



Our results demonstrate that the measurement of distance between catheter tip and tracheal carina performed by a nurse provide a convenient and reliable way to determine position of PICC tip”  
Zhang et al (2017).

Abstract:

INTRODUCTION: Accurate identification of position of a central venous catheter tip is important to reduce catheter-related complications. Nevertheless, inter-observer bias limits the accuracy of traditional method for determining tip position on chest x-ray (CXR) images. The aim of this study was to explore a simple and objective method for assessing position of peripherally inserted central catheter (PICC) tip on CXR image.

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METHODS: Tracheal carina was used as the landmark to identify positions of catheter tips. The central vein (CV) was located between 3 cm above and 4 cm below tracheal carina. The vertical distance from catheter tips to tracheal carina was measured independently by a nurse and re-assessed by a radiologist. Inter-observer agreement was expressed as percentage in agreement and kappa coefficient.

**RESULTS:** Six hundred and twelve CXR images of catheters taken from 612 patients were included. The inter-observer agreement between nurse and radiologist was 97.88% (kappa = 0.934) for all catheter tips evaluated, and 98.40% (kappa = 0.923) for catheter tips with regard to CV, innominate vein, and right atrium. Most discrepancies (9/13) between observers occurred when catheter tips were positioned in a border region between different anatomical parts.

**CONCLUSIONS:** Inter-observer agreement between nurse and radiologist is excellent. Our results demonstrate that the measurement of distance between catheter tip and tracheal carina performed by a nurse provide a convenient and reliable way to determine position of PICC tip. Our study also suggests that nurses can be trained to handle PICCs, especially when properly located catheters are applied in critically ill patients during emergency setting.

Reference:

Zhang, X., Jia, D., Ke, N., Liu, C., Fu, L. and Hu, X. (2017) Excellent inter-observer agreement between radiologist and nurse: tracheal carina-based identification of peripherally inserted central catheter tip position. *The Journal of Vascular Access*. October 6th. .

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