Journal of Pain Research

Dovepress
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LETTER

Unequal Local Anesthetic Dosing and Surgical Heterogeneity: Considerations for Interpreting the ESPB–TEA Non-Inferiority Trial [Letter]

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Dear editor

We read with interest the trial by Cho et al reporting non-inferiority of continuous erector spinae plane block (ESPB) versus thoracic epidural analgesia (TEA) after thoracotomy.[1] The study is carefully conducted, and the Bayesian complementary analysis strengthens its conclusions. We nevertheless wish to raise four methodological concerns that bear on the interpretation of the results.

First, the study did not verify ESPB efficacy through objective sensory block assessment. Volunteer studies have shown that ESPB often produces only cutaneous posterior thoracic sensory loss with limited anterior spread,[2,3] making it difficult to determine whether analgesia in this trial reflected true interfascial block or systemic local anesthetic (LA) absorption. This question is particularly pressing given the large difference in LA dosing between arms: the ESPB group received a 20 mL pre-incision bolus, a 10 mL intraoperative top-up, and a 10 mL/h basal infusion, compared with 10 mL pre-incision and 3 mL/h in the TEA group. Over 72 hours, this translated into substantially higher total ropivacaine exposure in the ESPB group, with no plasma concentration monitoring or formal assessment of local anesthetic systemic toxicity (LAST) risk.[4,5] Future trials should include standardized dermatomal mapping prior to incision, dose-equivalent protocols, or pharmacokinetic monitoring to separate block-specific from systemic analgesic effects.

Second, the distribution of surgical procedures was notably uneven between groups. Pneumonectomy, which carries substantially greater chest wall trauma and postoperative pain than lobectomy, was performed in 33.3% of TEA patients but only 8.7% of ESPB patients, while lobectomy predominated in the ESPB arm (56.5% vs. 33.3%). This imbalance was not adjusted for in the primary analysis, and no stratified randomization by procedure type was performed. In a sample of 44 patients, even a modest procedural mismatch can act as a meaningful confounder. Consistent with CONSORT recommendations for trials involving heterogeneous surgical populations,[6] future studies should stratify randomization by operative extent or incorporate procedure type as a covariate.

Third, catheter stability in the ESPB group warrants closer attention. The CONSORT diagram shows that two patients had accidental catheter removal within postoperative day 1 and a third experienced device problems, representing a technical failure rate of roughly 13% in the ESPB arm. Superficial fascial catheters are inherently more susceptible to dislodgement than epidural catheters,[7] and twice-daily pain score recordings may not capture transient periods of analgesic loss from partial dislodgements or positional changes that fall short of the predefined failure criteria. Subcutaneous tunneling has been proposed to improve catheter retention for continuous fascial plane blocks[8] and should be considered in future protocols, alongside more granular reporting of catheter integrity throughout the infusion period.

Fourth, although the outcome assessors were appropriately blinded, the proceduralists managing postoperative care were not, which is unavoidable in this type of trial but carries residual risk of performance bias.[8] Rescue analgesia in the post-anesthesia care unit was required by 69.6% of ESPB patients versus 42.9% of TEA patients — a clinically

https://doi.org/10.2147/JPR.S619693
Received: 27 April 2026
Accepted: 30 April 2026
Published: 2 May 2026

meaningful gap that did not reach significance, likely due to the underpowered sample. It is possible that awareness of group allocation influenced the threshold for rescue medication. A pre-specified, protocolized rescue pathway administered by blinded personnel would reduce this risk in future studies.

These concerns do not undermine the value of the study, which makes a useful contribution to the ongoing evaluation of ESPB as an alternative to TEA. However, unequal LA dosing, surgical case mix imbalance, catheter instability, and unblinded postoperative management collectively introduce uncertainties that should temper definitive conclusions pending larger multicenter confirmation.

Funding

There is no funding to report.

Disclosure

The authors report no conflicts of interest in this communication.

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https://doi.org/10.2147/JPR.S619693