

INPLASY PROTOCOL

To cite: Zhu et al. Efficacy and safety of early chest tube removal after selective pulmonary resection with high-output drainage : a systematic review and meta-analysis. Inplasy protocol 202240124. doi: 10.37766/inplasy2022.4.0124

Received: 20 April 2022

Published: 20 April 2022

Corresponding author:
Junwei Zhu

spike12593@tom.com

Author Affiliation:
Zhoukou central hospital

Support: None.

Review Stage at time of this submission: The review has not yet started.

Conflicts of interest:
None declared.

Efficacy and safety of early chest tube removal after selective pulmonary resection with high-output drainage: a systematic review and meta-analysis

Zhu, J¹; Xia, X²; Li, R³; Song, W⁴; Zhang, Z⁵; Lu, H⁶; Li, Z⁷; Guo, Q⁸.

Review question / Objective: Is postoperative early chest tube removal in patients undergoing selective pulmonary resection with high-output safe in terms of postoperative complications requiring intervention? Does postoperative early chest tube removal after selective pulmonary resection with high-output lead to reduced length of hospital stay?

Condition being studied: Thoracic surgeons may make more clinical decisions each day about the management of patients' chest tubes than on any other clinical problem. Often these decisions are made on the basis of biases and preferences learned during training as opposed to evidence-based medicine. This may be attributed to the lack of clinical trials that address "mundane issues" such as chest tube management. For fear of complications from pleural effusion, previous conservative surgeons did not remove the chest tube until daily drainage had ceased to 100–200 ml/24 h, while others removed the chest tube with a high-output drainage threshold which was defined as drainage greater than 250 mL per 24 h.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 20 April 2022 and was last updated on 20 April 2022 (registration number INPLASY202240124).

INTRODUCTION

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METHODS

Search strategy: A number of sources will be used to identify studies for this review. First, the databases PubMed, Web of Science, EMBASE, Cochrane Library, Scopus, Ovid, Elsevier, Ebsco, Wiley will be used. Next, the registries PROSPERO, WHO-ICTRP and ClinicalTrials.gov will be searched. Manual cross-references and related articles searches will be performed to prevent any possible missing articles.

Participant or population: Patients undergoing selective pulmonary resection; inclusion criteria: Adult patients (>18 years old) were included if they underwent selective pulmonary resection(eg, wedge resection, lobectomy, segmentectomy); American Society of Anesthesiologist performance status class 1 or 2.

Intervention: Early chest tube remove after selective pulmonary resection with the drainage threshold of more than 250ml/24h.

Comparator: Institutional postoperative chest tube protocol(drainage threshold < 250ml/24h).

Study designs to be included: All observational and randomized studies that reported outcomes (eg, duration of tube drainage, complication rates) and articles that compared conservative treatment versus early chest tube removal group after selective pulmonary resection.

Eligibility criteria: 1)Studies published in English 2)RCTs or Cohort studies were included 3)The study contains primary outcome and at least one secondary outcome.

Information sources: The databases PubMed, Web of Science, EMBASE, Cochrane Library, Scopus, Ovid, Elsevier, Ebsco, Wiley will be used. Next, the registries PROSPERO, WHO-ICTRP and ClinicalTrials.gov will be searched. Manual cross-references and related articles searches will be performed to prevent any possible missing articles.

Main outcome(s): Length of postoperative hospital stay.

Additional outcome(s): Complication, mortality, rate of tube placement or thoracentesis.

Quality assessment / Risk of bias analysis: The Cochrane risk of bias assessment tool will be used to assess the quality of randomised controlled trials, while the Newcastle-Ottawa Quality Scale will be used to assess the quality of observational studies. Across studies, at outcome level, publication bias is assessed by a visual funnel plot ,a p-value lower than 0.10 was considered statistically significant.

Strategy of data synthesis: RevMan software and Stata.14-MP were used for analysis. The effect index of counting data was relative risk (RR) or odds ratio (OR). The effect index of measuring data was weighted mean difference (WMD) or standardized mean difference (SMD). The heterogeneity of literatures was judged according to the size of I^2 , if $I^2 \leq 50\%$, it means that the heterogeneity is acceptable or homogeneous, fixed effect model was used for analysis; if $I^2 > 50\%$, it means that there is heterogeneity among different studies. indicating statistical heterogeneity among the study results, the source of heterogeneity was further analyzed. After excluding the influence of obvious clinical heterogeneity, a random-effect model was used for meta-analysis. The level of meta-analysis was set as $\alpha = 0.05$. Significant

clinical heterogeneity was treated by descriptive analysis.

Subgroup analysis: One subgroup analysis will be undertaken to assess if the different drainage threshold groups produce different treatment effects.

Sensitivity analysis: The trim-and-fill approach was utilized to determine the number of additional studies required to overcome potential bias and provide adjusted effect.

Language: English.

Country(ies) involved: China.

Keywords: chest tube removal, high-output, pulmonary resection.

Contributions of each author:

Author 1 - Junwei Zhu.

Author 2 - Xueyang Xia.

Author 3 - Rongyao Li.

Author 4 - Weikang Song.

Author 5 - Zhiqiang Zhang.

Author 6 - Huawei Lu.

Author 7 - Zhiwei Li.

Author 8 - Qingwei Guo.