INPLASY PROTOCOL

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Proximal versus distal adductor canal blocks for knee surgery: A protocol for a systematic review and meta-analysis of randomised controlled trials

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ABSTRACT

Review question: Currently, there remains a paucity of literature about the efficiency of proximal adductor canal block (PACB) versus distal adductor canal block (DACB) for pain management after knee surgery. The purpose of this study is to perform a relatively credible and overall assessment to compare the efficiency of PACB versus DACB for early postoperative pain treatment after knee surgery.

Methods: The following electronic databases will be searched: PubMed, Scopus, EMBASE, and Cochrane Library databases. There will be English language restriction. We developed a search strategy using a combination of keywords and medical subject headings (MeSH)/EMTREE terms, and the following expressions will be used: (knee arthroplasty or arthroscopic knee surgery) and (adductor canal block or saphenous nerve block or peripheral nerve block) and (proximal or distal or femoral triangle or adductor canal) and (blind or random). The reference lists of the included studies will also be checked for additional studies that are not identified in the database search. The flow diagram of the study selection is shown in Figure 1. This study will be reported in line with Assessing the Methodological Quality of Systematic Reviews guidelines. Ethical approval is not necessary because the present meta-analysis will be performed based on previously published studies.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 15 March 2020 and was last updated on 15 March 2020 (registration number INPLASY202030004.

INTRODUCTION

Objectives / Review question: **Currently, there remains a paucity of literature about the efficiency of proximal adductor canal block (PACB) versus distal adductor canal block (DACB) for pain management after knee surgery. The purpose of this study is**

to perform a relatively credible and overall assessment to compare the efficiency of PACB versus DACB for early postoperative pain treatment after knee surgery.

Condition being studied: knee surgery.

METHODS

Participant or population: Patients with knee surgery.

Intervention: Proximal adductor canal block.

Comparator: Distal adductor canal block

Study designs to be included: RCTs.

Eligibility criteria: The study protocol will be developed and executed in compliance with the Preferred Reporting Items for Systematic Reviews and Meta-analyses statement. All of the following inclusion criteria in the PICOS order will be met by the studies included in our meta-analysis: (1) population: patients undergoing knee surgery; (2) intervention: the proximal ACB group; (3) comparison intervention: the distal group; (4) outcome measures: at least one of the following outcome measures should to be reported: postoperative pain score, opioid consumption, quadriceps strength, patient satisfaction, and postoperative adverse event; and (5) study design: English RCTs. Articles with no assessment of the outcomes mentioned above or no comparison of 2 groups will not be included in this meta-analysis. Duplicate reports and conference abstracts will be excluded. Retrospective trials, case reports, biochemical trials, letters, and reviews will also be eliminated. Two independent authors will screen the titles and abstracts of the potentially relevant studies to determine their eligibility based on the criteria. Disagreements will be resolved through a discussion with a third review author.

Information sources: PubMed, Scopus, EMBASE, and Cochrane Library databases.

Main outcome(s): The primary outcome is pain score.

Additional outcome(s): Secondary outcome measures include opioid consumption, postoperative adverse events, patient satisfaction, and quadriceps strength.

Data management: The method of data extraction will follow the approach outlined by the Cochrane Handbook for Systematic Reviews of Interventions.12 Two independent authors will extract the following descriptive raw information from the selected studies: study characteristics such as author, publication year, study design, sample size, type of anaesthesia, compositions of proximal and distal ACB, follow-up time, and outcome measures. The primary outcome is pain score. Secondary outcome measures include opioid consumption, postoperative adverse events, patient satisfaction, and quadriceps strength. When disagreement in the collection of data occur, it will be resolved through discussion. If the data are missing or can not be extracted directly, we will contact the corresponding authors to ensure that the information is integrated. Otherwise, we will collect data according to the guidelines of the Cochrane Handbook for Systematic Reviews of Interventions.12 If necessary, the extraction of incomplete data will be abandoned.

Quality assessment / Risk of bias analysis: The Cochrane risk of bias tool will be used to evaluate the risk of bias of the included RCTs by two independent reviewers.12 RCT quality will be assessed using the following 7 items: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting, and other bias. Kappa values will be used to measure the degree of agreement between the 2 reviewers and are rated as follows: fair, 0.40–0.59; good, 0.60–0.74; and excellent, >0.75. Any controversy will be resolved by discussion

with a third author to reach a final consensus.

Strategy of data synthesis: According to the basic characteristics of the included studies, the Meta analysis will be performed using Review Manager version 5.3 provided by the Cochrane Collaboration. Given the characteristics of the extracted data in the review, continuous outcomes will be expressed as the mean differences with 95% confidence intervals (CIs). Differences in categorical variables will be expressed as risk ratio values and 95% CIs. Heterogeneity will be assessed by means of I2 statistics. I2 ≥ 50% represent high heterogeneity. A standardized mean difference will be used when the studies included in the meta-analysis assess the outcome based on different scales (eg, VAS 0-10 and VAS 0-100). Initially, a fixed-effect model will be used to compare the outcomes, unless the heterogeneity tests indicate that the I2 statistic ≥ 50% and substantial heterogeneity existed between studies; in this case, the reasons for this heterogeneity will be searched for and a random-effect model will be used for comparison.

Subgroup analysis: None.

Sensibility analysis: Sensitivity analyses will be undertaken to determine the potential source of heterogeneity when significant.

Language: English.

Countries involved: China

Other relevant information: None

Keywords: Proximal adductor canal block, distal adductor canal block, knee surgery, pain control, meta, study protocol.

Dissemination plans: None.

Contributions of each author:
Quan Wang, Xiangjin Lin and Jingyu Du conceived the study, designed the review, and wrote the initial manuscript. Quan Wang, Yijun Zhang and Jingyu Du performed the initial searches to determine the feasibility, provided input into the study design, and reviewed the manuscript. All authors read and approved the final.