



This cross-sectional study aimed to verify the reliability and validity of a tablet-type device in assessing vein size and depth for catheter site selection and detecting thrombus with resultant subcutaneous edema as a cause of catheter failure using US” Takahashi et al (2019).

Abstract:

Purpose: In clinical settings, ultrasonography (US) has recently been used to aid in the insertion of peripheral intravenous catheters (PIVCs). This cross-sectional study aimed to verify the reliability and validity of a tablet-type device in assessing vein size and depth for catheter site selection and detecting thrombus with resultant subcutaneous edema as a cause of catheter failure using US.

Methods: Adult patients receiving infusions via a PIVC at a university hospital between January and February 2017 were included. All participants underwent US at the PIVC site. An expert sonographer and a nurse blinded to all information, except for ultrasonograms, evaluated the data. Intraclass correlation with 95% confidence interval (CI) was used to evaluate interrater and intrarater reliability of US assessment. To assess criterion-related validity, a high-end US notebook device was used for reference data collection. Pearson’s correlation coefficient was used to evaluate criterion-related validity.

Results: We observed 21 patients with 26 catheters. Intraclass correlations (95% CI) for the measured vein diameters and depths were as follows: intrarater reliability, 0.92 (0.57–0.98) and 0.78 (0.10–0.95); interrater reliability, 0.95 (0.78–0.99) and 0.94 (0.77–0.99); and Pearson’s correlation coefficient for criterion-related validity, 0.74 ( $P = 0.02$ ) and 0.77 ( $P = 0.02$ ), respectively. However, the analysis of causes of catheter failure did not show reliable validity.

## You may also be interested in...

Performance of peripheral intravenous catheterization in relation to work experience  
Performing successful peripheral intravenous catheterization in difficult situations  
Successful peripheral IV catheterization of preterm infants

### Reference:

Takahashi, T., Murayama, R., Yabunaka, K., Tanabe, H. and Sanada, H. (2019) Using Tablet-Type Ultrasonography to Assess Peripheral Veins for Intravenous Catheterization. *Journal of the Association for Vascular Access*. 24(3), p.25-30.  
<https://doi.org/10.2309/j.java.2019.002.007>.

