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Efficacy and safety for applying esketamine in patients experienced hip and knee surgery with internal fixation or implant: A meta-analysis

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Completed but not published.

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 30 November 2025 and was last updated on 30 November 2025.

INTRODUCTION

Review question / Objective Demonstrate the efficacy and safety of using esketamine during hip or knee perioperative process with implant or internal fixation.

Condition being studied Individuals who received hip or knee joint surgery with internal fixation or implant, and receiving esketamine used in one group and other analgesia methods in the other group perioperatively.

METHODS

Participant or population Individuals who received hip or knee joint surgery with internal fixation or implant, and receiving esketamine used in one group and other analgesia methods in the other group perioperatively.

Intervention Individuals who received hip or knee joint surgery with internal fixation or implant, and receiving esketamine used in one group and other analgesia methods in the other group perioperatively.

Comparator Reported perioperative index such as hospitalization length, visual analogue score(VAS), adverse effects incidence, anesthetic drug consumption, etc.

Study designs to be included Comparative studies.

Eligibility criteria Studies were included if they met the following criteria: Population: Individuals who received hip or knee joint surgery with internal fixation or implant, and receiving esketamine used in one group and other analgesia methods in the other group perioperatively. We choose these patients since compared with endoscopic surgeries and other organs surgeries, these

surgeries cause more blood loss and request higher requirement for rehabilitation.
Outcomes: Reported perioperative index such as hospitalization length, visual analogue score(VAS), adverse effects incidence, anesthetic drug consumption, etc.
Study Design: Randomized controlled trials(RCT) are expected, but other comparative observational studies are also acceptable.
Language: English-language publications.

Information sources PubMed, EMBASE, Web of Science, and the Cochrane Central Register of Controlled Trials.

Main outcome(s) Reported perioperative index such as hospitalization length, visual analogue score(VAS), adverse effects incidence, anesthetic drug consumption, etc.

Quality assessment / Risk of bias analysis Study quality was assessed via the Cochrane Risk of Bias Tool for RCTs and Newcastle-Ottawa Scale (NOS) for nonrandomized comparative studies.

Strategy of data synthesis Analyses were performed using RevMan 5.3. Continuous outcomes were pooled using mean differences (MDs) with 95% confidence intervals (CIs). A fixed-effects model was applied; however, if the heterogeneity of the forest plot was significant ($I^2 > 50\%$ or $P < 0.05$ on χ^2 test), a random-effects model was chosen. The odds ratio (OR) and 95% confidence interval (CI) were computed as summary statistics for the dichotomous variables, and pooled summary statistics were calculated with the use of a random effects model. Sensitive analysis was conducted if the heterogeneity was high($I^2 > 50\%$ or $P < 0.05$ on χ^2 test). Statistical significance was defined as $P < 0.05$. Getdata (version 2.22) was used if the data were presented only as figures in the article instead of as detailed information. Mean and standard deviation values were estimated via https://www.math.hkbu.edu.hk/~tongt/papers/median2mean.html only if median and interquartile were provided by the authors.

Subgroup analysis Analyses were performed using RevMan 5.3. Continuous outcomes were pooled using mean differences (MDs) with 95% confidence intervals (CIs). A fixed-effects model was applied; however, if the heterogeneity of the forest plot was significant ($I^2 > 50\%$ or $P < 0.05$ on χ^2 test), a random-effects model was chosen. The odds ratio (OR) and 95% confidence interval (CI) were computed as summary statistics for the dichotomous variables, and pooled summary statistics were calculated with the use of a random effects model. Sensitive analysis was conducted if the heterogeneity was high($I^2 > 50\%$ or $P < 0.05$ on χ^2 test). Statistical significance was defined as $P < 0.05$. Getdata (version 2.22) was used if the data were presented only as figures in the article instead of as detailed information. Mean and standard deviation values were estimated via https://www.math.hkbu.edu.hk/~tongt/papers/median2mean.html only if median and interquartile were provided by the authors.

Sensitivity analysis Analyses were performed using RevMan 5.3. Continuous outcomes were pooled using mean differences (MDs) with 95% confidence intervals (CIs). A fixed-effects model was applied; however, if the heterogeneity of the forest plot was significant ($I^2 > 50\%$ or $P < 0.05$ on χ^2 test), a random-effects model was chosen. The odds ratio (OR) and 95% confidence interval (CI) were computed as summary statistics for the dichotomous variables, and pooled summary statistics were calculated with the use of a random effects model. Sensitive analysis was conducted if the heterogeneity was high($I^2 > 50\%$ or $P < 0.05$ on χ^2 test). Statistical significance was defined as $P < 0.05$. Getdata (version 2.22) was used if the data were presented only as figures in the article instead of as detailed information. Mean and standard deviation values were estimated via https://www.math.hkbu.edu.hk/~tongt/papers/median2mean.html only if median and interquartile were provided by the authors.

Country(ies) involved China.

Keywords esektamine; opioids; hip surgery; knee surgery; meta-analysisbone mineral density; runner; physical activity; meta-analysis.

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