

# Securement of central venous lines by subcutaneously anchored sutureless devices in neonates and children.

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## 1. Background and aim

- Accidental dislodgement of central venous access is a frequent complication in the pediatric population and it is often associated with the need of catheter replacement.
- Subcutaneously anchored sutureless devices (SAS) (Securacath) is probably the most reliable strategy for avoiding catheter dislocation
- SAS have been recently introduced in our hospital for securement of all central lines in neonates and children.



## 2. Methods

- We used SAS for securement of all tunneled central lines (centrally inserted – i.e. CICC's - or peripherally inserted – i.e. PICC's) in neonates and children requiring central venous access as elective procedure.
- Emergency procedures were excluded from this study.
- All catheters were inserted according to our insertion bundle for pediatric central lines:

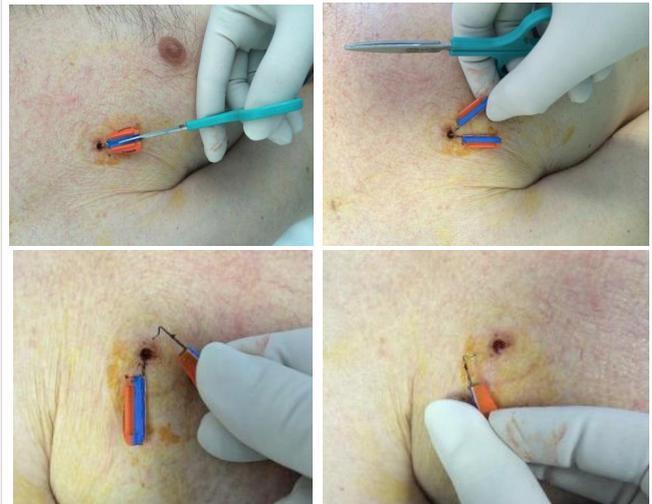
1. Pre-operative ultrasound scan of peripheral and central veins.
2. Maximal barrier precautions.
3. Skin antisepsis with 2% chlorhexidine in 70% isopropilic alcohol.
4. Ultrasound guided venipuncture using a modified Seldinger technique by micro-introducer.
5. Ultrasound assessment of the direction of the guidewire into the vasculature.
6. Tip location by intracavitary ECG and/or transthoracic echocardiography.
7. Tunneling of the catheter.
8. Cyanoacrylate glue for the closure of the puncture site and for the sealing of the exit site.
9. Coverage of the exit site with semipermeable transparent membrane.



The catheter was subsequently managed according to our maintenance bundle (weekly replacement of the transparent dressing after skin antisepsis with 2% chlorhexidine in 70% isopropilic alcohol; use of chlorhexidine releasing sponge in selected cases; saline flush before and after each use; catheter lock with saline only). SAS was removed at the time of catheter removal.

## 3. Results

- 85 central lines (3-4Fr power injectable polyurethane catheters: 48 CICC + 37 PICC) were secured with SAS in 73 patients (age range 20 days to 12 years).
- All SAS were easy to place and the duration of the line (equal to the duration of the SAS) ranged from 5 day to 7 months (median 3 weeks).
- Discomfort or local pain due to the presence of SAS was rare (4 cases) and limited to PICC inserted in children.
- In all cases, the discomfort was elicited by accidental traction of the SAS during dressing change.
- We had only one accidental removal (associated with skin erosion related to the SAS); the phenomenon was probably due to inappropriate placement of the device (the anchor was too superficial).
- SAS removal – consistently performed by splitting in two halves with scissors - did not require sedation or local anesthesia and was easy and uneventful in all cases.



- The securement device was perfectly compatible with the cyanoacrylate glue placed at the moment of insertion. Skin antisepsis was easier and safer, considering the possibility of cleansing accurately all around the exit site, without concerns of possible dislocation.



## 4. Conclusions

- SAS was effective in preventing dislocation in 99% of patients.
- Complications at insertion, during maintenance and at removal were negligible.
- The adoption of SAS was perfectly compatible with the interventions included in our insertion

bundle (use of cyanoacrylate glue and transparent dressing) and in our maintenance bundle (skin antisepsis with 2% chlorhexidine, weekly dressing change, use of chlorhexidine-releasing sponge in selected cases)