

INPLASY PROTOCOL

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Corresponding author:
Xlwu Yang

yxw6651@163.com

Author Affiliation:
Affiliated Hospital of Chengde
Medical College

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None.

The effect of erector spinae plane block for postoperative analgesia in cholecystectomy patients: A meta-analysis

Yang, Y¹; Zhang, A²; LI, S³.

Review question / Objective: A meta-analysis of the effect of ultrasound-guided erector spinae plane block for postoperative analgesia in cholecystectomy patients.

Condition being studied: The ultrasound-guided erector spinae plane block (ESPB) is a new type of regional block technology first reported in 2016, the local anesthetic can gradually diffuse from the puncture point along the fascia, thereby blocking the skin and visceral sensation. Ultrasound-guided ESPB has been increasingly applied in cholecystectomy patients for postoperative analgesia. However, at present, its effectiveness remains uncertain. This meta-analysis aimed to determine the clinical efficacy of ultrasound-guided ESPB in adults cholecystectomy.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 07 June 2020 and was last updated on 07 June 2020 (registration number INPLASY202060023).

INTRODUCTION

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METHODS

Search strategy: We searched relevant literature in PubMed, EMBASE, Web of Science, and the Cochrane Library. The limit of searching time was from January 1, 2016, to April 5, 2020. The following keywords were used in combination with Boolean operators: "erector spinae plane block" OR "erector spinae block" OR "ESPB" OR "ESP" AND RCT. Randomized controlled trials addressing ultrasound-guided ESPB for the treatment of early pain after cholecystectomy were collected according to the criteria for inclusion and exclusion.

Participant or population: patients undergoing cholecystectomy (including open cholecystectomy and endoscopic cholecystectomy).

Intervention: ultrasound-guided erector spinae plane block.

Comparator: Blank or placebo control.

Study designs to be included: Randomized controlled experiment (RCT).

Eligibility criteria: (1) Type of study: a randomized controlled experiment. (2) Participants: patients undergoing cholecystectomy (including open cholecystectomy and endoscopic cholecystectomy). (3) Intervention: ultrasound-guided ESPB. (4) Outcome indicators: Numeric rating scale (NRS) or visual numerical scale (VAS), opioid consumption, the occurrence of nausea,

postoperative shoulder pain, and postoperative rescue analgesia.

Information sources: We searched relevant literature in PubMed, EMBASE, Web of Science, and the Cochrane Library.

Main outcome(s): Numeric rating scale (NRS), opioid consumption.

Additional outcome(s): The incidence of nausea, postoperative shoulder pain, and postoperative rescue analgesia.

Data management: EndNoteX9.

Quality assessment / Risk of bias analysis: Quality assessment based on the Cochrane Handbook for Systematic Reviews of Interventions. Risk of bias that included the following elements: random sequence generation, allocation concealment, blinding, incomplete outcome data, free of selective reporting, and other bias. Each item was recorded by "low", "high" or "unclear." It will be resolved through negotiation with a third party if there is a disagreement.

Strategy of data synthesis: Apply RevMan5.3 software for data statistical analysis and p-value < 0.05 was considered statistically significant. A random-effects model was selected. The standardized mean differences (SMDs) with 95% confidence intervals (CIs) were calculated for continuous data, at the same time, the relative risks (RRs) with the corresponding 95% CI were calculated for dichotomous data. An I² statistic of 25–50% were defined as low heterogeneity, an I² statistic of 50–75% were described as moderate heterogeneity, and those with an I² statistic of > 75% were considered as high heterogeneity [14]. Subgroup analysis was conducted based on the puncture point or additional category of local anesthetic. A sensitivity analysis was performed by iteratively removing one study at a time.

Subgroup analysis: Subgroup analysis based on category of anesthetic and puncture point.

Sensibility analysis: A sensitivity analysis was performed by iteratively removing one study at a time by ReveMan5.3.

Language: English.

Country(ies) involved: China.

Keywords: erector spinae plane block, ESPB, meta-analysis, cholecystectomy.

Contributions of each author:

Author 1 - Xiwu Yang - Data extraction, data analysis, writing

Author 2 - Ai Zhang - Literature search, literature screening, data extraction.

Author 3 - Shuaiqi LI - Literature search, literature screening, data extraction.