Does Thoracic Epidural Analgesia Impede Recovery After Laparoscopic Colorectal Surgery?

To the Editor:

In a randomized clinical trial comparing epidural analgesia (EDA) with patient-controlled analgesia (PCA) in patients undergoing laparoscopic colorectal surgery, Hübner and colleagues¹ showed that EDA impeded postoperative recovery without adding any obvious benefit of pain relief or reduced complications. Many aspects of this study were well done. The authors chose a sensitive and well-validated primary endpoint: medical recovery. Other than an adequate number of study subjects and a consistent surgical procedure, group comparability was also demonstrated by proven risk factors affecting postoperative recovery, such as age, American Society of Anesthetists' physical status classifications, Charlson comorbidity index, sort of diseases, duration of surgery, etc. However, the EDA scheme used in this study needs to be discussed.

In this study, about 40% of EDA patients had an intraoperative hypotension requiring hemodynamic support with vasopressor. It has been shown that intraoperative hypotension is a significant risk factor of increased postoperative complications and prolonged hospital stay after abdominal surgery.² In patients undergoing noncardiac surgery, short durations of an intraoperative hypotension can also result in postoperative kidney and myocardial injuries,³ which are main adverse events that can affect postoperative recovery, hospital stay, morbidity, and mortality.^{4,5}

We noted that the EDA scheme of this study included a bolus of 5 mL of bupivacaine 0.5% before anesthesia induction and a continuous infusion of bupivacaine 0.5% at a rate of 5 mL/h until the end of surgery. To avoid hypotension and motor blockade, recommended concentration of bupivacaine for thoracic EDA is 0.125% or less, especially for when thoracic epidural local anesthetics and opioids are combined.⁶ Thus, we consider that intraoperative addition of thoracic epidural anesthesia with a high

concentration bupivacaine should be a main reason for significantly more EDA patients with hypotension. If thoracic epidural anesthesia with a high concentration bupivacaine was avoided during surgery, the different results of patients in the EDA group would have been obtained in this study. For example, in the study of Senagore et al,⁷ when the thoracic EDA scheme includes a bolus of 6 to 8 mL of bupivacaine 0.25% immediately before skin incision and a continuous infusion of bupivacaine 0.1% at 4 to 6 mL/h until the morning of the first postoperative day, thoracic EDA compared with PCA results in an improved dietary tolerance and a shorter hospital stay after laparoscopic colectomy. Furthermore, Taqi et al⁸ shows that when an epidural infusion of bupivacaine 0.1% at a rate of 5 to 15 mL/h is only started at the end of surgery and continued up to 3 days after laparoscopic colectomy, thoracic EDA is superior to PCA in providing pain relief and accelerating the return of bowel function and dietary intake. Accordingly, we do not agree with them that thoracic EDA cannot be recommended as part of enhanced recovery program pathways in laparoscopic colorectal surgery. We argue that before the real role of thoracic EDA in the enhanced recovery program of laparoscopic colorectal surgery is concluded, further studies to determine the optimal bupivacaine concentration and the best commence time of thoracic EDA are still needed.

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Reply:

We thank Prof Xue and colleagues for their interest in our article¹ and for their insightful comments. Obviously, several important points may have been misunderstood and we appreciate the opportunity to clarify.

Our article does not provide data on intraoperative hypotension. Our group investigated this important topic in a previous randomized trial (NCT00556790). In fact, we reported more patients with intraoperative hypotension in the enhanced recovery arm of the study; these were the patients with the combination of epidural analgesia and stringent fluid regimens.^{2,3} Long-lasting intraoperative hypotension with negative impact on outcomes should not occur and can be avoided by specialized anesthesia teams. Hypotension was counteracted in our aforementioned study by appropriate means of either colloids or low-dose vasopressors.² Patients in the enhanced recovery arm of the study fared well with reduced complications and hospital stay.³ So, our data do not support the statement that appropriately managed intraoperative hypotension is deleterious.

There is indeed a large variation in concentrations used for intra- and postoperative epidural analgesia.^{4,5} A bupivacaine concentration of 0.125% is recommended for the postoperative phase in the cited article and not for the intraoperative period as suggested by Xue et al.⁴ We agree that incidence of postoperative hypotension was concerning in our study, as it is an obvious impediment for recovery. We therefore decided (i) not to place epidurals any longer for laparoscopic cases and (ii) to adapt our postoperative protocol for epidurals in patients having open surgical procedures. With lower dose of local anesthetics, we

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observed fewer episodes of hypotension in a consecutive cohort of patients who did not have more pain issues (unpublished data).

In summary, the main point is that most patients with laparoscopic colectomy do as well or even better without epidurals. Prof Xue selectively cited 2 positive studies in favor of epidurals for laparoscopic colectomy.^{6,7} Both studies are limited by a small sample size and can be labeled historical (2001, 2007) in such a rapidly evolving field. Furthermore, Taqi et al⁷ conducted their study in non-ERAS (enhanced recovery after surgery) patients and the group of Prof Senagore⁸ seems to have abandoned epidurals for laparoscopic ERAS patients meanwhile. Several excellent contemporaneous studies are in line with our findings reporting a slower recovery for patients with epidurals.^{9,10} Moreover, a recent US review analyzed 191,576 laparoscopic colorectal surgical procedures. On case-matched analysis, epidural analgesia was associated with more urinary tract infections, a longer hospital stay, and increased costs.¹¹ It is therefore not surprising that the most recent ERAS guidelines for colonic surgery do not recommend epidurals explicitly but rather underline the promising alternatives.¹²

In conclusion, successful implementation of an enhanced recovery protocol has proven a most effective way of improving recovery and reducing complications. The

current evidence suggests that epidural analgesia does *not* help recovery after laparoscopic colorectal surgery within such a multimodal pathway. Enhanced recovery also means to simplify patient care and to become less and less invasive. We suggest therefore making efforts to improve implementation of ERAS pathways and to evaluate promising alternatives for epidurals rather than to focus on different patterns of epidural analgesia.

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