Adequate catheter tip location is crucial for functional intravenous port and central venous catheter" Wu et al (2015).

Abstract:

Adequate catheter tip location is crucial for functional intravenous port and central venous catheter. Numerous complications were reported because of catheter migration that caused by inadequate tip location. Different guidelines recommend different ideal locations without consensus.

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Another debate is actual movement of intravascular portion of implanted catheter. From literature review, the catheter migrated peripherally an average of 20 mm on the erect chest radiographs. In this study, we want to verify the actual presentation of catheter movement within a vessel and try to find a quantitative catheter length model to recommend.From March 2012 to March 2013, 346 patients were included into this prospective cohort study. We collect clinical data from medical record and utilized picture archiving and communication system to measure all image parameters. Statistical analysis was utilized to identify the risk factors for catheter migration.The nonmigration group had 221 patients (63.9%); 67 (19.4%) patients were classified into the peripheral migration group; and 58 (16.8%) patients were

classified into the central migration group. Patients with short height (P = 0.03), larger superior vena cava (SVC) diameters at the brachiocephalic vein confluence site (P = 0.02), and longer implanted catheter length (P = 0.0004) had greater risks for central migration. We utilized regression curve for further analysis and height (centimeters)/10 had moderate correlation distances from the entry vessel to the carina.Although intravascular movement of catheter was exist in implanted catheter, the intraoperative fluoroscopy could provide accurate catheter tip location in 63.9% patients. Additional length of catheter implantation seems unnecessary in 80.6% patients. Patients with short height, larger SVC diameters at the brachiocephalic vein confluence site had greater risk for catheter central movement. Height/10 may be consider as reference length of implantation for inexperience surgeon and precise implantation length could be adjust under guidance of fluoroscopy.

Reference:

Wu, C.Y., Fu, J.Y., Wu, C.F., Ko, P.J., Liu, Y.H., Kao, T.C. and Yu, S.Y. (2015) Dose Intraoperative Fluoroscopy Precisely Predict Catheter Tip Location via Superior Vena Cava Route? Medicine. 94(49), p.e2199.

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