Vein size during tourniquet application was greater in the supine than in the seated position even in cases of DPIVC” Yamagami and Inoue (2019).

Abstract:

BACKGROUND: Larger veins are associated with a higher rate of success of peripheral intravenous cannulation. Although patient position affects venodilation during central venous cannulation, the association between patient position and vein size for peripheral intravenous cannulation remains unclear.

PURPOSE: We examined the effect of seated versus supine positioning on vein size during peripheral intravenous cannulation before and after tourniquet application.

METHODS: In the present study, we recruited 81 participants (20-64 years) and included 80 in the analysis. We measured outcomes before and after tourniquet application in the seated and supine positions. The primary outcome was the cross-sectional area of the target forearm vein (ultrasonography by a blinded assessor). Subgroup analysis was used to test the effects of positioning combined with difficult peripheral intravenous cannulation (DPIVC) defined as poor visibility and/or palpability of the target vein.

RESULTS: Results of paired t tests demonstrated that the venous cross-sectional area significantly increased in the supine position with tourniquet application compared with the
seated position with tourniquet application. Subgroup analysis with two-way repeated measures analysis of variance revealed that the venous cross-sectional area was significantly larger in the supine position than in the seated position despite DPIVC.

CONCLUSION: Vein size during tourniquet application was greater in the supine than in the seated position even in cases of DPIVC. We thus recommend the supine position over the seated position for peripheral intravenous cannulation.

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