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Meta-analysis of the postoperative analgesic effects of quadratus lumborum block and transversus abdominis plane block in patients undergoing liver resection

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Formal screening of search results against eligibility criteria.

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 18 December 2025 and was last updated on 18 December 2025.

INTRODUCTION

Review question / Objective Postoperative pain after liver surgery is severe. The most common pain site is the incision site. Poor control of the pain can lead to chronic pain.Recently, regional nerve block techniques have been widely used in postoperative pain management of the liver, with various methods and each having its own advantages and disadvantages.
P:Adult patients scheduled with elective liver surgery with ASA grade I-III.
I:Adult patients undergo quadratus lumborum block
C:Adult patients undergo transverse abdominis plane block
O:The primary outcome was pain scores at rest and movement at 24 and 48 h postoperatively either using a visual analog scale (VAS) or numeric rating scale (NRS).
S:Randomized controlled study.

Condition being studied This study aimed to conduct a network meta-analysis to compare the effects of lumbar quadratus lumborum block and transversus abdominis plane block on postoperative analgesia and adverse reactions in liver surgery, with the goal of identifying an optimal method for clinical reference.

METHODS

Search strategy The search strategy was as follows: "quadratus lumborum block", "transverse abdominis plane block", " liver resection", "postoperative analgesia", "regional anesthesia".We systematically searched the Wanfang, CNKI, VIP, CBM, PubMed, Cochrane Library, Web of Science Citation Index, and Embase databases for self-built databases up to October 2025, identifying randomized controlled trials (RCTs) that met the listed inclusion criteria.

Participant or population Adult patients scheduled with elective liver surgery with ASA grade I-III.

Intervention Adult patients undergo quadratus lumborum block.

Comparator Adult patients undergo transverse abdominis plane block.

Study designs to be included Randomized controlled study.

Eligibility criteria All published randomized controlled trials (RCTs) comparing the analgesic efficacy of quadratus lumborum block versus transverse abdominis plane block in adult hepatic surgery patients met the inclusion criteria.

Information sources We systematically searched the Wanfang, CNKI, VIP, CBM, PubMed, Cochrane Library, Web of Science Citation Index, and Embase databases for self-built databases up to October 2025, identifying randomized controlled trials (RCTs) that met the listed inclusion criteria.

Main outcome(s) The primary outcomewas pain scores at rest and movement at 24 and 48 h postoperatively either using avisual analog scale (VAS) or numeric rating scale (NRS).

Additional outcome(s) The secondary outcomes were opioid consumption, postoperative vomiting, and nausea, adverse events, length of hospitalization, and patient satisfaction.

Quality assessment / Risk of bias analysis The tool based on the Cochrane risk of bias was adopted to evaluate the quality of individual RCTs. The quality was evaluated using the following potential sources of bias: sequence generation, allocation concealment, blinding of participants or outcome assessor, incomplete data, and selective reporting. The methodology for each study was graded as 'high', and 'low'.

Strategy of data synthesis A random-effect model was performed if I2 > 50% ,suggesting the existence of high heterogeneity, whereas if I2≤50%, a fixed effect model was performed.

Subgroup analysis Performed for the primary outcomes.

Sensitivity analysis Sensitivity analyses were performed via the leave-one-out approach to find possible the sources of heterogeneity and subgroup analyses according to different levels of risk of bias were also performed.

Language restriction English.

Country(ies) involved China.

Keywords quadratus lumborum block; transverse abdominis plane block; liver resection; postoperative analgesia; regional anesthesia.

Contributions of each author

Author 1 - Zhong Yan - Concept design; Data analysis; Drafting article; Critical revision of the article.
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