



“Our primary objective was to describe the time to vessel penetration and difficulty of long-axis and short-axis approaches for ultrasound-guided small vessel penetration...” Erickson et al (2014).

Reference:

Erickson, C.S., Liao, M.M., Haukoos, J.S., Douglass, E., DiGeronimo, M., Christensen, E., Hopkins, E., Bender, B. and Kendall, J.L. (2014) Ultrasound-guided small vessel cannulation: long-axis approach is equivalent to short-axis in novice sonographers experienced with landmark-based cannulation. The Western Journal of Emergency Medicine. 15(7), p.824-30.

Ultrasound-guided small vessel cannulation reviewed <http://ctt.ec/87yKN+> @ivteam #ivteam

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Abstract:

INTRODUCTION: Our primary objective was to describe the time to vessel penetration and difficulty of long-axis and short-axis approaches for ultrasound-guided small vessel penetration in novice sonographers experienced with landmark-based small vessel penetration.

METHODS: This was a prospective, observational study of experienced certified emergency nurses attempting ultrasound-guided small vessel cannulation on a vascular access phantom.

We conducted a standardized training, practice, and experiment session for each participant. Five long-axis and five short-axis approaches were attempted in alternating sequence. The primary outcome was time to vessel penetration. Secondary outcomes were number of skin penetrations and number of catheter redirections. We compared long-axis and short-axis approaches using multivariable regression adjusting for repeated measures, vessel depth, and vessel caliber.

RESULTS: Each of 10 novice sonographers made 10 attempts for a total of 100 attempts. Median time to vessel penetration in the long-axis and short-axis was 11 (95% confidence interval [CI] 7-12) and 10 (95% CI 6-13) seconds, respectively. Skin penetrations and catheter redirections were equivalent and near optimal between approaches. The median caliber of cannulated vessels in the long-axis and short-axis was 4.6 (95% CI 4.1-5.5) and 5.6 (95% CI 5.1-6.2) millimeters, respectively. Both axes had equal success rates of 100% for all 50 attempts. In multivariable regression analysis, long-axis attempts were 32% (95% CI 11%-48%; $p=0.009$) faster than short-axis attempts.

CONCLUSION: Novice sonographers, highly proficient with peripheral IV cannulation, can perform after instruction ultrasound-guided small vessel penetration successfully with similar time to vessel penetration in either the long-axis or short-axis approach on phantom models.

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