The primary objective was to compare the frequency of first-attempt successful axillary vein cannulation by the Seldinger technique using out-of-plane ultrasound guidance versus in-plane imaging” Maddali et al (2017).

Abstract:

OBJECTIVE: The primary objective was to compare the frequency of first-attempt successful axillary vein cannulation by the Seldinger technique using out-of-plane ultrasound guidance versus in-plane imaging. Between the two ultrasound imaging planes, this study also compared the number of attempts that were necessary for the cannulation of the left axillary vein along with the number of needle redirections that had to be done for final cannulation of the vein. Incidence of complications and the number of times the procedure was abandoned also were compared between the two imaging planes.

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DESIGN: Prospective, randomized, interventional study.

SETTING: Tertiary care cardiac center.
PARTICIPANTS: Cardiac surgical patients.

INTERVENTIONS: Left axillary vein cannulation under ultrasound guidance by Seldinger technique.

MEASUREMENTS AND MAIN RESULTS: The left axillary vein was accessed under ultrasound guidance in 86 consecutive adult cardiac surgical patients. They were randomized to out-of-plane (Group I, n = 43) and in-plane (Group II, n = 43) groups. In group I, the number of first-attempt cannulations was very high (p < 0.01). The number of attempts to access the vein was significantly lower in this group (p < 0.05). The duration for completion of the procedure was also less in group I with out-of-plane ultrasound guidance (p < 0.01). The number of needle redirections and the incidence of complications (arterial puncture, pneumothorax hematoma formation) were similar between the groups. There was no difference in the number of times the procedure was abandoned between the two groups. With an assumption that the first 10 patients in each group would suffice for overcoming the learning curve, the above aspects were analyzed further in each group. The first-attempt cannulation success continued to be significantly higher in the out-of-plane group.

CONCLUSIONS: Out-of-plane ultrasound imaging during axillary vein cannulation increased the chance of first-attempt successful cannulation. Axillary vein cannulation under out-of-plane ultrasound imaging also appeared to be quicker and was preferable in terms of the fewer number of attempts that were necessary for a successful vein cannulation.

Reference:


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