Catheter Securement Impact on PICC-Related CLABSI: A University Hospital Perspective

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Financial Disclosures

1. Disclosure of Relevant Financial Relationships

I have the following financial relationships to disclose: **Mark Rowe**

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Honoraria from: None

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2. Disclosure of Off-Label and/or investigative Uses

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Employee of: Global Vascular Access, LLC

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Objectives

- The viewer will have an understanding of methodology used for this retrospective observational study.
- The viewer will become familiar with the study's results and interpretation of its statistical analysis.
- The viewer will have an understanding of study outcomes related to healthcare outcomes and further research.

Introduction

- Can a securement device provide a lower risk of CLABSI?
- What do we know?
- What we need to know?
- How do we get there?

Method

- Reviewed all PICCs placed at UAMS from 2015-2018 in 2 different departments (7779 cases)
- R/O any insertion related concerns
- Deep dive on all reported PICC CLABSI (47 cases)


LOST
VERY LOST

Be Safe Everyone!

- CER (Comparative Effective Research)
- Results
- Analysis
- Interpretation

CER (Comparative Effective Research)

- Helps to inform health-care decisions by providing evidence on the effectiveness, benefits, and harms of different treatment options
- Vascular access has considerable room for securement studies

Results

- Primary study endpoint
  - Device applied
- Incidence
  - Volume (VAT & IR) 7779 PICCS
  - Incidence (47 PICC specific CLABSI)

Data

- Validity
  - EMR capturing intended data
- Reliability
  - Manual chart review comparison

Data

- Collection tools
- Type
- Distribution
- Similar groups?
- Sample
- Univariate/Multivariate?

	SESD (VAT)	%	AESD (IR)	%
2015	1827	87.04	272	12.96
2016	1795	89.30	215	10.70
2017	1688	89.26	203	10.74
2018	1631	91.68	148	8.32

Results

YEAR	TOTAL PICCs PLACED	SL	DL	TL	DWELL DAYS	CLABSI	AESD	SESD	Cancer	Non-Cancer	Right Side	Left Side
2015	2099	2	9	1	714	12	4	8	3	9	4	8
2016	2010	0	8	1	190	9	3	6	5	4	5	4
2017	1891	2	15	0	460	17	4	13	9	8	7	10
2018	1779	4	4	1	151	9	4	5	7	2	5	4
TOTAL	7779	8	36	3	1515	47	15	32	24	23	21	26

Results

- Expected population findings
  - No outliers noted
  - No noticeable difference
    - Cancer, Lateral placement, …
- Noted: Minimal triples
  - Supporting advanced practice team model

Results

- Confounding variables r/o: placement, etc.
  - Retrospective…Narrow inclusionary parameters?
- Incidence(s)
  - AESD, 1.79%
  - SESD, 0.46%

Analysis

- Level 1, no inference
  - Non-parametric, data types, …
- Descriptive Statistics
  - Frequencies
  - Relative Risk Ratio
  - Percent Relative Effect

Analysis - Interpretation

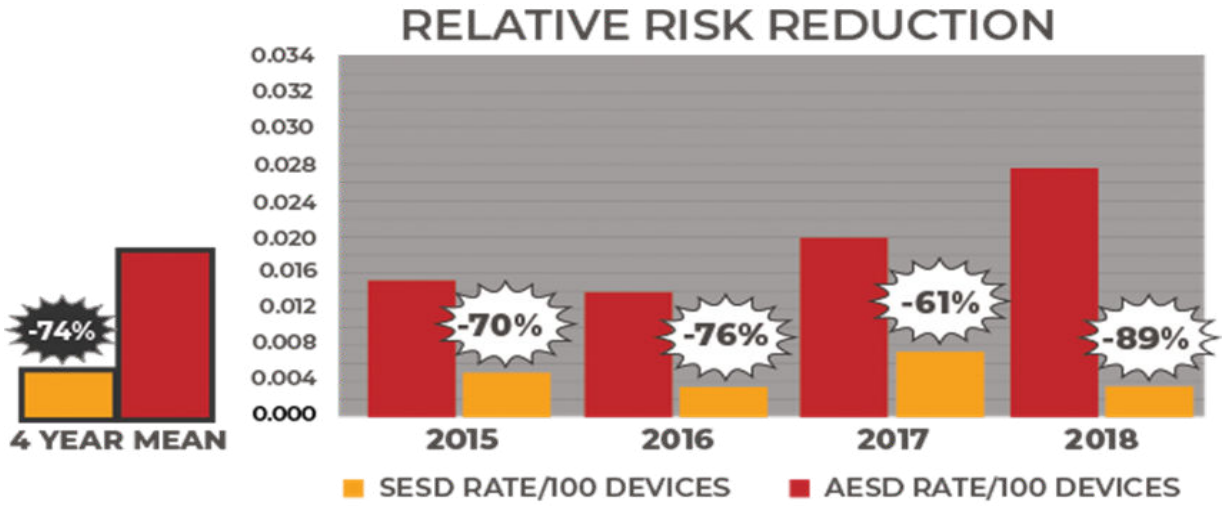
- Descriptive Statistics
  - Relative Risk Ratio
    - Those with an AESD had 3.88 times the risk for a CLABSI than those with a SESD
  - Percent Relative Effect
    - Those who had an AESD had a 288% increase in risk of CLABSI compared to those who had an SESD

Device	CLABSI	No CLABSI	Total	Cumulative Incidence
AESD	15	823	838	1.79%
SESD	32	6909	6941	0.46%
			Risk Ratio	3.88
			Percent Relative Effect	288%

288%
INCREASE IN RISK OF CLABSIs IN THE AESD GROUP

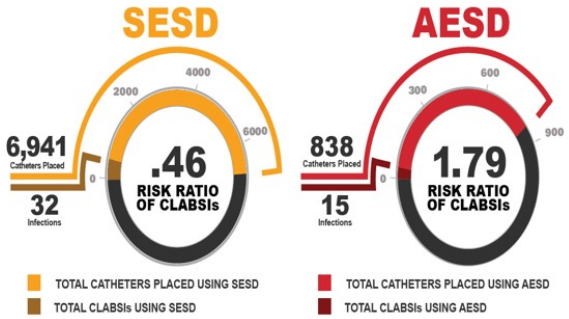
Analysis - Interpretation

- Relative Risk Reduction
- Math …



Ultimate Question

- The ultimate question we are all trying to answer in device selection decisions…
  - Will patients do better if you change your practice?



Supportive Research

Applied Health Economics and Health Policy
https://doi.org/10.1007/s40258-018-0427-1

REVIEW ARTICLE

SecurAcath for Securing Peripherally Inserted Central Catheters: A NICE Medical Technology Guidance

Tom Macmillan · Mark Pennington · Jennifer A. Summers · Kate Goddard · Darshan Zala · Naomi Herz · Janet L. Peacock · Stephen Keevil · Anastasia Chalkidou

Original research article

JVA The Journal of Vascular Access

Intravascular catheter migration: A cross-sectional and health-economic comparison of adhesive and subcutaneous engineered stabilisation devices for intravascular device securement

Dympna McParlan, L Edgar, M Gault, S Gillespie, R Menelly and M Reid

Original research article

JVA The Journal of Vascular Access

An observational study of the securement of central venous access devices with a subcutaneous anchor device in a paediatric population at a tertiary level hospital

Kathryn Marie Fitzsimons, Joseph Speekman, Temora Senior, Kerrie Curtis, Alex Cochrane-Davis and Richard Barnes

Reducing PICC migrations and improving patient outcomes

Meinir Elen Hughes

Can J Anesth/J Can Anesth (2013) 60:504–505
DOI 10.1007/s12630-013-9897-7

CORRESPONDENCE

A prospective trial on a new sutureless securement device for central venous catheters

Daniel Cordovani, MD · Richard M. Cooper, MD

Original research article

JVA The Journal of Vascular Access

GAVeCeLT-WoCoVA Consensus on subcutaneously anchored securement devices for the securement of venous catheters: Current evidence and recommendations for future research

Fulvio Pinelli, Mauro Pittiruti, Ton Van Boxtel, Giovanni Barone,

COMMENTARY Open Access

Recommendations for the use of vascular access in the COVID-19 patients: an Italian perspective

Mauro Pittiruti, Fulvio Pinelli on behalf of the GAVeCeLT Working Group for Vascular Access in COVID-19

Open Access Research

BMJ Open SecurAstaP trial: securement with SecurAcath versus StatLock for peripherally inserted central catheters, a randomised open trial

Godelieve Alice Goossens, Niel Grumiaux, Christel Janssens, Martine Jérôme, Steffen Fieuws, Philip Moons, Marguerite Stas, Geert Maleux

Hindawi
Case Reports in Pediatrics
Volume 2020, Article ID 7480483, 5 pages
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Hindawi

Case Report

Subcutaneously Anchored Sutureless Device for Securement of Chest Tubes in Neonates with Pleural Effusion: Three Case Reports

Carmen Rodriguez Perez, Maria Grazia Romitti, Elena Pezzotti, Vito D'Andrea, Lucilla Pezza, and Mauro Pittiruti

Evaluating safety, efficacy, and cost-effectiveness of PICC securement by subcutaneously anchored stabilization device

Pietro Antonio Zerla, Antonio Canelli, Lidia Cerne, Giuseppe Caravella, Alessandra Gilardini, Giuseppe De Luca, Ana Maria Aricisteanu, Raffaele Venezia

Early Research

- Egan et al (2013) published the first post-market study on SecurAcath, using 5 Fr. PICCs (performed Aug–Dec 2010).
- A multicenter, prospective study designed to monitor the safety and performance of the SecurAcath device.
- 68 adult patients at 3 different institutions were enrolled. PICCs were placed in both outpatients and inpatients, including areas such as critical care and medical/ surgical units, home care, and extended care facilities.
- 91.2% of the patients completed therapy without a securement-related device malfunction or device-related adverse event.
- OUTCOME: The SecurAcath device represented a novel, safe, and effective method for catheter securement.

Early Research

- Cordovani and Cooper (2013) performed a multicenter, prospective study to evaluate the effectiveness of securement on 7Fr. CICCs
- 74 patients enrolled and the primary outcome, successful securement, was achieved in 97%. Two patients experienced catheter dislodgement, attributed to improper coupling of the two device components. These were identified within 24hr of catheter placement.
- OUTCOME: Safe and reliable securement of the CVC in the internal jugular vein, and it is easy to learn how to use the device. Study too small to determine infection reduction claim.

Early Research

- Hughes (2014) performed an evaluation of 31 patients with SecurcAath to secure PICCs and found only one case of insignificant catheter migration.
- The SecurAcath device proved successful in preventing PICC-related migration.
- Overall patient satisfaction was high.
- Infection rates initially high, resultant of unfamiliarity of device. Was successfully resolved after additional clinician training.
- The introduction of the SecurAcath device has led to a significant overall cost saving.

Recent Research

- Zerla et al (2017) performed a single center, prospective observational study on safety, effectiveness and cost effectiveness of SecurAcath for securement of PICCs in 30 adult cancer patients with treatment expected to be >60 days.
- During 4963 catheter days/709 dressing changes, there were no PICC dislodgements.
- A lower incidence of complications if compared to traditional securement devices.
- Insertion, management and removal of SecurAcath were not associated with an increased pain.
- Provided very cost effective and clinical benefits for medium to long dwelling PICCs.

Recent Research

- Goossens et al (2018) performed first randomized trial against StatLock with PICCs.
- 105 patients enrolled - (StatLock, n=53; SecurAcath, n=52).
- StatLock required weekly changes – SecurAcath remained for the duration of dwell.
- Median time differences for dressing change for SecurAcath was reduced with 41% compared to StatLock ($p<.0001$), pain at insertion/removal ($p<.02$/$p<.001$), migration, dislodgement and CRBSI showed minimal statistical differences.
- OUTCOME: Saves time during dressing change compared with StatLock. Training on correct placement and removal of SecurAcath is critical to minimize pain and is user friendly.

Recent Research

- McParlan et al (2020) reported a cross-sectional and health-economic comparison of adhesive and subcutaneous engineered stabilization devices, highlighting significant clinical and financial benefits.
- The use of subcutaneous devices provided reduced risks for PICCs in terms of dislodgement, migration or malposition, alleviating the potential risks to develop catheter-related thrombosis and device-related infection.
- The cost savings per patient amounted to £74 (€81.92/US$93.41) when averaging total material costs across all patients due to variability of therapy and overall dwell times.

Recent Research

- Fitzsimmons et al (2020) collected data on 52 consecutive pediatric patients, who required PICCs and non-cuffed tunneled CICCs.
- There was a reduction in securement failure from 2.58/1000 catheter days using historical data to 2.01/1000 catheter days.

- Rodriguez Perez et al (2020) reported 3 case reports with the use of SecurAcath to secure neonatal chest drains.
- It was not associated to any undesired effect: no sign of pain and/or discomfort and no skin inflammation. The device proved to be comfortable and harmless, even in fragile patients as neonates, including the frailest ones, the premature.
- This is the first report describing the use of such a device for this purpose.

Implications

- Additional prospective research is still needed to assess the direct impact of subcutaneous devices on PICC-associated infection, device occlusion and catheter-related thrombotic complications.
- There is growing evidence for the use of SecurAcath with other invasive devices, such as drains and chest tubes, across various patient populations.
- Although the quality of evidence is generally low, based mainly on non-controlled prospective studies, the use of a subcutaneous securement device provides effective strategies in reducing dislodgment and appear to be safe in all categories of patients, are associated only with rare and negligible local adverse effects; cost-effectiveness is been demonstrated—or highly likely—in specific populations of patients with medium to long-term venous access and/or are at high risk of dislodgment.

Conclusions

- Securacath provide safe, effective strategies to provide securement for intravascular as well as other invasive devices, such as chest drains.
- Patient experience and satisfaction are well received and have very limited adverse effects.
- Several studies have shown reductions in infection and thrombotic-related complications with the use of the device.
- Recommendations from professional organizations regarding the use of subcutaneous securement, under various environmental conditions.
- This study demonstrated significant impact on CLABSI when compared to an adhesive securement device.

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Major Article

Catheter securement impact on PICC-related CLABSI: A university hospital perspective

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