



2019
Verona
2-3-4 Dicembre
December 2nd-3rd-4th

XI 11TH Congresso GAVeCeLT Congress

2-3 Dicembre December 2nd-3rd

II 2ND Convegno GAVePed Conference

3 Dicembre December 3rd

XIII 13TH PICC Day

4 Dicembre December 4th



Securement of UVC,ECC and CICC in the neonate: new options

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UNIVERSITÀ DEGLI STUDI DI NAPOLI
FEDERICO II

Securing CVADwhy ?

The dressing represents a mean of security, since it can prevent:
catheter migration,
dislodgement,
breakage,
phlebitis,
thrombosis.

Most importantly, the dressing can help protecting against the entry of microorganisms at the insertion site, which can be potential cause of catheter-related bloodstream infection (CRBSI)

What is in guidelines?

INS 2016

- *Use sterile gauze or steril TSM dressing to cover the catheter site*
- *Not interfere with assessment and monitoring of the access site*
- *Consider use of an Engineered Stabilization Device (ESD) to stabilize and secure VADs*
- *Avoid use of sutures*
- *Do not rely on VAD dressings (ie, standard, non-bodered transparent semipermeable membrane [TSM] dressings, gauze and tape dressings) as a means for VAD stabilization*
- *Apply barrier solutions to skin exposed to the adhesive dressing to reduce the risk of MARSI.*

Securing vascular access devices

By Timothy R. Spencer, DipAppSc, BHSc, RN, APRN, ICCert, VA-BC™

- **Transdermal:**

- sutures

- **Cutaneous**

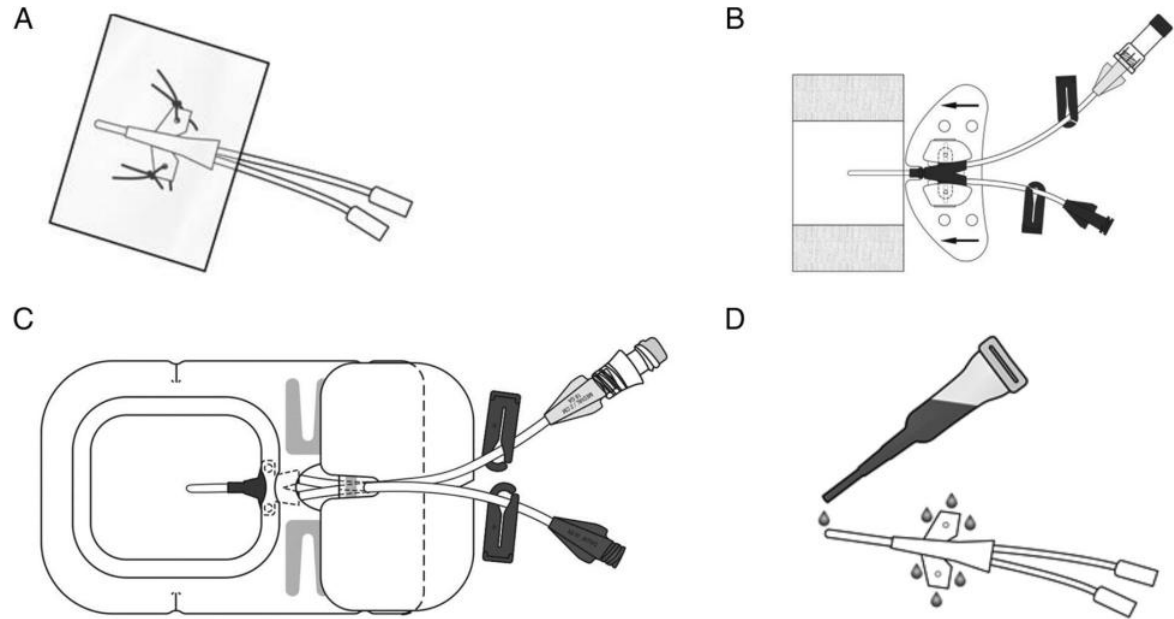
- Adhesive securement device

- Integrated securement solution

- Tissue adhesive (glue)

- **Subcutaneous**

- Subcutaneously Anchored Sutureless Device (SAS)



CVAD in neonate and prematures

- CVO

Short term

- ECC (1,2,3 Fr)

- Non tunnelled CICC and FICC ($\leq 2\text{Fr}$,3 Fr et..)

Long term

- Tunnelled CICC and FICC + SAS

Issues for newborns

Skin of the very premature newborn –physiology and care
Sonja Anić Jurica Paediatr Croat. 2016;REVIEW

- **Tiny stratum corneum**
- **Immature skin**
- **Neonates are more likely to engage in random mobility**
- **Immunodeficit**

In premature newborns of <32 ws of GA, stratum corneum is very thin and it does not sufficiently prevent transepidermal water loss, absorption of external agents and invasion of microbes.

Birth with exposure to external environment stimulates and accelerates maturation of epidermal barrier in prematures.

Stratum corneum matures rapidly till the end of the first week of life but achieving full maturation may take more than four weeks.

DRESSING CHANGE

The Centers for Disease Control and Prevention (**CDC**) recommends that in adult and adolescent patients, **CVC transparent dressings be changed at least weekly, except in those pediatric patients in whom the risk of dislodging the catheter outweighs the benefit of changing the dressing.**

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1. O'Grady N, Alexander M, Dellinger E, et al. *Guidelines for Prevention of Intravascular Catheter-Related Infections*. Bethesda, MD: Centers for Disease Control and Prevention, National Institutes of Health. *MMWR*. 2002;51(RR-10).

The National Association of Neonatal Nurses (**NANN**) guidelines state that :

“in light of the potential for damage to the stratum corneum layer of the skin and dislodgement of the catheter when the dressing is removed, a dressing change is recommended when the transparent dressing no longer adheres to the catheter or skin or becomes damp or soiled.”

Gauze and tape dressings, a transparent dressing with gauze underneath or an occlusive tape on top, require changing every 48 hours.

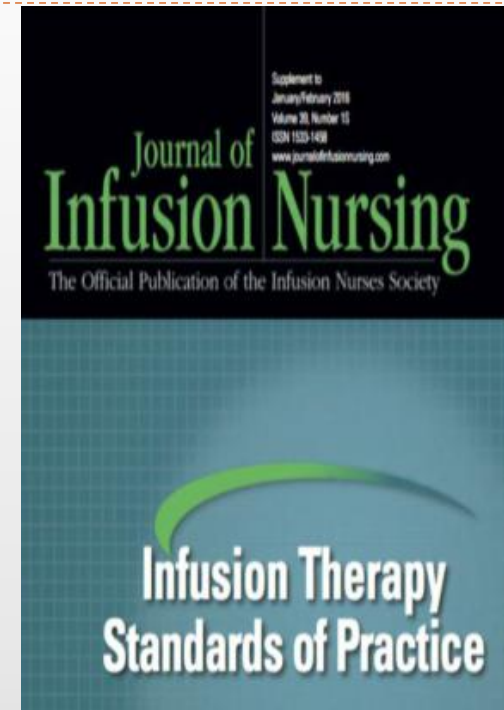
Pettit J, Wyckoff MM. *NANN (National Association of Neonatal Nurses) Peripherally Inserted Central Catheters Guideline for Practice*. 2nd ed. Glenview, IL: National Association of Neonatal Nurses; 2007.



Securing the UVC

Choose a method for securing the UVC and UAC based on promoting skin integrity, decreasing complications, and ease of use. There is a lack of evidence demonstrating the best method.²⁶ (IV)

2. Do not use topical antibiotic ointment or creams on umbilical sites due to the risk of fungal infections and antimicrobial resistance.⁴ (I)



Cvo – securement and dressing: what is right?

Lack of evidences:

Effect of Umbilical Catheter Fixation Using Tegaderm versus Hydrocolloid Dressing and Safe Removal on Abdominal Skin Condition among Preterm Neonates
Omnia G. Waziry IOSR Journal of Nursing and Health Science 2018

Options for Securing Umbilical Catheters Heather E. Elser Advances in Neonatal Care 2013

Method for securing umbilical lines. Hindley DT, Lewis MA, Robinson MJ. *Arch Dis Child Fetal Neonatal Ed.* 1994

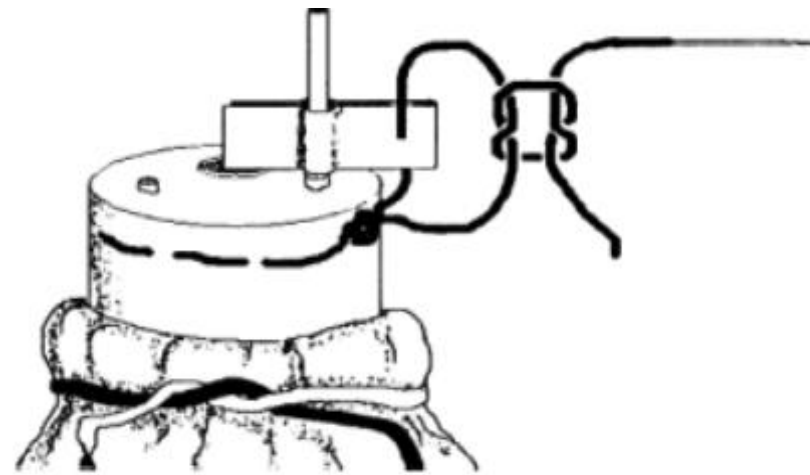
The KEMH method for securing umbilical catheters. Grauaug AA, Tompkins JR. *J Paediatr Child Health.* 1992

Single experiences: Survey

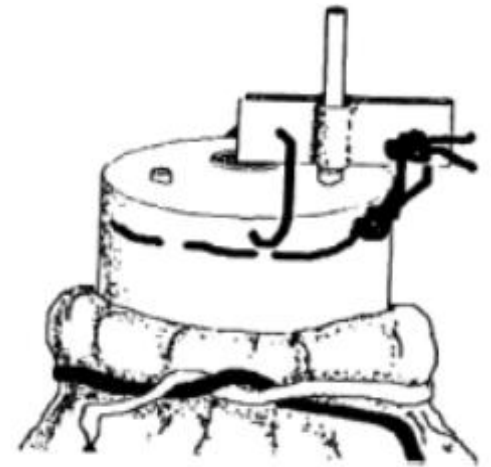
18 NICU in Campania:

- 3 anchoring with stitching and tegaderm
- 5 anchoring and bridging
- 10 anchoring and steril strip

Anchoring



Anchoring with stitches.



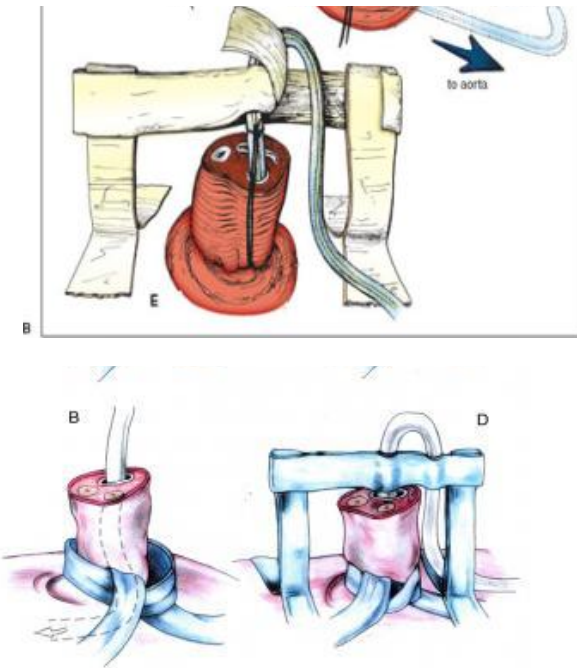
Options for Securing Umbilical Catheters

Heather E. Elser, PhD, RN, NNP-BC, CNS



Necessity of Transparent dressing with high MVTR
Use of sutures. Pain at umbilical site
Skin irritation
Difficulty for catheter adjustment

Goal post or bridging



Graueg AA, Tompkins JR. The KEMH method for securing umbilical catheters. J Paediatr Child Health. 1992;28(6):436-437.

Covidien. Covidien monitoring and OR products division best practices for the care and maintenance of Argyle umbilical vessel catheter. <http://www.kendall-ltp.com/imageServer.aspx?contentID=13736&contenttype=application/pdf>. Accessed August 24, 2013.



Curtesy of
Hosp. Villa Betania

Sutures

Skin irritation

Catheter adjustment can require new goal post

Evidence-Based Practice Briefs

Options for Securing Umbilical Catheters

Advances in Neonatal Care 2013

Heather E. Elser, PhD, RN, NNP-BC, CNS

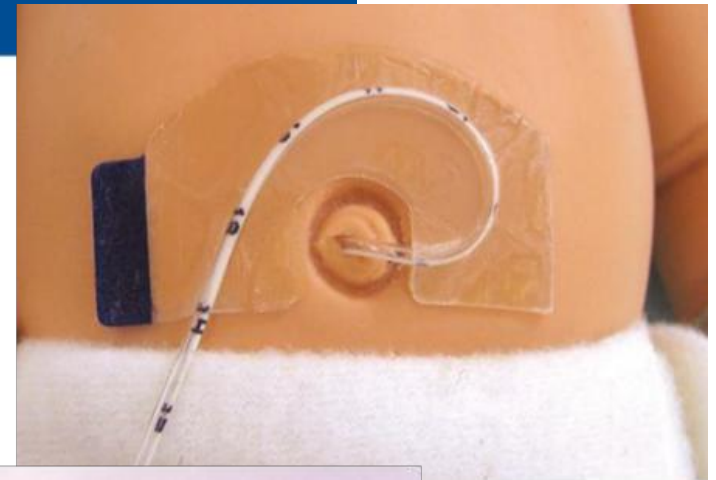


TABLE. Comparison of Umbilical Cord–Securing Techniques Based on Discussion of Advantages Versus Disadvantages

Technique	Advantages	Disadvantages	Price
1. Anchoring (with or without stitching)	No adhesives on skin.	Pain at umbilical site.	Negligible
2. Goal post or bridging	Potentially anchored more securely.	Skin irritation and infection. Catheter adjustments may require new goal post.	Negligible
3. DuoDERM method	Quick securing of umbilical cord lines.	Skin irritation and infection. Not ideal for infants requiring ultrasound of abdomen or heart.	~\$5 DuoDERM and < \$1 for Tegaderm
4. NeoBridge by Neotech Products	Hydrocolloid gel secured to abdomen. Adjustable flaps allow easy catheter adjustments.	Expensive. Skin irritation and infection.	\$8 to \$10/NeoBridge



What's new:

AN APPLICATION TECHNIQUE (use saline wipe as needed)

TECHNIQUE D'APPLICATION (utiliser une lingette imbibée de sérum physiologique si nécessaire)

EINE BEFESTIGUNGSTECHNIK (bei Bedarf Tupfer mit physiologischer Kochsalzlösung verwenden)

UNA TECNICA DI APPLICAZIONE (usare una salvietta di salina secondo necessità)

UNA TÉCNICA DE APLICACIÓN (use un paño impregnado en solución salina cuando sea necesario)

METHODE VAN AANBRENGEN (gebruik, indien nodig, een doekje met fysiologische zoutoplossing)

UMA TÉCNICA DE APLICAÇÃO (utilize a limpeza com soro fisiológico conforme o necessário)

ΜΙΑ ΤΕΧΝΙΚΗ ΕΦΑΡΜΟΓΗΣ (χρησιμοποιήστε φυσιολογικό ορό, όπως απαιτείται)



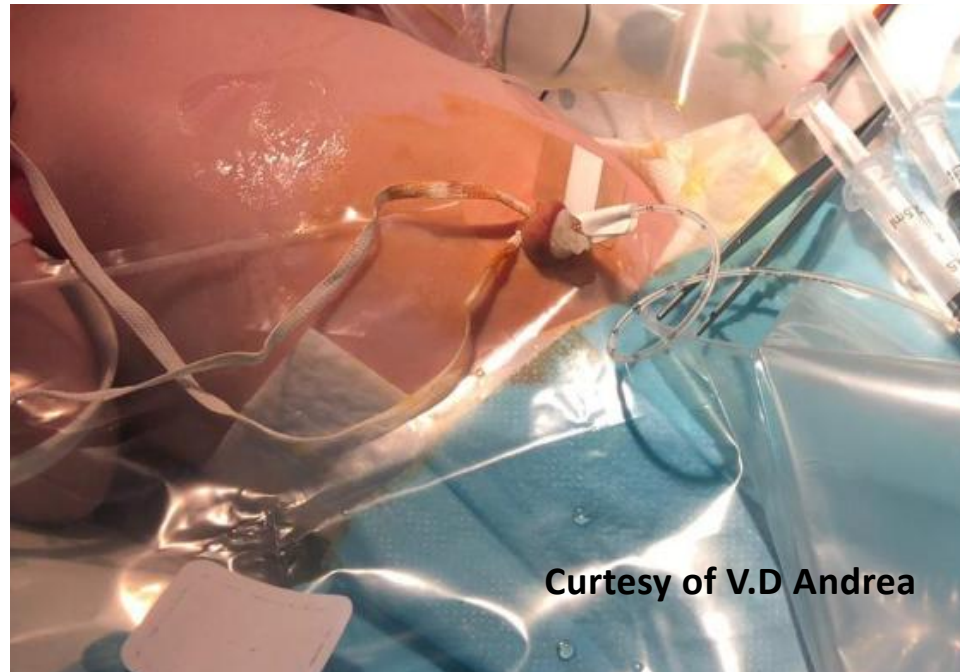
8. CARATTERISTICHE TECNICHE

- Dispositivo di fissaggio adesivo con dorso in Tyvek® flessibile
- Superficie inferiore composta da sistema adesivo in acrilico, ipoallergenico.



What's new:

**Tissue glue + suturless
device**



Courtesy of V.D Andrea

Securement of UVC

- **The current literature does not adequately provide significant empirical data to suggest one method over another to secure umbilical catheters**
- **The choice of the best method to secure umbilical catheters may depend on the infant's health status**
- **A secure method that seems to give the best protection for the integrity of the abdominal skin would involve the clinician who is inserting the catheter to change his or her technique to an anchoring method**
- **Consider the use of tissue glues and suturless devices**

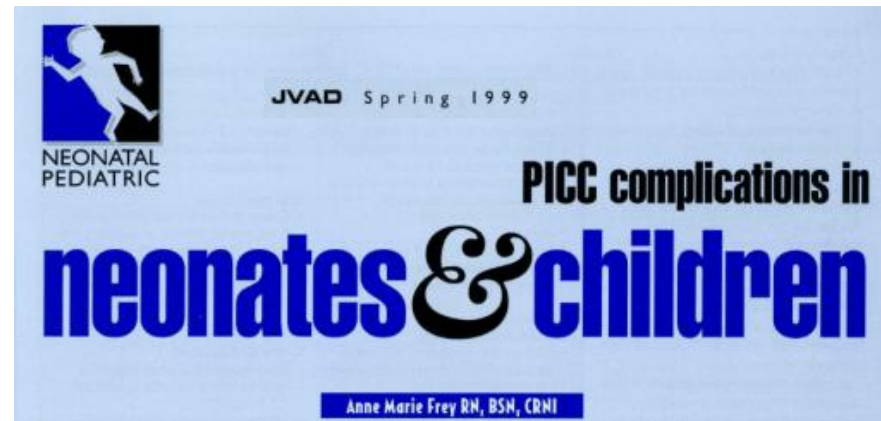
SECURING THE ECC

Topics:

Small size of catheter

Catheter length

Neonates ELBW



Tiny patients, tiny dressings

A guide to the neonatal picc dressing change

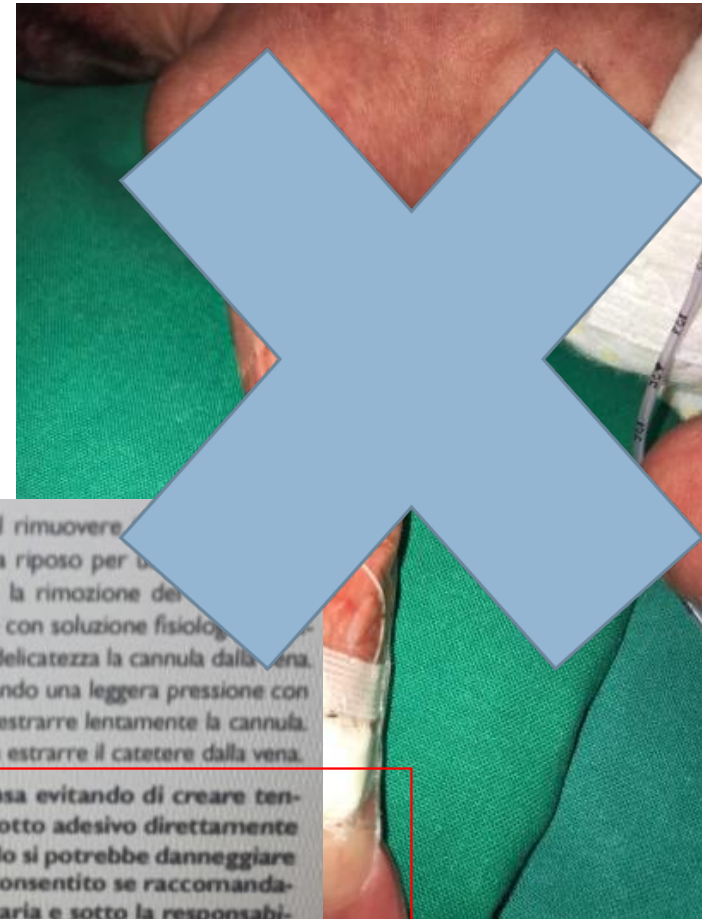
E.Sharpe Advance in neonatal care 2008

TSM and skin closure strips

The CDC recommends the use of either sterile gauze or a sterile TSM dressing to cover the catheter site.

The disadvantage of TSM dressing is the potential damage for the stratum corneum and possible discomfort upon removal.

Skin closure strips should never be placed directly overlying the catheter to avoid catheter breakage and embolism.



ATTENZIONE: in caso di difficoltà nel rimuovere rompere la procedura e lasciare la vena a riposo per tentare molto lentamente. Per facilitare la rimozione del possibile irrorare delicatamente il catetere con soluzione fisiologica, tenendo il catetere in avanti, e estrarre con delicatezza la cannula dalla vena. Mantenere il catetere in posizione esercitando una leggera pressione con il dito sul catetere, oltre la cannula, quindi estrarre lentamente la cannula. Aprire la cannula facendo attenzione a non estrarre il catetere dalla vena.

Fissare il catetere con una piccola ansa evitando di creare tensioni sul tubicino. Non applicare il cerotto adesivo direttamente sul tubicino perché, essendo delicato, lo si potrebbe danneggiare durante la rimozione. Tale utilizzo è consentito se raccomandato dal protocollo della struttura sanitaria e sotto la responsabilità della stessa. L'aletta di fissaggio e la prolunga devono essere fissate al paziente per evitare qualsiasi tensione sul catetere.

IMPORTANTE: PRIMA DI INIZIARE L'INFUSIONE EV
ATTRAVERSO IL CATETERE CONFERMARE IL SUO COR-

Do not rely on VAD dressings (ie, standard, nonbordered transparent semipermeable membrane [TSM] dressings, gauze and tape dressings) as a means for VAD stabilization as there is insufficient evidence supporting their benefits as stabilization devices.¹¹ (I)

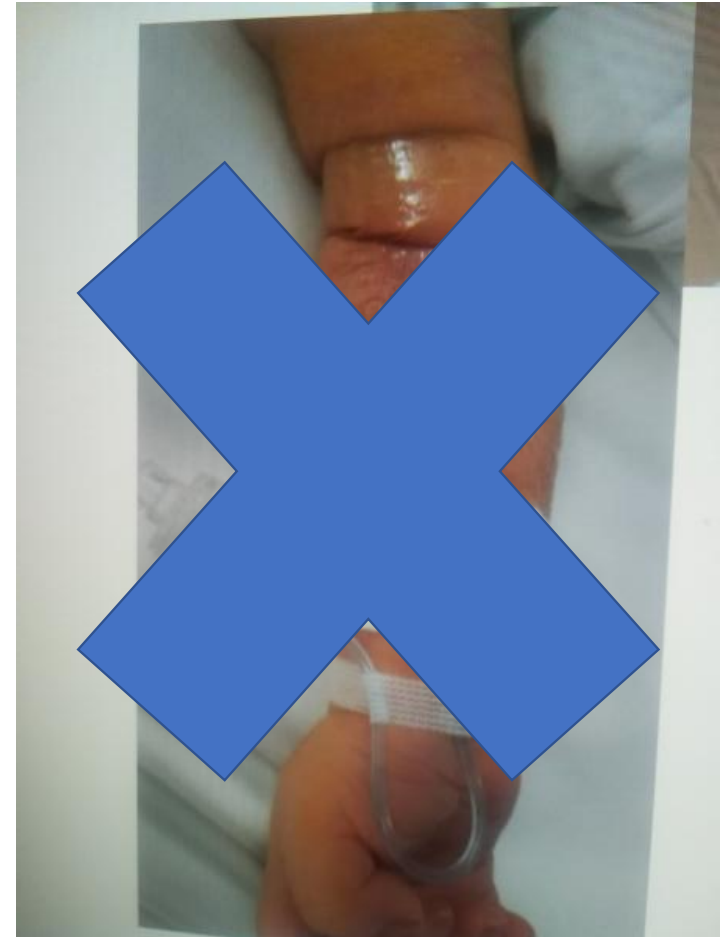
INS 2016



Curtesy of
Hosp. Villa Betania

ESDs promote consistent practice among all clinicians, reduce VAD motion that can lead to complications, reduce interruption of needed infusion therapy, and may decrease cost of care. (INS 2016)

Skin closure strips should never be placed directly overlying the catheter to avoid catheter breakage and embolism.



CDC 2017

Chlorhexidine-impregnated dressings are NOT recommended to protect the site of short-term, non-tunneled central venous catheters for premature neonates due to risk of serious adverse skin reactions.

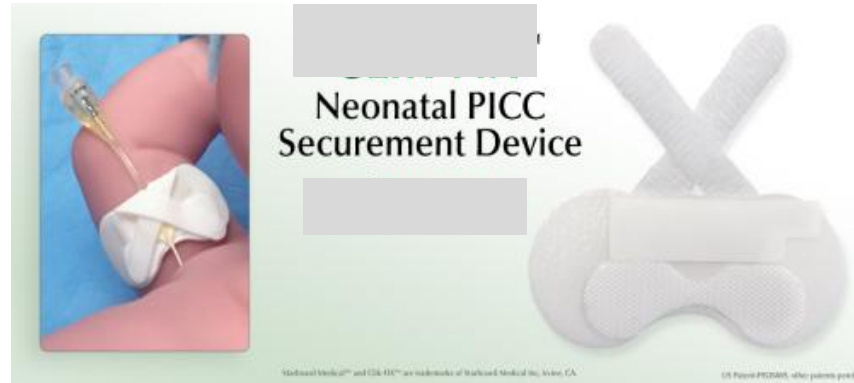
The application of a chlorhexidine-impregnated dressing requires a dressing change every 7 days (per manufacture's recommendations.)



SECUREMENT of ECC

Suturless device
Tissue glue
TSM

Preliminar results



Nose et al. (2016)A suturless technique using cyanoacrylate adhesives when creating a stoma for extremely low birth weight infants. Springer plus

CVAD in neonate and prematures

- CVO

Short term

- ECC (1,2,3 Fr)

- Non tunnelled CICC and FICC ($\leq 2\text{Fr}$,3 Fr et..)

Long term

Tunnelled CICC and FICC +SAS

Securement option	Pros	Cons
Sutures	- Initially very secure - Initially stable during cleaning - Minimal adhesive use	- May erode through skin - Prevent complete cleaning of insertion site - May require replacement over time

Strictly Clinical

Securing vascular access devices

Subcutaneous securement devices

- Easy application
- Stable during site cleaning
- Enables complete cleaning
- Easy maintenance
- Reduced skin surface complications
- Minimal adhesive use
- Decreased migration and pistoning
- No suture-related needlestick injuries
- Remains in place for duration of therapy
- Learning curve associated with placement and removal

- bacterial penetration
- Hemostatic properties reduce postinsertion bleeding
- Improved fixation when used with other polyurethane dressings
- Does not affect catheter materials

cyanoacrylate adhesives are directly related to the structure of tissue adhesive

Lawrence, H & Hacking, M Histoacryl for securing central venous catheters: not so sticky! Anaesthesia 2014, 69, 1398–1408

Subcutaneously anchored securement



≥3 Fr



F. Subcutaneous ESDs have been successful in stabilizing PICCs and CVADs inserted through the internal jugular vein of adults. Patient outcomes and patient and inserter satisfaction have been favorable; however, additional studies with other CVADs are needed.²¹⁻²³ (V)

JVA
ISSN 1129-7298

J Vasc Access 2017; 18 (6): 540-545
DOI: 10.5301/jva.5000780

ORIGINAL RESEARCH ARTICLE

Potential role of a subcutaneously anchored securement device in preventing dislodgment of tunneled-cuffed central venous devices in pediatric patients

Andrea Dolcino^{1,2}, Antonio Salsano¹, Andrea Dato², Nicola Disma³, Alessio Pini Prato⁴, Filippo Bernasconi⁵, Luigi Montagnini², Stefano Avanzini², Michela Bevilacqua², Giovanni Montobbio², Girolamo Mattioli², Clelia Zanaboni²



Clinical experience of a subcutaneously anchored sutureless system for securing central venous catheters

Mauro Pittiruti, Giancarlo Scoppettuolo, Laura Dolcetti, Davide Celentano, Alessandro Emoli, Bruno Marche and Andrea Musarò

British Journal of Nursing, 2019,

the analysis of the data allowed the authors to define those categories of patients where the device should have the most benefit: neonates, children,



KEY POINTS

- Subcutaneously anchored securement is effective in preventing catheter dislodgement
- Placement of a subcutaneously anchored securement system is safe and painless, if the anchor is properly placed in the subcutaneous area; also, if properly placed, local complications and pain at removal are uncommon
- Central catheters in paediatric patients should be preferably secured by subcutaneously anchored devices

Securement of Cicc and Ficc

- **Secure and stabilize CVAD with adhesive suturless device if the catheter features a diameter < 3 Fr**
- **Secure and stabilize CVAD with subcutaneous suturless device if the catheter features a diameter equal or superior to 3F**
- **Use tissue glue**
- **Cover with TSM high MVTR**
- **Avoid complications with training**



Curtesy of G. De
Simone



Curtesy of
M.Pittiruti



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GRAZIE

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