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# Comparative Outcomes of Catheter-Directed Thrombolysis Plus Anticoagulation vs Anticoagulation Alone to Treat Lower-Extremity Proximal Deep Vein Thrombosis

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## ABSTRACT

ABSTRACT | INTRODUCTION | METHODS | RESULTS | DISCUSSION | CONCLUSIONS | ARTICLE INFORMATION | REFERENCES

**Importance** The role of catheter-directed thrombolysis (CDT) in the treatment of acute proximal deep vein thrombosis (DVT) is controversial, and the nationwide safety outcomes are unknown.

**Objectives** The primary objective was to compare in-hospital outcomes of CDT plus anticoagulation with those of anticoagulation alone. The secondary objective was to evaluate the temporal trends in the utilization and outcomes of CDT in the treatment of proximal DVT.

**Design, Setting, and Participants** Observational study of patients with a principal discharge diagnosis of proximal or caval DVT from 2005 to 2010 in the Nationwide Inpatient Sample (NIS) database. We compared patients treated with CDT plus anticoagulation with the patients treated with anticoagulation alone. We used propensity scores to construct 2 matched groups of 3594 patients in each group for comparative outcomes analysis.

**Main Outcomes and Measures** The primary study outcome was in-hospital mortality. The secondary outcomes included bleeding complications, length of stay, and hospital charges.

**Results** Among a total of 90 618 patients hospitalized for DVT (national estimate of 449 200 hospitalizations), 3649 (4.1%) underwent CDT. The CDT utilization rates increased from 2.3% in 2005 to 5.9% in 2010. Based on the propensity-matched comparison, the in-hospital mortality was not significantly different between the CDT and the anticoagulation groups (1.2% vs 0.9%) (OR, 1.40 [95% CI, 0.88-2.25]) ( $P = .15$ ). The rates of blood transfusion (11.1% vs 6.5%) (OR, 1.85 [95% CI, 1.57-2.20]) ( $P < .001$ ), pulmonary embolism (17.9% vs 11.4%) (OR, 1.69 [95% CI, 1.49-1.94]) ( $P < .001$ ), intracranial hemorrhage (0.9% vs 0.3%) (OR, 2.72 [95% CI, 1.40-5.30]) ( $P = .03$ ), and vena cava filter placement (34.8% vs 15.6%) (OR, 2.89 [95% CI, 2.58-3.23]) ( $P < .001$ ) were significantly higher in the CDT group. The CDT group had longer mean (SD) length of stay (7.2 [5.8] vs 5.0 [4.7] days) (OR, 2.27 [95% CI, 1.49-1.94]) ( $P < .001$ ) and higher hospital charges (\$85 094 [\$69 121] vs \$28 164 [\$42 067]) ( $P < .001$ ) compared with the



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anticoagulation group.

**Conclusions and Relevance** In this study, we did not find any difference in the mortality between the CDT and the anticoagulation groups, but evidence of higher adverse events was noted in the CDT group. In the context of this observational data and continued improvements in technology, a randomized trial with outcomes such as mortality and postthrombotic syndrome is needed to definitively address this comparative effectiveness.

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