Abstract:

Background: Central venous catheter guidewire retention is classed as a ‘never event’ in the United Kingdom, with the potential for significant patient harm. If the retained guidewire remains within the central venous catheter lumen, bedside techniques may facilitate guidewire retrieval. However, these techniques may be ineffective if the guidewire has already passed below skin level. We investigated a novel ‘suck out’ technique for bedside guidewire retrieval and compared this against traditional retrieval methods.

Methods: Simulation 1: in a benchtop model, seven different central venous catheters had their corresponding guidewire placed in the last 2 cm of the catheter tip which was immersed horizontally in fluid. A 50-mL syringe was attached to the distal lumen central venous catheter hub and suction applied for 5 s, and the distance of guidewire retraction was recorded. Simulation 2: a central venous catheter guidewire was intentionally retained within the catheter at either 5 cm above or below skin level in a pigskin model. Simple catheter withdrawal, catheter clamping withdrawal and the ‘suck out’ method were compared for efficacy using Fisher’s exact test.

Results: Simulation 1: retained guidewires were retracted by 13 cm on average. Simulation 2: when guidewires were retained 5 cm above skin level, all retrieval methods were 100% effective; however, when retained 5 cm below skin level, simple catheter withdrawal was ineffective, clamping and withdrawal was only 10% effective and the ‘suck out’ technique was 90% effective (p < 0.001).

Conclusion: The ‘suck out’ technique can effectively retract guidewires retained within central venous catheter lumens and demonstrates superiority over traditional methods of retained guidewire extraction in simulated models.

Reference: