The objective was to evaluate the effectiveness and safety of intracavitary electrocardiogram (IC-ECG)-guided peripherally inserted central catheter (PICC) placement and tip positioning in premature infants" Xiao et al (2019).

Abstract:

This pre-post intervention study was conducted in Neonatal Intensive Care Units in two Chinese hospitals. The objective was to evaluate the effectiveness and safety of intracavitary electrocardiogram (IC-ECG)-guided peripherally inserted central catheter (PICC) placement and tip positioning in premature infants. A total of 161 premature infants who required a PICC were enrolled and divided into two groups: pre-intervention group (n = 83) from October 2017 to July 2018 and post-intervention IC-ECG group (n = 78) from August 2018 to March 2019. Nurses were trained from May 2018 to July 2018. The reposition rate in the IC-ECG group and pre-interventions group was 3.85% and 19.28%, respectively (OR 5.970; 95% CI 1.666-21.395; p = 0.002). More infants achieved optimal tip position at the first attempt in the IC-ECG group than the pre-intervention group (93.59% vs 73.49%; OR 0.190; 95%CI 0.068-0.531; p = 0.001). The overall catheter-related complications in the pre-intervention group were 14.46% compared to 3.84% in the IC-ECG group (OR 2.962; 95%CI 1.013-8.661; p = 0.040). However, no significant differences were observed between the individual complication leakage, phlebitis and catheter-related blood stream infection.

Conclusions: IC-ECG-guided peripherally inserted central catheter placement and tip positioning technology
might decrease reposition rates, achieve more accurate tip positioning at the first attempt and might reduce catheter-related complications in premature infants. Further robust RCTs are needed to confirm the effectiveness of IC-ECG-guided PICC placement and tip positioning in neonates.

What is Known:
• Chest radiography is the gold standard for tip position confirmation of peripherally inserted central catheter placement.
• Studies in adult patients have shown that electrocardiogram guidance in the placement of central venous catheters can be beneficial, while evidence in neonates is limited.

What is New:
• Intracavitary electrocardiogram-guided peripherally inserted central catheter placement might be superior to chest radiography in preterm infants.
• Decreasing the repositioning rates and correct tip position of peripherally inserted central catheters might reduce catheter-related complications.

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Reference: