

# INPLASY

## Meta-analysis of Angiojet mechanical thrombectomy and catheter-directed thrombolysis in the treatment of lower extremity deep venous thrombosis

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### ADMINISTRATIVE INFORMATION

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**Review Stage at time of this submission** - Data extraction.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY2023100075

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 22 October 2023 and was last updated on 22 October 2023.

### INTRODUCTION

**Review question / Objective** To compare the efficacy and safety of Angiojet mechanical thrombectomy and catheter-directed thrombolysis (CDT) in the treatment of deep venous thrombosis of lower extremities.

**Condition being studied** Deep venous thrombosis of lower extremities(LEDVT) is a common disease in surgery, which is common in patients with major trauma, surgical braking, malignant tumor, embolism and so on. Acute thrombus exfoliation can lead to serious clinical complications-pulmonary embolism (PE). With the progress of the disease, some patients will develop post-thrombotic syndrome (PTS). In order to prevent further progression of the disease, early treatment is very important. Percutaneous mechanical thrombectomy (PMT) and CDT are the two most commonly used methods at present. Angiojet mechanical thrombus removal device is the representative of PMT, and it is also the most

widely used in clinic. This study searches published articles in Chinese and English. To analyze the efficacy and safety of Angiojet mechanical thrombus and CDT in the treatment of LEDVT, in order to provide a theoretical basis for clinicians to make decisions.

### METHODS

**Search strategy** Database: PubMed, Embase, Web of Science, Cochrane Database, China National Knowledge Infrastructure (CNKI), Wanfang Database, and Chinese Science and Technology Journal Database (VIP).

Search keywords: Deep venous thrombolysis, DVT, catheter directed thrombolysis, CDT, Pharmacomechanical catheter- directed thrombolysis, PCDT, AngioJet, percutaneous mechanical thrombectomy, PMT, mechanical thrombectomy, pharmacomechanical thrombectomy and pharmacomechanical thrombolysis.

**Participant or population** Patients were diagnosed with deep venous thrombosis of lower extremities and were treated with Angiojet mechanical thrombectomy and catheter-directed thrombolysis.

**Intervention** Angiojet mechanical thrombectomy.

**Comparator** Catheter-directed thrombolysis.

**Study designs to be included** Prospective or retrospective cohort studies or randomized controlled trials.

**Eligibility criteria** Inclusion criteria: ①contrastive study that compared Angiojet with CDT for the treatment of LEDVT.②Study designs include prospective cohort studies, retrospective studies and randomized controlled trials.③The search language was limited to Chinese or English. ④Postoperative follow-up included at least two of the following reference indicators: Early postoperative patency rate of deep vein, detumescence rate of affected limb, thrombus clearance rate of grade II and III, thigh circumference difference before and after treatment, dosage of urokinase, thrombolysis time, hospital stay, PTS incidence and related complications incidence. Exclusion criteria:①case reports, animal experiments, expert reviews, letters, summary articles, conference papers and doctoral theses.②use of thrombus aspiration devices other than Angiojet in cases. ③observational studies without setting up a control group.④full-text literatures that cannot be retrieved.⑤literatures that do not have clear observation indicators or inconsistent observation standards, and cannot be converted. ⑥The sample size of Angiojet group or CDT group was less than 10 cases or the literature quality score was less than 5 points.

**Information sources** PubMed, Embase, Web of Science, Cochrane Database, China National Knowledge Infrastructure (CNKI), Wanfang Database, and Chinese Science and Technology Journal Database (VIP).

**Main outcome(s)** Early postoperative patency rate of deep vein, detumescence rate of affected limb, thrombus clearance rate of grade II and III, thigh circumference difference before and after treatment, dosage of urokinase, thrombolysis time, hospital stay, PTS incidence and related complications incidence.

**Quality assessment / Risk of bias analysis** Newcastle-Ottawa Scale (NOS) was used to test the methodological quality and risk of bias of the included prospective or retrospective cohort studies. This 9-point scale assesses bias in three aspects: selection of study subjects, comparability between groups, and ascertainment of exposure or outcome. Studies with a score of over 6 were considered to be of high quality.

**Strategy of data synthesis** RevMan 5.4 software was used for the meta-analysis. Statistics were analysed using odds ratio (OR) and 95% confidence interval (CI) as indicators for dichotomous variables and mean difference (MD) and 95% confidence interval (CI) for continuous variables. The heterogeneity in the results between the studies was analyzed using the Q-test and I<sup>2</sup> test. If I<sup>2</sup> < 0.1 indicate insignificant heterogeneity, a fixed-effects model was used for Meta-analysis. If I<sup>2</sup> ≥ 50% or P ≤ 0.1 indicate heterogeneity exists, a random effects model was used for Meta-analysis.

**Subgroup analysis** We will consider subgroups such as samples.

**Sensitivity analysis** We conduct sensitivity analysis by one-by-one elimination method.

**Language restriction** English, Chinese.

**Country(ies) involved** China.

**Keywords** Deep venous thrombosis of lower extremities, Angiojet mechanical thrombectomy, catheter-directed thrombolysis, Meta analysis.

#### **Contributions of each author**

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