Changing the Outcome: Securing the future of Vascular access

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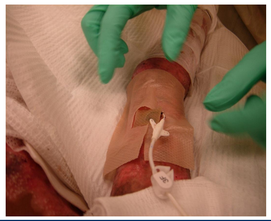
Introduction

Vascular access has become a vital part of most hospitalizations. While peripheral intravenous access remains common, both the complexity and chronic medical needs of today's patient have led to an increase in the need for central venous access. At Cincinnati Children's Hospital Medical Center (CCHMC) a significant number of patients needing central access receive a peripherally inserted central catheters (PICC). In the pediatric population, maintaining vascular access can be especially challenging. Preventing catheter migration and accidental catheter dislodgement continue to be especially difficult. Since the securement of PICC lines primarily relies on the use of adhesives, these complications increase significantly in patients with altered skin integrity or diseases that lead to fragile skin, such as epidermolysis bullosa (EB) and graft versus host disease.

Current Practice

The standard central venous catheter (CVC) maintenance bundle was altered to develop a " Fragile Skin" protocol for patients who were unable to tolerate the adhesives used in traditional central line dressings. While this protocol was largely successful in preserving skin integrity and preventing catheter-associated blood stream infections (CABSI), the necessary reduction in the strength of the adhesives led to an increase in migrations and catheter dislodgements.



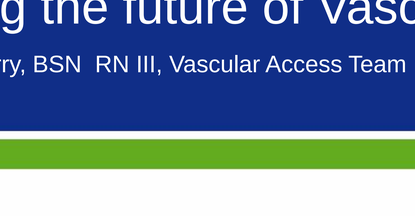
Fragile skin dressing on a patient with EB

Goal

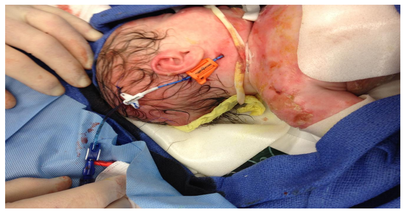
Change the outcome by utilizing new technology to increase catheter dwell time, decrease CVC complications and preserve vessel health.

Method

Patients with fragile skin who were referred for PICC placement were initially assessed by a vascular access nurse. If determined to be at high risk for catheter migration/dislodgement, a subcutaneous anchoring device was placed during catheter insertion by either the PICC insertion RN or the Interventional radiologist. The site was then dressed according to the CCHMC "fragile skin" protocol. The dressings were changed weekly or as needed by a vascular access RN. The anchoring device remained in place until completion of treatment and catheter was removed.



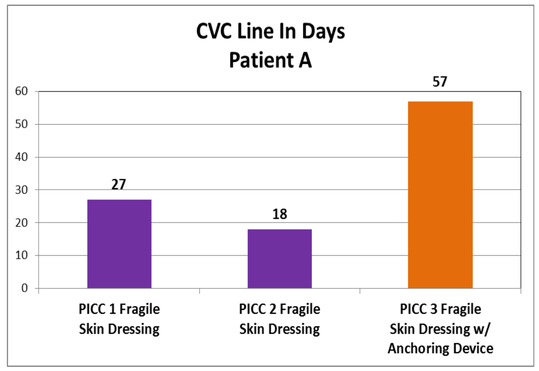
***Patient A**: Adolescent patient with diagnosis of EB requiring long term vascular access. Shown with subcutaneous anchoring device in place.*



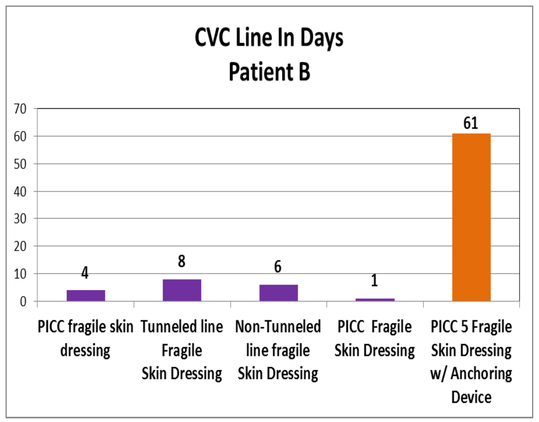
***Patient B**: Neonate with diagnosis of EB requiring long term vascular access. Shown with subcutaneous anchoring device in place.*

Outcome

The subcutaneous anchoring device proved to significantly extend the life of the catheter in patients with fragile skin. This type of securement device has been vital to maintaining long term vascular access in patients that would otherwise have required multiple catheter replacements in order to complete their therapy.



***Patient A:** PICC 1 and 2 removed secondary to catheter migration. PICC 3 remained in place without migration*

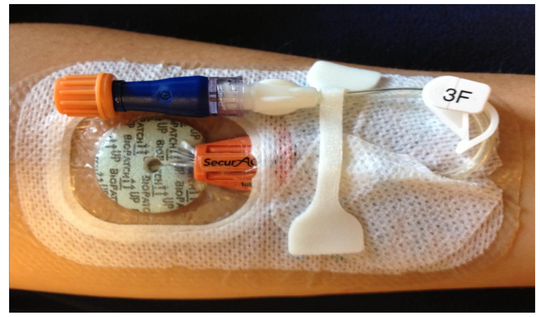


***Patient B**: First 2 PICCs lost secondary to accidental dislodgement. Tunneled catheter and Non-tunneled line also lost to accidental dislodgement. Final PICC line remained in place without migration until patient's therapy was complete*

Future Plans

Now that we are confident the device successfully secures the catheter in even our most high risk pediatric patients, future expectations for the vascular access team at Cincinnati Children's Hospital Medical Center include:

- Transitioning dressing change responsibilities for these patients using this device to the unit staff
- Consider expanding the use of the device to a wider variety of patients over the next year
- Consider collaborating with our general surgeons and critical care physicians to consider evaluating the device on patients receiving non-tunneled catheters as a way to reduce/eliminate the use of sutures according to INS guidelines



Anchoring device with fragile skin dressing

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