Increase in first attempt success was clinically relevant when electrical stimulation with the Veinplicity® device was combined with the application of a tourniquet in participants at moderate risk of a difficult peripheral intravenous access” van Loon et al (2019).

Abstract:

BACKGROUND: Peripheral intravenous cannulation is one of the most frequently performed medical procedures. Venodilation, which can be achieved with different techniques, is an important factor for first attempt success. The objective of this study was to compare the first attempt success rates upon peripheral intravenous cannulation after applying a tourniquet, with venous dilation by electrical stimulation using the Veinplicity® device, or a combination of both techniques, in participants at moderate risk of a difficult peripheral intravenous access.

METHODS: This non-randomized clinical trial was carried out in adult patients divided into three parallel study groups, consisting of cannulation with a tourniquet (control group), cannulation after electrical stimulation without using a tourniquet (intervention group 1), and cannulation after applying electrical stimulation followed by the application of a tourniquet on the selected upper extremity (intervention group 2). The primary outcome was the first attempt success rate of peripheral intravenous catheter placement.

RESULTS: In all, 141 participants were included in this study, with an overall success rate of 86%. Success rates of 78%, 88%, and 92% were observed in the control group, intervention group 1, and intervention group 2, respectively (p = 0.25, χ² = 2.771, df = 2). A higher first attempt success rate was detected in participants in intervention group 2, when compared to the control group (p = 0.04, χ² = 4.63, df = 1).

CONCLUSION: Increase in first attempt success was clinically relevant when electrical stimulation with the Veinplicity® device was combined with the application of a tourniquet in participants at moderate risk of a difficult peripheral intravenous access.
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