

Different indications of Midlines and Long Peripheral Catheters



Adam Fabiani RN, PhD Student

Azienda Sanitaria Universitaria Giuliano Isontina (TS)

Dipartimento Cardioracovascolare

S.C Cardiochirurgia Terapia Intensiva Post Operatoria

mail: adam.fabiani@asugi.sanita.fvg.it

GAVeCeLT 2022
Roma, 5-6-7 dicembre



...no conflict of interest!!!

MIDLINE CATHETER – 30 years ago!!!

> J Intraven Nurs. 1991 Mar-Apr;14(2):91-9.

Performance of a new softening expanding midline catheter in home intravenous therapy patients

P J Fontaine

PMID: 2005511

findings served as a basis for the ongoing formal study. The low complication rate, insertion ease, and suitability of a wide variety of patient types makes the midline catheter a better alternative to peripheral catheters or central venous lines for intermediate-length I.V. therapies of 1 to 6 weeks.

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 Seppe S. H. A. Koopman ⁵, Marc P. Buise ², Hendrikus H. M. K Angelique T. M. Dierick-van Daele ^{7,8} and Arthur R. A. Bouwn



Factor	β	SE	<i>p</i> Value	Odds Ratio	95% CI
History of a difficult intravenous cannulation	0.976	0.180	<0.001	2.7	1.6 to 4.4
Practitioner's expectation of a difficult intravenous access	0.936	0.191	<0.001	2.6	1.6 to 4.0
No palpable vein after tourniquet placement	1.670	0.187	<0.001	4.8	2.5 to 8.1
No visible vein after tourniquet placement	1.879	0.192	<0.001	5.9	2.5 to 10.1
Diameter of the vein less than 3 millimeters after tourniquet placement	1.247	0.094	<0.001	3.5	2.7 to 4.4

Constant β 8.950, SE 0.543, p < 0.001. SE = Standard Error. CI = Confidence Interval.

LONG PERIPHERAL CATHETER

IMAGING/BRIEF RESEARCH REPORT

Ultrasonographically Guided Insertion of a 15-cm Catheter Into the Deep Brachial or Basilic Vein in Patients With Difficult Intravenous Access

Christopher N. Mills, MD

Otto Liebmann, MD

Michael B. Stone, MD

Bradley W. Frazee, MD

From the Department of Emergency Medicine, Alameda County Medical Center–Highland Hospital, Oakland, CA

0196-0644/\$-see front matter

Copyright © 2007 by the American College of Emergency Physicians.

doi:10.1016/j.annemergmed.2007.02.003

Editor's Capsule Summary

What is already known on this topic

Standard intravenous catheters can be placed into deep arm veins under ultrasonographic guidance but tend to be easily dislodged.

What question this study addressed

Can clinicians safely and efficiently procure venous access with a 2-step procedure that uses ultrasonographically guided cannulation of deep arm veins and standard intravenous catheters, followed by guidewire-assisted exchange of initial catheters for 15-cm, 16-gauge catheters in patients with 2 failed peripheral intravenous cannulation attempts?

What this study adds to our knowledge

The procedure was successful in 23 of 25 patients, with a median procedure time of 8 minutes. Complications were rare and the procedure was well tolerated.

How this might change clinical practice

This technique may provide a useful alternative to central line placement in emergency department patients with difficult peripheral access.

«LONG» PERIPHERAL CATHETER



The Journal of Emergency Medicine, Vol. 39, No. 3, pp. 325-329, 2010
Copyright © 2010 Elsevier Inc.
Printed in the USA. All rights reserved
0736-4679/\$-see front matter

doi:10.1016/j.jemermed.2009.02.013

Ultrasound in Emergency Medicine

ULTRASOUND-GUIDED PERIPHERAL INTRAVENOUS ACCESS IN THE EMERGENCY DEPARTMENT USING A MODIFIED SELDINGER TECHNIQUE

Simon A. Mahler, MD, Hao Wang, MD, PHD, Chad Lester, RN, and Steven A. Conrad, MD, PHD

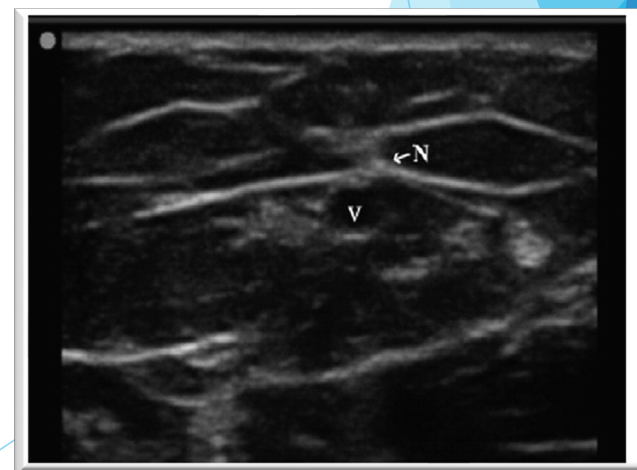
Department of Emergency Medicine, Louisiana State University Health Sciences Center, Shreveport, Louisiana
Reprint Address: Simon A. Mahler, MD, Department of Emergency Medicine, Louisiana State University Health Sciences Center, 1501
Kings Highway, Shreveport, LA 71130



Figure 1. A 20-gauge catheter with integral wire (20G 1-1/2\"/>



Figure 2. Dynamic short-axis approach to basilic vein cannulation using a high-frequency linear probe.



Posizionamento ecoguidato di cateteri venosi periferici con accesso venoso difficile da parte di infermieri novizi

Ultrasound-guided peripheral intravenous catheters placement in difficult venous access patients by novice nurses

Elisa Basso, infermiere, C
Adam Fabiani, infermiere
Riuniti, Trieste
Alessia Franzoi, infermier
Gianfranco Sanson, infer



Figura 1 - Alcune fasi del corso di formazione preliminare allo studio



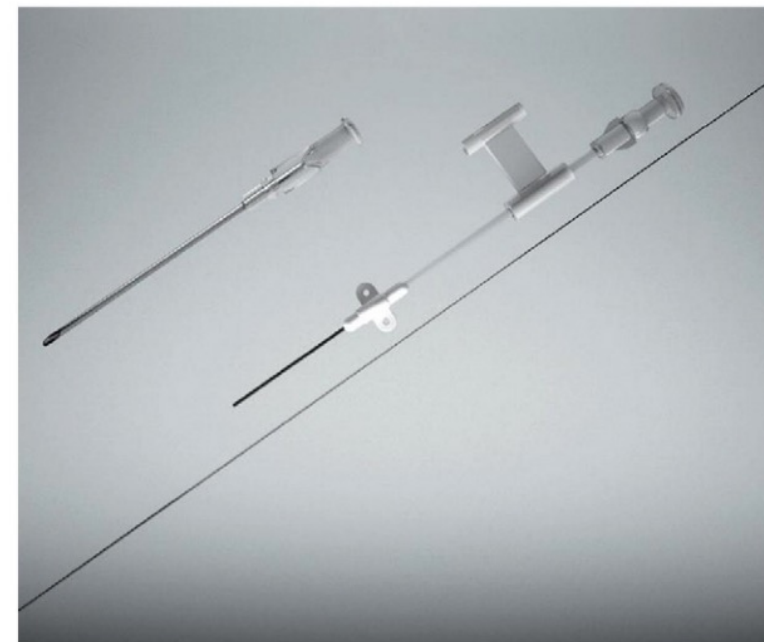
edali
rieste



journal homepage: www.jccjournal.org

 CrossMark

^c Intensive Care Unit, Hôpital St-Antoine, Paris, France



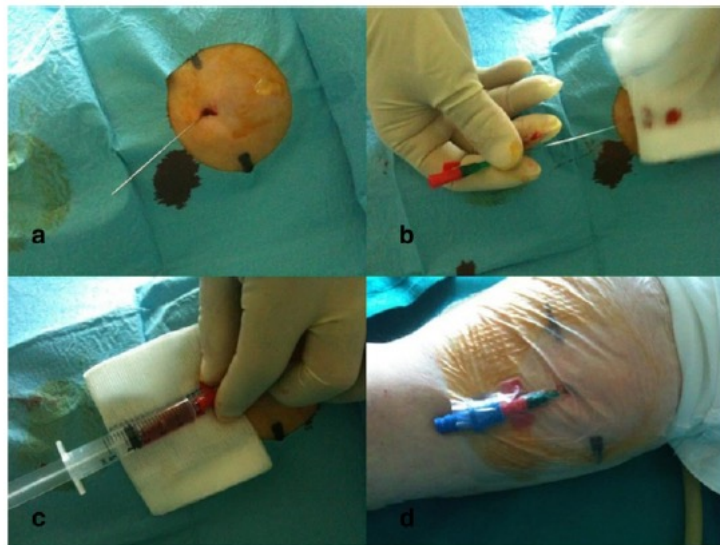
ORIGINAL RESEARCH

Open Access



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

Giancarlo Scoppettuolo^{1*}, Mauro Pittiruti², Sara Pitoni³, Laura Dolcetti¹, Alessandro Emoli⁴, Alessandro Mitidieri⁵, Ivano Migliorini² and Maria Giuseppina Annetta³



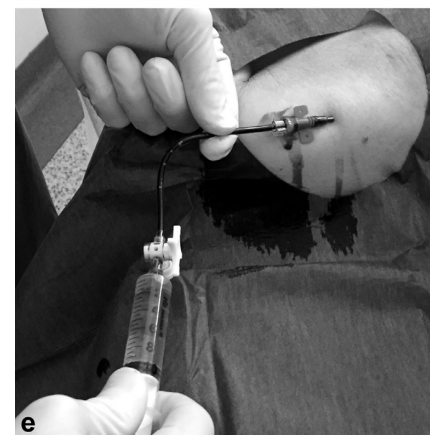
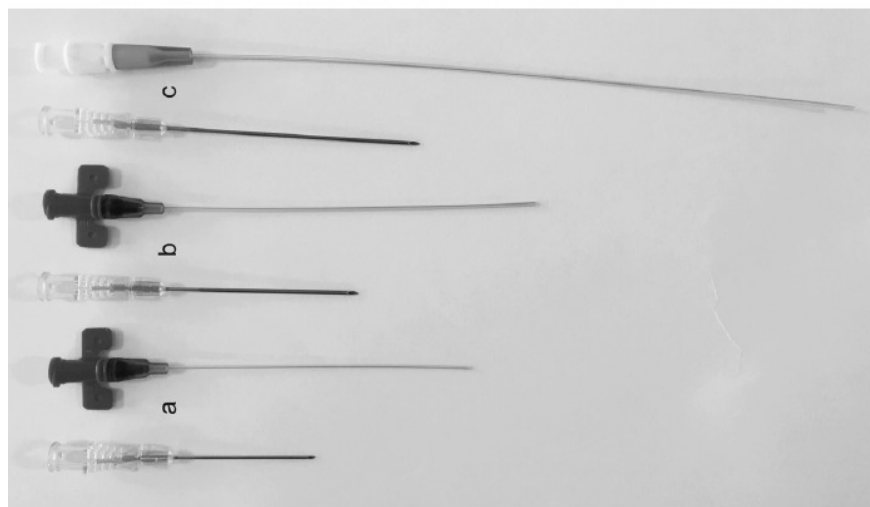
Ultrasound-guided deep-arm veins insertion of long peripheral catheters in patients with difficult venous access after cardiac surgery

Adam Fabiani, RN^a, Lorella Dreas, MD^a, Gianfranco Sanson, RN, MSN^{b,c,*}

^a Cardiac Surgery Intensive Care Unit, Azienda Sanitaria Universitaria Integrata, Strada di Fiume 447, 34148, Trieste, Italy

^b School of Nursing, University of Trieste, Piazzale Valmaura 9, 34147, Trieste, Italy

^c Azienda Sanitaria Universitaria Integrata, Strada di Fiume 447, 34148, Trieste, Italy





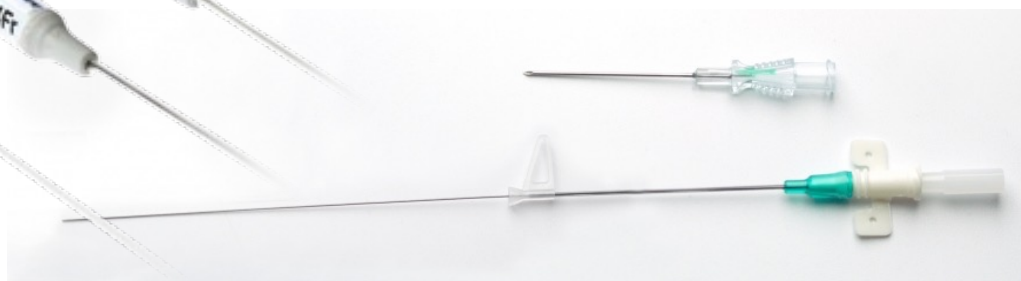
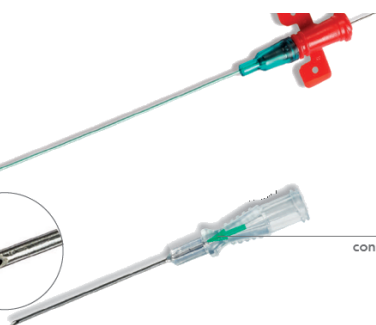
Estremità distale
dislivello minimo tra
catetere e guida



Tagliente dell'ago
tagliente ben affilato per
una puntura agevole



Ago eco-riflettente
con indicazione di posizione
del tagliente



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

Kirby R Qin¹, Ramesh M Nataraja^{1,2} and Maurizio Pacilli^{1,2}

The Journal of Vascular Access
1–4
© The Author(s) 2018
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/1129729818819730
journals.sagepub.com/home/jva



The Journal of Vascular Access 00(0)

Table 1. Comparison of peripheral venous access devices.

	Peripheral intravenous catheter	Long peripheral catheter	Midline catheter
Length	3–6 cm	6–15 cm	15–25 cm
Catheter tip extension	Distal to the axilla	Distal to the axilla	Infra/supraclavicular region
Insertion site	At or distal to the antecubital fossa	Forearm, antecubital fossa or upper arm	Antecubital fossa or upper arm
Material	PTFE, PUR	PUR, PEBA	PUR, silicone
Insertion technique	Catheter-over-needle	Catheter-over-needle Catheter-over-guidewire (direct Seldinger)	Catheter-over-guidewire with tissue dilator (modified Seldinger)
Cost ^a	\$6	\$44	\$160

PTFE: polytetrafluoroethylene; PUR: polyurethane; PEBA: poly-ether-bloc-amide.

^aAt our institution (in 2018 Australian Dollars).



SIAARTI

PRO VITA CONTRA DOLOREM SEMPER

Buone pratiche cliniche SIAARTI

**LE BUONE
PRATICHE PER
GLI ACCESSI
VASCOLARI**

Venosi periferici	Agocannula	Agocannula lunga	Midline
Lunghezza cm	2-6	6-15	>15
Inserimento	Tradizionale	Tradizionale/Ecoguida	Ecoguida

Long peripheral catheters and midline catheters: Insights from a survey of vascular access specialists

Kirby R Qin^{1,3} , Mauro Pittiruti⁴ ,
Ramesh M Nataraja^{1,2,5} and Maurizio Pacilli^{1,2,5} 

The Journal of Vascular Access
1–6
© The Author(s) 2020
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/1129729820966226
journals.sagepub.com/home/jva


The majority of participants (57.9%) agreed with the following classification of peripheral IV devices:

1. PIVCs: 2 to 6 cm in length, terminating distal to the axilla;
2. LPCs: 6–15 cm in length, terminating distal to the axilla;
3. MCs: 15–25 cm in length, terminating in the axilla.

European recommendations on the proper indication and use of peripheral venous access devices (the ERPIUP consensus): A WoCoVA project

The Journal of Vascular Access
1–18
© The Author(s) 2021
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/11297298211023274
journals.sagepub.com/home/jva
SAGE

Mauro Pittiruti¹ , Ton Van Boxtel² , Giancarlo Scoppettuolo¹, Peter Carr³, Evangelos Konstantinou⁴, Gloria Ortiz Miluy⁵, Massimo Lamperti⁶, Godelieve Alice Goossens⁷, Liz Simcock⁸, Christian Dupont⁹, Sheila Inwood¹⁰, Sergio Bertoglio¹¹ , Jackie Nicholson¹², Fulvio Pinelli¹³  and Gilda Pepe¹

PVADs. Today, current guidelines¹⁰ differentiate between short peripheral cannulas (SPC), long peripheral cannulas (LPC) (6–15 cm long) and midline catheters (MC) or “midclavicular” (>15 cm). There has been a lot of uncertainty about

STRUCTURAL CHARACTERISTICS

	LENGTH	MATERIAL	LUMEN	INSERTION TECHNIQUE
MCs	>15	Polyurethane/ silicone	1/2	US - modified seldinger
LPCs	6-15	Polyurethane/ polyethylene	1	US - direct/simplified seldinger

INDICATIONS AND CONTRAINDICATIONS



DWELLING TIME



Available online at www.sciencedirect.com

Journal of Hospital Infection

Journal homepage: www.elsevierhealth.com/journals/jhin



epic3: National Evidence-Based Guidelines for Preventing Healthcare-Associated Infections in NHS Hospitals in England

H.P. Loveday^{a*}, J.A. Wilson^a, R.J. Pratt^a, M. Golsorkhi^a, A. Tingle^a, A. Bak^a, J. Browne^a, J. Prieto^b, M. Wilcox^c

Tipo	Caratteristiche	Uso comune	Durata
Periferici			
Cateteri venosi periferici	Mono-lume. Inseriti nelle vene dell'avambraccio o delle mani (in pazienti adulti)	Somministrazione di liquidi/sangue e farmaci	Breve, fino a 7 -10 giorni
Cateteri arteriosi periferici	Mono-lume. Posizionati solitamente in arteria radiale (altre opzioni: art. femorale, ascellare, brachiale o tibiale posteriore)	Monitoraggio emodinamico Prelievo ematico Somministrazione di liquidi e farmaci	Breve, fino a 7 -10 giorni
Cateteri <i>Midline</i>	Solitamente posizionati nelle vene della fossa antecubitale. Non raggiungono le vene centrali	Somministrazione di liquidi/sangue e farmaci	Breve, 1- 4 settimane

DWELLING TIME and DIVA PATIENTS

LE BUONE
PRATICHE PER
GLI ACCESSI
VASCOLARI



SIAARTI
PRO VITA CONTRA DOLOREM SEMPER

Buone pratiche cliniche SIAARTI

Venosi periferici	Agocannula	Agocannula lunga	Midline
Lunghezza cm	2-6	6-15	>15
Inserimento	Tradizionale	Tradizionale/Ecoguida	Ecoguida
Indicazione	Terapie 5-7 giorni e Patrimonio Venoso Superficiale Integro	Terapie fino a 29 giorni o Patrimonio Venoso Superficiale Esaurito	Terapie >30 giorni
Uso Extra Ospedaliero	No	Possibile	Sì

DIVA AND INFUSION CHARACTERISTICS

Infusion Therapy Standards of Practice

8TH EDITION

REVISED 2021



SETTING THE STANDARD FOR INFUSION CARE®

One Edgewater Drive, Norwood, MA 02062

www.ins1.org

III. Long Peripheral Intravenous Catheters

A. Choose a long peripheral intravenous catheter (long PIVC) as follows:

1. When all aspects of a short PIVC are met, but the vessel is difficult to palpate or visualize with the naked eye; ultrasound guidance/near infrared technology is recommended.^{1,2,28,29,47} (III)
2. Evaluate depth of vessel when choosing a long PIVC to ensure two-thirds of catheter lies within vein.²⁸⁻³² (I)
3. Choose the smallest-gauge PIVC based on vein size to complete therapy.^{27,29,43} (IV)

IV. Midline Catheters

A. Choose a midline catheter as follows:

1. Assess infusate characteristics and planned duration of infusion therapy for tolerability by peripheral veins.^{1,2,35,49-58} (I)
2. Use a midline catheter for medications and solutions such as antimicrobials, fluid replacement, and analgesics with characteristics that are well-tolerated by peripheral veins.^{1,2,52} (I)
3. Assess the clinical benefit of using a midline catheter that inhibits bacterial attachment and biofilm formation.^{61,62} (IV)
4. Do not use midline catheters for continuous vesicant therapy, PN, or infusates with extremes of pH or osmolarity (see Standard 63, Parenteral Nutrition).^{2,13,51,52,63} (I)
5. Increase catheter site surveillance when administering intermittent infusions of known irritants and vesicants due to increased risk of phlebitis or extravasation.^{52,64,65} (III)

Long peripheral catheters and midline catheters: Insights from a survey of vascular access specialists

The Journal of Vascular Access
1–6
© The Author(s) 2020
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/1129729820966226
journals.sagepub.com/home/jva
SAGE

Kirby R Qin^{1,3} , Mauro Pittiruti⁴ ,
Ramesh M Nataraja^{1,2,5} and Maurizio Pacilli^{1,2,5} 

Table 3. Indications for 6–15 cm and 15–25 cm peripheral intravenous devices.

Indication	Long peripheral catheter/6–15 cm catheter (N = 92), N (%)	Midline catheter/15–25 cm catheter (N = 102), N (%)
Difficult venous access	52 (56.5)	34 (33.7)
Deep vein/ultrasound-guided access	36 (39.1)	4 (3.9)
Medium-term IV therapy (1–4 weeks)	22 (23.9)	64 (62.7)
Blood draws	5 (5.4)	8 (7.8)
Avoiding the need for central access	4 (4.3)	9 (8.8)

Participants responded in free-form text. Participants could list multiple indications. Answers were collated and summarised in this table.

DIVA PATIENTS AND INFUSION CHARACTERISTICS

Review

JVA | The Journal of
Vascular Access

European recommendations on the proper indication and use of peripheral venous access devices (the ERPIUP consensus): A WoCoVA project

The Journal of Vascular Access
1-18
© The Author(s) 2021
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/11297298211023274
journals.sagepub.com/home/jva
SAGE

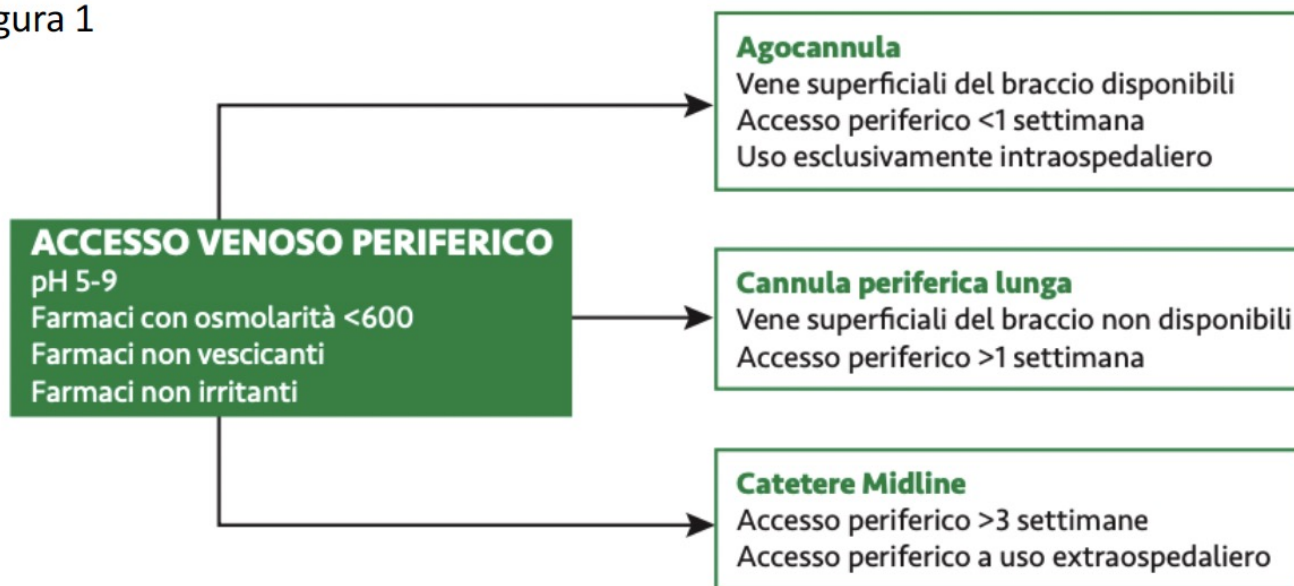
Mauro Pittiruti¹ , Ton Van Boxtel² , Giancarlo Scoppettuolo¹,
Peter Carr³, Evangelos Konstantinou⁴, Gloria Ortiz Miluy⁵,
Massimo Lamperti⁶, Godelieve Alice Goossens⁷, Liz Simcock⁸,
Christian Dupont⁹, Sheila Inwood¹⁰, Sergio Bertoglio¹¹ , Jackie
Nicholson¹², Fulvio Pinelli¹³  and Gilda Pepe¹

- Both MCs and LPCs are CONTRAINDICATED for infusion of vesicant drugs or prolonged infusion (>30 min) of peripherally incompatible solutions
- Both MCs and LPCs are CONTRAINDICATED for long term intravenous access (>3-4 months)
- LPCs are appropriate in DIVA patients, or expected duration 1-4 weeks
- MCs are appropriate when expected duration >4 weeks

RACCOMANDAZIONI GAVeCeLT 2021 PER LA INDICAZIONE, L'IMPIANTO E LA GESTIONE DEI DISPOSITIVI PER ACCESSO VENOSO



Figura 1



Is there still
some «confusion»?



MIDLINE OR LPVC??



Figure 2. Midline for patient with difficult intravenous access (used with permission from Matthew Ostroff)

Indications for peripheral, midline and central catheters: summary of the MAGIC recommendations

Nancy Moureau and Vineet Chopra

Midline catheters

Midline catheters are experiencing a resurgence of attention with great usage owing to improvements in catheter materials and products. The two most recent midline catheters are 8–10 cm in length utilising the insertion technique referred to as accelerated Seldinger (AST) (Access Scientific, Bard Access Systems, Teleflex). These all-in-one devices with the

MIDLINE OR LPVC??

CLINICAL RESEARCH REPORT

Investigation of the role of infusate properties related to midline catheter failure in an ovine model

Marcia Ryder, PhD, MS, RN, Ryder Science Inc., Brentwood, TN

Robert A. Gunther, PhD, MA, University of California, Davis, Davis, CA

Reid A. Nishikawa, PharmD, BCNSP, FASPEN, FCSHP, Nutrishare, Inc., Elk Grove, CA

Marc Stranz, PharmD, StranzCrossley Inc, Weston, FL

Britt M. Meyer, RN, PhD, CRNI, NE-BC, VA-BC, Duke University Hospital, Durham, NC, and East Carolina University School of Nursing, Greenville, NC

Taylor A. Spangler, DVM, DACVP, VDX, Veterinary Diagnostics and Preclinical Research Services, Davis, CA

Albert E. Parker, PhD, MS, Center for Biofilm Engineering, Department of Mathematical Sciences, Montana State University, Bozeman, MT

Charles Sylvia Jr, DVM, MS, Covance Laboratories, Inc., Princeton, NJ

Study procedures. Evidence-based practices were followed during catheter insertion, postinsertion care, and infusate administration.^{4,14,15} Two 10-cm, 18-gauge single-lumen midline catheters (PowerGlide Pro RT Midline, BD, Franklin Lakes, NJ) were inserted into the cephalic veins of each sheep.

MIDLINE OR LPVC??

Received: 28 March 2019

Revised: 6 November 2019

Accepted: 26 November 2019

DOI: 10.1111/aas.13516

ORIGINAL ARTICLE

acta Anaesthesiologica Scandinavica

The clinical performance of midline catheters—An observational study

Emma Bundgaard Madsen¹  | Erik Sloth²  | Britta Skov Illum¹ | Peter Juhl-Olsen^{1,3} 

2.1 | Midline catheters and ultrasound guidance

The staff at the departments where patients were admitted to (Table 1) made the decision for midline catheter insertions. Indications were not formalised allowing for a pragmatic and individualised approach to the introduction of a new catheter type. Generally accepted indications were expected medium- to long-term intravenous therapy and/or repeated failures of PVCs.

All midline catheters were 100 mm 18G/20G polyurethane

MIDLINE OR LPVC??

INFECTIOUS DISEASE/ORIGINAL RESEARCH

The Utility of Midline Intravenous Catheters in Critically Ill Emergency Department Patients

Rory J. Spiegel, MD*; Daniel Eraso, MD; Evan Leibner, MD; Henry Thode, PhD; Eric J. Morley, MD; Scott Weingart, MD

*Corresponding Author. E-mail: rspiegs@gmail.com, Twitter: [@EMNerd_](https://twitter.com/EMNerd_).

Interventions

Emergency medicine attending physicians and residents were trained on proper patient and vessel selection and insert techniques. Clinicians took part in a 1- to 2-hour didactic session that incorporated small lectures and simulation-based learning. Each provider was required to perform one supervised midline catheter insertion to achieve certification.

Two separate midline catheter kits were available for midline catheter insertion: the single-lumen, 10-cm, 20-gauge Bard PowerGlide (Bard Access Systems Inc, Salt Lake City, UT) catheter, and the dual-lumen, 5-French, 20-cm, trimmable Medcomp Midline (Medical

MIDLINE OR LPVC??



Clinical Review

The Journal of Emergency Medicine, Vol. ■, No. ■, pp. 1–7, 2016
© 2016 Elsevier Inc. All rights reserved.
0736-4679/\$ - see front matter

<http://dx.doi.org/10.1016/j.jemermed.2016.05.029>

THE MIDLINE CATHETER: A CLINICAL REVIEW

Daniel Z. Adams, MD,* Andrew Little, DO,† Charles Vinsant, MD,* and Sorabh Khandelwal, MD*

*Department of Emergency Medicine, The Ohio State University Wexner Medical Center, Columbus, Ohio and †Department of Emergency Medicine, Doctors Hospital, Columbus, Ohio

Reprint Address: Daniel Z. Adams, MD, Department of Emergency Medicine, The Ohio State University Wexner Medical Center, 760 Prior Hall, 376 W. 10th Avenue, Columbus, OH 43210.

to confirm placement. Some brands have adjustable-length 20-cm catheters that can be tailored to the patient. Other devices that are shorter in comparison, at 8–10 cm, require no adjustment. The use of MCs in the emergency department (ED) for patients with difficult venous access has been described, as has utilization of ultrasound guidance to help with placement (6,7).

Table 1. Comparison of Commonly Available Midline Catheters

Catheter	Size	Length (cm)	Power Injectable	Lumens
Medcomp® CT Midline	4–5 Fr	20	Yes	1–2
Nexus™ CT Midline	3–5 Fr	10–20	Yes	1–2
Powerwand®	4–5 Fr	8 and 10	Yes	1
Powerglide®	18–22 gauge	8 and 10	Yes	1

The Practice and Complications of Midline Catheters: A Systematic Review

OBJECTIVE: Midline catheters are considered “midway” regarding vascular access. The objective of this systematic review was to explore the current practice, dwell time, and complication rates of midline catheters.

Sandeep Tripathi, MD, MS¹
Shruti Kumar, BLA²
Shubhi Kaushik, MBBS³

DOI: 10.1097/CCM.0000000000004764

February 2021 • Volume 49 • Number 2

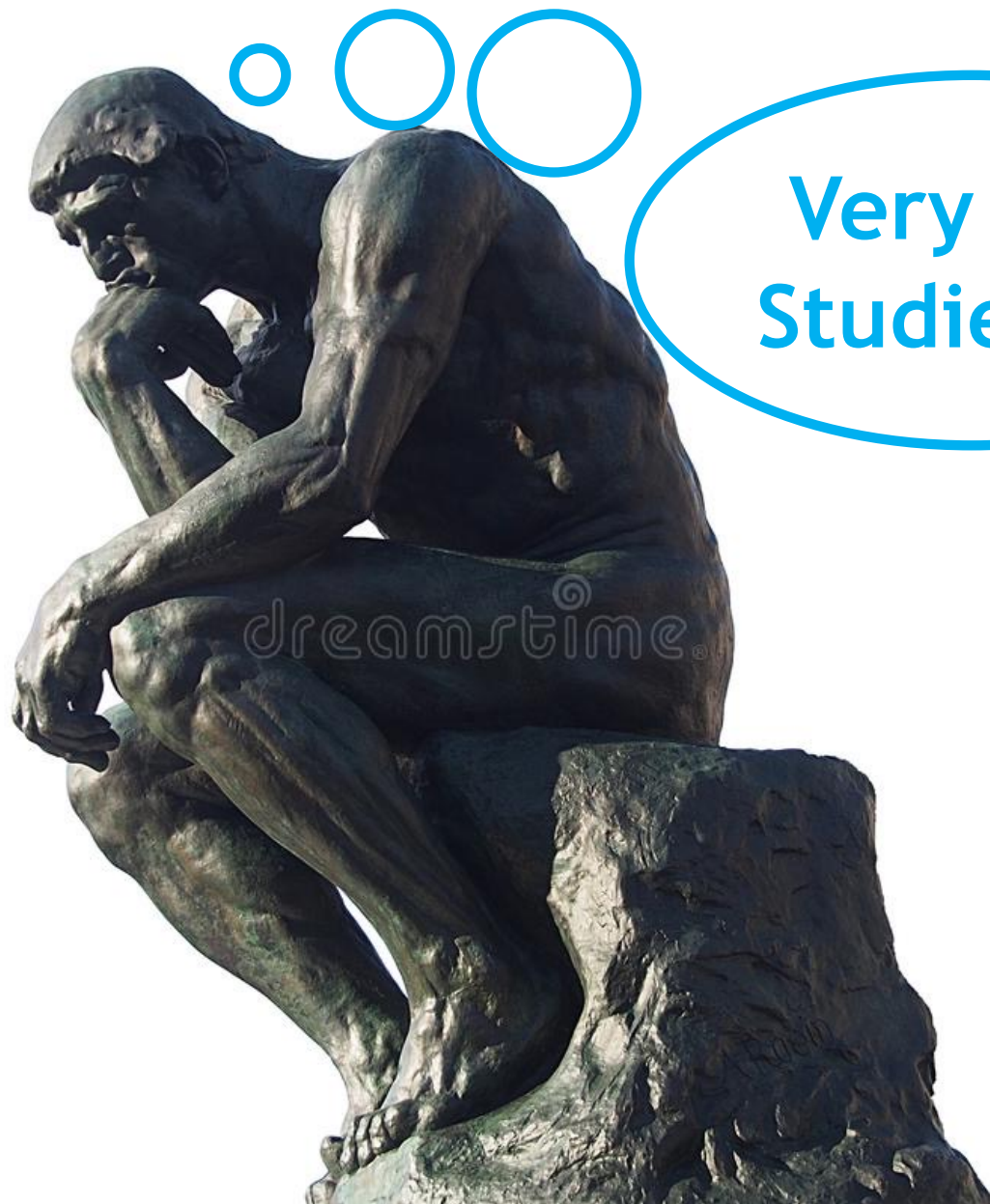
9 Studies= LPC
2 Studies= LPC /MC
4 Studies= MC
16 Studies= No data

TABLE 2.

Quality Assessment, Sample Size, and Dwell Times of the Studies Included in the Review

Serial Number	Study	Quality Assessment			N	Dwell Time (d)
		Sel*	Com*	Out*		
1	DeVries et al (13)	**		**	5,430 ^a	
2	Chopra et al (5)	**		**	1,161	6
3	Dumont et al (14)	**		**	345	6.9 ± 6.1
4	Bahl et al (2)		RCT		33	4.04
5	Underwood et al (15)	***		***	273	
6	Campagna et al (1)	***		***	1,584	26
7	Xu et al (10)	***	**	***	200	5
8	Sharp et al (16)	****		***	231	22
9	Mushtaq et al (9)	****	**	***	411	
10	Barr et al (17)	***	**	***		
11	Chenoweth et al ^b (18)	***		***	432	4.0 ± 2.3
12	Deutsch et al (19)	***		**	31	9.8 ± 5.6
13	Caparas and Hu (20)		RCT		29	5.8
14	Keller et al (21)	****	**	***	10	33 ^d
15	Bahl et al (22)	****	*	***	1,094	
16	Fabiani et al (23)	**		**	71	14.7 ± 11.1
17	Panter et al (24)		Quality improvement			
18	Lisova et al (25)	***		**	439	10
19	Magnani et al (26)	***		***	66	
20	Caparas and Hung (27)	***		**	1,086	
21	Anderson et al ^b (28)	***		***	122	9
22	Scoppettuolo et al (29)	**		**	76	2.3 ± 2.9
23	Moureau et al (30)	**		**	3,224	
24	Dickson et al (31)	***		**	38	13.4 ± 11 ^e
25	Leick-rude and Haney ^b (32)	**		**	1,130	8.7
26	Seo et al (33)	***		***	82	7
27	Pathak et al (34)	***		***		
28	Zerla et al (35)	****		***	623	
29	Cummings et al (36)	**		*	42	
30	Anderson (7)	***		***	6,047	
31	Giuliani et al (37)	**		**	92	85

**IS THERE A REAL
DIFFERENCE
BETWEEN MCs
AND LPCs
IN TERMS OF
PATIENT
OUTCOMES?**



**Very few
Studies!!!!**



Major Article

Midline or long peripheral catheters in difficult venous access conditions? A comparative study in patients with acute cardiovascular diseases

Adam Fabiani MSN, RN^a, Valentina Eletto CNS, RN^a, Lorella Dreas MD^a, Daria Beltrame CNO, RN^a, Gianfranco Sanson PhD, RN^{b,*}

^a Cardiothoracic-Vascular Department, Azienda Sanitaria Universitaria Integrata, Strada di Fiume 447, Trieste, Italy

^b Department of Medicine, Surgery and Health Sciences, University of Trieste, Strada di Fiume 447, Trieste, Italy



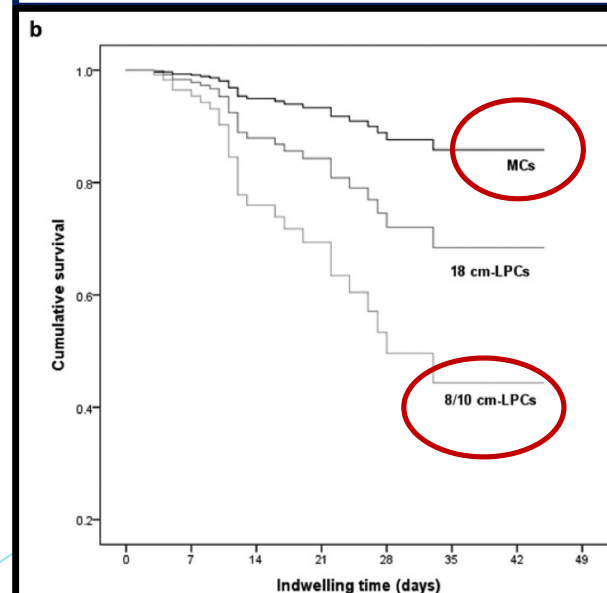
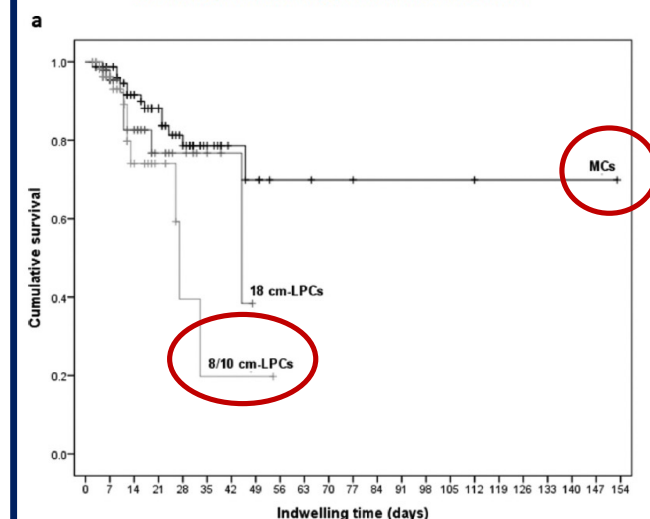
Table 2

Results of the multivariable Cox model

Predictor	HR (95% CI)	P-value
Catheter		
Midline	1.000	/
18-cm LPC	2.489 (0.961–6.448)	0.060
8/10-cm LPC	5.328 (2.118–13.404)	<0.001
Ciprofloxacin	3.423 (1.324–8.846)	0.011
Levofloxacin	3.505 (1.128–10.888)	0.030
Rifampicin	5.730 (2.423–13.551)	<0.001

HR, hazard ratio; CI, confidence interval; LPC, long peripheral catheter.

Variables excluded from the final model: Age, Charlson index, heparin, ceftriaxone, number of different antibiotics infused, vein-to-catheter ratio.



TAKE HOME A MESSAGE!!!

- ▶ There is a clear difference between MC and LPC in length, material, insertion technique
 - LPCs (6-15 cm), direct/simplified seldinger technique; PUR-PEBA
 - MCs (15-25 cm), modified seldinger technique, PUR-Silicone
- ▶ Both MCs and PLCs are indicated for DIVA patients
- ▶ LPCs indicated for 1-4 weeks use and MCs for > 4 weeks use
- ▶ Both MCs and PLCs are contraindicated for drugs with extreme osmolarity and pH
- ▶ Unclear literature and very few studies comparing MCs VS LPC



THANKS FOR YOUR ATTENTION

