INPLASY

Perioperative administration of pregabalin for pain in patients undergoing laparoscopic cholecystectomy: a systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

Support - National Science and Technology Council, Taiwan.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202670108

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 28 July 2026 and was last updated on 28 July 2026.

INTRODUCTION

Review question / Objective To evaluate the efficacy and safety of perioperative pregabalin compared with placebo or standard care for postoperative pain management in patients undergoing laparoscopic cholecystectomy.

Condition being studied Laparoscopic cholecystectomy is one of the most commonly performed abdominal surgical procedures. Although minimally invasive, it is associated with moderate early postoperative pain that may increase opioid consumption and delay recovery. Multimodal analgesia is recommended, and pregabalin has been investigated as an adjunctive analgesic to improve postoperative pain control. However, its efficacy and safety in this setting remain uncertain.

METHODS

Participant or population Adults (≥18 years) undergoing elective laparoscopic cholecystectomy.

Intervention Oral pregabalin given in the perioperative period—preemptively, on the day of surgery, or in the immediate postoperative phase.

Comparator Placebo or no pregabalin on otherwise comparable perioperative care.

Study designs to be included Randomized controlled trials.

Eligibility criteria Trials enrolling mixed surgical populations will be eligible provided that data specific to laparoscopic cholecystectomy can be extracted. Studies involving pediatric populations will be excluded.

Information sources Systematic searches will be conducted in MEDLINE (via PubMed), Embase, and the Cochrane Central Register of Controlled

Trials (CENTRAL). Reference lists of eligible studies and relevant systematic reviews will also be screened to identify additional studies. No language restrictions will be applied.We also screened reference lists of eligible studies and topic-relevant systematic reviews to identify additional trials. No language restrictions were applied.

Main outcome(s) The primary outcome will be postoperative pain intensity, prioritized at approximately 24 hours at rest using a 0–10 scale (or converted to a 0–10 scale). Secondary outcomes will include pain with movement; time to first opioid requirement; cumulative opioid consumption in the post-anesthesia care unit and within 24–48 hours after surgery; postoperative sedation scores (Ramsay Sedation Scale); and adverse events (e.g., nausea and vomiting).

Quality assessment / Risk of bias analysis Risk of bias will be assessed independently by two reviewers using the Cochrane Risk of Bias 2 (RoB 2) tool across the following domains: the randomization process, deviations from intended interventions, missing outcome data, measurement of the outcome, and selection of the reported result. The certainty of evidence for the primary and key secondary outcomes will be assessed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach, considering risk of bias, inconsistency, indirectness, imprecision, and publication bias.

Strategy of data synthesis Data synthesis will be performed using Review Manager (RevMan). Pairwise meta-analyses will be conducted when at least two trials report the same outcome within a prespecified postoperative time window (e.g., pain at different postoperative time points). Continuous outcomes (e.g., pain intensity, opioid consumption, and sedation scores) will be summarized as mean differences (MDs) using a unified scale, whereas dichotomous outcomes will be summarized as odds ratios (ORs). All effect estimates will be reported with 95% confidence intervals (CIs). A two-sided p value <0.05 will be considered statistically significant. Clinical and methodological heterogeneity will be assessed before meta-analysis. Statistical heterogeneity will be evaluated using the I^2 statistic and Cochran's Q test. A random-effects model will be used for all pooled analyses. Prespecified subgroup and sensitivity analyses will be performed where appropriate.

Subgroup analysis Planned subgroup analyses will evaluate (1) pregabalin dose (high vs. low; high dose defined as a single dose of ≥150 mg or an equivalent regimen) and (2) timing of administration (preoperative versus postoperative administration).

Sensitivity analysis Sensitivity analyses will be performed to assess the robustness of the findings by excluding trials at high risk of bias.

Language restriction No language restrictions were applied.

Country(ies) involved Taiwan.

Keywords pregabalin; laparoscopic cholecystectomy; postoperative pain; opioid-sparing analgesia; randomized controlled trials.

Contributions of each author

Author 1 - Jin-Yi Lin - J.Y.L. conceptualized the study, screened the studies, extracted data, assessed risk of bias , and drafted the manuscript.
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