

INPLASY

Comparison of ultrasound-guided quadratus lumborum block and other regional blocks for postoperative pain in caesarean section: A systematic review and meta-analysis of randomized clinical trial

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Corresponding author:

Fenglin Jiang

jiangfenglin0125@163.com

Author Affiliation:

Pengzhou People's Hospital.

Jiang, FL; Zhuang, ZH; Jia, RY.

ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 6 June 2026 and was last updated on 6 June 2026.

INTRODUCTION

Review question / Objective Acute post-caesarean section (C/S) pain causes adverse maternal outcomes, and multimodal opioid-sparing analgesia is central to Enhanced Recovery after Surgery (ERAS) protocols.

Quadratus lumborum block (QLB) is a promising regional technique, but evidence comparing it with other regional blocks remains fragmented.

Condition being studied Caesarean section (C/S) is among the most commonly performed surgical procedures, predominantly conducted under regional anaesthesia. Acute postoperative pain following C/S is associated with adverse maternal outcomes, including reduced satisfaction, delayed breastfeeding initiation, impaired maternal–infant bonding, and an increased risk of chronic pain and postpartum depression.

Enhanced Recovery after Surgery (ERAS) protocols for caesarean delivery emphasize optimized postoperative analgesia through multimodal, opioid-sparing strategies. Although neuraxial

opioids are well-established for post-C/S analgesia, they are frequently accompanied by adverse effects such as nausea, vomiting, sedation, and pruritus. These limitations have prompted interest in non-opioid adjuncts.

The quadratus lumborum block (QLB), a relatively novel interfascial plane block, involves the injection of local anaesthetic adjacent to the quadratus lumborum muscle. Recent evidence indicates that QLB provides effective abdominal wall analgesia and favorable sensory blockade in C/S. As a truncal nerve block, QLB typically requires 20–30 mL of local anaesthetic. Mechanistically, QLB inhibits both somatic nerves and the lower thoracic sympathetic trunk, thereby theoretically alleviating both somatic and visceral pain, a potential advantage over conventional techniques targeting somatic pain alone.

Despite increasing clinical adoption of QLB in C/S, no comprehensive synthesis or direct comparison of analgesic outcomes across regional anaesthetic techniques for post-caesarean pain currently exists. This systematic review and meta-analysis synthesizes available prospective randomised controlled trials (RCTs) to evaluate the efficacy of QLB for post-C/S analgesia. The primary outcome

was cumulative morphine consumption at 24 hours postoperatively. Secondary outcomes included pain scores at rest and with movement, total opioid consumption beyond 24 hours, time to first analgesic request, time to ambulation, maternal satisfaction scores, and opioid-related adverse events. This analysis aims to improve maternal outcomes, facilitate postoperative recovery, and provide evidence-based guidance for multimodal analgesia protocols.

METHODS

Participant or population Adult participants aged 18 years or older undergoing C/S under spinal or general anaesthesia.

Intervention Administration of QLB to study participants..

Comparator Administration of other regional blocks or none block to study participants.

Study designs to be included Randomized controlled trials.

Eligibility criteria Inclusion criteria were as follows: 1)Randomized controlled trials (RCTs);2)Administration of QLB to study participants; 3) Adult participants aged 18 years or older; 4) Patients undergoing C/S under spinal or general anaesthesia. Exclusion criteria included: 1) Unpublished clinical trials; 2) Inaccessible full-text studies; 3)Case reports, conference abstracts, study protocols, or review articles.

Information sources A comprehensive literature search was performed across the PubMed, EMBASE, and Web of Science databases, encompassing all records from their respective inception through September 20,2025.

Main outcome(s) The primary outcome was cumulative morphine consumption at 24 hours postoperatively.

Additional outcome(s) Secondary outcomes included the cumulative morphine consumption at 48 h, pain resting or movement scores (measured using the Visual Analogue Scale (VAS) or Numerical Rating Scale (NRS),ranging from 0-10),duration of surgical and anaesthesia time,time to the first request post-operative analgesia,time to ambulation,patient satisfaction score, and incidence of opioid-related adverse events (including postoperative nausea and vomiting [PONV] and hypotension).

Quality assessment / Risk of bias analysis The Grading of Recommendations Assessment, Development, and Evaluation (GRADE) framework was applied to assess the certainty of evidence for each outcome, with evidence rated as low,moderate, or high based on outcome-specific and

comparison-specific criteria. The methodological quality of individual RCTs was assessed using the Cochrane Risk of Bias 2 (RoB 2) tool, with evaluations focused on five core domains: random sequence generation, allocation concealment, blinding of participants and outcome assessors, handling of incomplete outcome data, and selective outcome reporting.

Strategy of data synthesis Mean difference (MD) was used to synthesize continuous data, and risk ratio (RR) was employed for dichotomous outcomes,with all effect estimates reported alongside 95% confidence intervals (CIs).Statistical analyses were performed using Review Manager software (Version 5.4.1; Cochrane Collaboration,2020).For data pooling from homogeneous measurement tools, statistical significance was defined as a two-tailed P value 50% indicating substantial heterogeneity. A random-effects model was utilized to calculate the pooled effect size if significant heterogeneity was detected (P 50%); otherwise, a fixed-effects model was applied.

Subgroup analysis Subgroup analyses were conducted to explore differences in 24-hour postoperative cumulative morphine consumption according to the type of regional anaesthetic technique employed.

Sensitivity analysis Sensitivity analyses were performed using a leave-one-out approach to identify potential sources of heterogeneity influencing the primary outcome.

Country(ies) involved China.

Keywords Quadratus lumborum block,regional blocks, postoperative pain, caesarean section, systematic review.

Contributions of each author

Author 1 - Fenglin Jiang.
Email: jiangfenglin0125@163.com
Author 2 - Zenghong Zhuang.
Email: 1092974438@qq.com
Author 3 - Ruiyao Jia.
Email: 519775683@qq.com