To compare the duration to establish an umbilical venous catheter and an intraosseous access in real hospital delivery rooms and as a secondary aim to assess delaying factors during establishment and to provide recommendations to accelerate vascular access in neonatal resuscitation” Schwindt et al (2018).

Abstract:

OBJECTIVES: To compare the duration to establish an umbilical venous catheter and an intraosseous access in real hospital delivery rooms and as a secondary aim to assess delaying factors during establishment and to provide recommendations to accelerate vascular access in neonatal resuscitation.

DESIGN: Retrospective analysis of audio-video recorded neonatal simulation training.

SETTINGS: Simulation training events in exact replications of actual delivery/resuscitation rooms of 16 hospitals with different levels of care (Austria and Germany). Equipment was prepared the same way as for real clinical events.

SUBJECTS: Medical teams of four to five persons with birth-related background (midwives, nurses, neonatologists, and anesthesiologists) in a realistic team composition.

INTERVENTIONS: Audio-video recorded mannequin-based simulated resuscitation of an asphyxiated newborn including the establishment of either umbilical venous catheter or intraosseous access.

MEASUREMENTS AND MAIN RESULTS: The duration of access establishment (time from decision to first flush/aspiration), preparation (decision to start of procedure), and the procedure itself (start to first flush/aspiration) was significantly longer for umbilical venous catheter than for intraosseous access (overall duration 199 vs 86 s). Delaying factors for
umbilical venous catheter establishment were mainly due to the complex approach itself, the multitude of equipment required, and uncertainties about necessary hygiene standards. Challenges in intraosseous access establishment were handling of the unfamiliar material and absence of an intraosseous access kit in the resuscitation room. There was no significant difference between the required duration for access establishment between large centers and small hospitals, but a trend was observed that duration for umbilical venous catheter was longer in small hospitals than in centers. Duration for intraosseous access was similar in both hospital types.

CONCLUSIONS: Vascular access establishment in neonatal resuscitation could be accelerated by infrastructural improvements and specific training of medical teams. In simulated in situ neonatal resuscitation, intraosseous access is faster to establish than umbilical venous catheter. Future studies are required to assess efficacy and safety of both approaches in real resuscitation settings.

Reference:


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