

# FiCC versus PiCC: a propensity score matched analysis.



# Disclosures:

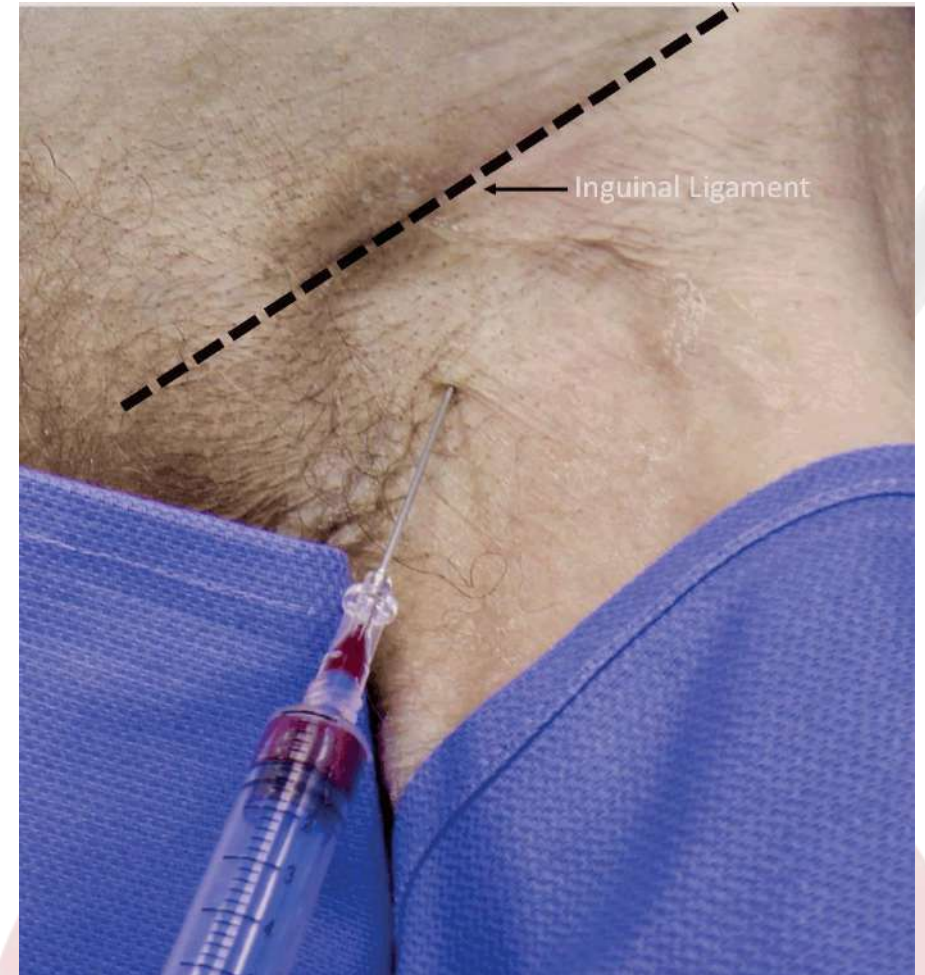
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- No conflicts of interest related to this presentation
- Have been engaged (and received honoraria) to deliver educational talks, webinars and consultancy in 2022 by:
  - 3M Australia
  - Teleflex Australia
  - ITL Australia
- Have been successful in competitive investigator initiated grants applications with Eloquest (USA) and BD (Asia Pacific) – funds payable to University and Health District

# Avoid the Femoral Vein!

**Has been the recommendation because:**

- Inserted usually for emergent situations (deemed as safer)
- Where central access is not appropriate (trauma, venous depletion, failed attempts)
- Does not normally require radiological confirmation – can be used straight away



# Avoid the Femoral Vein!

**BUT:**

**Deemed as higher risk for catheter associated bloodstream infection:**

- Puncture / Insertion site near inguinal groove (increased density of cutaneous flora)
- Difficulty with stabilisation / dressing adherence
- Humid area – bad if incontinent



# Avoid the Femoral Vein!

## Most Clinical Guidelines based on 'traditional' evidence for femoral insertion:

- Puncture near inguinal crease
- Minimal planning for catheter exit site
- Site usually not prepared adequately (hair removal in particular)
- Compared to IJ & SC insertion – traditional femoral placement has higher rates of infectious complications

### PRACTICE PARAMETERS

#### Practice Guidelines for Central Venous Access 2020

*An Updated Report by the American Society of Anesthesiologists Task Force on Central Venous Access\**

### REVIEW

A state of the art review on optimal practices to prevent, recognize, and manage complications associated with intravascular devices in the critically ill



#### Australian Guidelines for the Prevention and Control of Infection in Healthcare



# Avoid the Femoral Vein!

## Not really the recommendation from Vascular Access Groups:

- *27.1 The most appropriate vein and insertion site is selected to best accommodate the VAD required for the prescribed infusion therapy.*
- *Consider the use of femoral access (FICCs).....Choose an exit site at mid-thigh, away from the groin, either by puncturing the common femoral vein and then tunnelling to mid-thigh or by directly puncturing the superficial femoral vein at mid-thigh.*

## **Infusion Therapy Standards of Practice**

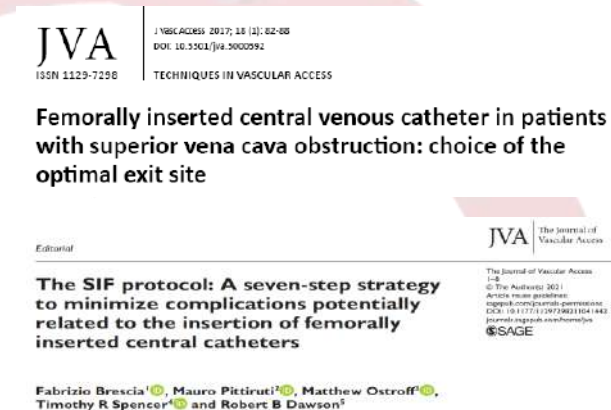
Recommendations for the use of vascular access in the COVID-19 patients: an Italian perspective

Mauro Pittiruti<sup>1\*</sup>, Fulvio Pinelli<sup>2</sup> on behalf of the GAVeCeLT Working Group for Vascular Access in COVID-19



# FICCS

- Increasing number observational studies being published on FICCs – no randomised trials to date
- Outcomes of studies so far are promising
- Probably due to optimising venous access site and catheter exit site - based on work of Brescia and colleagues:
  - RaFeVa Protocol
  - SIF Protocol
- Mid thigh exit site - cutaneous flora similar to arm



# FICCS

## What are the outcomes of FICCs compared to PICCs?

- Observational study assessing utility of FICCs
- Compared outcomes with PICCs inserted same time period
- *Significant heterogeneity (unmatched) in this study to reach a conclusion*

Table 2. Complications during the period of indwelling.


Object	Puncture site	Example/total	Rate	p value
Dislodgment	Upper limb	209/2094	9.98	0.051
	Thigh	5/121	4.13	
Infection	Upper limb	134/2094	6.40	0.042
	Thigh	2/121	1.65	
Occlusion	Upper limb	53/2094	2.53	0.002
	Thigh	9/121	7.44	
Bleeding	Upper limb	21/2094	1.00	1.000
	Thigh	1/121	0.83	
Catheter-related thrombosis	Upper limb	12/2094	0.57	1.000
	Thigh	1/121	0.83	
Catheter-related skin problem	Upper limb	17/2094	0.81	1.000
	Thigh	1/121	0.83	
Primary malposition	Upper arm	126/2094	6.02	0.045
	Thigh	2/121	1.65	

Techniques in vascular access

JVA | The Journal of  
Vascular Access

**Cannulation of the superficial femoral vein at mid-thigh when catheterization of the superior vena cava system is contraindicated**

Linfang Zhao , Xiuzhu Cao  and Yapping Wang

The Journal of Vascular Access  
2020, Vol. 21(4) 524-528  
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DOI: 10.1177/1129729819891473  
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WoCOVA   
7th World Congress on Vascular Access



# FICCs versus PICCs using propensity score matching

## Matching process

- Propensity for FICC used to match PICC control
- Propensity for FICC based on age, gender, BMI, co morbidities etc
- Aimed for 1:4 FICC to PICC match using calliper approach (+/- 0.05 propensity score)

Ou et al. *BMC Anesthesiology* (2022) 22:178  
<https://doi.org/10.1186/s12871-022-01722-5>

BMC Anesthesiology

RESEARCH

Open Access

Arterial catheterization and in-hospital mortality in sepsis: a propensity score-matched study



Qitian Ou<sup>1,2†</sup>, Gengxin Cai<sup>3†</sup>, Yuan Zhou<sup>1</sup>, Wanjie Zha<sup>1</sup>, Linqiang Huang<sup>2</sup>, Hongke Zeng<sup>2</sup>, Wenqiang Jiang<sup>2</sup>, Shenglong Chen<sup>2\*</sup> and Miaoyun Wen<sup>1,2\*</sup>

*J Am Soc Nephrol* 15: 477–486, 2004

Vascular Access and All-Cause Mortality: A Propensity Score Analysis

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# Comparing FICCs verses PICCs by Propensity Scoring

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## Our study :

- FICC patients (n=98) assigned propensity score to receive FICC
- PICC patients (n=4268) assigned propensity score for FICC
- 385 PICC patients matched (n=91 1:4, n=7 1:3)



# Comparing FICCs versus PICCs by Propensity Scoring

	UNMATCHED PICC (n = 4,268)	FICC (n = 98)	MATCHED PICC (n=385)	p-value
Age (years), mean (SD)	57 (21)	56 (24)	57 (21)	0.767
Women, n (%)	1,839 (43)	40 (41)	169 (44)	0.583
Diabetes, n (%)	558 (13)	7 (7)	34 (9)	0.592
Renal disease, n (%)	364 (9)	17 (17)	60 (16)	0.670
Cancer, n (%)	387 (9)	3 (3)	16 (4)	0.619
One or more comorbidity, n (%)	628 (15)	7 (7)	22 (6)	0.595
Indication, n (%)				
antibiotics	2,289 (54)	20 (20)	85 (22)	0.720
chemotherapy	734 (17)	6 (6)	30 (8)	0.574
long term-access	237 (6)	7 (7)	26 (7)	0.891
TPN	314 (7)	5 (5)	17 (4)	0.711
DiVa	164 (43)	43 (44)	207 (43)	0.819
No. of previous lines, median (IQR)	2 (1-3)	2 (1-4)	1 (1-3)	0.083

p-value comparing matched FICC and PICC groups

# Comparing FICCs versus PICCs by Propensity Scoring

	FICC (n = 98)	PICC (n = 385)	Difference (95% CI)
Total catheter days	4,157	18,434	
Median dwell (IQR)	14 (6 – 48)	21 (8 – 55)	<i>p</i> = .076
Catheter failure [n], rate per 1000 days (95% CI)	[n=10] 2.4 (1.1 – 4.4)	[n=56] 3.0 (2.3 – 3.9)	- 0.63 (-2.32, 1.06)
Catheter failure <b>suspected</b> infection [n], rate per 1000 days (95% CI)	[n = 4] 0.96 (0.26 – 2.5)	[n=12] 0.65 (0.36 – 2.2)	0.31 (-0.70, 1.32)
Catheter failure <b>confirmed</b> infection [n], rate per 1000 days (95% CI)	[n=1] 0.24 (0.01 – 1.34)	[n=4] 0.22 (0.06 – 0.56)	0.02 (-0.49 – 0.54)
Catheter failure thrombus [n], rate per 1000 days (95% CI)	[n = 0]	[n = 2] 0.11 (0.01 – 0.39)	-0.11 (-0.26, 0.04)

# FiCC versus PiCC: a propensity score matched analysis.

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Comparison of femorally inserted central catheters with peripherally inserted central catheters by propensity scoring analysis

Short title: FiCCs vs PiCCs

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# Comparing FICCs versus PICCs by Propensity Scoring

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## Conclusion:

- FICCs are an alternative for intermediate term use when centrally placed catheters are not an option
- Are safe and do not have complication rates of 'traditional' femoral catheters
- **In our study FICCs have comparative outcomes to PICCs**
- More high quality evidence is required to assess true effect - RCT

