Catheter exchange over a guidewire is frequently performed for malfunctioning peripherally inserted central catheters (PICCs). Whether such exchanges are associated with venous thromboembolism is not known" Chopra et al (2018).

Abstract:

BACKGROUND: Catheter exchange over a guidewire is frequently performed for malfunctioning peripherally inserted central catheters (PICCs). Whether such exchanges are associated with venous thromboembolism is not known.

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METHODS: We performed a retrospective cohort study to assess the association between PICC exchange and risk of thromboembolism. Adult hospitalized patients that received a PICC during clinical care one of 51 hospitals participating in the Michigan Hospital Medicine Safety consortium were included. The primary outcome was hazard of symptomatic venous thromboembolism (radiographically confirmed upper-extremity deep vein thrombosis and pulmonary embolism) in those that underwent PICC exchange vs. those that did not.

RESULTS: Of 23,010 patients that underwent PICC insertion in the study, 589 patients (2.6%)

experienced a PICC exchange. Almost half of all exchanges were performed for catheter dislodgement or occlusion. A total of 480 patients (2.1%) experienced PICC-associated deep vein thrombosis. The incidence of deep vein thrombosis was greater in those that underwent PICC exchange vs. those that did not (3.6% vs. 2.0%, p<0.001). Median time to thrombosis was shorter among those that underwent exchange compared vs. those that did not (5 vs. 11 days, p=0.02). Following adjustment, PICC exchange was independently associated with two-fold greater risk of thrombosis (hazard ratio [HR]=1.98, 95%CI=1.37-2.85) vs. no exchange. The effect size of PICC exchange on thrombosis was second in magnitude to device lumens (HR=2.06 [95%CI=1.59-2.66] and HR=2.31 [95%CI=1.6-3.33] for double- and triple lumen devices, respectively).

CONCLUSION: Guidewire exchange of PICCs may be associated with increased risk of thrombosis. As some exchanges may be preventable, consideration of risks and benefits of exchanges in clinical practice is needed.

Reference:

Chopra, V., Kaatz, S., Grant, P., Swaminathan, L., Boldenow, T., Conlon, A., Bernstein, S. and Flanders, S. (2018) Risk of Venous Thromboembolism Following Peripherally Inserted Central Catheter Exchange: an Analysis of 23,000 Hospitalized Patients. The American Journal of Medicine. January 31st. .

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