

INPLASY PROTOCOL

To cite: Li et al. The effectiveness of non-routine chest tube drainage strategy after video-assisted thoracoscopic pulmonary resection: a systematic review and meta-analysis. Inplasy protocol 202240026. doi: 10.37766/inplasy2022.4.0026

Received: 05 April 2022

Published: 05 April 2022

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Support: None.

Review Stage at time of this submission: Data analysis.

Conflicts of interest:
None declared.

The effectiveness of non-routine chest tube drainage strategy after video-assisted thoracoscopic pulmonary resection: a systematic review and meta-analysis

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Review question / Objective: We intend to perform a systematic review and meta-analysis to further identify the safety and feasibility of the non-routine chest tube drainage strategy after video-assisted thoracoscopic pulmonary resection.

Condition being studied: Comparison of perioperative outcomes between with and without routine chest tube drainage after video-assisted thoracoscopic pulmonary resection.

Information sources: Electronic databases : Pubmed, EMBASE and Cochrane Library. We also manually searched the reference lists of excluded publications to identify any further potential nonduplicate studies.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 05 April 2022 and was last updated on 05 April 2022 (registration number INPLASY202240026).

INTRODUCTION

Review question / Objective: We intend to perform a systematic review and meta-analysis to further identify the safety and feasibility of the non-routine chest tube

drainage strategy after video-assisted thoracoscopic pulmonary resection.

Condition being studied: Comparison of perioperative outcomes between with and without routine chest tube drainage after

video-assisted thoracoscopic pulmonary resection.

METHODS

Search strategy: (((((((((((((((("Lung Neoplasms"[Mesh]) OR (Pulmonary Neoplasms[Title/Abstract])) OR (Neoplasms, Lung[Title/Abstract])) OR (Lung Neoplasm[Title/Abstract])) OR (Neoplasm, Lung[Title/Abstract])) OR (Neoplasms, Pulmonary[Title/Abstract])) OR (Neoplasm, Pulmonary[Title/Abstract])) OR (Pulmonary Neoplasm[Title/Abstract])) OR (Lung Cancer[Title/Abstract])) OR (Cancer, Lung[Title/Abstract])) OR (Cancers, Lung[Title/Abstract])) OR (Lung Cancers[Title/Abstract])) OR (Pulmonary Cancer[Title/Abstract])) OR (Cancer, Pulmonary[Title/Abstract])) OR (Cancers, Pulmonary[Title/Abstract])) OR (Pulmonary Cancers[Title/Abstract])) OR (Cancer of the Lung[Title/Abstract])) OR (Cancer of Lung[Title/Abstract])) AND (((((((("Thoracoscopy"[Mesh]) OR (Thoracoscopic[Title/Abstract])) OR (Thoracic Surgery Video-Assisted[Title/Abstract])) OR (Thoracic Surgery Robotic-Assisted[Title/Abstract])) OR (Video-Assisted Thoracic Surgery[Title/Abstract])) OR (Robot-Assisted Thoracic Surgery[Title/Abstract])) OR (VATS[Title/Abstract])) OR (Lung Resection[Title/Abstract])) OR (Pulmonary resection[Title/Abstract])) AND (((((((("Drainage"[Mesh]) OR (Drainage Tube[Title/Abstract])) OR (Chest Tube[Title/Abstract])) OR (Chest Drain[Title/Abstract])) OR (Chest Drainage[Title/Abstract])) OR (Nonintubated[Title/Abstract])) OR (Tubeless[Title/Abstract])).

Participant or population: Patients underwent no routine chest drainage strategy after video-assisted thoracoscopic pulmonary resection and patients with routine chest tube drainage.

Intervention: No routine chest drainage strategy.

Comparator: Routine chest tube.

Study designs to be included: Cohort studies and randomized clinical trials.

Eligibility criteria: 1. Including a no routine chest tube drainage group. 2. Including a traditional chest tube group as control group. 3. reporting at least 1 of the outcome measures of interests. 4. written in English.

Information sources: electronic databases : Pubmed, EMBASE and Cochrane Library. We also manually searched the reference lists of excluded publications to identify any further potential nonduplicate studies.

Main outcome(s): Postoperative length of stay (LOS).

Additional outcome(s): Postoperative complications (pneumothorax, pleural effusion, and subcutaneous emphysema); Pain score; Reintervention rate; operation duration; wound healing satisfactory.

Quality assessment / Risk of bias analysis: Quality of included cohort studies was evaluated using the Newcastle-Ottawa Quality Assessment Scale (NOS). We identified studies with a score equal to or higher than 6 as eligible for our meta-analysis. We used the Cochrane risk of bias tool to assess the quality of RCTs. Due to the nature of the interventions involved in ERAS, it is often unfeasible to blind patients and staff; therefore, high risk of performance bias was assumed if a study did not mention blinding of staff or patients.

Strategy of data synthesis: We calculated the relative risk (RR) with 95% confidence interval (CI) to summarize the effects of routine chest tube drainage strategy on dichotomous data. The standardized mean difference (SMD) with 95% CI served as the appropriate statistics to summarize the mean values with standard deviations (SDs) for continuous variables. If the SDs were not provided, we did not incorporate the data in the quantitative synthesis because the extrapolation of SDs was only applicable for studies with a large sample size and normal distribution of outcomes according to the guidelines of the Cochrane Collaboration. Cochrane Q test and I² statistics were used to quantify the

heterogeneity level. A 2-sided P value of less than 0.05 was defined as statistical significance. In our study, random effects models were employed to estimate pooled effect sizes in order to reduce possible bias. Egger's test was used to detect any potential publication bias within the meta-analyses. Significant publication bias was revealed if Egger's P value < 0.05.

Subgroup analysis: To compare the outcomes between with and without routine chest tube drainage after different surgical methods, a meta-analysis was then performed on 2 subgroups: wedge resection and segmentectomy/Lobectomy.

Sensitivity analysis: We also conducted a sensitivity analysis, in which the impact of each study on the overall estimates could be detected by omitting individual studies sequentially, to further examine the stability of pooled estimates. The strong robustness of our meta-analysis was confirmed if there was no substantial variation between the adjusted results and the primary results.

Language: English only.

Country(ies) involved: China.

Keywords: routine chest tube drainage; no chest tube drainage; video-assisted thoracoscopic lung resection; perioperative outcomes; systematic review; meta-analysis.

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