INPLASY PROTOCOL

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Conflicts of interest:
None declared.

Individualised PEEP titration guided by EIT in patients undergoing general anesthesia: A systematic review and meta-analysis

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Review question / Objective: **To determine which method of Positive End-expiratory Pressure (PEEP) strategy is more useful, and to establish an evidence base for the clinical impact of Electrical Impedance Tomography (EIT) based individual PEEP setting which appears to be a promising method to optimize PEEP in patients undergoing general anesthesia.**

Condition being studied: **After the induction of general anesthesia and mechanical ventilation, the alveoli in the dependent lung regions may collapse. Studies have found that perioperative protective ventilation strategy: low tidal volume (6-8 ml /kg ideal body weight) combined with positive end-expiratory pressure (PEEP) can reduce postoperative atelectasis and improve the prognosis in patients undergoing general anesthesia . At present, the optimal level of PEEP is still controversial. Electrical impedance tomography (EIT), a noninvasive, functional imaging technology, can identify atelectatic, overdistended, and adequately recruited lung in different lung regions. In recent years, EIT-directed PEEP titration has attracted widespread attention as a new method for individualized PEEP titration strategy, but most studies focus on its application in ARDS patients rather than general anesthesia. Thus, to assess the effect of EIT derived PEEP titration in patients undergoing general anesthesia, we undertook a systemic review and meta analysis.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 01 January 2023 and was last updated on 01 January 2023 (registration number INPLASY202310001).

INTRODUCTION

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METHODS

Participant or population: Patients undergoing general anesthesia.

Intervention: EIT guided PEEP titration.

Comparator: Fixed PEEP and other PEEP titration strategies.

Study designs to be included: Randomized controlled trials (RCTs).

Eligibility criteria: Clinical trials in accordance with PICOS.

Information sources: Four electronic databases (PUBMED, EMBASE, Web Of Science, and the Cochrane Library).

Main outcome(s): 1. EIT-guided PEEP titration was associated with a raise respiratory system compliance and significant raise in PaO2/FiO2-ratio. 2. The EIT group had no significant effect on hemodynamics. 3. EIT is a superior option for patients undergoing general anesthesia.

Quality assessment / Risk of bias analysis: Cochrane tool will be used to evaluate the risk of bias by following means: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of out come assessment, incomplete outcome date, selective reporting and other sources of bias.

Strategy of data synthesis: The cochrane systematic software Revman version 5.3 was used for statistical analysis.

Subgroup analysis: Meta-regression or subgroup analysis will be applied to analyze the source of heterogeneity. We will provide a narrative summary if we couldn't identifymain source of serve heterogeneity.

Sensitivity analysis: None.

Country(ies) involved: China.

Keywords: Electrical impedance tomography; Anesthesia, General; Meta-analysis; Positive End-expiratory Pressure.

Contributions of each author:
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