"To evaluate prospectively the safety of contrast medium injection through standard peripheral intravenous cannulas at standard injection sites" Stroeder et al (2020).

Abstract:
AIM: To evaluate prospectively the safety of contrast medium injection through standard peripheral intravenous cannulas at standard injection sites during clinical routine using iomeprol 400, a contrast agent with high viscosity. MATERIALS AND METHODS: Three thousand, five hundred and fourteen clinical CT examinations undertaken at Saarland University Medical Center were included in this prospective observational trial. The size and site of the cannula as well as the contrast medium injection rate and volume were assessed for each patient. In addition, the ability to aspirate blood though the cannula and the occurrence of complications, such as extravasation or abortion of injection by the automated injector, were recorded. RESULTS: The overall complication rate was 30/3,514 (0.85%). With 22 G cannulas, the complication rate was 8/541 (1.48%) applying flow rates of 1-3.5 ml/s (mean 2.1 ml/s). With 20 G cannulas, complications occurred in 21/2,601 cases (0.81%) with flow rates of 1.5-5 ml/s (mean 3 ml/s). The complication rate using 18 G cannulas was 1/377 (0.26%) for flow rates of 2-6 ml/s (mean 3.5 ml/s). No relationship between the site and size of the cannula to the occurrence of complications was found. The inability to aspirate blood correlated with the development of extravasation. CONCLUSIONS: The injection of contrast agent using standard peripheral venous cannulas is a safe and reliable procedure yielding diagnostic image contrast, even when using highly viscous contrast agents such as iomeprol 400; an aspiration test should be performed before each injection.
National evaluation of safety peripheral intravenous catheters
PICC tip migration following CT contrast injection
Review of injection-related iatrogenic peripheral nerve injuries

Reference:


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