



ASSOCIATION FOR VASCULAR ACCESS

Position Statement

The Use of Seldinger or Modified Seldinger Technique, in Combination with Real-Time Imaging Modalities for Peripherally Inserted Central Catheter and Midline Placements by Clinicians

OVERVIEW

Clinicians have been inserting PICCs for over 30 years.¹ In the beginning, PICCs were inserted using a breakaway needle and the peel-away method; in other words, the catheter was threaded through the opening in the vessel created by the needle. The Modified Seldinger Technique (MST), was first described by Goodwin in 1989.² MST is a minimally invasive technique in which the practitioner accesses the target vessel with a small bore needle, then dilates to the size required for the catheter. The introduction of MST improves catheter insertion success rates²; when coupled with real-time imaging modalities for vessel identification, MST increases success rates even further.³ The use of ultrasound for PICC placement was first described by Boudreaux, a critical care nurse, in 1997 at the University of Washington Medical Center.^{4,5} A review of the literature shows insertion success rates using the peel-away needle method range from 60 -70%; success rates increase to 90-95% when MST and real-time imaging are used for insertion.⁵ Further, combining MST and real-time imaging decreases vessel and surrounding tissue trauma, and increases the likelihood of achieving venous access with a single stick.^{4,6} Core content of PICC insertion programs include relevant anatomy and physiology; infection control practices; patient assessment skills; indications/contraindications; complication identification, prevention and management; legal issues; patient education content; post-insertion management; insertion technique demonstration, including simulated insertions.^{7,8} In addition to the basic PICC insertion education, the clinician utilizing Seldinger or MST and real-time venous imaging requires advanced training and skills validation through a competency-based program. Utilizing Seldinger or MST and ultrasound and Fluoroscopy for PICC insertions is considered best practice.

POSITION STATEMENT

- The Seldinger or Modified Seldinger Technique (MST), in combination with real-time imaging modalities (ultrasound) is the standard method of insertion of Peripherally Inserted Central Catheters (PICC) and Midlines in adult and pediatric patients ;
- Clinicians who insert PICCs utilize the Seldinger Technique or Modified Seldinger Technique;
- Clinicians who insert PICCs utilize real-time Imaging Modalities (ultrasound) to visualize vessels during access;
- Clinicians who insert PICCs utilizing the Seldinger Technique visualize guide wire insertion under fluoroscopy;
- Clinicians who insert PICCs obtain specialized training in Seldinger or Modified Seldinger Technique and real time imaging modalities.

REFERENCES

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