

INPLASY PROTOCOL

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None declared.

INTRODUCTION

Review question / Objective: We aimed to compare the death risk of operating room thoracotomy and emergency department thoracotomy for patients with severe

Resuscitative thoracotomy at operating room as a protective factor for death compared with resuscitative thoracotomy at emergency department in patients with severe thoracic injuries: a systematic review and meta-analysis

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Review question / Objective: We aimed to compare the death risk of operating room thoracotomy and emergency department thoracotomy for patients with severe thoracic injuries by conducting systematic review and meta-analysis.

Condition being studied: Due to the high mortality of severe thoracic and cardiac trauma, treatment for severe thoracic trauma patients has become a great challenge. Resuscitative thoracotomy, which included emergency department thoracotomy (EDT) and operating room thoracotomy (ORT), is a surgical procedure to rescue severe thoracic patients, especially for patients with traumatic cardiac arrest and tamponade. However, it was still controversial that whether EDT or ORT was superior to the patients suffered from severe thoracic injuries.

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METHODS

Participant or population: Severe thoracic trauma patients who had been proceeded with resuscitative thoracotomy.

Intervention: Resuscitative thoracotomy at operating room.

Comparator: Resuscitative thoracotomy at emergency department.

Study designs to be included: Prospective or retrospective cohort study.

Eligibility criteria: (a) Study was designed as a prospective or retrospective cohort study. (b) Target population of the present meta-analysis should be based on the patients with severe thoracic trauma. (c) The results of included studies must report the number of patients underwent EDT and ORT. (d) The number of deaths in EDT and ORT should also be reported respectively. (e) If the study reported the mortality rate of EDT and ORT that we can extract information about the number of deaths to conduct statistical analysis, the study was also included.

Information sources: MEDLINE (via PubMed), Web of Science and EMBASE will be searched from initial to October 31st, 2022.

Main outcome(s): Mortality during the hospitalization for patients who underwent resuscitative thoracotomy.

Quality assessment / Risk of bias analysis: The quality assessment for the included studies was based on the Newcastle-Ottawa Scale (NOS). The total score of NOS

ranged from 0 to 9 stars for the assessment. Study with NOS score of ≤ 5 is considered to be of poor quality, study with NOS score of [6, 8) is considered to be of fair quality; study with NOS score of ≥ 8 is considered to be of good quality.

Strategy of data synthesis: The relative risk (RR) with 95% confidence interval (CI) was utilized to access the death risk of severe thoracic trauma patients undergoing ORT compared with severe thoracic trauma patients undergoing EDT. The heterogeneity among the included studies was assessed by Cochran Q statistical ($P < 0.10$ indicates a statistically significant heterogeneity). A fixed-effect model was implemented when there was no significant statistical heterogeneity between the combined studies; otherwise, a random-effect model was implemented when the heterogeneity between the combined studies was statistically significant.

Subgroup analysis: Subgroups were stratified by year of publication (before 1995 versus after 1995), sample size (≤ 100 versus > 100), proportion of penetrating injuries ($\geq 60\%$ versus $\leq 40\%$), region (America versus non-America) and quality assessment score (NOS > 7 versus NOS ≤ 7).

Sensitivity analysis: If the heterogeneity was significant, we conducted sensitivity analysis to find out the source of potential heterogeneity. Sensitivity analysis was conducted that we deleted each single study one at a time to see whether the pooled RR would be affected obviously.

Country(ies) involved: China.

Keywords: Thoracic injuries; Resuscitative thoracotomy; EDT; ORT; Death risk; Meta

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