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The use of laryngeal masks in prolonged laparoscopic surgery: a meta-analysis

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ADMINISTRATIVE INFORMATION

Support - We have no additional financial support.

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 21 December 2023 and was last updated on 21 December 2023.

INTRODUCTION

Review question / Objective Participants: the patients undergoing prolonged laparoscopic surgery. Intervention: laryngeal masks; Control: endotracheal intubation . Main outcomes : ventilatory quality and hemodynamics . Second outcomes: postoperative complications. Study design: meta-analysis.

Condition being studied Clinically, laryngeal mask instead of endotracheal intubation is widely used in short-term surgery, but its use in long-term surgery is controversial, especially in prolonged laparoscopic surgery.

METHODS

Participant or population The patients undergoing prolonged laparoscopic surgery.

Intervention Laryngeal masks.

Comparator Endotracheal intubation.

Study designs to be included Randomized controlled trials.

Eligibility criteria (a)Patients undergoing elective laparoscopic surgery; (b)The type of study was a randomized controlled study; (c)The duration of anesthesia was 90 minutes or more.

Information sources The PubMed, Embase, and Cochrane Library databases were used to search for studies of laryngeal mask ventilation and endotracheal intubation in people undergoing laparoscopic surgery. Search terms are as follows: "Laryngeal", "Laryngeal Mask", "LMA", "endotracheal intubation", "intubation", "laparoscopic", "supraglottic airway devices", "The laryngeal mask airway". These keywords and the corresponding Medical Subject Title (MeSH) terms are combined with the Boolean operators AND and OR. The search period was from the beginning of the establishment of the library to April 2023, and

relevant documents were searched through the literature retrospective method. The main observed indicators were changes in airway pressure, end-tidal carbon dioxide, blood pressure, and heart rate during surgery; Secondary observational measures include postoperative complications including sore throat, dysphagia, bloodstains, laryngospasm, nausea, and time to insertion.

Main outcome(s) Ventilatory quality and hemodynamics, such as, airway pressure ; end-tidal carbon dioxide and hemodynamics.

Data management Data were extracted independently by two reviewers using a pre-designed data extraction form (Yanan Wang and Ying Liu) , and disagreements were resolved by discussion or consensus with a third anesthesiologist (Qi Zhou) . Data extracted included author, year, type of laryngeal mask, sample size, patient age, BMI. Normal distribution measurements are expressed as mean ± standard deviation (), and other forms of data are converted to mean ± standard deviation using evidence-based medical assistants according to statistical methods.

Quality assessment / Risk of bias analysis Literature quality was assessed by two reviewers according to the RCT bias risk assessment criteria recommended by the Cochrane Manual. The review included: methods of random sequence generation, allocation concealment protocol, blinding of investigators and participants, blinding of study outcome assessment, completeness of outcome data, selective reporting of study results, presence of other biases, and disagreement resolved by discussion or consensus with a third anaesthetist.

Strategy of data synthesis Meta-analysis was performed using Review Manager 5.4 software. All continuous variables were converted to mean ± standard deviation (), the end-tidal carbon dioxide, airway pressure, blood pressure, and heart rate data at each time point (preoperative、intraoperative and postoperative) were expressed as mean values, and their respective change trends were displayed. Statistical heterogeneity was tested using the I2 statistic, and if I2 > 50%, statistical heterogeneity was considered to be performed, and a random-effects model was used for further subgroup analysis to look for potential sources of heterogeneity. If I2 <50%, a fixed-effect model is used.

Subgroup analysis Subgroup analysis and sensitivity analysis were performed to explore the source and size of heterogeneity among studies when necessary.

Sensitivity analysis Subgroup analysis and sensitivity analysis were performed to explore the source and size of heterogeneity among studies when necessary.

Country(ies) involved China.

Keywords Laryngeal mask, Endotracheal intubation, Laparoscopic surgery, Meta-analysis, Randomized controlled trials.

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Author 1 - Yanan Wang.
Author 2 - Qi Zhou.
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