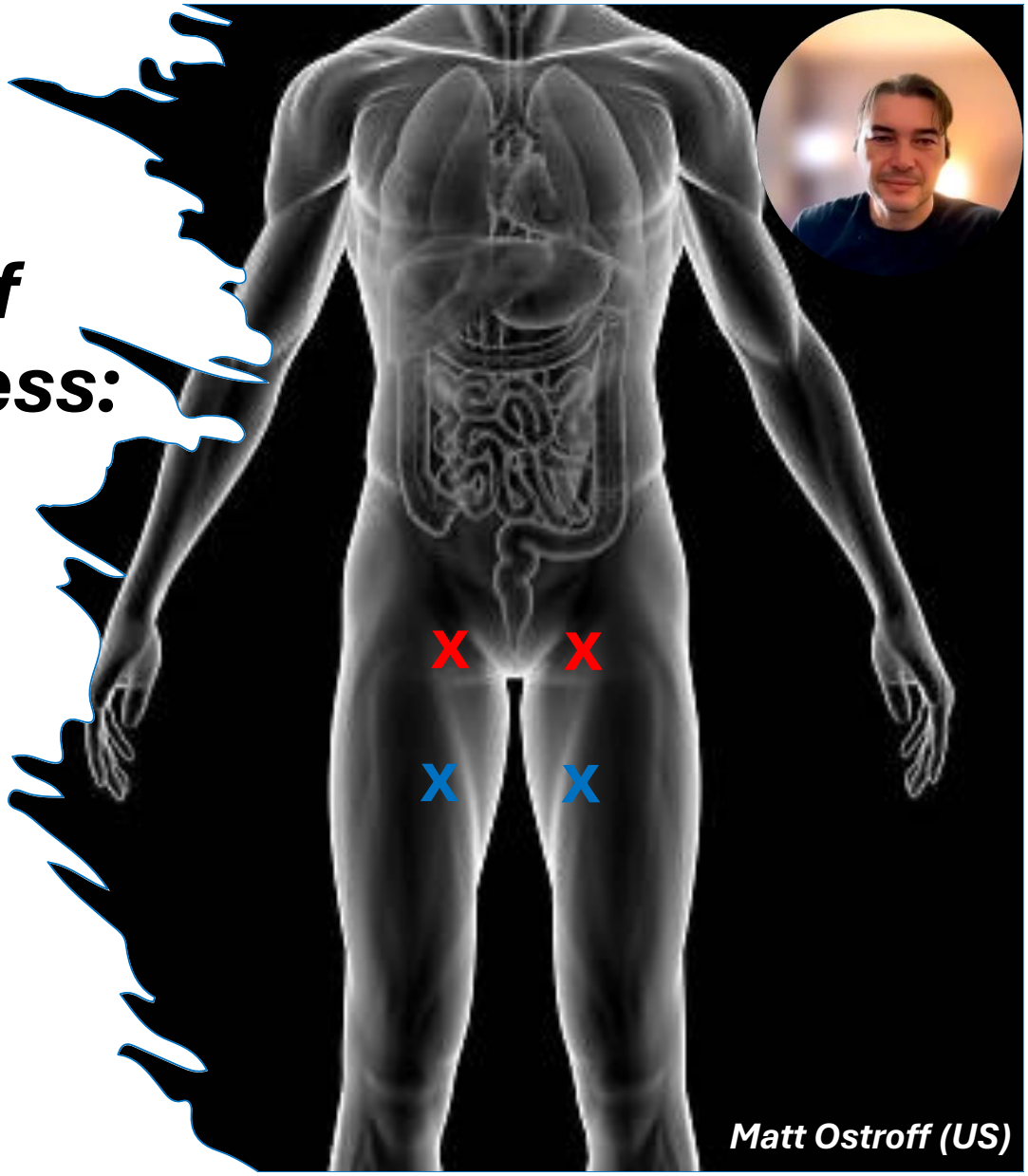
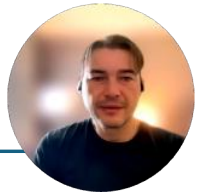
Getting to the BOTTOM of Peripheral and Central Access:

The Femoral Vein



Objectives



Review the indications, contraindications, and insertion techniques for FICC placement.

Describe the benefits of Phlebotomy via the Femoral vein.

Review the emerging use of the Femoral Midline catheter.

Overview of FICC combinations and terminal tip location.

Key points for Femoral dialysis and apheresis insertion site and terminal tip location.

Emergent Indications for Common Femoral Vein and Arterial access.

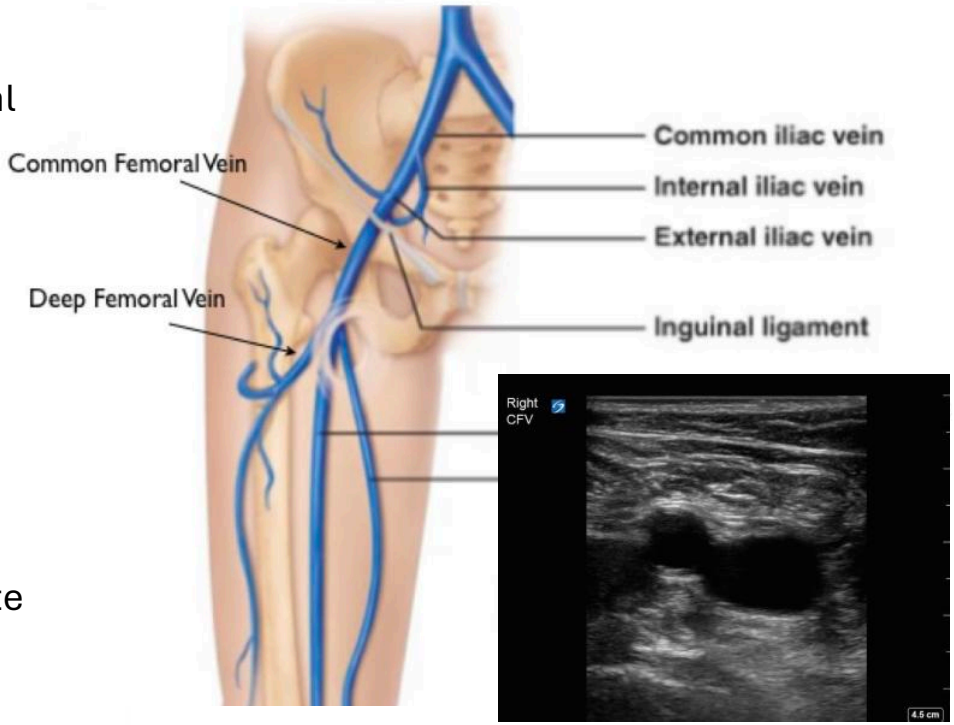
Completing device offerings with Tunneled and Implantable FICC’s.

Femoral Venous Access: State of the art and future perspectives

Annetta, M. G., Elli, S., Marche, B., Pinelli, F., & Pittiruti, M. (2023).
Femoral venous access: State of the art and future perspectives. The Journal of Vascular Access,

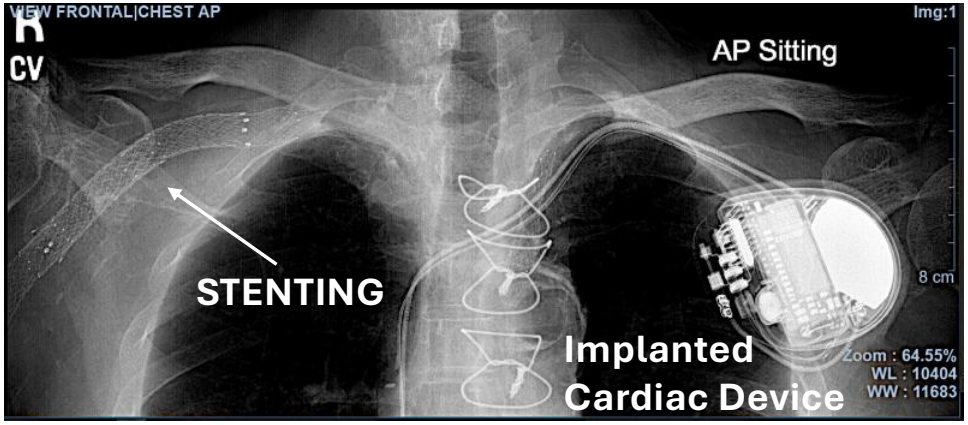
The insertion technique has evolved, thanks to ultrasound guided venipuncture, tunneling, and ultrasound based intraprocedural tip location.

- Insertion of femorally inserted central catheters may be today regarded as a procedure with an extremely low intraprocedural and post-procedural risk.
  - Large Caliber without Respiratory Variation
  - Flat Surface, No Neck Movement
  - No Pneumothorax
- The most relevant novelties in this field can be summarized in four issues:
  - (1) a better definition of “central” venous access and use
  - (2) clinical diversification between emergency (allows intubation and CPR) versus elective femoral catheters
  - (3) new options for puncture site and choice of the exit site
  - (4) new options for the intraprocedural assessment of catheter tip



Indications for Femoral Approach

- Unable to Lay Supine
- Severe Shortness of Breath
- Upper Extremity DVT
- Severe Coagulopathy
- Contractures



JVA The Journal of Vascular Access

Rapid Femoral Vein Assessment (RaFeVA): A systematic protocol for ultrasound evaluation of the veins of the lower limb, so to optimize the insertion of femorally inserted central catheters

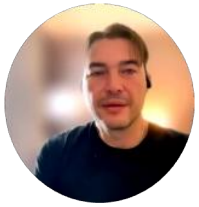
The Journal of Vascular Access
1–10

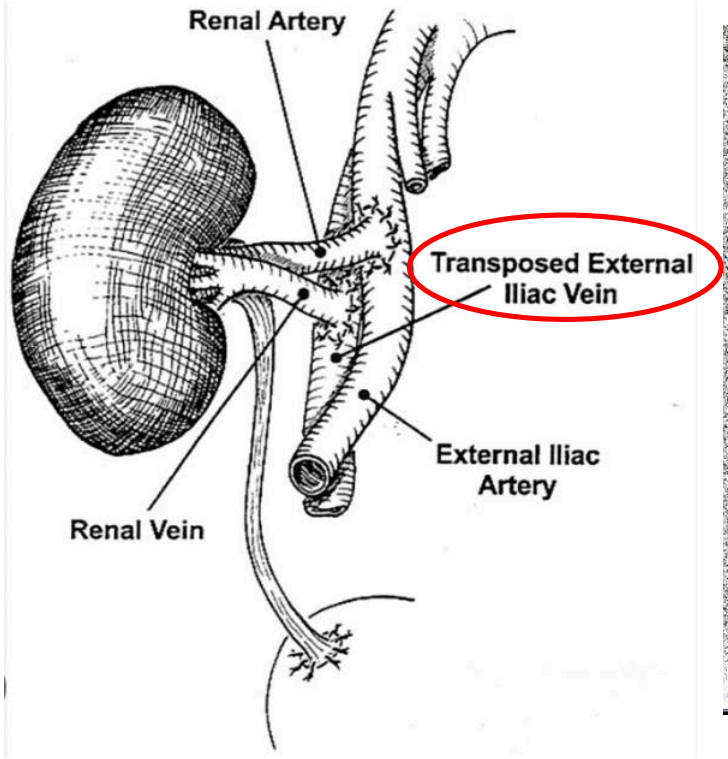
DOI: 10.1177/1129729820965063
journals.sagepub.com/home/jva
SAGE

Fabrizio Brescia[1], Mauro Pittiruti[2], Matthew Ostroff[3] and Daniele G Biasucci[4]

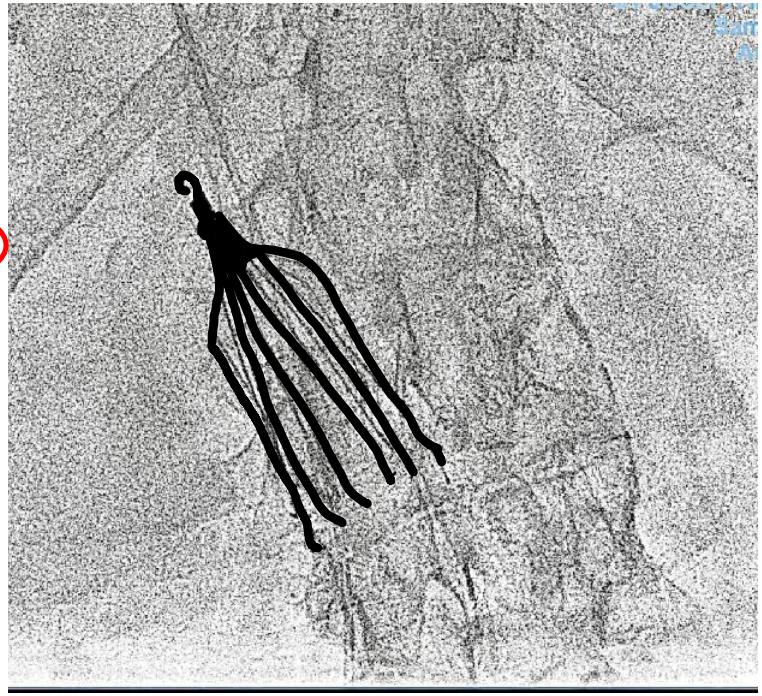
Abstract
In this paper we describe a new protocol—named RaFeVA (Rapid Femoral Vein Assessment)—for the systematic US assessment of the veins in the inguinal area and at mid-thigh, designed to evaluate patency and caliber of the common and superficial femoral veins and choose the best venipuncture site before insertion of a FICC.

Relative Contraindications for Femoral Approach





RENAL TRANSPLANT

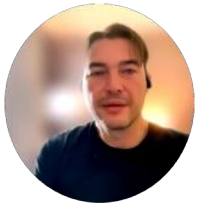


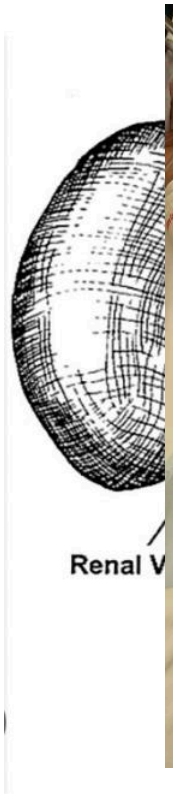
IVC FILTER

- **Loose Stool**
- **Edema**

Signs of Central Stenosis or History of Lower Extremity DVT

Relative Contraindications for Femoral Approach





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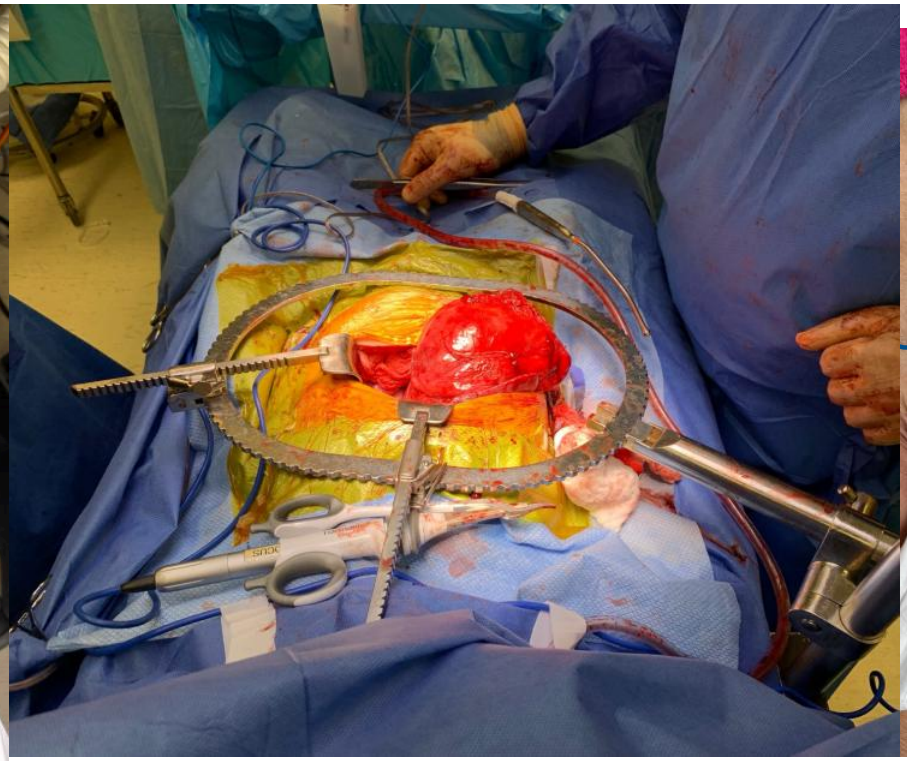

IVC FILTER

- **Loose Stool**
- **Edema**

Signs of Central Stenosis or History of Lower Extremity DVT

Femoral ZIM

Dawson, R. B. (2011). PICC Zone Insertion Method™(ZIM™): a systematic approach to determine the ideal insertion site for PICCs in the upper arm. *Journal of the Association for Vascular Access*, *16*(3), 156-165.

Editorial

JVA The Journal of Vascular Acc

The Journal of Vascular Access
1–8

DOI: 10.1177/11297298211041442
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SAGE

The SIF protocol: A seven-step strategy to minimize complications potentially related to the insertion of femorally inserted central catheters

Fabrizio Brescia[1], Mauro Pittiruti[2], Matthew Ostroff[3], Timothy R Spencer[4] and Robert B Dawson[5]

Direct Puncture in the Yellow Zone:
Emergent Access
Pseudo-tunnel out of yellow zone
Traditional tunnel to green zone

Mid Thigh Femoral Puncture in the Green Zone:
Direct puncture for FICC
Pseudo-tunnel down thigh
Traditional tunnel to outer thigh

Patellar Region: AVOID

Puncturing the CFV/SFV with EXIT SITE DISTAL to the Inguinal Crease

Pseudo Tunnel

Ostroff, M. D., & Moureau, N. L. (2017). Report of modification for peripherally inserted central catheter placement: subcutaneous needle tunnel for high upper arm placement. *Journal of Infusion Nursing*, *40*(4), 232-237.

Elli, S., Abbruzzese, C., Cannizzo, L., Vimercati, S., Vanini, S., & Lucchini, A. (2017). “Extended subcutaneous route” technique: a quick subcutaneous tunnelling technique for PICC insertion. *The journal of vascular access*, *18*(3), 269-272.

Ostroff, M., Zauk, A., Chowdhury, S., Moureau, N., & Mobley, C. (2021). A retrospective analysis of the clinical effectiveness of subcutaneously tunneled femoral vein cannulations at the bedside: a low-risk central venous access approach in the neonatal intensive care unit. *The Journal of Vascular Access*, *22*(6), 926-934.

Mid Thigh Femoral

Zhang, J., Tang, S., Hu, C., Zhang, C., He, L., Li, X., & Xiao, J. (2017). Femorally inserted central venous catheter in patients with superior vena cava obstruction: choice of the optimal exit site. *The journal of vascular access*, *18*(1), 82-88.

Ostroff, M., Moureau, N., & Ismail, M. (2018). Review and case studies of midthigh femoral central venous catheter placement. *Journal of the Association for Vascular Access*, *23*(3), 167-175.

Traditional Tunnel

McManus, C., Mifflin, N., Rivera, R., Vause, S., Tran, T., Ostroff, M., ... & Alexandrou, E. (2024). Comparison of outcomes from tunneled femorally inserted central catheters and peripherally inserted central catheters: a propensity score-matched cohort study. *BMJ open*, *14*(5), e081749.

Femoral Phlebotomy and Catheter Placement with Pseudo Tunnel to the CFV

Measurements of Central Blood Vessels in Infants and Children: Normal Values. Steinberg, et al. (1992)

The Anatomic Relationship of Femoral Vein to Femoral Artery in Euvolemic Pediatric Patients by Ultrasonography: Implications for Pediatric Femoral Central Venous Access. Warkentine, et al. (2008)

False Aneurysm of the Common Femoral Artery in an Infant after a Phlebotomy. Zouizra, et al. (2017)

A systematic Ultrasound Evaluation of the Diameter of Deep Veins in the Newborn: Results and Implications for Clinical Practice. Barone, et al. (2019)

Ostroff, M. D., & Connolly, M. W. (2022). Infusion and Phlebotomy via the Femoral Vein in Outpatient Pediatrics. In *Ultrasound Guided Vascular Access: Practical Solutions to Bedside Clinical Challenges* (pp. 7-11). Cham: Springer International Publishing.

Nickel, B., Gorski, L., Kleidon, T., Kyes, A., DeVries, M., Keogh, S., ... & Hagle, M. E. (2024). Infusion therapy standards of practice. *Journal of Infusion Nursing*, *47*(1S), S1-S285.

Femoral Phlebotomy with Access: Case Study

Patient was a **6-year-old** female
Growth Hormone Stimulation Test.
Patient NPO for 8 hours.
Poor Peripheral Vasculature Based on **RaPeVA**

Brescia, F., Pittiruti, M., Spencer, T. R., & Dawson, R. B. (2022). The SIP protocol update: Eight strategies, incorporating Rapid Peripheral Vein Assessment (RaPeVA), to minimize complications associated with peripherally inserted central catheter insertion. The Journal of Vascular Access, 25(1), 5-13.

Infusion **Vesicant**: Arginine
7 gel tubes q 15 minutes

Abraham MB, van der Westhuyzen J, Khanna V. Arginine extravasation leading to skin necrosis. J Paediatr Child Health. 2012 Mar;48(3):E96-7. doi: 10.1111/j.1440-1754.2011.02074.x. Epub 2011 Apr 29. PMID: 21535285.

Plan: 8cm catheter to the common femoral vein

Procedural support: *Integrative Medicine*
Essential oil aromatherapy: spearmint and orange
Magnets to apply acupressure on Large Intestine 4 (he gu in pin yin)
Red Laser (635nm) ear acupuncture point (shen men) for stress/anxiety

Femoral Midline

Definition:

Central Tip Position from the Femoral approach is defined as within the Inferior Vena Cava.
A tip position distal to the inferior vena cava should function as a midline catheter.

Annetta, M. G., Elli, S., Marche, B., Pinelli, F., & Pittiruti, M. (2023). Femoral venous access: state of the art and future perspectives. *The Journal of Vascular Access*, 11297298231209253.

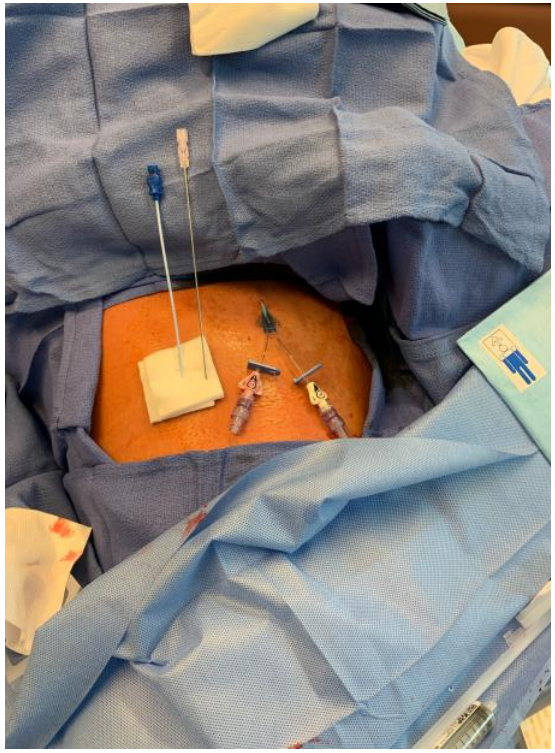
Ostroff, M., Aberger, K., & Moureau, N. (2021). Case report: End of life care via a mid-thigh femoral midline catheter. *The Journal of Vascular Access*, 11297298211043410-11297298211043410.

Gidaro, A., Samartin, F., Salvi, E., Casella, F., Cogliati, C., Giustivi, D., ... & Calloni, M. (2022). Midline peripheral catheters inserted in the superficial femoral vein at mid-thigh: Wise choice in COVID-19 acute hypoxemic respiratory failure patients with helmet continuous positive airway pressure. *The Journal of Vascular Access*, *24*(6), 1469-1476.

Giustivi, D., Gidaro, A., Baroni, M., & Paglia, S. (2022). Tunneling technique of PICCs and midline catheters. *The Journal of Vascular Access*, *23*(4), 610-614.

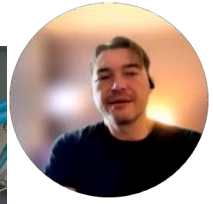
FICC

10 cm



Triple Lumen

High BMI



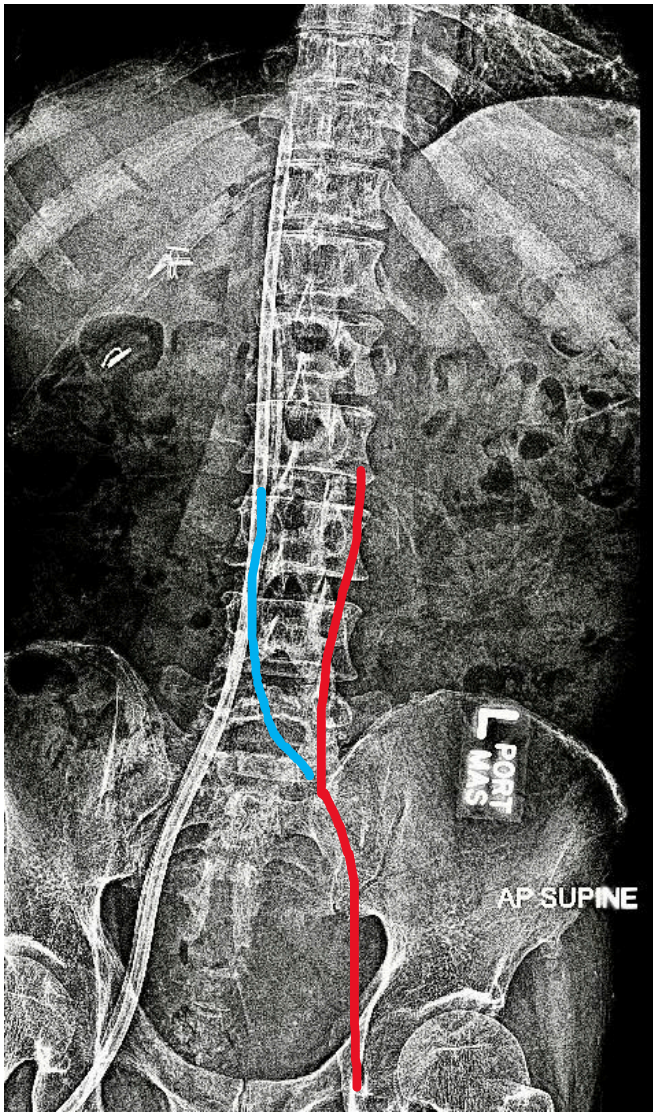
Contractures

Multiple FICC’s

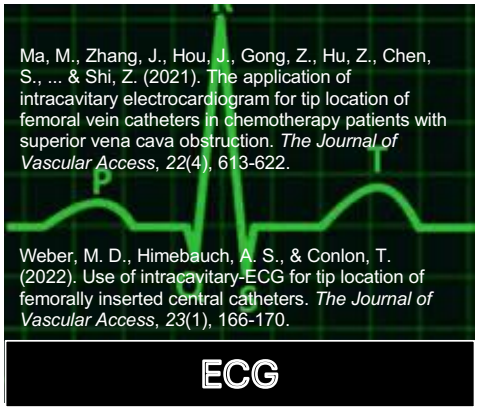
Tip location

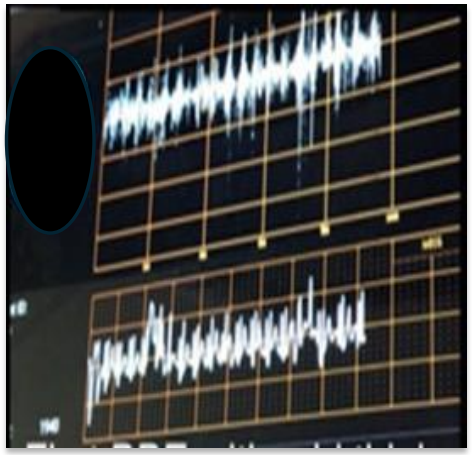
Malpositions: Ascending lumbar vein
Renal and Hepatic Vein, Looping in IVC
Contralateral iliac

Interventions:
Retract/Advance
High Flow Flush
Exchange

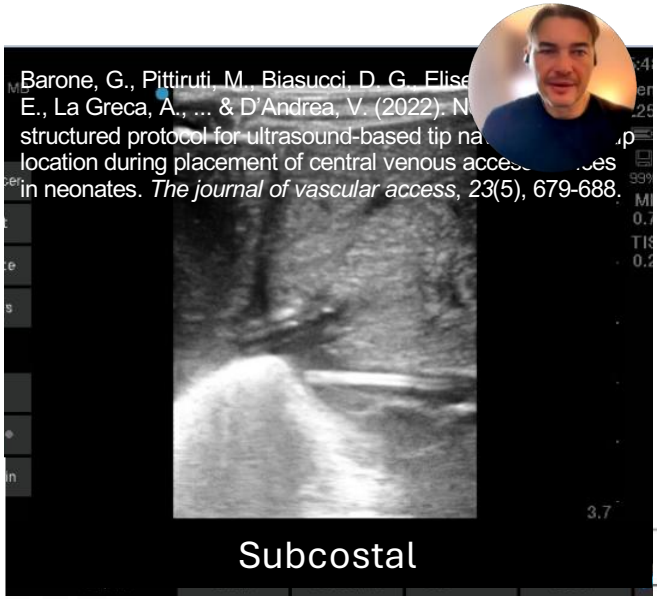


Radiograph

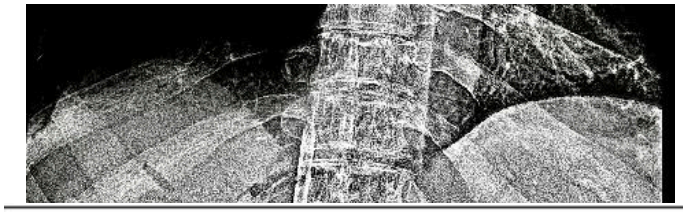




Dual Vector

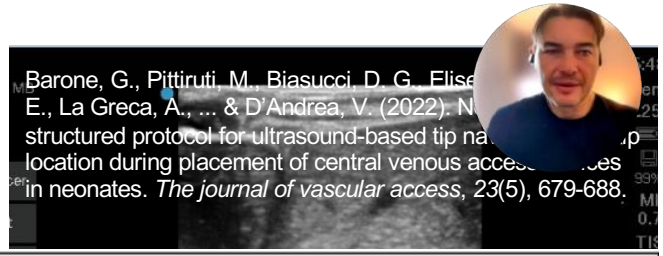


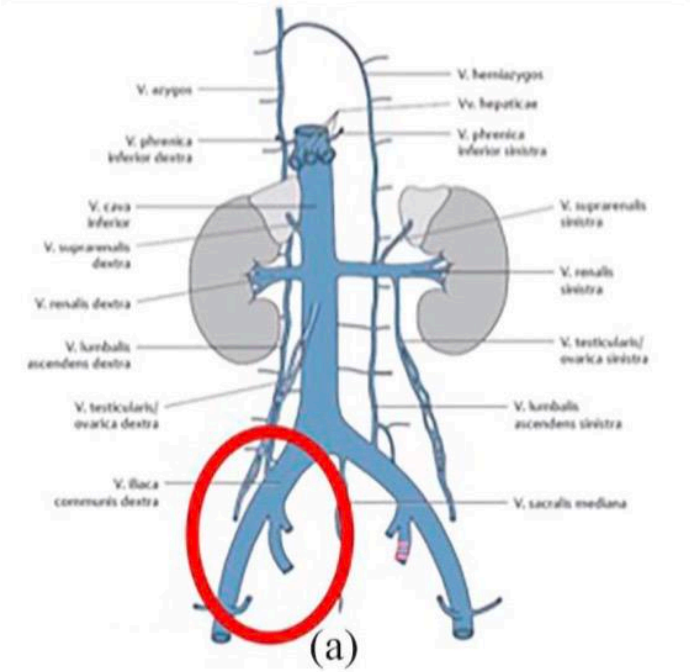
Transhepatic

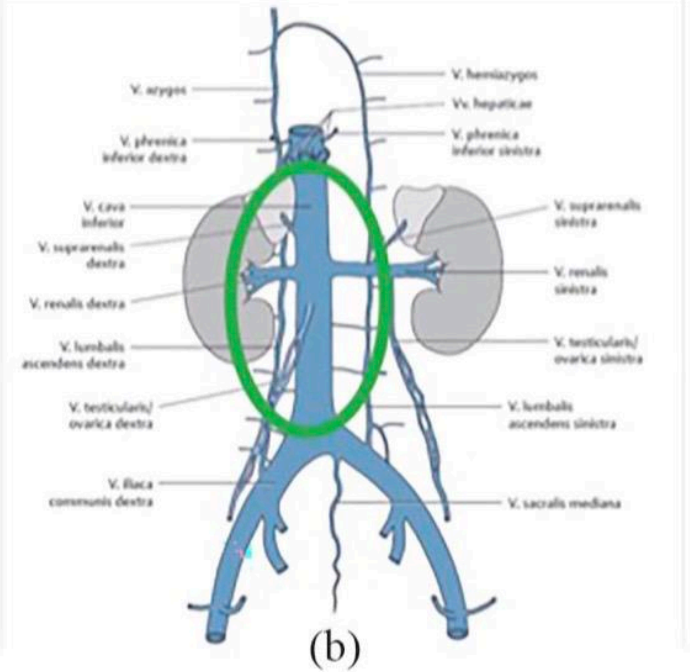


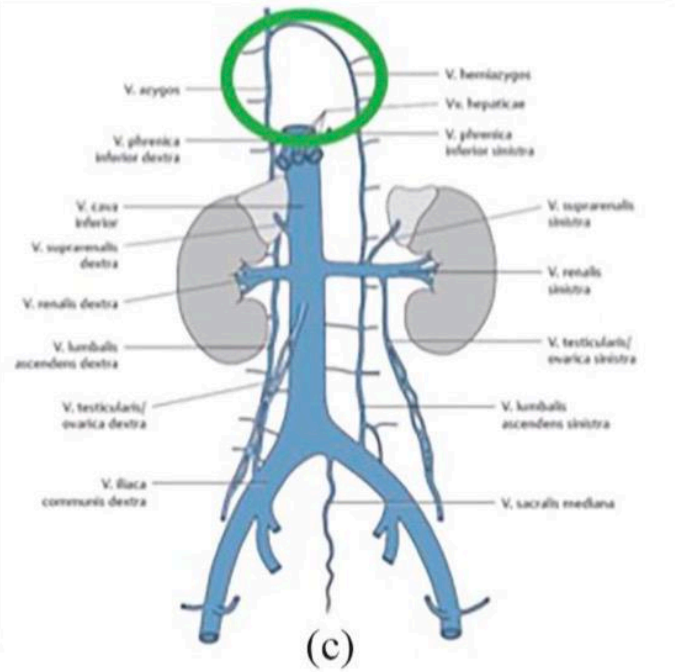
Tip location

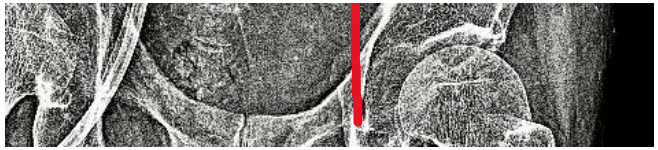
Malpositions: Ascending lumbar vein
Renal and Hepatic Vein, Looping in IVC



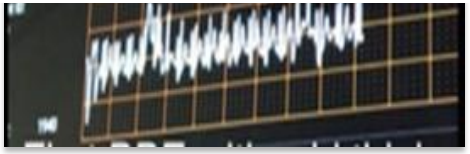




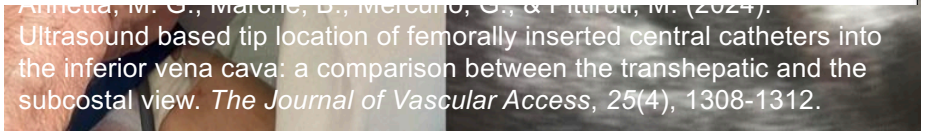




Radiograph



Dual Vector



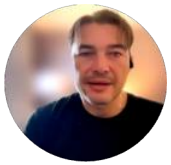
Transhepatic

The Femoral Approach from the Prone Position

Adams, E., & Mousa, A. Y. (2020). Achieving a popliteal venous access for renal replacement therapy in critically ill COVID-19 patient in prone position. *Journal of Vascular Surgery Cases, Innovations and Techniques*, *6*(2), 266-268.

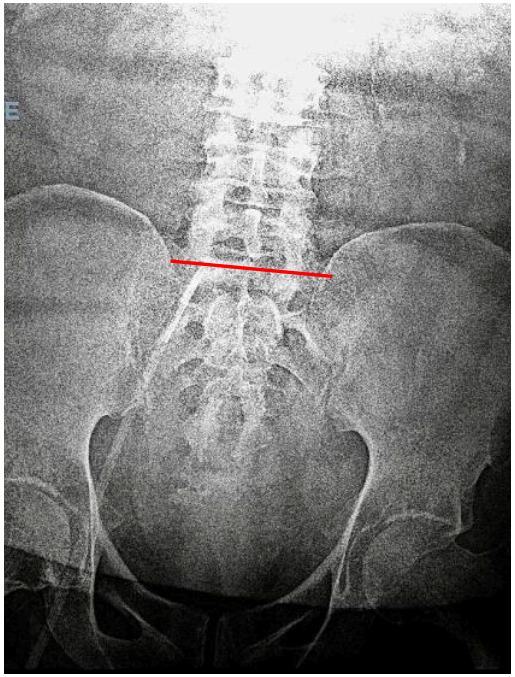
Ostroff, M., Ismail, M., & Weite, T. (2022). Achieving superficial femoral venous access in a critically ill COVID-19 patient in the prone position. *The Journal of Vascular Access*, *23*(3), 458-461.

Kammerer, T., & Brezina, T. (2022). Cannulation of the popliteal vein as an intraoperative emergency access in prone position: A case report. *The Journal of Vascular Access*, *23*(5), 816-818.

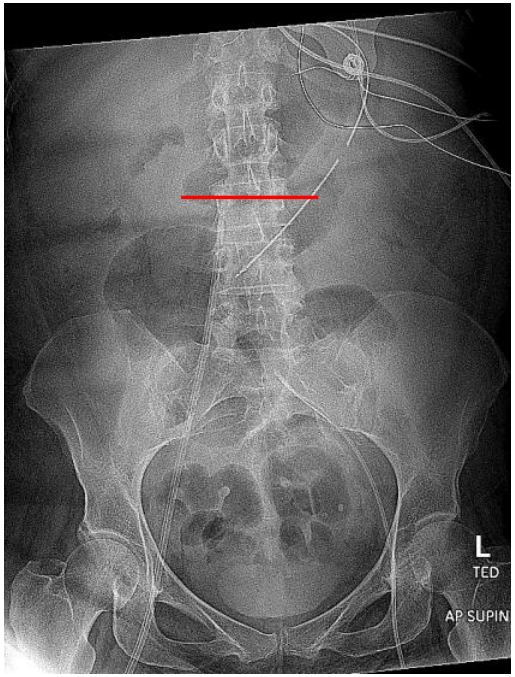


Dialysis and Apheresis

Outside of the crease



25cm



30cm

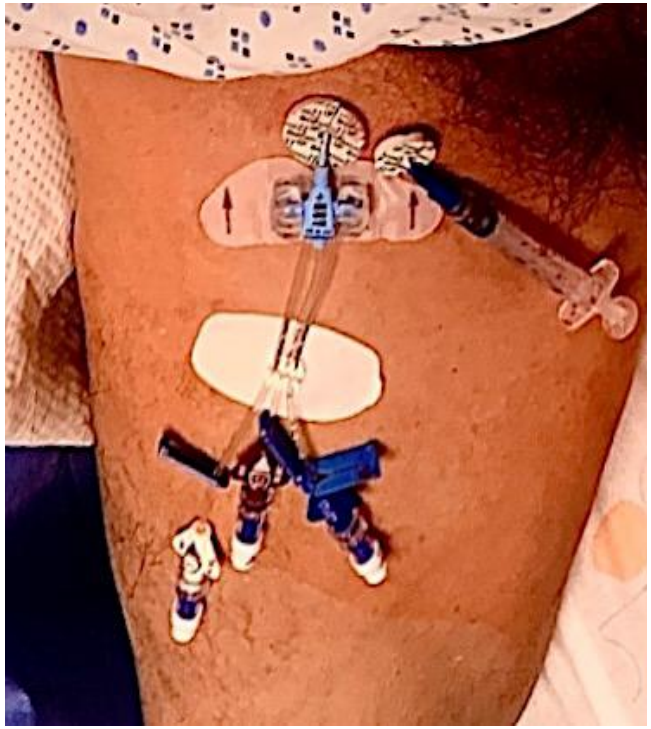
Must Reach IVC

Outside of the diaper

Emergent Femoral Venous and Arterial Access

- Ostroff, M. D., & Connolly, M. W. (2022). **Emergent Femoral Arterial and Venous Catheter Placement in the Critically Ill Pediatric Patient.** In *Ultrasound Guided Vascular Access: Practical Solutions to Bedside Clinical Challenges* (pp. 199-203). Cham: Springer International Publishing.

- **<u>Advantages</u>:**
- Single Sterile Set Up
- Allows CPR and Intubation
- Single Dressing
- Bridge to Stabilize patient



Tunneling the Common and Superficial Femoral Vein

Ostroff MD, Moureau N, Pittiruti M. Rapid Assessment of Vascular Exit Site and Tunneling Options (RAVESTO): A new decision tool in the management of the complex vascular access patients. The Journal of Vascular Access. 2023;24(2):311-317. doi:10.1177/11297298211034306

Ostroff, M. D., & Connolly, M. W. (2022). Tandem Tunneled Femoral Vein Catheter Placement. In *Ultrasound Guided Vascular Access: Practical Solutions to Bedside Clinical Challenges* (pp. 279-284). Cham: Springer International Publishing.

Ostroff, M., & Hafez, N. (2021). A triple tunnel from the mid-calf to the femoral vein in patient with severe dementia. The Journal of Vascular Access, 11297298211026820-11297298211026820.

Ostroff, M., Elzomor, H., Weite, T. A., Garcia, D., Ahn, J., Stanko, O., ... & Alexandrou, E. (2024). Femoral to abdomen tunneling at the bedside for medium/long term venous access. *The Journal of Vascular Access*, 11297298241251510

FICC PORT

Thank you to my Italian Brothers, for teaching me the PICC PORT procedure especially Andrea Musaro

JVA The Journal of Vascular Access

Original research article

Totally implanted central venous access devices inserted by the femoral route: A narrative review and the proposal of a novel approach, the FICC-port

The Journal of Vascular Access
1–9

DOI: 10.1177/11297298241236816
journals.sagepub.com/home/jva
Sage

Maria Giuseppina Annetta[1], Bruno Marche[2], Gloria Ortiz Miluy[3] and Mauro Pittiruti[4]

Abstract

Background: Femoral ports are used in patients with indication to a totally implanted venous access device but with contraindication to chest-ports and brachial ports because of obstruction of the superior vena cava. In the last three decades, femoral ports have been implanted almost exclusively by cannulation of the common femoral vein at the groin, while the position of the tip has been assessed by X-ray.

Keep the windows of your brain OPEN.

Thank you for your attention.