



Response to letter to the editor on “Continuous paravertebral block combined with multilevel single-shot intercostal nerve blocks for pain control after thoracotomy”

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To the Editor:

We appreciate Yuan et al.’s [1] thoughtful engagement with our recently published article evaluating the analgesic efficacy of continuous paravertebral block (PVB) alone compared to the combination of continuous paravertebral and intercostal nerve block (ICNB) in patients undergoing thoracotomy [2].

Although a small sample randomized controlled trial of 70 patients, our trial was adequately powered to detect significant outcomes. Small sample sizes are not uncommon in randomized controlled trials, especially in specialized surgical studies. Logistical constraints and ethical considerations often limit the number of participants, and smaller studies can still be adequately powered to detect meaningful effects. Our study aimed to explore the specific comparison of PVB alone and the combination of PVB with ICNB in the context of thoracotomy. The results can provide valuable insights and inform larger, multicenter studies.

Regarding the lack of detailed information on thoracotomy approaches, we utilized a posterolateral approach which is widely accepted. However, this procedure includes the separation of the latissimus dorsi, and occasionally, the serratus anterior and trapezius muscles, resulting in one of the most painful surgical incisions [3]. According to literature, anterolateral thoracotomies, on the other hand, are less

painful than posterolateral thoracotomies [4–6]. Our focus was on a specific cohort undergoing posterolateral thoracotomy, and the results are particularly relevant to this population. However, we agree that future studies could explore different surgical approaches and their impact on postoperative pain.

Concerning the administration of ICNB under ultrasound guidance after surgery, we standardized the procedure to ensure consistency. There are no studies in the literature indicating the superiority of ICNB under direct vision compared to ultrasound guidance, and our decision aimed to maintain procedural uniformity.

Regarding the conversion of nalbuphine and tramadol dosages into morphine milligram equivalents (MMEs), we appreciate Yuan et al.’s diligence in converting opioid analgesics into total morphine milligram equivalents (MME) and examining their clinical significance. We would like to provide further insight into the cutoff value of 10 mg intravenous morphine within 24 h that is raised as a point of contention.

It is acknowledged that defining a universally accepted recommendation for clinically significant differences in total MMEs remains an ongoing discourse within the literature. We noted the reference to the Cochrane article titled “Pre-emptive and preventive NSAIDs for postoperative pain in adults undergoing all types of surgery,” which utilized the assumed cutoff value of 10 mg morphine consumption in 24 h for their secondary outcome analysis [7].

This Cochrane article, in turn, derived the mentioned cutoff value from a study by Doleman et al., titled “Baseline Morphine consumption may explain between-study heterogeneity in meta-analyses of adjuvant analgesics and improve precision and accuracy of effect estimates” [8]. Doleman et al. indicated that, in the absence of a defined literature consensus on clinically significant reduction

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in morphine consumption, they selected values based on standard doses of morphine. Specifically, they considered a difference > 20 mg as a large and clinically significant change, > 10 mg as a moderate and clinically significant change, and > 5 mg as a small and clinically significant change from a fixed consumption of 50 mg morphine.

It is crucial to recognize that these values were applied by Doleman et al. to facilitate comparisons across different pain-relieving drugs while accommodating variations in the initial morphine consumption in control groups across randomized controlled trials. Furthermore, Doleman et al. emphasized the need for caution in interpreting rankings, clarifying that rankings were based on point estimates and did not fully consider the accompanying uncertainty.

Hence, challenging the significance of our study based on the assumed and arbitrary cutoff value of 10 mg intravenous morphine within 24 h is unwarranted. The literature lacks a universally accepted recommendation for clinically significant differences in total morphine milligram equivalents (MMEs). Applying arbitrary values based on assumptions from other studies may indeed warrant caution.

Our study findings indicate that the combination of continuous PVB with ICNB provides effective postoperative pain relief comparable to continuous paravertebral block alone. Notably, our study demonstrates an additional benefit of reduced narcotic consumption after thoracotomy. This reduction in narcotics is particularly significant as it contributes to minimizing associated side effects, such as nausea, vomiting, sedation, constipation, and respiratory depression. The detailed explanation of the possible mechanism is provided in our article.

Regarding the suggestion of using erector spinae plane block with ICNB, it is important to note that this approach is not novel, and existing literature offers multiple studies on this combination [9–11]. Researchers and clinicians can refer to these studies for a comprehensive review and understanding of the potential benefits and outcomes associated with adding multilevel single-shot ICNB to an erector spinae plane block in the context of pain control after open thoracotomy or thoracoscopic surgery.

Thank you for the opportunity to clarify these points, and we welcome further discussion related to our study.

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Declarations

Conflict of interest All authors declare that they have no conflict of interest related to this work.

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