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Pharmacomechanical Thrombectomy versus Catheter-Directed Thrombolysis for Thrombosed Arteriovenous Dialysis Access: A TriNetX-database Analysis

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Objectives : To compare the outcomes of pharmaceutical thrombectomy versus catheter directed thrombolysis among chronic kidney disease (CKD) patients dependent on renal dialysis with thrombosed hemodialysis vascular access; in terms of rethrombosis, GI hemorrhage, inpatient encounter, sepsis and all cause mortality following dialysis.

Methods : Adult patients (≥ 18 years) with diagnosed cases of CKD stage 5 or End-stage renal disease (ESRD) dependent dialysis with thrombosed hemodialysis vascular access were divided into two groups: those undergoing pharmacomechanical thrombectomy versus catheter-directed thrombolysis. Study was conducted in the TriNetX database and propensity matching was done to eliminate potential biases. Risk ratio, cumulative incidence, hazard ratios were estimated and a $p < 0.05$, was considered statistically significant.

Results : Each cohort was accessed for outcomes following propensity matching to eliminate selection bias. Re-thrombosis occurred more frequently following thrombectomy than thrombolysis (59.7% vs 49.6%; RR 1.21, 95% CI 1.15–1.26; $p < 0.001$), with a higher hazard of re-thrombosis (HR 1.20, 95% CI 1.13–1.28; $p < 0.001$). The risk of gastrointestinal hemorrhage was similar between groups (13.5% vs 13.4%; RR 1.01, 95% CI 0.90–1.14; $p = 0.834$), with no clinically meaningful difference in hazard (HR 0.92, 95% CI 0.81–1.04; $p = 0.027$). Thrombectomy was associated with a lower risk of sepsis compared with thrombolysis (34.6% vs 39.2%; RR 0.88, 95% CI 0.83–0.94; $p < 0.001$) and a significantly reduced hazard of sepsis (HR 0.76, 95% CI 0.71–0.83; $p < 0.001$). Inpatient encounters were less frequent in the thrombectomy group (73.7% vs 77.3%; RR 0.95, 95% CI 0.93–0.98; $p < 0.001$), with a lower hazard of hospitalization (HR 0.73, 95% CI 0.69–0.77; $p < 0.001$). All-cause mortality was significantly reduced following thrombectomy (34.8% vs 42.1%; RR 0.83, 95% CI 0.78–0.88; $p < 0.001$), with improved overall survival (HR 0.73, 95% CI 0.68–0.79; $p < 0.001$).

Conclusions : Compared to the thrombolytic group, pharmacomechanical thrombectomy was associated with higher rates of re-thrombosis but lower risk of complications.

Figure 1_page-0001.jpg



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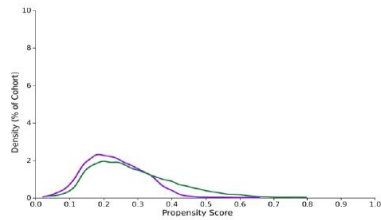
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Purple: Pharmacomechanical Thrombectomy Group

Green: Catheter-directed Thrombolysis Group

Figure 1: Propensity score density function before propensity matching.



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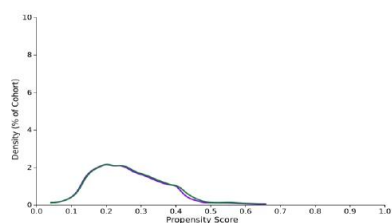
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Figure 2: Propensity score density function after propensity matching.