

37TH ASIA-PACIFIC

NURSING AND MEDICARE SUMMIT

OCTOBER 20-21, 2017 OSAKA, JAPAN

Optimal forearm side and posture for peripheral intravenous cannulation**Yuki Yamagami and Tomoko Inoue**
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Background: Peripheral intravenous cannulation is a common procedure performed by nurses. As larger vein size is associated with peripheral intravenous cannulation success, venodilatation techniques are often used in clinical situations. However, it is currently unknown if participants' forearm side and posture affect vein size.

Objective: To evaluate the effect of forearm side (dominant or non-dominant) and posture on vein size.

Methods: This prospective observational study was conducted at a national university in Japan between March 2016 and April 2016 and included 79 participants aged 20-64 years. Each participant had a tourniquet applied for 30 seconds to the non-dominant forearm under two postural conditions (sitting and supine). The primary outcome was target vein cross-sectional area, which was measured by blinded research assistants using an ultrasound device. All analyses were performed using R 3.3.0 for Windows. The Wilcoxon signed-rank test was used to compare outcomes between the following: tourniquet application to the non-dominant or dominant forearm in sitting position and to the non-dominant forearm in sitting or supine position. $P < 0.05$ was considered statistically significant. This study was approved by the Ethics Committee of the Graduate School of Medicine, Osaka University, Japan (no.15434).

Results: After tourniquet application, the vein cross-sectional area was significantly greater in the dominant forearm than in the non-dominant forearm ($P < 0.01$) and in the non-dominant forearm in the supine position than in the sitting position ($P < 0.01$).

Conclusion: The dominant forearm and supine position were associated with greater vein size compared with the non-dominant forearm and sitting position, respectively. The non-dominant forearm is recommended to avoid movement limitations. However, considering these demonstrable effects on vein size, the dominant forearm and supine position may be considered in urgent or difficult cannulation situations for successful peripheral intravenous cannulation.

Biography

Yuki Yamagami has completed her Master of Science degree in Nursing from Osaka University, Japan and she is currently a Doctoral student at the same university. She has conducted several clinical trials to establish nursing practice. Her research interests include evidence-based practice, such as vascular access and nursing fatigue and stress.

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