

INPLASY PROTOCOL

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None declared.

Peripherally inserted central catheter lines for Intensive Care Unit and onco-hematologic patients: a systematic review and meta-analysis

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Review question / Objective: We aim to compare the occurrence of Central Line-Associated Bloodstream Infections (CLABSI) and catheter-related thrombosis in ICU and onco-hematologic patients with Peripherally Inserted Central Catheters (PICC) or Central Venous Catheters (CVC).
Condition being studied: Catheter-related thrombosis is a relatively common complication of Central Line placement. This entity includes asymptomatic thrombi and symptomatic thrombotic complications. CLABSI is a laboratory-confirmed systematic infection occurring after Central Line placement.
Information sources: Electronic databases: PubMed, Cochrane, Google Scholar.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 11 May 2020 and was last updated on 11 May 2020 (registration number INPLASY202050043).

INTRODUCTION

Review question / Objective: We aim to compare the occurrence of Central Line-Associated Bloodstream Infections (CLABSI) and catheter-related thrombosis in ICU and onco-hematologic patients with Peripherally Inserted Central Catheters (PICC) or Central Venous Catheters (CVC).

Rationale: PICC line use has been associated with a higher risk of developing catheter-related thrombosis compared to conventional CVCs, however this finding has not been explored in specific populations. The risk of CLABSI occurrence after PICC line application remains unclear.

Condition being studied: Catheter-related thrombosis is a relatively common complication of Central Line placement. This entity includes asymptomatic thrombi and symptomatic thrombotic complications. CLABSI is a laboratory-confirmed systematic infection occurring after Central Line placement.

METHODS

Search strategy: We conducted an electronic search of the PubMed (MEDLINE), Cochrane Library and Google Scholar databases. The search algorithm included the following terms: “CVC”, “central venous catheter”, “central venous line”, “PICC”, “peripherally inserted central catheter”.

Participant or population: Intensive Care Unit (ICU) patients, Onco-hematologic patients.

Intervention: PICC line placement.

Comparator: Conventional CVC.

Study designs to be included: Randomized Controlled Studies, observational studies.

Eligibility criteria: (1) Randomized Controlled Trials (RCTs) and observational studies, (2) comparing the complications (thrombosis and CLABSI) of PICC lines with those of the other CVCs in (3) adult populations (4) hospitalized in the ICU/ Acute Care or (5) treated for hematological malignancies.

Information sources: Electronic databases: PubMed, Cochrane, Google Scholar.

Main outcome(s): Catheter-related thrombosis, CLABSI.

Quality assessment / Risk of bias analysis: Quality of included studies was assessed with the Newcastle-Ottawa Scale for observational studies and the Jadad Score for Randomized Controlled Trials. Risk of bias was assessed by evaluating the summery of forest plots and the conductions of Egger's and Begg's tests.

Strategy of data synthesis: The comparison of CLABSI and thrombosis occurrence between the PICC and the CVC groups was done by calculating the 95% confidence interval (95% CI) and the pooled odds ratio (OR). The significance was set at P50% and/or PQ<0.10. Otherwise, the fixed effects model was used. All statistical analyses were performed in Review Manager (RevMan) [Computer program]. Version 5.3. Copenhagen: The Nordic Cochrane Centre, The Cochrane Collaboration, 2014. PRISMA guidelines for reporting reviews and meta-analyses were applied (Appendix A).

Subgroup analysis: We will not be conducting subgroup analysis due to the limited number of studies included (<10).

Sensibility analysis: Sensitivity analysis will be conducted based on study type and prophylactic measures used.

Language: English.

Country(ies) involved: Greece.

Keywords: Peripherally Inserted Central Catheter; Thrombosis; Central Line Associated Bloodstream Infection; Intensive Care Unit.

Contributions of each author:

Author 1 - Georgios Mavrovounis - Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Writing-Original draft, Writing-review and editing, Visualization.

Author 2 - Maria Mermiri - Conceptualization, Methodology, Investigation, Writing-Original draft, Writing-review and editing.

Author 3 - Ioannis Pantazopoulos - Writing-Original draft, Writing-review and editing, Supervision, Project administration.