Abstract:

Background: Most hospital protocols—including those of our own institute—require the use of radiography to validate tip position in every central vascular access device placement. This study evaluated whether unnecessary ionizing radiation exposure could be spared in the pediatric population when intracavitary electrocardiography is used to guide catheter placement.

Material and methods: Retrospective study of intracavitary electrocardiography-guided central vascular access device placements in our pediatric surgery department between 2013 and 2018. We evaluated the operating time, success in positioning the catheter, and accuracy of final tip position. We also assayed the effects of catheter type and of catheter access point on operating time, success, accuracy, and complications. We applied the chi-square test for statistical analysis.

Results: In total, 622 interventions of central vascular access device placements were evaluated; 340 intracavitary electrocardiography-guided central vascular access device placements were included in the study. The electrocardiography method successfully positioned the tip of the catheter in 316/340 (92.94%) of placements. Where intracavitary electrocardiography placement was successful, radiography confirmed accuracy of tip position in 314/316 (99.41%) of placements.

Conclusion: When electrocardiography-guided positioning is uneventful and a valid P-Wave pattern is seen, postprocedure radiograph imaging for verification is unnecessary. Any effort should be made to upgrade hospital policies according to evidences and newest guidelines to spare pediatric patients harmful exposure to radiation by limiting the use of radiography only to selected cases.

Reference: