

Efficacy of Programmed Intermittent Bolus vs Continuous Infusions on Abdominal Truncal Blocks

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INTRO

- Ultrasound guided truncal blocks play a significant role in postoperative multimodal analgesia by providing excellent pain relief, reducing opioid consumption, and increasing overall patient satisfaction . Truncal blocks are unique among nerve blocks in that, unlike most other peripheral nerve blocks, no specific nerve or plexus is identified. Instead, local anesthesia is injected in a particular muscle plane, and injectate spreads and reaches the intended nerves.

Material and Methods

- This was a prospective, double-blinded case-control study with a novel design, where the patient served as their own control. Adult patients who received perioperative bilateral abdominal truncal blocks with catheters, and were inpatients postoperatively in January 2023 were enrolled in this study. Ropivacaine 0.2% was administered as programmed intermittent bolus of either 8±2 ml every 2 hours to one side, and continuous infusion of the same amount per hour on the other side. We defined abdominal truncal blocks as patients who received either a transversus abdominus plane block (TAP) or quadratus lumborum 1 (QL1) block. The designation of one side as PIB and the other as continuous was randomized by coin flip. Patients were then evaluated daily up to post-procedure day 7 by a member of the acute pain service for pain scores on either side of their abdomen, and these were recorded. Both patients and evaluators were blinded to which side was PIB, and which was continuous. Pain scores between the two were compared with the Wilcoxon signed-rank test. Statistics were performed using Microsoft Excel (Microsoft, Albuquerque, NM). This study received an exempt determination from the George Washington University Institutional Research Board (NCR 224433).



We set out to compare the efficacy of PIB vs continuous infusion in patients who had received perioperative truncal blocks. We hypothesized that PIB would provide improved analgesia for the patient in the form of reduced pain scores.

Results

- A total of nineteen (19) patients were enrolled in the study with sixteen patients receiving TAP blocks with catheter placement, and three patients receiving quadratus lumborum nerve block catheter placement. Of the sixteen patients receiving the TAP block, three were excluded from the study due to improper documentation, refusing to participate further, and removal of the catheter by day 2. Out of the remaining fifteen patients (twelve with TAP and three with QL catheters), there was found to be no significant difference in the pain scores ($p = 0.2$) between the continuous and programmed intermittent bolus nerve catheters.

CONCLUSION

- Since the PIB catheter received 8±2 ml of local anesthetic every 2 hours, versus the same amount continuously per hour on the other side, patients effectively received half of the local anesthetic on the PIB side. Of note, patients described having no significant difference in their pain when comparing both sides of their truncal nerve block. Therefore, we found that less local anesthetic is required to produce the same level of analgesia, which may reduce the risk of adverse effects such as local anesthetic systemic toxicity. Furthermore, decreased utilization of local anesthetic also leads to reduced burden on nursing staff to replace vials of medication. Hypothetically, this should lead to less human and technical errors that may interrupt therapy for the patient. There is also cost saving factor from decreasing medication utilization for health care facility that can be passed down to the patient.

KEYWORDS:

Transversus abdominis plane block, Programmed Intermittent bolus, local anesthetic systemic toxicity

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