surgery (ERAS) programs arose in the 1990s, when Kehlet² coined the term “fast-track” and presented several proposals to improve postoperative progress in patients who had undergone elective surgery. The ERAS protocol was initially used only for patients undergoing colorectal surgery,³ and its use has later been extended to other surgical subspecialties.⁴

A well-known complication after gastrointestinal surgery is postoperative ileus. The multifactorial etiology of prolonged ileus means that all patients are different, and studies about risk factors have calculated theoretical probabilities. Based on these principles, traditional measures in anesthetic and surgical practices (prolonged preoperative fasting, mechanical bowel preparation and the use of nasogastric tubes for decompression) are not currently recommended. On the other hand, it has been demonstrated that practices like intravenous

analgesia for pain control (especially with opiates), the delay in the initiation of oral intake until the appearance of peristalsis evaluated subjectively and bedrest are risk factors that favor longer hospitalization and increased healthcare costs.^{5,6}

A key point would be the optimized use of fluid therapy.¹ Fluid overload is associated with cardiorespiratory complications, reduced tissue oxygenation, predisposition for thromboembolisms and slowing down of gastrointestinal function, all of which lead to reduced survival.⁵ Although it is well known that ileus is caused by multiple factors, and there are numerous publications about the associated risk factors, the management of perioperative fluid therapy has not been widely studied or related with postoperative ileus. Traditionally, large quantities of fluids have been used to replace perioperative deficit. This deficit includes replacing losses due to fasting, insensible water loss, third-space sequestration and blood loss, resulting in an excessive input of intraoperative fluids. In a multi-center study, Brandstrup et al.⁷ researched the impact of fluid restriction on colorectal surgery, and they observed a reduction in complications of almost 20% in the group with fluid restriction (1000 mL the day of surgery). Lung complication rates were 7% vs 24%, and tissue healing complications were 16% vs 31%, when they compared the group with fluid restriction with the classic fluid therapy group. Nevertheless, this study does not refer to postoperative ileus. Along this line, clinical guidelines have recently been published for intraoperative hemodynamic optimization in non-cardiac surgery.⁸ It has currently been demonstrated that prolonged fasting (8–10 h) does not entail a clinically relevant reduction in intravascular volume and, therefore, does not require perioperative replacement. To this situation, we should add that fasting of clear liquids has been reduced to 2 h prior to surgery, which reduces even more the possibilities

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of the patient presenting intravascular volume depletion during surgery. Likewise, it has been demonstrated that insensible losses are much lower than originally thought and nonexistent in the third space.^{7,8} For these reasons, aggressive administration of fluids, mainly crystalloids, provides no benefits and justifies the current trend of balanced fluid replacement, also known as zero balance.⁹

Goal-directed fluid therapy (GDFT) can be a plausible option for individualized treatment using algorithms that optimize systolic volume (SV) and cardiac output (CO) using “fluid challenge” or based on dynamic parameters for volume response. Although there is much controversy, there is also evidence supporting its use, particularly in high-risk patients. In this regard, an individualized focus is recommended when using GDFT for general surgery patients, although restrictive therapy could be a valid alternative in low-risk patients. Nonetheless, GDFT is generally done intraoperatively and there are no randomized clinical trials comparing intraoperative versus perioperative GDFT. The ERAS programs developed by the *Grupo Español de Rehabilitación Multimodal* (GERM) in Spain have led to a greater introduction of GDFT and allow for patients to be in an optimal preoperative situation. However, it is difficult to quantify this intervention or others individually because the ERAS protocol emphasizes the approach of the different stages of perioperative management using the implementation of management bundles, which impact the treatment and recovery processes.¹⁰

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