We conclude that both landmark guidance and ECG guidance are comparable with regard to accurate central venous catheter tip positioning when CVCs are placed through right internal jugular vein whereas formula based technique is least accurate and results in over insertion of CVCs” Jayaraman et al (2019).

Abstract:

BACKGROUND AND AIMS: Central venous catheterization is a frequently performed procedure in anesthesia and critical care, and is indispensable in the practice of emergency medicine. Correct positioning of the central venous catheter (CVC) tip is often regarded as a secondary goal and there are various complications that can occur due to abnormal position of the catheter tip. Different methods have been advocated to guide accurate prediction of optimal CVC depth insertion before or during the procedure at the bedside.

MATERIAL AND METHODS: A prospective randomized double blinded study was conducted in 180 patients aged between 18 to 65 years requiring central venous catheterization. The optimal depth of insertion of right internal jugular vein (IJV) catheter using three different techniques, Peres’ formula method, Landmark technique and Intra atrial Electrocardiography (ECG) guided technique was performed and the three techniques were compared with respect to optimal positioning using carina as a landmark in post procedural chest radiograph. Correct position of the catheter tip was considered upto 1 cm above or below the
carina in post procedure X ray.

RESULTS: The average final depth of insertion was 15.30 ± 0.62 cms in the Formula group, 12.74 ± 0.77 cms in landmark group and 12.64 ± 0.70 cms in ECG group. The vertical distance from carina was 0.91 ± 0.94 cms in formula group, 0.54 ± 0.67 cms in landmark group and 0.53 ± 0.43 cms in ECG group. The CVC tip was properly positioned within 1 cm above and below the carina in 58.33% patients in the formula group, 93.33% patients in landmark group and 96.67% patients in ECG group.

CONCLUSION: We conclude that both landmark guidance and ECG guidance are comparable with regard to accurate central venous catheter tip positioning when CVCs are placed through right internal jugular vein whereas formula based technique is least accurate and results in over insertion of CVCs.

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