
Abstract:

Objective: Umbilical catheter placement is a routine neonatal emergency procedure that has large variability in technical methods. Commonly used methods are unable to accurately estimate insertion lengths, and X-rays cannot always identify malpositioned catheters. In clinical practice, the placement of umbilical lines takes time away from nursing during a critical transition period. Ultrasound is a safe and commonly used tool in the nursery for clinical management of sick neonates and has been shown to readily identify central catheter tip position. In this study, we sought to determine a more time-efficient and accurate means of umbilical catheter placement using bedside ultrasound.

Study Design: This is a prospective, randomized, pilot trial of infants of any age or weight admitted to the neonatal intensive care unit who required umbilical catheter placement. Infants were excluded if they had congenital heart disease, abdominal wall defects or had a single umbilical artery. Catheters were placed using either the conventional method, with blinded evaluation of the catheters using ultrasound, or with ultrasound guidance, with input pertaining to catheter tip location. The number of X-rays required to confirm proper positioning, completion time points throughout the procedure and manipulations of the lines were recorded for both groups.

Result: Ultrasound use decreased the time of line placement with an average saving of 64±6% min, as well as decreased the number of manipulations required and X-rays taken to place the catheters. The average X-ray time from request to viewing per X-ray was 40±6% min for all subjects.

Conclusion: Ultrasound-guided umbilical catheter placement is a faster method to place catheters requiring fewer manipulations and X-rays when compared with conventional catheter placement.