

A modified ultrasound technique for vascular cannulation (dynamic needle tip positioning) has been described for peripheral venous cannulation. We therefore assessed the success rate of this technique compared to the palpation technique for radial artery cannulation in adult surgical patients” Kiberenge et al (2017).

Abstract:

BACKGROUND: Radial arterial cannulation is most commonly done using palpation, but the use of ultrasound has increased the cannulation success rate. This improvement, albeit significant, has not led to a very high success rate especially in trainees. A modified ultrasound technique for vascular cannulation (dynamic needle tip positioning) has been described for peripheral venous cannulation. We therefore assessed the success rate of this technique compared to the palpation technique for radial artery cannulation in adult surgical patients.

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METHODS: We enrolled patients who were having nonemergent operations that required a radial arterial catheter for intraoperative monitoring. Patients were randomized to either palpation or dynamic needle tip positioning technique. Arterial cannulation was performed by anesthesia residents or faculty members. The primary end point was successful cannulation on the first pass. Secondary end points were overall 5-minute success rate and number of attempts within 5 minutes.

RESULTS: Two hundred sixty patients were evaluated. The first-pass success rate was 83% in the dynamic needle tip positioning technique group (n = 132) and 48% in the palpation group (n = 128; P < .001); relative risk was 2.5; 95% confidence interval, 1.7-3.6. The overall 5-minute success rate was 89% in the dynamic needle tip positioning technique group compared to 65% in the palpation group (P < .001), relative risk was 2.4; 95% confidence interval, 1.2-1.6. The number of skin puncture attempts was significantly more in the palpation group (P < .001). The median cannulation times and interquartile ranges were 81.5 (61-122) seconds in the dynamic needle tip positioning and 76 (48-175) seconds (P = .7) in the palpation group.

CONCLUSIONS: The use of the ultrasound-guided dynamic needle tip positioning technique increased the first and overall success rates compared to palpation in anesthesia residents and faculty members.

Reference:

Kiberenge, R.K., Ueda, K. and Rosauer, B. (2017) Ultrasound-Guided Dynamic Needle Tip



Positioning Technique Versus Palpation Technique for Radial Arterial Cannulation in Adult Surgical Patients: A Randomized Controlled Trial. Anesthesia and Analgesia. November 10th. . doi: 10.1213/ANE.0000000000002261.

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