European Society of Regional Anaesthesia & Pain Therapy
ESRA ITALIA

ESRA Cè

# XXIX CONGRESSO NAZIONALE

ESRA Italian Chapter

CESENA, Cesena fiere

7-9 Novembre 2024

Presidente del congresso
**Vanni Agnoletti**
**Domenico Pietro Santonastaso**
**Andrea Tognù**

# *IMPIANTO ECOGUIDATO DI CATETERI VENOSI CENTRALI E PERIFERICI*

## *Mini-midline e Midline*

Dr. Andrea Sica – U.O. Anestesia e Rianimazione,
Ospedale «M. Bufalini» – Cesena – AUSL Romagna

MZ EVENTS

# Mini - midline e Midline

- Di cosa parliamo
- Indicazioni
- Dove e Come
- Complicanze e Controindicazioni

# Mini - midline

- Di cosa parliamo?

- Cateteri periferici lunghi
- Cannule lunghe
- Mini-midline
- Short midline
- Catetere da 15 cm
- Catetere inserito con metodo Seldinger
- Catetere lungo
- Catetere IV lungo
- Cannula periferica lunga
- Catetere periferico lungo
- Catetere venoso periferico lungo
- Cannula midline
- Catetere di Seldinger
- Catetere endovenoso periferico guidato da US

JVA The Journal of Vascular Access

Editorial

## Long peripheral catheters: Is it time to address the confusion?

The Journal of Vascular Access
1–4

DOI: 10.1177/1129729818819730
journals.sagepub.com/home/jva
SAGE

Kirby R Qin[1], Ramesh M Nataraja[1,2] and Maurizio Pacilli[1,2]

**Abstract**

Long peripheral catheters are 6–15 cm peripheral dwelling catheters that are inserted via a catheter-over-needle or direct Seldinger (catheter-over-guidewire) technique. When inserted in the upper extremity, the distal tip terminates before reaching the axilla, typically no further than the mid-upper arm. This is distinct from a midline catheter, which is inserted via a modified Seldinger technique and terminates at the axilla. The nomenclature of this catheter is confusing and inconsistent. We have identified over a dozen labels in the literature, all describing the same device. These include '15 cm catheter', 'catheter inserted with a Seldinger method', 'extended dwell/midline peripheral catheter', 'Leaderflex line', 'long catheter', 'long IV catheter', 'long peripheral cannula', 'long peripheral catheter', 'long peripheral venous catheter', 'long polyurethane catheter', 'midline cannula', 'mini-midline', 'peripheral intravenous catheter', 'Seldinger catheter', 'short midline catheter', 'short long line' and 'ultrasound-guided peripheral intravenous catheter'. The purpose of this editorial is to achieve some level of standardisation in the nomenclature of this device. Is it time to address the confusion? We suggest adopting 'long peripheral catheter'. However, we encourage discussion and debate in reaching a consensus.

CVAD - PVAD

2024

JVA | The Journal of Vascular Access

Editorial

The Journal of Vascular Access
1–8

DOI: 10.1177/11297298241291248
journals.sagepub.com/home/jva
Sage

# The NAVIGATE project: A GloVANet–WoCoVA position statement on the nomenclature for vascular access devices

Matheus (Roland) van Rens[1], Robin van der Lee[1], Timothy R Spencer[2], Ton van Boxtel[3], Giovanni Barone[4], Alessandro Crocoli[5], Fulvio Pinelli[6], Mauro Pittiruti[7], on behalf of the WoCoVA Foundation (World Conference on Vascular Access) and of the Global Vascular Access Network (GloVANet)

PVAD

**Raccomandazioni europee sulla corretta indicazione e uso dei dispositivi di accesso venoso periferico (consenso ERPIUP): Un progetto WoCoVA**

Mauro Pittiruti[1] , Ton Van Boxtel[2] , Giancarlo Scoppettuolo[1], Peter Carr[3], Evangelos Konstantinou[4], Gloria Ortiz Miluy[5], Massimo Lamperti[6], Godelieve Alice Goossens[7], Liz Simcock[8], Christian Dupont[9], Sheila Inwood[10], Sergio Bertoglio[11] , Jackie Nicholson[12], Fulvio Pinelli[13] and Gilda Pepe[1]

**2021 - Fondazione WoCoVA (World Conference on Vascular Access) - ERPIUP** (European Recommendations for Proper Indication and Use of Pheripheral venous access):

- classificazione ed indicazione dei **PVAD**
- definire le tecniche corrette di inserimento e manutenzione

*SPC*

*LPC*

*MC*

# LPC/Mini - midline

- Di cosa parliamo?

- Catetere a dimora **periferico** (vene superficiali dell'avambraccio o del braccio con tecnica diretta oppure in vene profonde con tecnica ecoguidata) di 6-15 cm

- La punta distale termina prima di raggiungere il cavo ascellare, in genere non oltre la metà superiore del braccio

- Catetere (PUR - poliuretano/PEBA - polietere ammide a blocchi) inserito su guida Seldinger; 18 – 20 G / 3 – 4 Fr; power injectable

- In situ per circa 4 settimane (device a breve termine)

# MC/Midline

- Di cosa parliamo?

- Catetere a dimora **periferico** (vene profonde del braccio con tecnica ecoguidata) di 15 - 25 cm

- La punta distale termina al tratto toracico della vena ascellare o in vena succlavia (*midclavicular*)

- Catetere (PUR) inserito con tecnica Seldinger modificata.

- 18 – 20 G / 3 – 4 Fr; power injectable

- In situ per > 4 settimane (device a medio termine)

US

- **Ultrasuoni e PVAD**

*British Journal of Anaesthesia* **110** (6): 888–91 (2013)
doi:10.1093/bja/aet078

EDITORIAL II

## Difficult peripheral veins: turn on the lights

M. Lamperti[1*] and M. Pittiruti[2]

[1] Department of Neuroanaesthesia, National Neurological Institute Besta, Via Celoria, 11, 20136 Milan, Italy
[2] Department of Surgery, Catholic University, Rome, Italy
* Corresponding author. E-mail: doclampmd@gmail.com

Review

## Ultrasound guidance for difficult peripheral venous access: systematic review and meta-analysis

Grace Egan,[1,2] Donagh Healy,[1] Heidi O'Neill,[2] Mary Clarke-Moloney,[1] Pierce A Grace,[2] Stewart R Walsh[1,2]

«...increases the likelihood of successful peripheral cannulation in difficult access patients...»

EJA

*Eur J Anaesthesiol* 2020; **37**:344–376

**GUIDELINES**

# European Society of Anaesthesiology guidelines on peri-operative use of ultrasound-guided for vascular access (PERSEUS vascular access)

Massimo Lamperti, Daniele Guerino Biasucci, Nicola Disma, Mauro Pittiruti, Christian Breschan, Davide Vailati, Matteo Subert, Vilma Traškaitė, Andrius Macas, Jean-Pierre Estebe, Regis Fuzier, Emmanuel Boselli and Philip Hopkins

"…we recommend the use of ultrasound guidance for peripheral vein cannulation in adults with moderate to difficult venous access, both in emergency and elective situations, as it is safer and more effective in terms of a reduction of complications, improved overall success rate and reduced time to achieve vascular access (1C)."

US

# Ultrasound-guided peripheral intravenous access in the intensive care unit

**Shea C. Gregg MD*, Sarah B. Murthi MD, Amy C. Sisley MD, MPH, FACS, Deborah M. Stein MD, MPH, Thomas M. Scalea MD, FACS**

*Division of Surgical Critical Care, R Adams Cowley Shock Trauma Center, Baltimore, MD 21201, USA*

**Keywords:**
Ultrasound;
Peripheral intravenous access;
Central venous catheters;
Intensive care unit

**Abstract**
**Purpose:** Central venous catheters continue to be a popular means of maintaining vascular access in surgical intensive care units despite well-described complications. With edema, obesity, and difficult to visualize veins potentially affecting the surgically ill, inability to obtain peripheral intravenous (PIV) access may hinder the clinician's ability to avoid the use of central lines. With ultrasound gaining increased popularity for obtaining vascular access, we evaluated its utility in ultrasonagraphically placing PIV catheters for the purposes of either avoiding central venous access or removing central venous catheters.
**Materials and Methods:** We performed a retrospective cohort review of our requests for ultrasound-guided PIV access in the intensive care unit between September 2007 and February 2008.
**Results:** Over a 6-month period, 77 requests for ultrasound-guided PIV access were made for 59 surgical, trauma, and cardiothoracic intensive care unit patients. Reasons for inability to obtain PIVs through standard means included edema (95%), obesity (42%), IV drug abuse history (8%), and emergency access (4%). Of the 148 PIV lines that were requested, 147 PIV catheters were successfully placed (99%). Of these, 105 PIV catheters were placed on the first attempt (71%). Complications of PIVs included IV infiltration (3.4%), inadvertent removal (2.7%), and phlebitis/cellulitis (0.7%). As a result of placing these PIV catheters, 40 central lines were discontinued and 34 central lines were avoided. The average number of line days at the time of central venous catheter removal was 11 ± 11 days.
**Conclusion(s):** In intensive care unit patients who do not require central venous lines, ultrasound-guided PIV access can have a high placement success rate and can result in fewer central line days and/or less reliance on central venous catheters for access-only purposes.


...riduzione in numero e durata dei CVAD in ICU

Volume 61, Issue 2, P198-203, February 2013

# Ultrasound-Guided Peripheral Intravenous Access Program Is Associated With a Marked Reduction in Central Venous Catheter Use in Noncritically Ill Emergency Department Patients

Hamid Shokoohi, MD, MPH, RDMS, RDCS; Keith Boniface, MD, RDMS, RDCS; Melissa McCarthy, ScD; Tareq Khedir Al-tiae, MD; Mehdi Sattarian, MD, MBA; Ru Ding, MS; Yiju Teresa Liu, MD, RDMS; Ali Pourmand, MD, MPH, RDMS; Elizabeth Schoenfeld, MD, RDMS; James Scott, MD; Robert Shesser, MD; Kabir Yadav, MDCM, MS

Annals *of* Emergency Medicine
*An International Journal*

..riduzione CVAD in ED

ORIGINAL ARTICLE

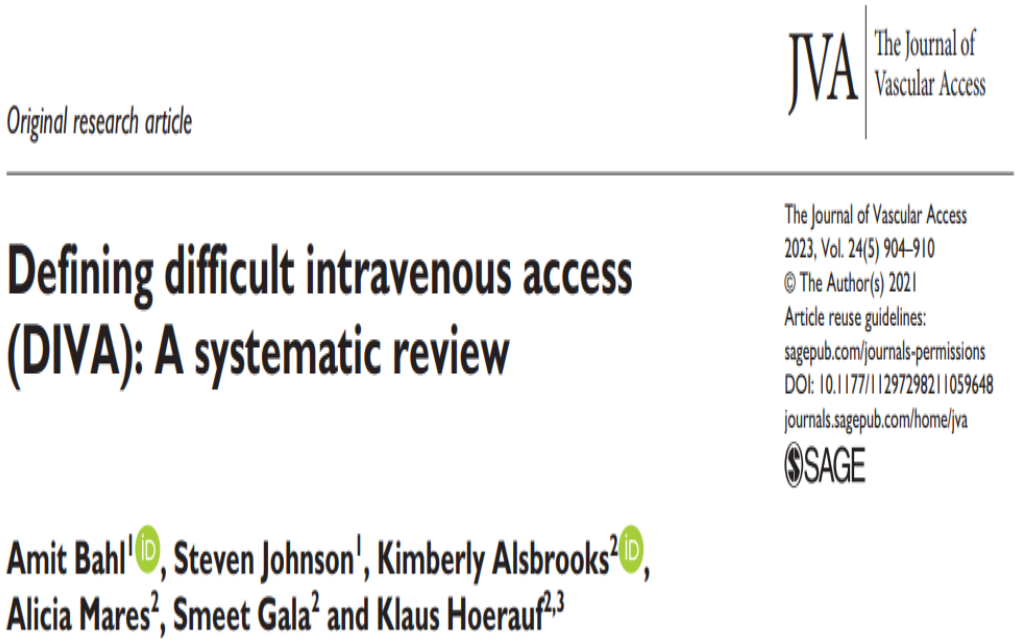
# Ultrasound guidance allows faster peripheral IV cannulation in children under 3 years of age with difficult venous access: a prospective randomized study

Mehdi Benkhadra[1], Mathieu Collignon[1], Isabelle Fournel[2], Christian Oeuvrard[1], Patricia Rollin[1], Murielle Perrin[1], François Volot[1] & Claude Girard[1]

1 Department of Anesthesiology and Intensive Care, University Hospital Bocage, Dijon, France
2 Department of Epidemiology and Infection Control, University Hospital Bocage, Dijon, France

…pediatrico

- Difficult intravenous access



Original research article

JVA The Journal of Vascular Access

# Defining difficult intravenous access (DIVA): A systematic review

The Journal of Vascular Access
2023, Vol. 24(5) 904–910

DOI: 10.1177/11297298211059648
journals.sagepub.com/home/jva
SAGE

Amit Bahl[1], Steven Johnson[1], Kimberly Alsbrooks[2], Alicia Mares[2], Smeet Gala[2] and Klaus Hoerauf[2,3]

Journal of Clinical Medicine

MDPI

*Article*

# The Modified A-DIVA Scale as a Predictive Tool for Prospective Identification of Adult Patients at Risk of a Difficult Intravenous Access: A Multicenter Validation Study

Fredericus H. J. van Loon [1,2,*], Loes W. E. van Hooff [3], Hans D. de Boer [4], Seppe S. H. A. Koopman [5], Marc P. Buise [2], Hendrikus H. M. Korsten [2,6], Angelique T. M. Dierick-van Daele [7,8] and Arthur R. A. Bouwman [2,6]

"…when a clinician has two or more failed attempts at PIV access using traditional techniques, physical examination findings are suggestive of DIVA (e.g. no visible or palpable veins) or the patient has a stated or documented history of DIVA."

# LPC/Mini - midline

- Indicazioni

- 6 giorni > infusioni < 30 giorni
- Sostanze compatibili con via periferica*
- Emergenza o elezione
- Intraospedaliero

*
- Soluzioni con 5 > pH < 9
- Farmaci con osmolarità < 600 mOsm/l
- Nutrizione Parenterale < 800 mOsm/l
- Farmaci NON vescicanti, irritanti o associati a danno intimale


- The Michigan appropriateness guide for intravenous catheters (**MAGIC**): results from a multispecialty panel using the RAND/UCLA appropriateness method. Chopra V, Flanders SA, Saint S, et al. Ann Internal Med 2015.
- **GAVeCeLT**: Sistema esperto '**DAV-Expert**' per la scelta dell'accesso venoso. GAVeCeLT website. http://davexpert. gavecelt.it (2018)

# LPC/Mini - midline

- Indicazioni

Scoppettuolo et al. International Journal of Emergency Medicine (2016) 9:3
DOI 10.1186/s12245-016-0100-0

International Journal of Emergency Medicine
a SpringerOpen Journal

ORIGINAL RESEARCH Open Access

## Ultrasound-guided "short" midline catheters for difficult venous access in the emergency department: a retrospective analysis

Giancarlo Scoppettuolo[1*], Mauro Pittiruti[2], Sara Pitoni[3], Laura Dolcetti[1], Alessandro Emoli[4], Alessandro Mitidieri[5], Ivano Migliorini[2] and Maria Giuseppina Annetta[3]

Original research article

JVA The Journal of Vascular Access

## Peripherally inserted central catheter, midline, and "short" midline in palliative care: Patient-reported outcome measures to assess impact on quality of care

The Journal of Vascular Access
1–7

DOI: 10.1177/1129729818814732
journals.sagepub.com/home/jva
SAGE

Caterina Magnani[1], Alice Calvieri[1], Diana Giannarelli[2], Margot Espino[1] and Giuseppe Casale[1]

Original research article

JVA The Journal of Vascular Access

## Mini-midline in difficult intravenous access patients in emergency department: A prospective analysis

The Journal of Vascular Access
1–7

DOI: 10.1177/1129729819883129
journals.sagepub.com/home/jva
SAGE

Emanuele Gilardi[1], Rosangela Giannuzzi[1], Kidane WoldeSellasie[1], Alfonso Piano[1], Mauro Pittiruti[2] and Giancarlo Scoppettuolo[3]

Original research article

JVA The Journal of Vascular Access

## Short midline catheters: High success rates for antibiotic therapy in children with cystic fibrosis

The Journal of Vascular Access
2023, Vol. 24(3) 385–390

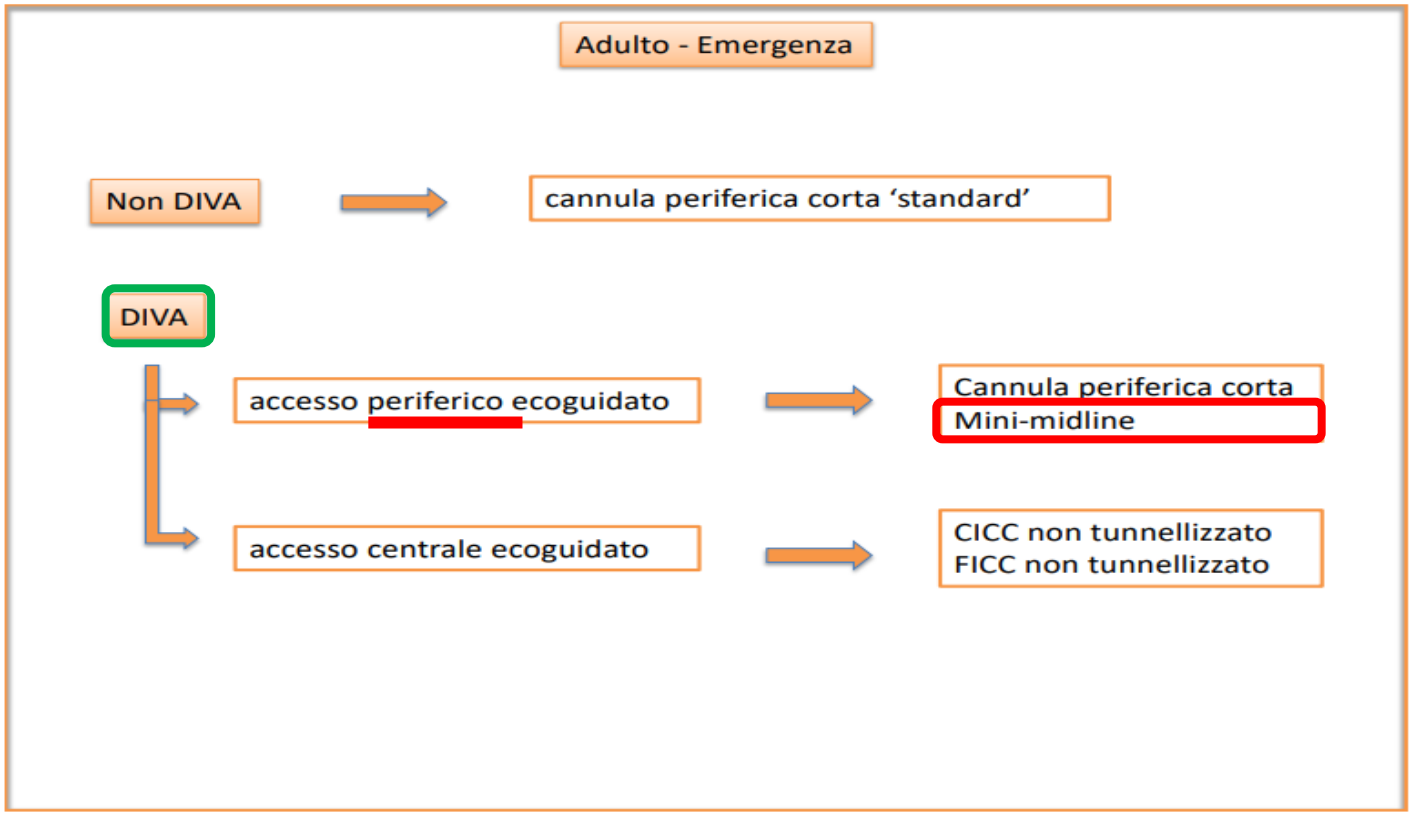
DOI: 10.1177/11297298211035310
journals.sagepub.com/home/jva
SAGE

Judith Glazner[1], Kate Steinfort[2], Yanhong Jessica Hu[3], William Browne[2], Ian Smith[2] and Christopher Brasher[2,3,4]

# LPC/Mini – midline

- Indicazioni

**Emergenza**

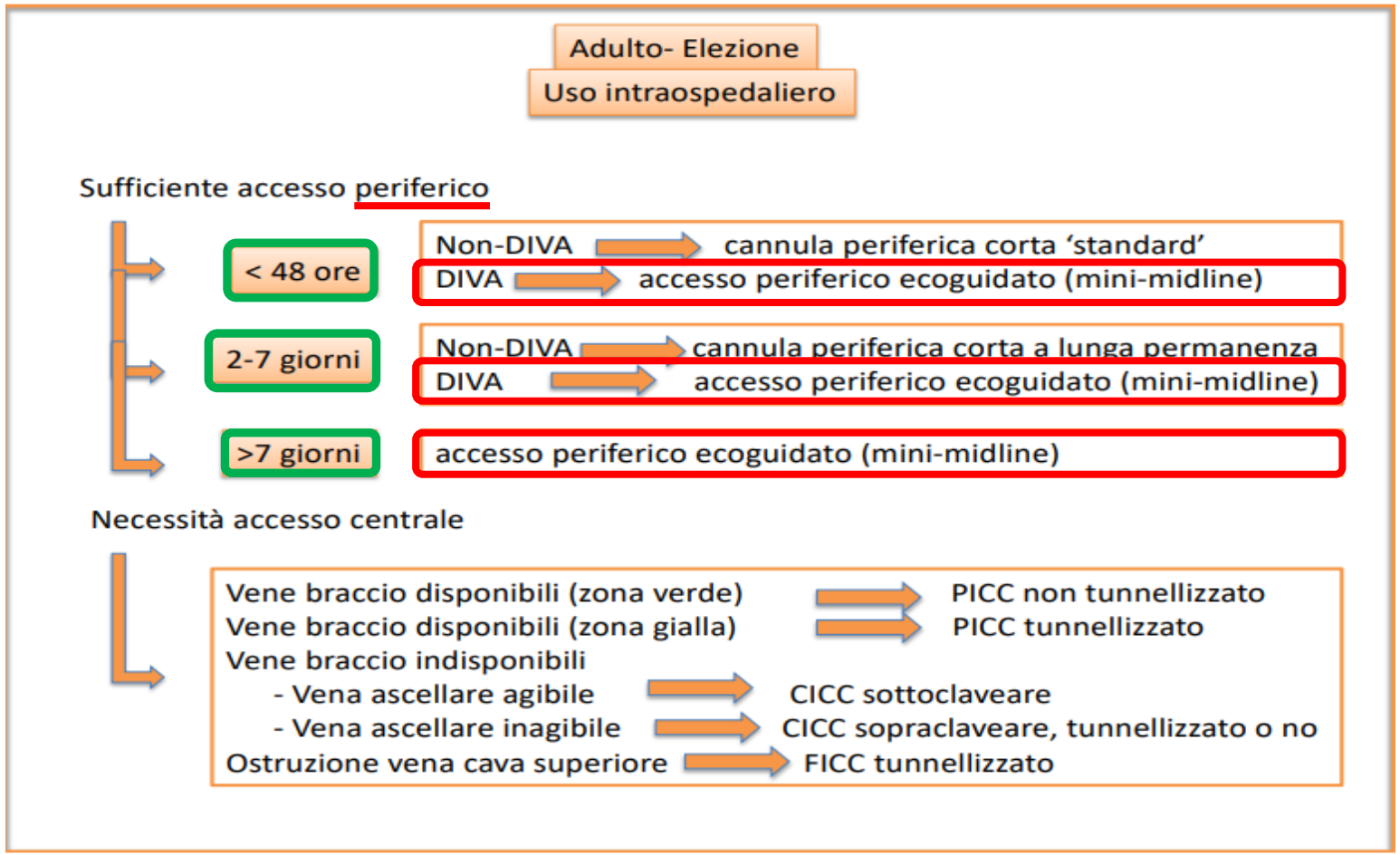



..da rimuovere entro 24-48 h

…circa il 10% dei pazienti adulti, in ED, è DIVA

# LPC/Mini - midline

## Elezione Intraospedaliero



- Indicazioni

- Infusioni > 30 giorni
- Sostanze compatibili con via periferica*
- Elezione
- Intra o extraospedaliero (DH, domicilio, hospice)

*

- Soluzioni con 5 > pH < 9
- Farmaci con osmolarità < 600 mOsm/l
- Nutrizione Parenterale < 800 mOsm/l
- Farmaci NON vescicanti, irritanti o associati a danno intimale


- The Michigan appropriateness guide for intravenous catheters (**MAGIC**): results from a multispecialty panel using the RAND/UCLA appropriateness method. Chopra V, Flanders SA, Saint S, et al. Ann Internal Med 2015.
- **GAVeCeLT**: Sistema esperto '**DAV-Expert**' per la scelta dell'accesso venoso. GAVeCeLT website. http://davexpert. gavecelt.it (2018)

Original research article

JVA The Journal of Vascular Access

## Midline catheters for extracorporeal photopheresis in hematological patients

The Journal of Vascular Access
2023, Vol. 24(4) 568–574

DOI: 10.1177/1129729821041450
journals.sagepub.com/home/jva
SAGE

Bruno Marche[1*], Sonia D'Arrigo[2*], Maria Giuseppina Annetta[2], Andrea Musarò[3], Alessandro Emoli[4], Simona Sica[1], Nicola Piccirillo[5], Rossana Putzulu[5], Maria De Paolis[5], Marco Bernoldi[5] and Mauro Pittiruti[6]

Supportive Care in Cancer (2023) 31:580
https://doi.org/10.1007/s00520-023-08045-2

RESEARCH

## Use and safety of peripherally inserted central catheters and midline catheters in palliative care cancer patients: a retrospective review

Eva Gravdahl[1] · Siri Steine[1] · Knut Magne Augestad[2,3,4] · Olav Magnus Fredheim[1,2]

Received: 4 May 2023 / Accepted: 7 September 2023 / Published online: 19 September 2023


ELSEVIER
Contents lists available at ScienceDirect
Transfusion and Apheresis Science
journal homepage: www.elsevier.com/locate/transci

## Midline catheter as effective device in healthy allogeneic donors and patients without an adequate peripheral venous access for HPC collection by apheresis: Preliminary experience at IEO

Alessandro Caime[a], Alessio Piredda[b], Bruno Lucchetti[a], Antonio Magarò[a], Claudia Zencovich[b], Margerita Clerici[a], Daniele Laszlo[a,*]

[a] Stem Cell Mobilization and Collection Unit, Italy
[b] PICC Team, IEO IRCCS, Milano, Italy

RESEARCH ARTICLE

WILEY Journal of Clinical Apheresis ASFA

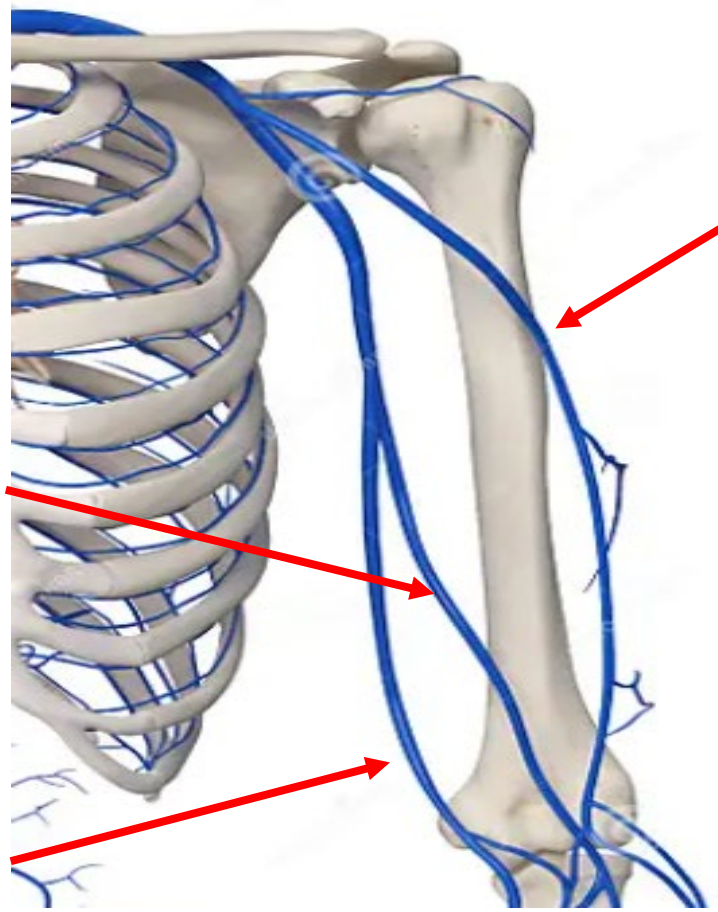
## Ultrasound-guided peripheral venous access for therapeutic apheresis procedures reduces need for central venous catheters

Eric Salazar | Salvador Garcia | Robin Miguel | Francisco J. Segura |

…cure palliative, antibioticoterapia protratta, NP integrativa per patologie croniche…

# Anatomia

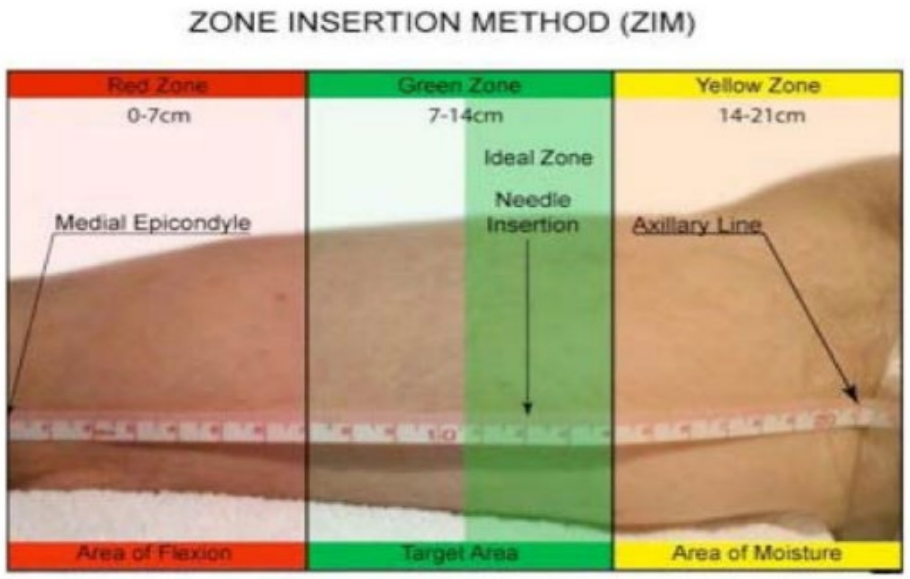
- Dove e Come



# Anatomia

- Dove e Come

## Zone di Dawson




Il diametro della vena scelta deve essere almeno tre volte più largo del catetere stesso

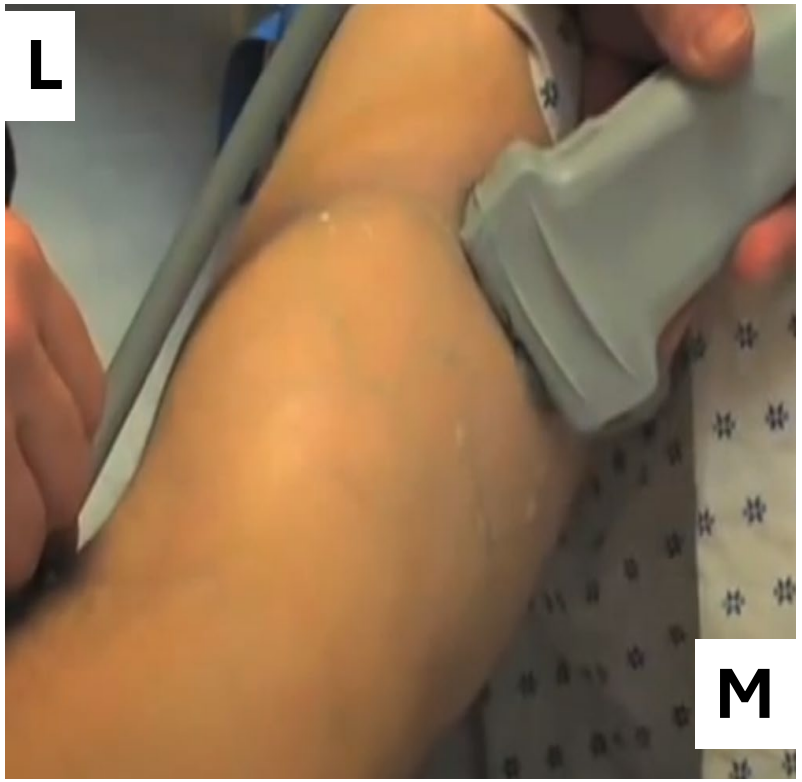
1 Fr = 0.3333 mm

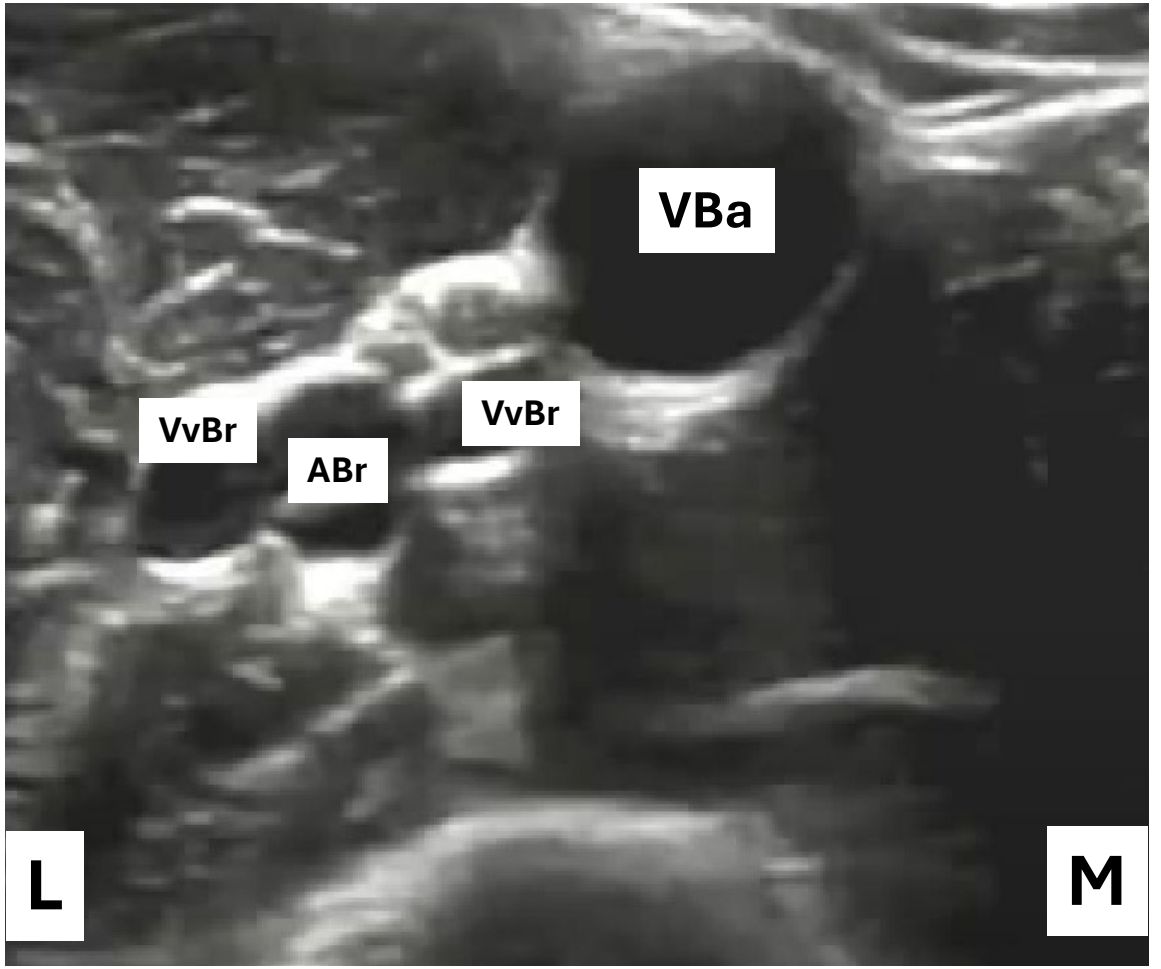
Es. catetere **4 Fr** ha un diametro di 1.3 mm pertanto la vena scelta dovrà avere un diametro di almeno **4 mm**

# Sonoanatomia

- Dove

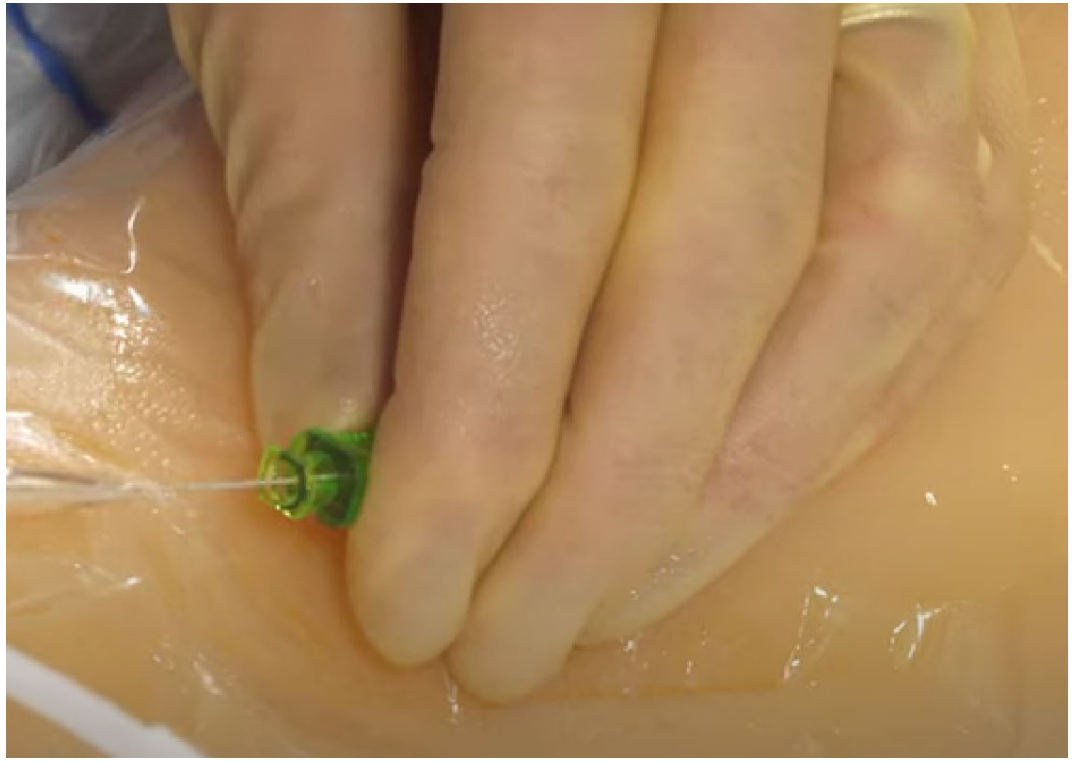
## RaPeVA



# LPC/Mini - midline

1



2

# LPC/Mini - midline

3

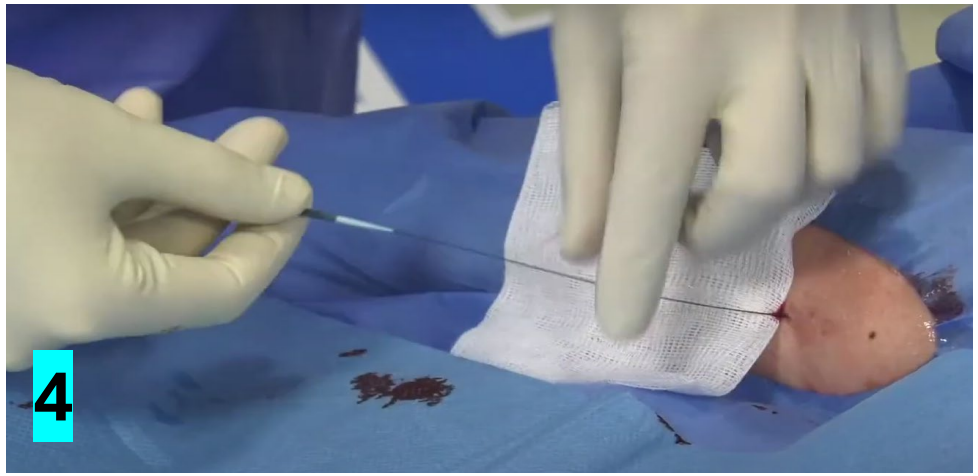
4

5

# MC/Midline

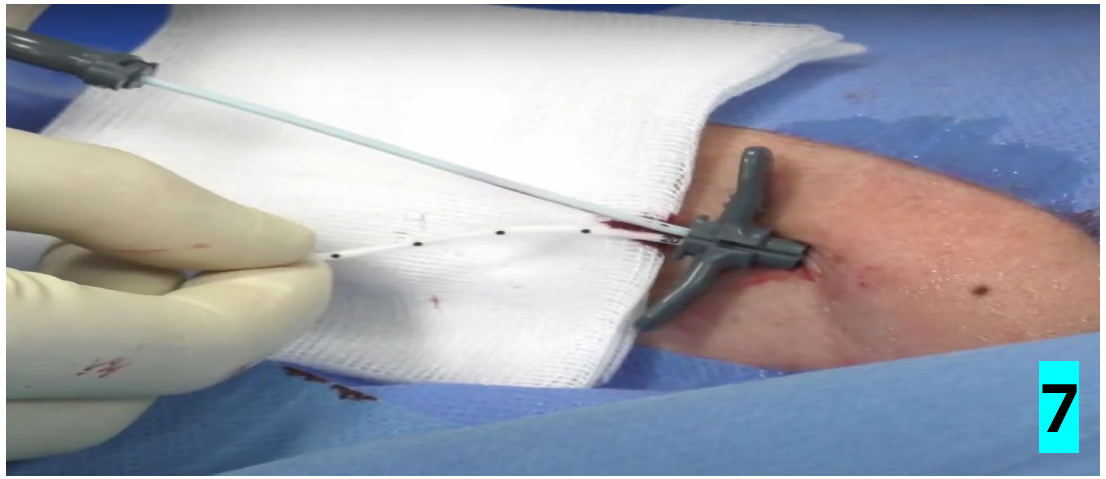


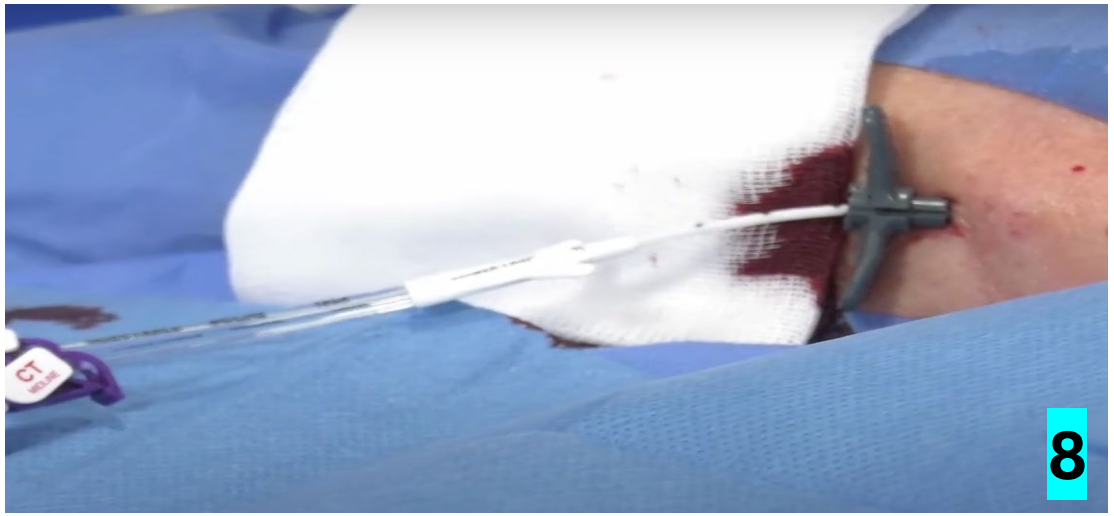
# MC/Midline



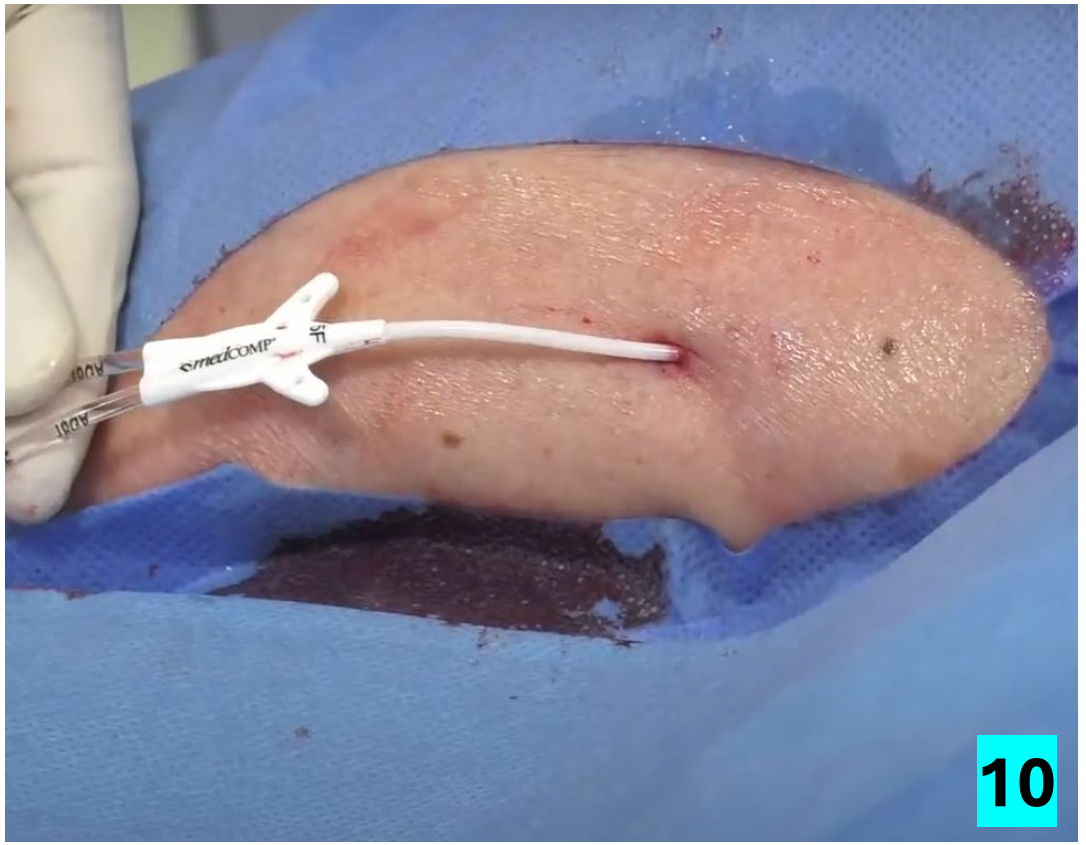


# MC/Midline




# MC/Midline

# Complicanze

## *Occlusione e malfunzionamento*

- punta catetere al braccio
- da guaina fibroblastica

## *Dislocazione*

- inappropiato fissaggio e/o medicazione

## *Trombosi*

- infusione di sostanze non compatibili con via periferica
- materiale costituente il catetere (PUR/PE)

## *Infettive*

- Rare (Minimidline 0-0.2 infezioni per 1000gg catetere); minori rispetto CVAD

## Midline Catheters: An Essential Tool in CLABSI Reduction

March 15, 2013

By Robert B. Dawson, MSA, BSN, RN, CRNI, CPUI, VA-BC, and Nancy L. Moureau, BSN, RN, CRNI, CPUI, VA-BC

Infection Control TODAY

"Evidence now demonstrates that certain Midlines offer patients the possibility of full length of stay infusion therapy, with reduced risk of bloodstream infection."

## The Practice and Complications of Midline Catheters: A Systematic Review

Critical Care Medicine
Society of Critical Care Medicine
The Intensive Care Professionals

Sandeep Tripathi, MD, MS[1]
Shruti Kumar, BLA[2]
Shubhi Kaushik, MBBS[3]

"Their infection rates are also lower than the reported rates of central venous catheters;
however, they have a higher rate of mechanical complications."

JAMA Internal Medicine | Original Investigation

## Safety and Outcomes of Midline Catheters vs Peripherally Inserted Central Catheters for Patients With Short-term Indications
A Multicenter Study

Lakshmi Swaminathan, MD; Scott Flanders, MD; Jennifer Horowitz, MA; Qisu Zhang, MPH; Megan O'Malley, PhD; Vineet Chopra, MD, MSc

"Midlines were associated with a lower risk of bloodstream infection and occlusion compared with PICCs."

European Society of Regional Anaesthesia & Pain Therapy
ESRA ITALIA

ESRA Italian Chapter
XXIX CONGRESSO NAZIONALE

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CESENA, Cesena fiere

2024

Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Major Article

# The longer the catheter, the lower the risk of complications: Results of the HERITAGE study comparing long peripheral and midline catheters

Adam Fabiani MNS, RN [a,b], Nicola Aversana MNS, RN [c], Marilena Santoro RN [b], Dario Calandrino RN [d], Paolo Liotta RN [b], Gianfranco Sanson PhD, RN [e,*]

[a] *Department of Biomedicine and Prevention, University of Rome Tor Vergata, Rome, Italy*
[b] *Cardiothoracic-Vascular Department, Azienda Sanitaria Universitaria Giuliano-Isontina, Trieste, Italy*
[c] *School of Nursing, University of Trieste, Trieste, Italy*
[d] *Internal Medicine Department, Azienda Sanitaria Universitaria Giuliano-Isontina, Trieste, Italy*
[e] *Department of Medicine, Surgery and Health Sciences, University of Trieste, Trieste, Italy*

# Controindicazioni

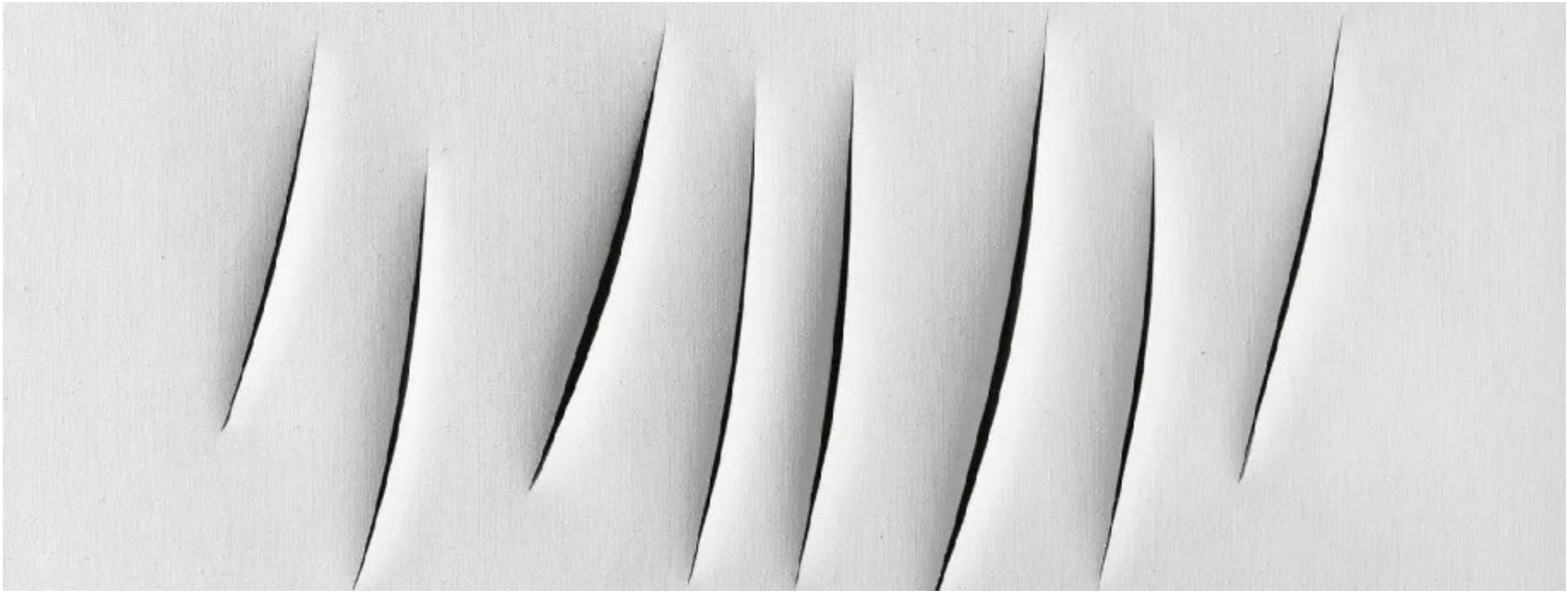
- Pregresso svuotamento linfonodale ascellare
- Alterazioni cutanee
- Paresi/Paralisi cronica del braccio
- Indisponibilità di vene di calibro sufficiente
- Trombosi venosa a livello dell'asse basilica-ascellare succlavia
- Presenza di insufficienza renale cronica stadio 3b – 4 – 5, trattamento emodialitico in atto o potenziale

# Riassumendo

- Sono accessi venosi **periferici**
- Scelta corretta del device a seconda delle necessità del paziente
- Rispettare le strategie condivise al fin di ridurre il rischio infettivo e trombotico
- Applicare le corrette tecniche di inserzione e di gestione del device

## **...vs** il fallimento del catetere

(rimozione forzata e non programmata del VAD)



…grazie per l'attenzione!

andrea.sica@auslromagna.it