INPLASY PROTOCOL

To cite: Pang et al. Scalp nerve block versus local incision infiltration, which can provide better perioperative analgesia for craniotomy: a systematic review and meta-analysis. Inplasy protocol 202230066. doi: 10.37766/inplasy2022.3.0066

Received: 15 March 2022

Published: 15 March 2022

Corresponding author:
Qianyun Pang

pqy047417@163.com

Author Affiliation:
Affiliated Cancer Hospital of Chongqing University.

Support: **Key R & D project of Chongqing.**

Review Stage at time of this submission: **Data extraction.**

Conflicts of interest:
None declared.

Scalp nerve block versus local incision infiltration, which can provide better perioperative analgesia for craniotomy: a systematic review and meta-analysis

Pang, QY[1]; Wang, JY[2]; Liu, HL[3].

Review question / Objective: **We conducted this meta-analysis to compare scapl nerve block with local incision infiltration, tried to clarify which is better for analgesia in craniotomy.**
Condition being studied: **Multimodal analgesia combining systemic opioids and regional anesthesia technique is recommended for craniotomy in the clinic, although there has been no consensus about analgesia for craniotomy till now. Two meta-analyses found that regional anesthesia techniques could reduce postoperative opioids dosage and pain scores compared with no regional anesthesia[5-6]. Regional anesthesia techniques used for craniotomy mainly include scalp nerve block(SNB) and local incision infiltration(LII). One study showed that even SNB combined with LII, the blood concentration of local anesthetics was within a safe range[7], but due to the large amount and volume of local anesthetics required for SNB with LII, either SNB or LII alone is considered in the clinic in order to prevent local anesthetic intoxication.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 14 March 2022 and was last updated on 14 March 2022 (registration number INPLASY202230066).

INTRODUCTION

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METHODS

Participant or population: Patients who underwent craniotomy.

Intervention: Scapl nerve block.

Comparator: Local incision infiltration.

Study designs to be included: RCT.

Eligibility criteria: Inclusion criteria included: 1) single- or double-blind randomized controlled trials (RCTs) comparing scalp block with incision infiltration in adult undergoing craniotomy or brain biopsy, 2) the analgesia was the main outcome measure, including at least one of the following measures, intraoperative hemodynamics from surgical stimulus or intraoperative opioids or postoperative patient-reported pain scores.

Information sources: The Pubmed, Embase, Cochrane Library, and Web of science were searched from Jan 2000 to May 2022. All searches were performed without language restrictions. The references lists of the included studies were checked for potentially eligible articles. When the data were reported as median and interquartile range or graphs, the corresponding authors were contacted to obtain the respective mean and standard deviation. If no response, we transferred the data from median to mean±SD according to the method described by Hozo et al[9], or transformed the data from graph to numbers using Engauge digitizer software.

Main outcome(s): The primary outcome was analgesia including intraoperative hemodynamics by surgical stimuli or postoperative patient-reported pain scores.

Additional outcome(s): The secondary outcome was intraoperative or postoperative opioids dosage, the time to the first rescue analgesia after surgery, and adverse effects.

Quality assessment / Risk of bias analysis: The risk of bias was checked by appraising the inclusion of phrases such as "adequate sequence generation", "allocation concealment", "blinding", "incomplete outcome data addressed", "free of selective reporting" and "free of other bias", as recommended by the Cochrane Collaboration.

Strategy of data synthesis: Meta-analysis was performed using Review Manager5.4.1. The pain scores were rescaled to a standard interval of 0 to 10.The dosages of intraoperative or postoperative analgesics were converted to the dosage of morphine using a standardized conversion calculator (https://clincalc.com/Opioids/). The effect size for continuous data was expressed as the mean difference (MD) with 95% confidence interval (CI). The effect size for dichotomous outcomes was expressed as odds ratio(OR) with 95% CI. Between-study heterogeneity was qualified with the I2 value, a fixed effect model was used in the case of homogeneity (I2< 50%), and a random effect model was chosen in the case of heterogeneity (I2≥ 50%).

Subgroup analysis: Subgroup comparisons were performed when necessary to identify the sources.

Sensitivity analysis: Sensitivity analysis was also performed to test the robustness of the meta-analysis results.

Country(ies) involved: China.

Keywords: scalp nerve block; local incision infiltration; regional anesthesia; craniotomy; analgesia.

Contributions of each author:

Author 1 - Qianyun Pang.
Email: pqy047417@163.com
Author 2 - Jingyun Wang.
Email: 511135265@qq.com
Author 3 - Hongliang Liu.
Email: liuhl75@163.com