

Outcomes of bedside peripherally inserted central catheter (PICC) placement: a retrospective study from an academic tertiary institution

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Introduction

- High incidence of adverse events in critically ill patients during intra-hospital transport
- Peripherally inserted central catheter (PICC) insertion is a sterile procedure.
- However, under special circumstances, such as ICU patients, or patients with hematologic disorders who should remain in isolation, as well as patients in need of a venous access but difficulty in transferring, bedside PICC placement is necessary.
- Our aim is to present outcomes of bedside PICC insertion at home regarding feasibility and safety.

Results

- In total, 23 PICCs have been implanted bedside at home and 67 bedside at hospital.
- The overall venous access success rate with bedside home PICC placement was 100% (23/23) and optimal tip position was achieved on the first attempt in 21/23 patients (91.3%), while in 2/23 patients (8.7%) bedside repositioning was successful.
- For hospital bedside placement, the overall venous access success rate with bedside hospital PICC placement was 97% (65/67) and optimal tip position was achieved on the first attempt in 62/67 patients (92.5%), while in 2/67 patients (2.9%) bedside repositioning was successful

Materials and Methods

This retrospective study included patients who underwent bedside PICC at home placement from January 2020 to December 2023. The procedure was conducted under ultrasound guidance by the staff of academic, tertiary department.

Progression and final position of the catheter were decided with use of magnetic tracking and electrocardiogram-based tip confirmation system, since there is no ability for chest X-ray.

Conclusions

- A series of steps, including patient positioning, venous assessment and measurement, preparation of the vascular device, overall technique, and positioning of the catheter tip, is necessary for successful a precise bedside ultrasonography-guided PICC placement.
- Bedside PICC placement under ultrasound guidance is effective and safe alternative for at-home venous access acquisition, especially with use of magnetic tracking and electrocardiogram-based tip confirmation system.
- Potential risk factors that predispose to catheter tip malposition include older age, female sex, malignancy, pulmonary disease, as well as previous central vein catheterizations.