

# Utility of Ultrasound-Guided Erector Spinae Plane Blocks for Postoperative Pain Management Following Thoracolumbar Spinal Fusion Surgery [Letter]

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## Dear editor

In a retrospective cohort analysis including 118 patients who underwent primary thoracolumbar spinal fusion surgery, Zelenty et al<sup>1</sup> assessed perioperative analgesic efficacy of preoperative ultrasound-guided erector spinae plane blocks (ESPB). Using multidimensional statistical analyses including simple comparisons, multivariate analysis and propensity score adjustment, they showed that the ESPB only reduced significantly intraoperative opioid consumption, but did not provide any benefit in term of postoperative opioid consumptions, pain control and recovery outcomes. Their results are different from the findings of a recent meta-analysis comparing postoperative opioid consumption and pain control between ESPB and placebo, in which the ESPB results in reduced opioid consumption and pain intensity, a shortened time to first rescue analgesia, and a lower incidence of nausea and vomiting after thoracolumbar spinal surgery.<sup>2</sup> The exact causes of these variable results are unclear. In addition to the limitations stated by the authors in the discussion section, however, there were several issues in this study that were not well addressed.

First, the primary study outcome of this study was opioid consumption in the postoperative first 24 h. Other than the ESPB before surgery, however, the authors did not provide the details of postoperative analgesic protocols, especially perioperative administration routes and dosages of nonopioid basic analgesics. In fact, the best practices of enhanced recovery after surgery protocols for spinal fusion surgery emphasize an opioid-sparing multimodal strategy including a serial of nonopioid basic analgesics with different mechanisms, such as acetaminophen, nonsteroidal anti-inflammatory drugs, NMDA receptor antagonists, steroids and others.<sup>3</sup> Furthermore, it is required that nonopioid basic analgesics should be administered before or during operation and regularly repeated after surgery to achieve adequate coanalgesia, unless there are patient specific contraindications for their use. As there is the lack of between-group comparison data about perioperative administration of nonopioid basic analgesics in this study, it is hard to interpret correctly the between-group differences of cumulative opioid consumptions in the postoperative first 24 h and pain scores at different time points postoperatively or the associations of ESPB use with intraoperative opioid consumptions and postoperative recovery outcomes by multivariate analysis and propensity score adjustment.

Second, postoperative pain score was one of important secondary outcomes, but the authors did not provide the patients' status when evaluating postoperative pain levels. For patients undergoing spinal fusion surgery, the robust evidence indicates that postoperative pain is more severe during movement than at rest.<sup>4,5</sup> We are concerned that this unknown factor would have confused the results of postoperative pain assessment in this study.

Third, the details of establishing multivariate models were not described in the statistical analysis. It was unclear why the association of ESPB use with postoperative opioid consumption was not performed by multivariate analysis. Is it because of lacking statistical significance in the opioid consumptions within first 24 h postoperatively between patients with and without the ESPB in simple comparisons? Based on the principles of establishing a multivariate model, all potential factors associated with postoperative opioid consumptions reported in the available literature, including

significant and nonsignificant variables in simple comparisons, should be included in the model for statistical adjustment. Most importantly, the authors did also not assess the calibration of their multivariate models by the Hosmer–Lemeshow test.<sup>6</sup> Thus, we question the robustness of results from multivariate analyses.

## Disclosure

The author reports no conflicts of interest in this communication.

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