

Abstract:

Background: Central venous catheters should be positioned at the cavoatrial junction or the right atrium. If catheters are inserted to a depth derived by adding the length between the needle insertion point and the clavicular notch and the length between the clavicular notch and the carina, the catheter tip can be placed near the carina. Based on this, we aim to make a formula to place a catheter tip near the cavoatrial junction.

Methods: This prospective nonrandomized interventional study included patients who needed a central venous catheter from June 2017 to July 2018. The location of the cavoatrial junction was identified using a fluoroscopic technique. The following variables were measured: L1, the length between the needle insertion point and the clavicular notch; L2, the length between the clavicular notch and the carina; and α , the length between the carina and the cavoatrial junction.

Results: A total of 70 patients were enrolled. The mean age was 65.5 ± 11.6 years, and 62.9% were male. The mean L1 and L2 were 7.6 ± 1.4 and 7.0 ± 1.4 cm, respectively. The mean α was 4.4 ± 1.5 cm (95% CI 4.1-4.8), and it was not affected by demographic factors, such as sex, age, height or weight.

Conclusions: Central venous catheters in adult patients can be placed near the cavoatrial junction using a simple formula: the distance between the insertion point and the clavicular notch + the distance between the clavicular notch to the carina + 4.4 cm.

Reference:

Mo, H., Ahn, S., Lee, J., Cho, S. and Min, S. K. (2020) Optimal Prediction of the Central Venous Catheter Insertion Depth Targeting the Cavoatrial Junction. *World Journal of Surgery*. 44(7), p.2170-2174. <https://doi.org/10.1007/s00268-020-05449-7>.