Bedside prediction of the central venous catheter insertion depth by chest radiographs and ultrasounography

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ABSTRACT

Background: There are many indications for central venous cannulation eg. central venous pressure monitoring, administration of drug .After insertion of CVC, the position of the catheter tip must be corrected. The depth of the catheter is vary from the performance.Chest radiographs are one of the most common radiological procedure perform before the operation. The propose of this study was to reveal the simple method to predict the adequate CVC depth.

Methods: Patients were randomized either to the chest radiographs ,ultrasounography (CVCs were placed at a depth derived by adding the distance between insertion point and the notch on the clavicle and the vertical length between the notch and the carina on a routine chest radiograph plus depth of subcutaneous fat by ultrasounography) or to the landmark group. After the procedure, the correct CVC tip position were checked by the postoperative chest radiograph.

Results: The mean CVC tip position relative to the carina was 0.2 (range 0-1 ,95% confidence interval (CI) 0.12 to 0.34) cm in the chest radiographs plus ultrasound guidance group and 0.0 (range -1.5-1.2 ,95% CI -0.28 to 0.31) cm in the landmark group.

Conclusion: Central venous catheterization via chest radiographs plus ultrasound guidance was useful for avoiding CVC displacement.