

Ultrasound guidance increases the success rate of peripheral i.v. cannulation, especially in patients with known or predicted difficult i.v. access” van Loon et al (2018).

Abstract:

BACKGROUND: Peripheral vein cannulation is a routine and straightforward invasive procedure, although i.v. access can be difficult to obtain. To increase the success rate of inserting an i.v. catheter, many devices have been proposed, including ultrasonography. The objective of this study was to compare ultrasound guidance with the traditional approach of palpation and direct visualisation for peripheral vein cannulation. The primary outcome was successful peripheral i.v. cannulation.

METHODS: Database search was performed on PubMed, Clinical Key, CINAHL, Cochrane Library of Clinical Trials, and Trip Database (from January 2000 to December 2017). Random-effect meta-analysis was performed to determine the pooled odds ratio for success in peripheral i.v. cannulation.

RESULTS: After database review and eligibility screening, eight studies were included in the final analysis, with a total of 1660 patients. The success rate in the ultrasound group was 81% (n=855), and was 70% (n=805) in the control group, resulting in a pooled odds ratio for success upon ultrasound-guided peripheral i.v. cannulation of 2.49 (95% confidence interval 1.37-4.52, P=0.003). Furthermore, the ultrasound-guided technique reduced the number of punctures and time needed to achieve i.v. access, and increased the level of patient satisfaction, although it did not result in a decreased number of complications.

CONCLUSIONS: Ultrasound guidance increases the success rate of peripheral i.v. cannulation, especially in patients with known or predicted difficult i.v. access.

Reference:

van Loon, F.H.J., Buise, M.P., Claassen, J.J.F., Dierick-van Daele, A.T.M. and Bouwman, A.R.A. (2018) Comparison of ultrasound guidance with palpation and direct visualisation for



peripheral vein cannulation in adult patients: a systematic review and meta-analysis. British Journal of Anaesthesia. 121(2), p.358-366.

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