The combined short-axis-and-long-axis approach for ultrasound-guided central venous catheterization had a lower posterior wall puncture rate than the SA-OOP approach, but there was no significant difference with the long-axis in-plane approach” Takeshita et al (2019).

Abstract:

OBJECTIVE: The authors compared the occurrence of posterior wall puncture using the short-axis out-of-plane and long-axis in-plane approaches with that using the combined short-axis-and-long-axis approach that the authors previously showed to be effective in observational and manikin studies.

DESIGN: Randomized controlled study.

SETTING: Single tertiary institution.

PARTICIPANTS: One hundred twenty patients who underwent cardiac or vascular surgery under general anesthesia.

INTERVENTIONS: The patients were divided randomly into combined short-axis-and-long-axis (n = 40), short-axis out-of-plane (SA-OOP) (n = 40), and long-axis in-plane (LA-IP) (n = 40) groups and received ultrasound-guided central venous catheterization at the right internal jugular vein.

MEASUREMENTS AND MAIN RESULTS: Successful guidewire insertion without posterior wall puncture was performed in 40 patients (100%) in the combined short-axis-and-long-axis approach group, 28 (70%) in the short-axis out-of-plane approach group, and 38 (95%) in the LA-IP approach group (combined short-axis-and-long-axis v SA-OOP, p = 0.0002 ; combined short-axis-and-long-axis v LA-IP, p = 0.49 ). Procedure durations were 28.5 (24.1-36.4) seconds in the combined short-axis-and-long-axis group, 31.7 (24.4-40.6) seconds in the SA-OOP group, and 24.3 (20.8-32.1) seconds in the long-axis in-plane group (combined short-axis-and-long-axis v SA-OOP, p = 0.53; combined short-axis-and-long-axis v LA-IP, p = 0.044).
CONCLUSION: The combined short-axis-and-long-axis approach for ultrasound-guided central venous catheterization had a lower posterior wall puncture rate than the SA-OOP approach, but there was no significant difference with the long-axis in-plane approach.

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- Review of ultrasound-guided central venous catheterization
- Ultrasound guidance for pediatric central venous catheterization
- Head mounted ultrasound-guided central venous catheterization

Reference: