

Corso pregressuali teorico-pratico:

CORSO A L' ecografia nell'impianto e gestione degli accessi venosi nel neonato.



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Rimini
15-16 maggio 2023

**Studio ecografico pre-procedurale delle vene
e tecniche di venipuntura ecoguidata per il posizionamento di CICC e FICC nel neonato.**

Dott. Ferdinando Spagnuolo
Terapia Intensiva Neonatale AOU Università degli Studi della Campania «L. Vanvitelli», Napoli.



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INCANNULAMENTI

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COMPLICANZE

DURATA ILLIMITATA

DIVA

Format: Abstract

Full text links



Pediatr Emerg Care. 2008 Mar;24(3):143-7. doi: 10.1097/PEC.0b013e3181666f32.

Derivation of the DIVA score: a clinical prediction rule for the identification of children with difficult intravenous access.

Yen K¹, Riegert A, Gorelick MH.



Academic Emergency Medicine
Official Journal of the Society for Academic Emergency Medicine

ORIGINAL RESEARCH CONTRIBUTION

Validation and Refinement of the Difficult Intravenous Access Score: A Clinical Prediction Rule for Identifying Children With Difficult Intravenous Access

Michael W. Riker, MD, Chris Kennedy, MD, Brad S. Winfrey, RN, Kenneth Yen, MD, MS, and M. Denise Dowd, MD MPH

Table 1
DIVA Score⁴

Predictor Variable	Scores		
Visibility	Visible = 0		Not visible = 2
Palpability	Palpable = 0		Not palpable = 2
Age	≥36 months = 0	12-35 months = 1	< 12 months = 3
Prematurity	Not premature = 0		Premature = 3
Skin shade	Light = 0	Dark = 1	



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Credits



**Il sistema esperto DAV-EXP
è un progetto
educazionale GAVeCeLT**

da una idea di:

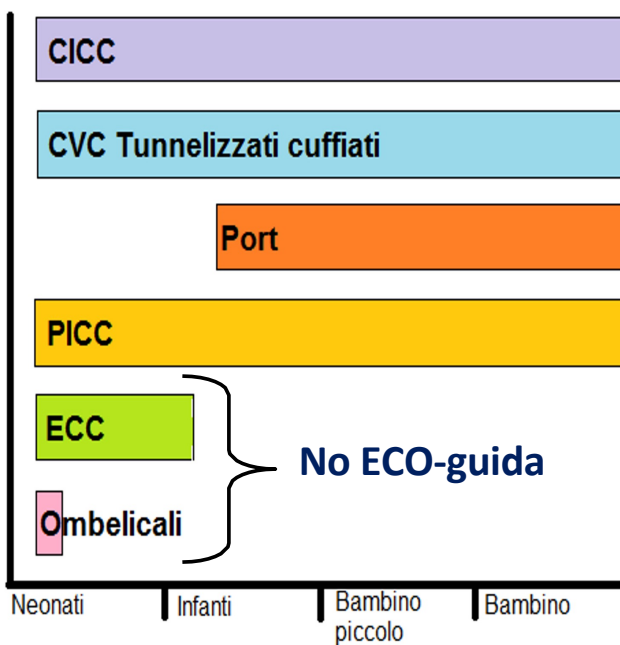
Mauro Pittiruti

Antonio Potere

Pantaleone Straccini

Realizzato da:

Quali



Long term (tunneled, cuffed external VADs)				
	Material	Tip	Lumen	French
Broviac	Silicon	No valve	1	2,7, 4,2, 6,6, 7, 9,6
Hickman	Silicon	No valve	2	7, 12
Leonard	Silicon	No valve	2	10
Groshong	Silicon	Distal valve	1 or 2	5,5, 7 8, 9
ProLine	P.I. PUR	No valve	1 or 2	5, 6

Medium term (PICCs)				
Silicon PICC	Silicon	No valve	1 or 2	3, 4, 5
Groshong PICC	Silicon	Distal valve	1 or 2	4, 5
Solo, PASV PICC	P.I. PUR	Proximal valve	1 or 2 or 3	3, 4, 5, 6
PASV PICC	PUR	Proximal valve	1 or 2	4, 5
PUR PICC	PUR	No valve	1 or 2	4, 5
P.I. PUR PICC	P.I. PUR	No valve	1 or 2 or 3	3, 4, 5, 6



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Intensive Care Med
DOI 10.1007/s00134-012-2597-x

CONFERENCE REPORTS AND EXPERT PANEL

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Eric Desruennes
Lawrence A. Melniker
Susan T. Verghese

International evidence-based recommendations on ultrasound-guided vascular access

Uso globale dell'ecografo

1. Scelta della vena (RaCeVA, RaPeVA, RaFeVA)
2. Venipuntura ecoguidata
3. Esclusione complicanze immediate legate alla puntura
4. Tip navigation
5. Tip location
6. Esclusione complicanze tardive



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1. Scelta della vena (RaCeVA, RaPeVA, RaFeVA)

1. CALIBRO DELLA VENA
2. PROFONDITA'
3. COLLASSABILITA' DURANTE IL RESPIRO
4. COMPRESSIONE DA PARTE DI ARTERIE VICINE O STRUTTURE PATOLOGICHE
5. CONTIGUITA' CON STRUTTURE «PERICOLOSE» (PLEURA)
6. CONVENIENZA DEL SITO DI EMERGENZA PER LA FUTURA GESTIONE DEL CATETERE.

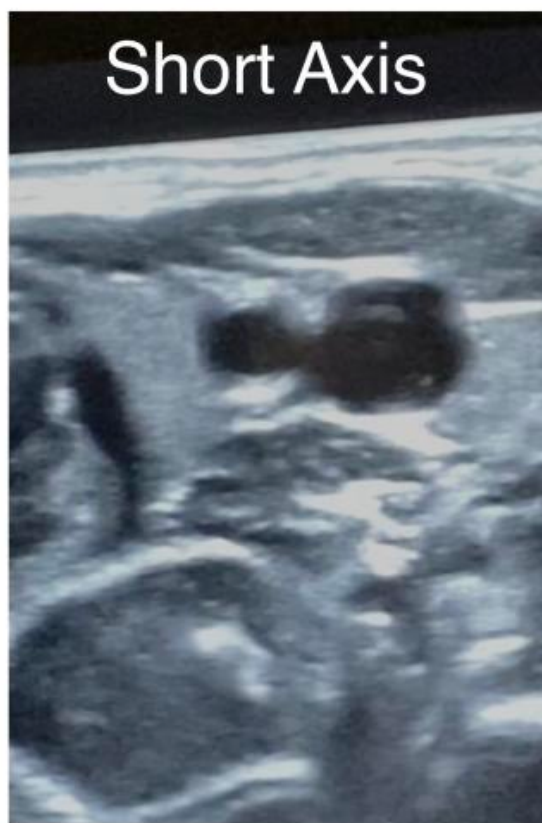


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Visualizzazione della vena





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Check for updates

Editorial

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

Fabrizio Brescia¹, Mauro Pittiruti², Matthew Ostroff³ and Daniele G Biasucci¹

JVA
The Journal of Vascular Access
1-12
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Tecniche di puntura

4

The Journal of Vascular Access 00(0)



Figure 1. Visualization of the vein in short-axis (a) and in long-axis (b).

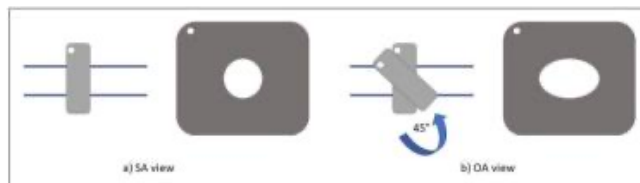
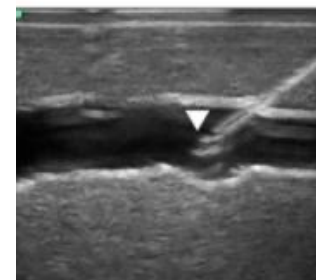
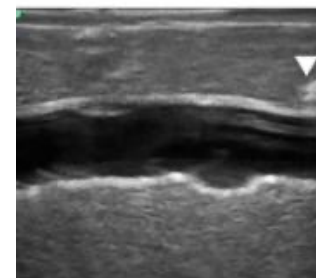
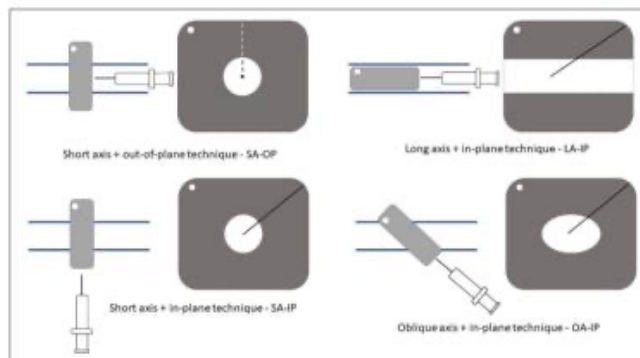


Figure 2. Transition from short-axis (a) view to oblique-axis view (b).

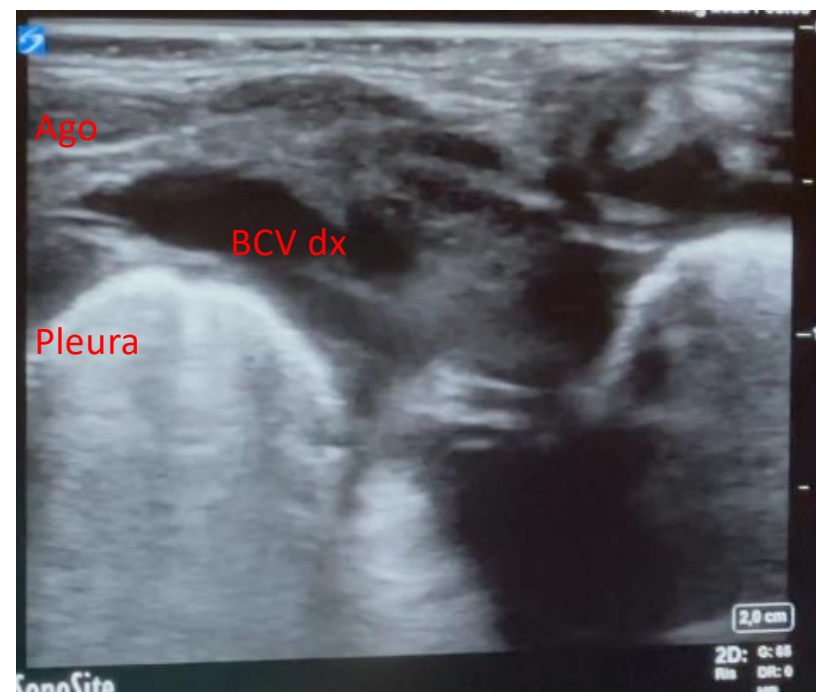
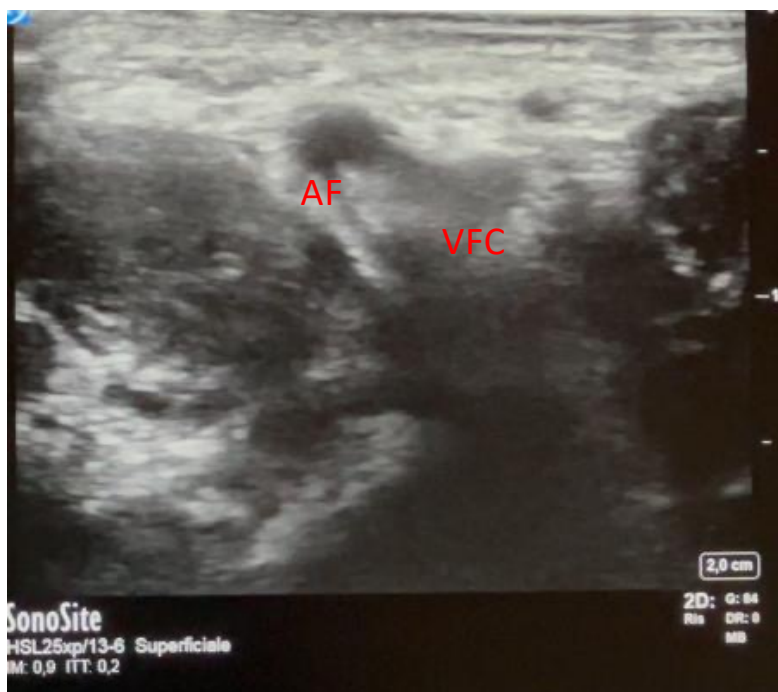




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Tecniche di puntura



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Review

Rapid Central Vein Assessment (RaCeVA): A systematic, standardized approach for ultrasound assessment before central venous catheterization

Timothy R Spencer¹ and Mauro Pittiruti²

JVA | The Journal of
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STEP 1

la sonda in posizione trasversa dalla regione centrale anteriore del collo perpendicolare alla cute in prossimità della cartilagine cricoide (il lato sinistro della sonda deve corrispondere alla sinistra del monitor e alla destra del paziente).



esplora in short axis la vena giugulare interna (IJV) e l'arteria carotide valutando il diametro, la comprimibilità e la forma



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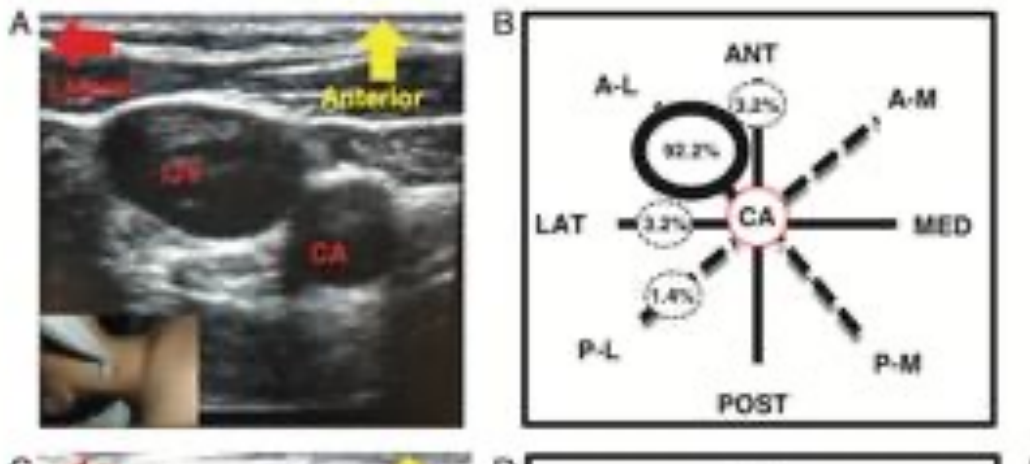
British Journal of Anaesthesia 112 (5): 879–84 (2014)
Advance Access publication 10 February 2014 · doi:10.1093/bja/aet482

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PAEDIATRICS

Ultrasonographic anatomic variations of the major veins in paediatric patients

E. P. Souza Neto^{1,2,3,4*}, S. Grousseau¹, F. Duflo¹, F. Tahon⁵, C. Mottolese⁶ and F. Dailler¹





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STEP 2 Scendendo, sempre in posizione trasversa, si visualizza il tratto inferiore della IJV e l'arteria verso la base del collo nell'area soprasternale carotide.



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STEP 3 La sonda tilta dal piano perpendicolare al piano Posteriormente alla giugulare interna è evidente l'arteria frontale, parallelamente alla clavicola e lateralmente succlavia in long axis. all'incisura sternale



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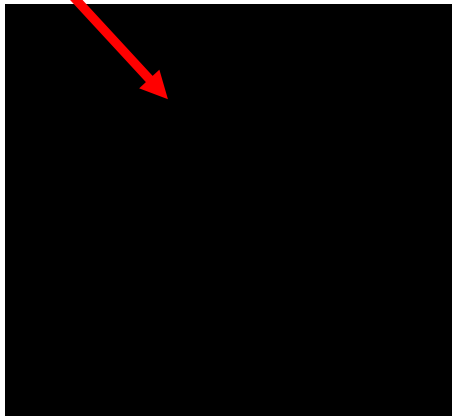
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STEP 4 Portando la sonda su un piano frontale nell'area sopraclavicolare



E' possibile seguire il decorso della IJV mentre decorre sopra l'arteria succlavia e si congiunge con la vena succlavia formando il tronco brachiocefalico.



Questa è la posizione ideale per la visualizzazione e la puntura della vena anonima in long axis essendo ben evidente anche la pleura mediastinica (linea iperecogena laterale e parallela al vaso).

si visualizza la v. succlavia e la giugulare esterna in long axis.

Questa è la posizione ideale per la puntura ecoguidata della v. succlavia o della giugulare esterna in long axis.

Original research article

JVA | The Journal of
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**Ultrasound-guided cannulation of
the brachiocephalic vein in newborns:
A novel approach with a supraclavicular
view for tip navigation and tip location**

The Journal of Vascular Access
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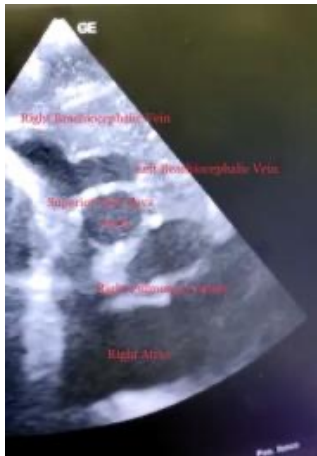
Ferdinando Spagnuolo  and Teresa Vacchiano



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Sonda microconvex in sede sopraclavicolare dx per visualizzare il passaggio del catetere in vena cava superiore in visione longitudinale consentendo contemporaneamente la tip navigation e la tip location

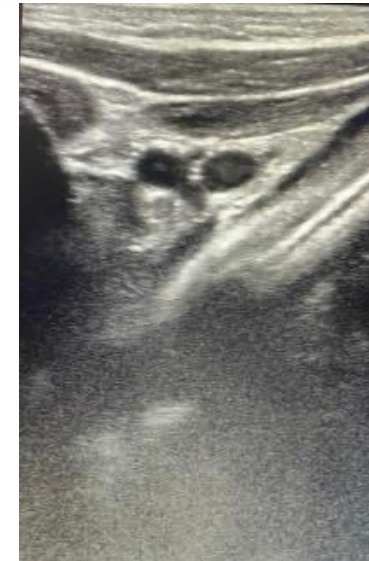
Original research article

Ultrasound-guided cannulation of the brachiocephalic vein in newborns: A novel approach with a supraclavicular view for tip navigation and tip location

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STEP 5

La sonda viene successivamente posizionata perpendicolarmente al solco pettorale in short axis sotto la clavicola (lateralmente al terzo della clavicola).

Sono evidenti tre vasi: l'arteria ascellare e la vena ascellare (medialmente rispetto all'arteria) in short axis e la vena cefalica in long axis (piccolo vaso che decorre sull'arteria e confluisce nella vena ascellare).



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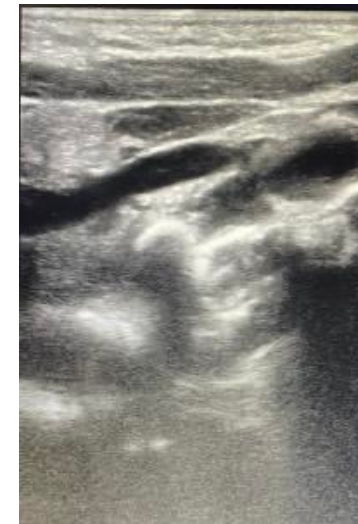


Obl ax + in plane:
AXILLARY

Techniques in vascular access

A novel ultrasound-guided approach to the axillary vein: Oblique-axis view combined with in-plane puncture

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STEP 6

La sonda viene lentamente ruotata per avere una visione longitudinale dei vasi, in modo da essere longitudinale e perpendicolare alla parete toracica più o meno parallela al solco pettorale, sotto la clavicola.

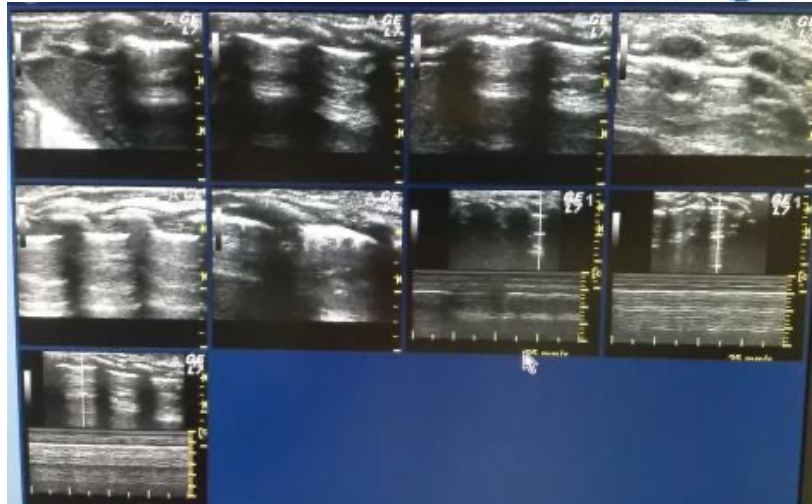
La vena ascellare, l'arteria ascellare e la vena cefalica in long axis.



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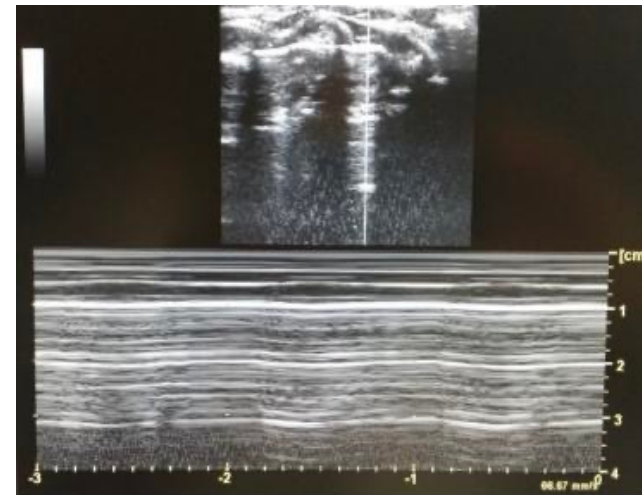
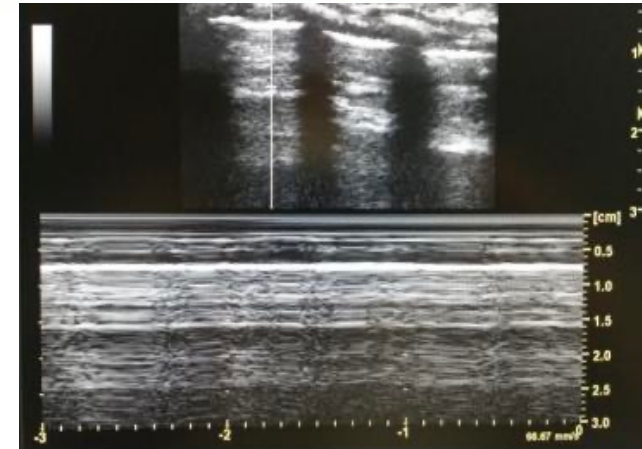
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STEP 7

L'interfaccia parietale-viscerale è esplorata sia in B-mode (2D) che in M-mode (monodimensionale) per evidenziare lo sliding polmonare (e l'aspetto a spiaggia sabbiosa).





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Editorial

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

Fabrizio Brescia¹ , Mauro Pittiruti² , Matthew Ostroff³ 
and Daniele G Biasucci⁴

JVA | The Journal of
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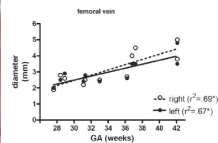
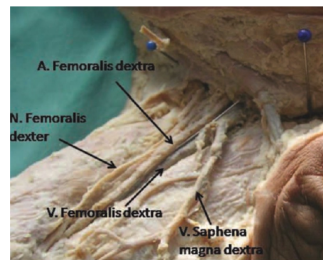


Fig. 4. There is a correlation between gestational age (GA) and outer diameter (mm) of the femoral vein ($r^2 = 0.69$ at right, $r^2 = 0.67$ at left, $^{**}P < 0.05$).

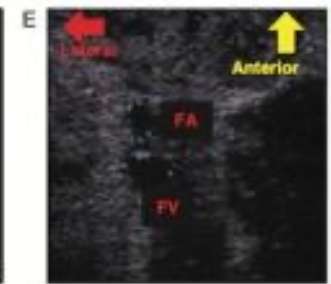
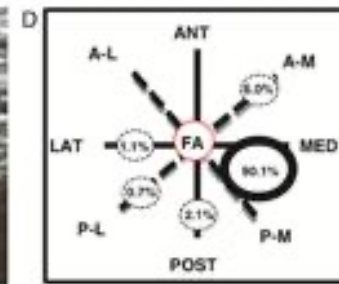


ORIGINAL COMMUNICATION

Anatomical Examination of the Great Inguinal Blood Vessels in Preterm and Term Neonates

FRANK EFTINGER,^{1*} ELPIDA CHOCHLOUROI LAZARIDIS,¹ BERNHARD ROTH,² AND JÜRGEN KOEBKE^{1†}

¹Department of Neonatology and Pediatric Intensive Care, University Children's Hospital, Cologne, Germany
²Department of Anatomy, University of Cologne, Cologne, Germany



No.	g.a. (week)	Femoral artery		Femoral vein		Great saphenous vein	
		Right (mm)	Left (mm)	Right (mm)	Left (mm)	Right (mm)	Left (mm)
1	36.8	2.5	2.0	4.0	3.5	1.8	2.3
2	42.1	1.9	2.3	5.0	4.8	1.8	2.0
3	28.4	2.8	2.3	2.8	2.5	1.3	1.0
4	31.3	2.3	1.8	2.5	2.8	2.0	1.8
5	37.2	1.8	2.8	4.5	3.5	2.0	1.0
6	42.1	1.5	1.5	3.8	3.5	2.5	2.2
7	31.1	1.2	1.3	2.2	2.4	0.7	1.0
8	33.0	2.0	2.0	2.5	2.4	1.3	0.2
9	27.6	1.5	1.6	1.9	2.0	0.4	0.4
10	28.9	1.7	1.6	2.6	2.9	0.6	0.7
11	38.2	1.5	1.6	2.7	3.2	1.2	1.1
Mean ± SD	38.1	1.9 ± 0.5	1.9 ± 0.4	3.1 ± 1.0	3.0 ± 0.8	1.4 ± 0.7	1.3 ± 0.6

Original Paper

Neonatology

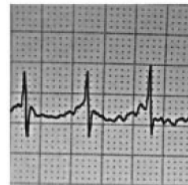
Neonatology 2019;115:335–340
DOI: 10.1159/000496848

Received October 26, 2018
Accepted after revision January 11, 2019
Published online March 13, 2019

A Systematic Ultrasound Evaluation of the Diameter of Deep Veins in the Newborn: Results and Implications for Clinical Practice

Giovanni Barone^a Vito D'Andrea^a Giovanni Vento^a Mauro Pittiruti^b

^aNeonatal Intensive Care Unit, Fondazione Policlinico A. Gemelli IRCCS, Rome, Italy; ^bDepartment of Surgery, Fondazione Policlinico A. Gemelli IRCCS, Rome, Italy



IVC

Umbilical vein catheterization under electrocardiogram guidance

BAN C.H., TSUI W.S., WONG W., GARETH J., RICHARDS M.B. AND JOHN VAN AERDE AND TEAM
^aDepartment of Anaesthesiology and Pain Medicine and Pediatrics, Neurology, University of Alberta Hospital and Stollery Children's Hospital, Edmonton, Alberta, Canada

British Journal of Anaesthesia 112 (5): 879–84 (2014)

Advance Access publication 10 February 2014 · doi:10.1093/bja/aet482

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PAEDIATRICS

Ultrasonographic anatomic variations of the major veins in paediatric patients

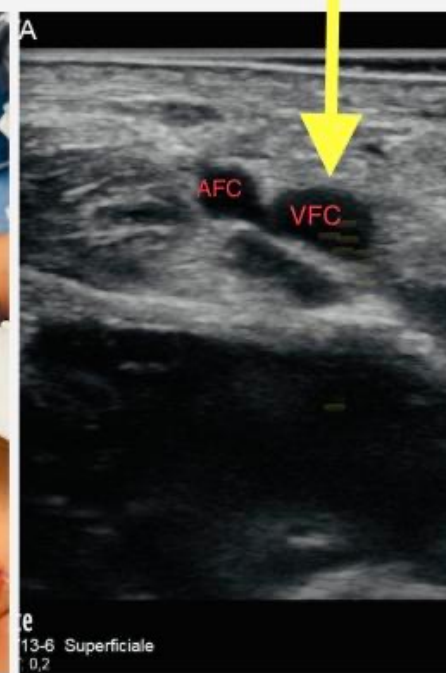
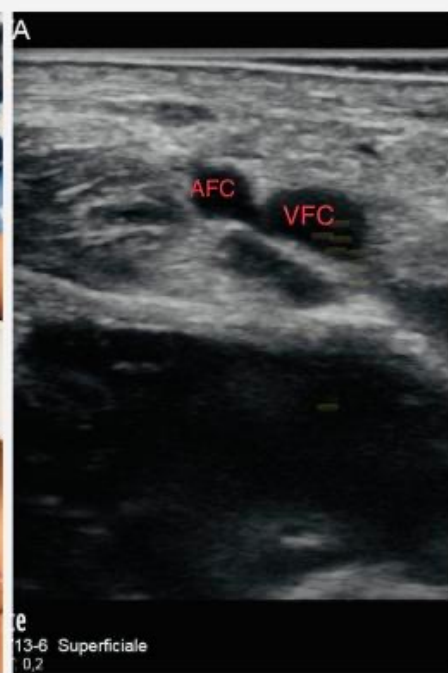
E. P. Souza Neto^{1,2,3,4*}, S. Grousseau¹, F. Duflo¹, F. Tahon⁵, C. Mottolese⁶ and F. Dailler¹



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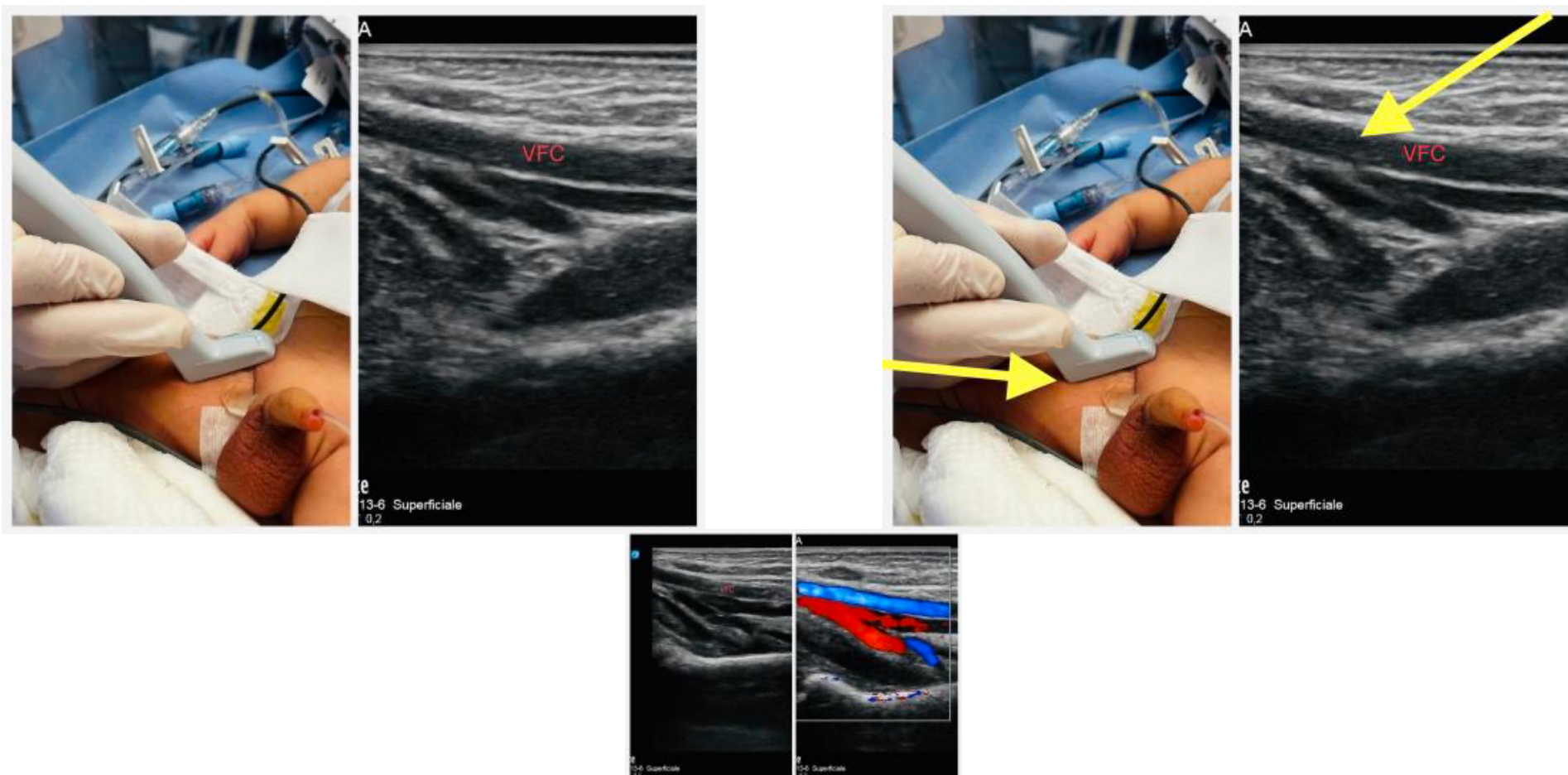




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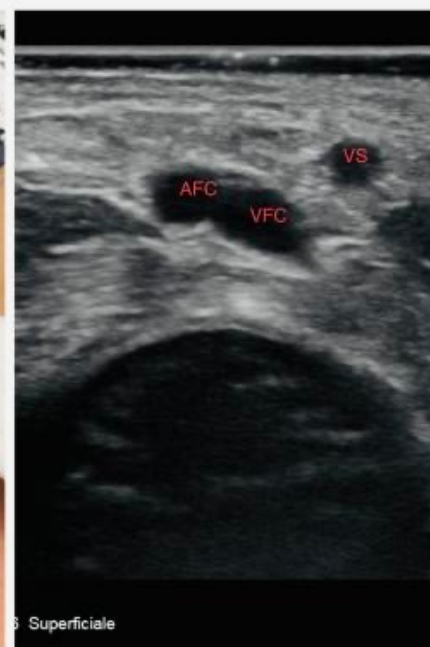




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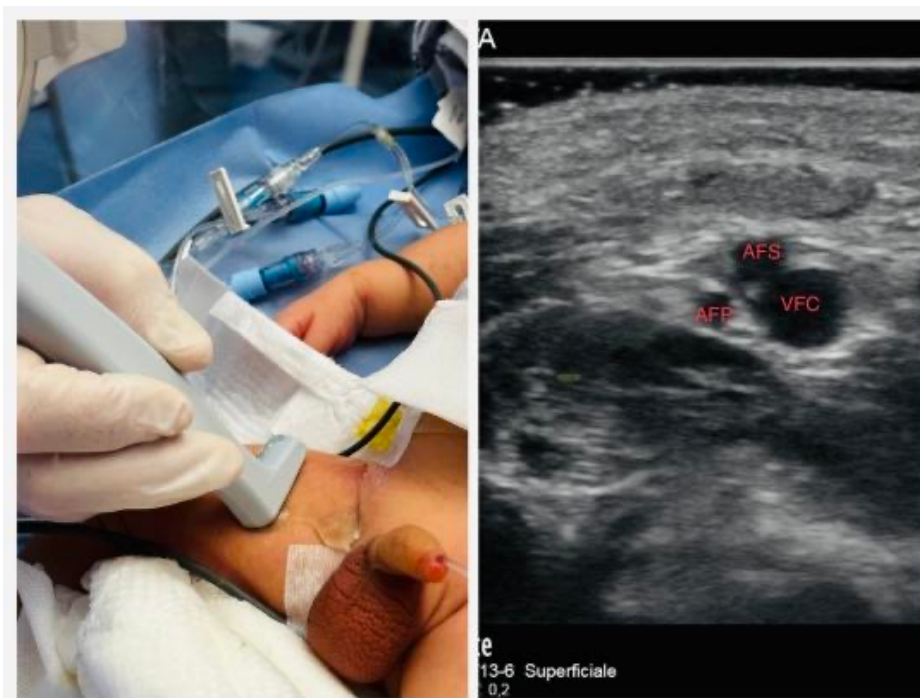




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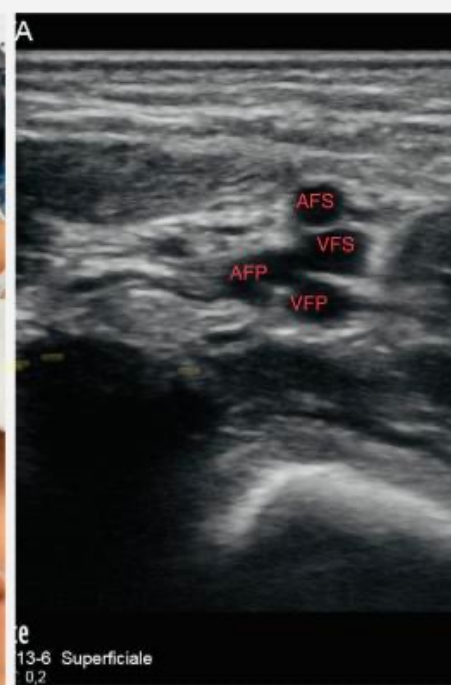




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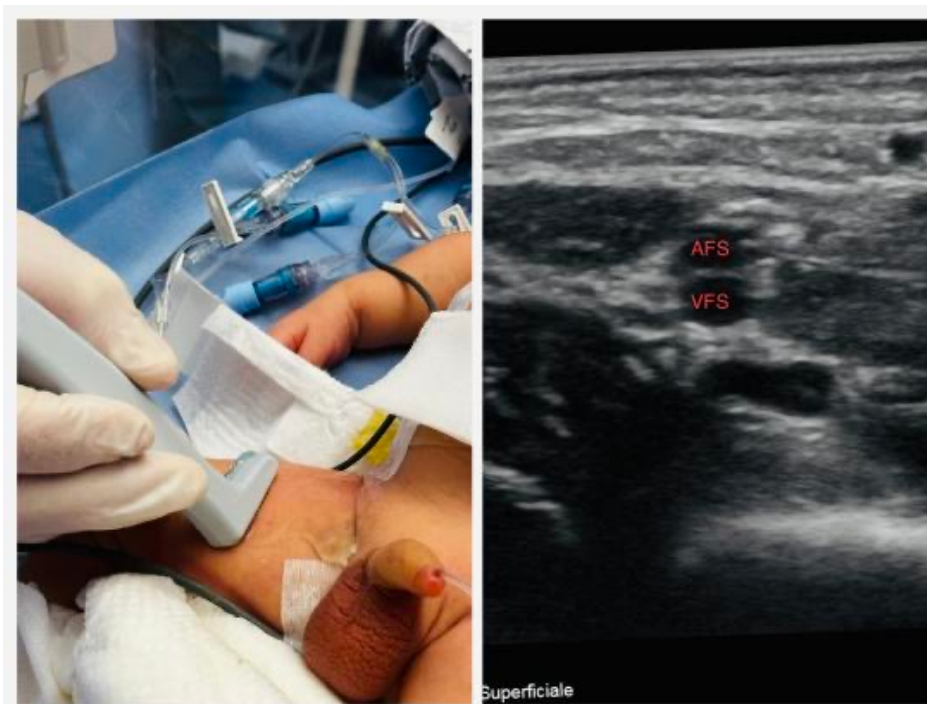




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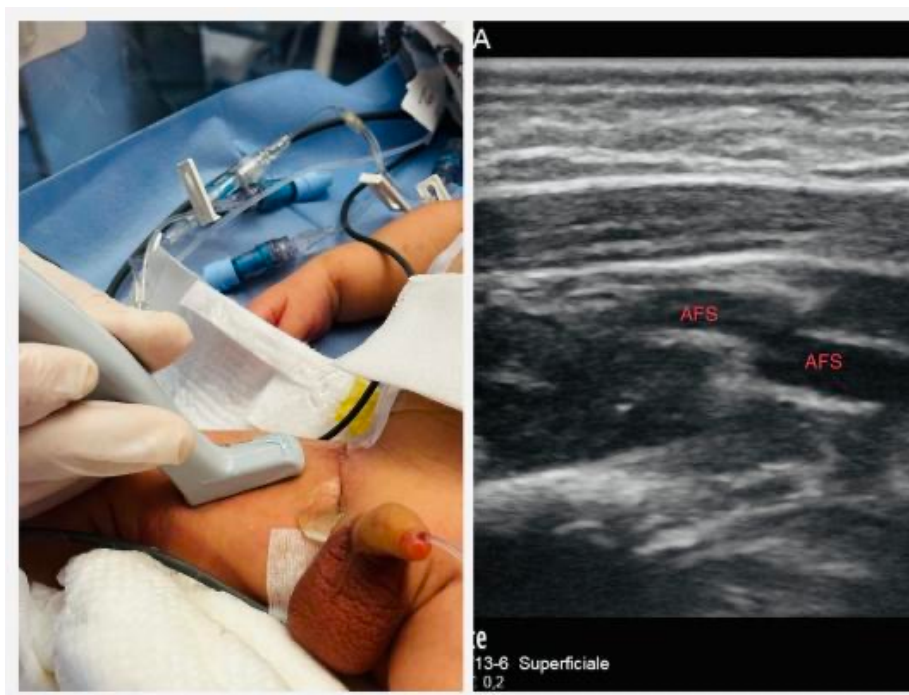




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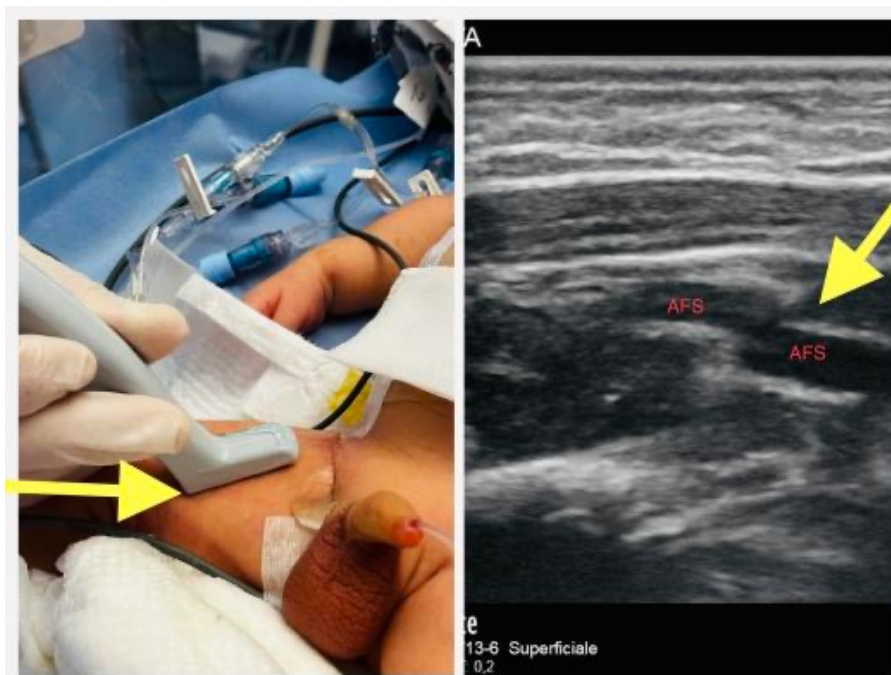




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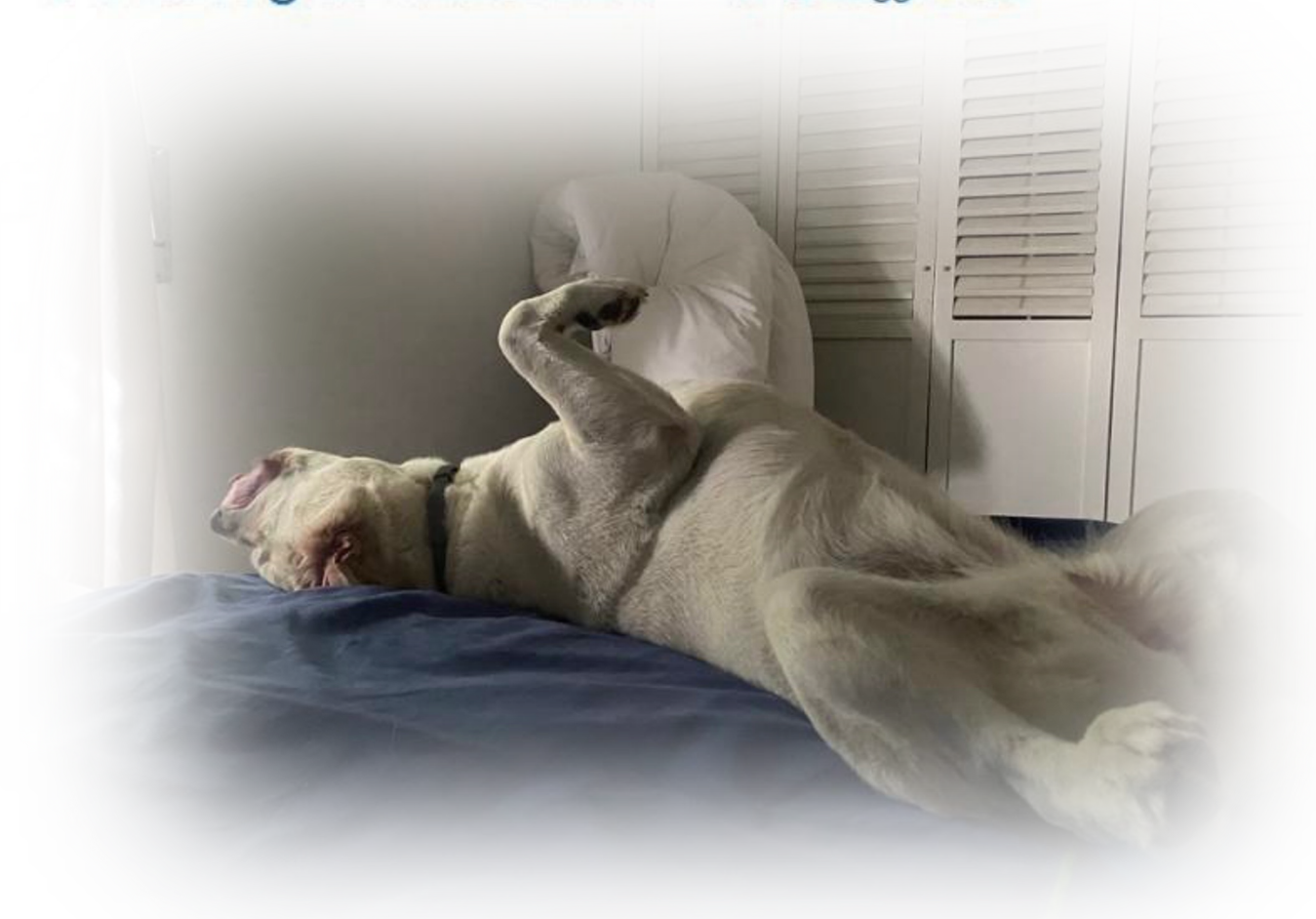


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RIFLESSIONI
&
CONCLUSIONI





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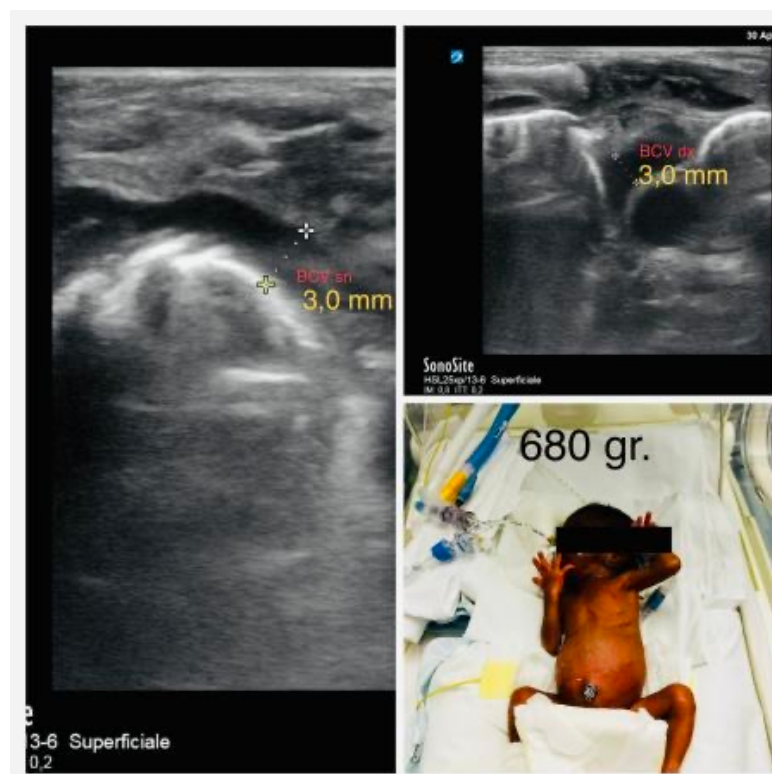
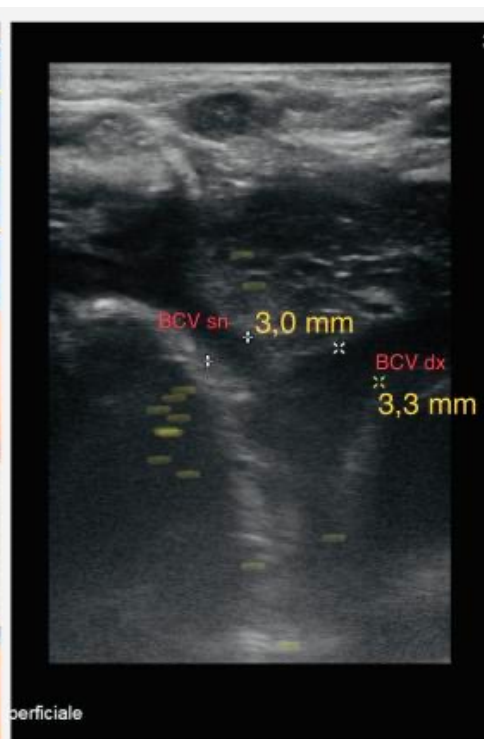
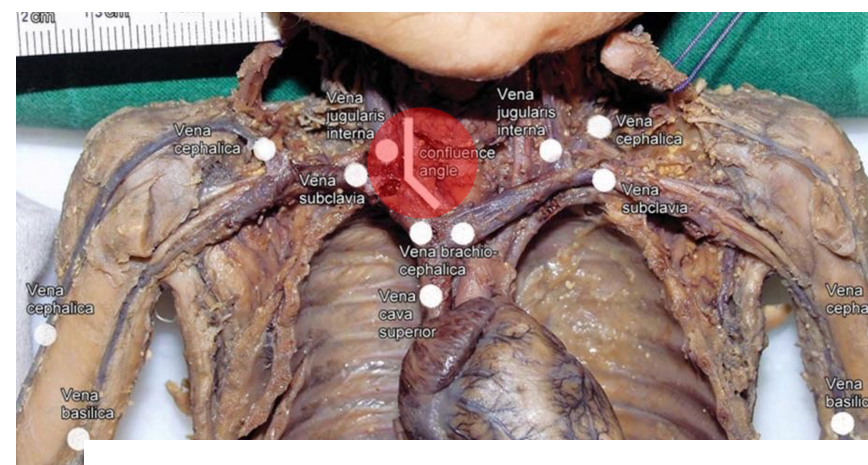


Table 1. Measurements of the diameters of the most relevant deep veins in the 5 weight groups

Vein	Whole cohort (n = 100)	500–1,000 g (n = 20)	1,001–1,500 g (n = 20)	1,501–2,000 g (n = 20)	2,001–2,500 g (n = 20)	2,501–3,000 g (n = 20)	ICC
R IJV	3.1±0.8 (1.8–6.0)	2.4±0.5 (1.8–3.1)	2.8±0.5 (2.0–3.3)	3.0±0.6 (2.1–4.2)	3.2±0.3 (2.8–3.6)	4.2±0.7 (3.2–6.0)	0.85
L IJV	3.2±0.8 (1.9–7.0)	2.5±0.4 (1.9–3.1)	2.7±0.5 (2.0–3.4)	3.2±0.6 (2.2–4.4)	3.2±0.2 (2.8–3.6)	4.4±0.9 (3.3–7.0)	0.87
R BCV	3.6±0.6 (2.6–5.7)	3.0±0.3 (2.6–3.6)	3.3±0.3 (2.7–3.7)	3.4±0.3 (2.7–3.6)	3.8±0.4 (3.1–4.2)	4.5±0.6 (3.7–5.7)	0.96
L BCV	3.5±0.8 (2.0–7.5)	3.0±0.3 (2.2–3.3)	2.9±0.4 (2.0–3.6)	3.4±0.5 (2.4–4.2)	3.5±0.3 (2.9–4.1)	4.6±0.9 (3.5–6.5)	0.97
R SBV	1.8±0.6 (0.8–3.0)	1.1±0.3 (0.8–1.7)	1.5±0.3 (1.2–2.2)	1.8±0.3 (1.3–2.3)	2.0±0.3 (1.5–2.4)	2.5±0.4 (2.0–3.0)	0.91
L SBV	1.8±0.6 (0.8–3.2)	1.1±0.3 (0.8–1.6)	1.4±0.3 (0.8–1.7)	1.8±0.3 (1.3–2.2)	2.0±0.3 (1.5–2.3)	2.5±0.3 (1.9–3.2)	0.92
R EJV	1.3±0.3 (0.8–2.2)	1.0±0.2 (0.8–1.3)	1.3±0.2 (0.9–1.5)	1.2±0.2 (0.9–1.5)	1.3±0.2 (1.0–1.5)	1.7±0.3 (1.1–2.2)	0.89
L EJV	1.4±0.4 (0.6–2.4)	0.9±0.2 (0.6–1.2)	1.2±0.3 (0.8–1.5)	1.4±0.2 (1.1–1.7)	1.5±0.2 (1.2–1.7)	1.8±0.2 (1.5–2.4)	0.90
R AxVc	1.9±0.5 (1.2–3.5)	1.5±0.1 (1.2–2.0)	1.7±0.4 (1.3–2.3)	1.8±0.3 (1.3–2.2)	2.0±0.3 (1.5–2.3)	2.5±0.5 (1.9–3.5)	0.91
L AxVc	2.0±0.4 (1.3–3.2)	1.6±0.2 (1.3–1.9)	1.9±0.5 (1.3–2.8)	2.0±0.3 (1.4–2.2)	2.2±0.2 (1.9–2.5)	2.5±0.4 (2.0–3.2)	0.93
R AxVa	1.6±0.4 (0.8–2.4)	1.2±0.3 (0.8–1.5)	1.5±0.3 (1.0–1.9)	1.5±0.3 (1.1–2.1)	1.8±0.3 (1.3–2.2)	2.1±0.2 (1.5–2.4)	0.92
L AxVa	1.6±0.4 (0.8–2.6)	1.2±0.2 (0.8–1.7)	1.5±0.4 (1.0–2.1)	1.7±0.3 (1.0–2.1)	1.8±0.2 (1.4–2.1)	2.0±0.3 (1.6–2.6)	0.91
R BrV	1.0±0.3 (0.5–2.1)	0.9±0.2 (0.7–1.2)	0.8±0.2 (0.5–1.0)	0.8±0.2 (0.6–1.1)	1.1±0.1 (0.9–1.3)	1.5±0.2 (1.2–2.1)	0.89
L BrV	1.1±0.4 (0.6–1.9)	0.9±0.2 (0.7–1.3)	0.8±0.2 (0.6–1.0)	1.0±0.2 (0.7–1.3)	1.2±0.1 (1.0–1.4)	1.6±0.2 (1.3–1.9)	0.90
R BaV	1.0±0.3 (0.5–1.5)	0.7±0.2 (0.5–1.1)	1.0±0.2 (0.7–1.2)	0.9±0.2 (0.6–1.2)	1.2±0.2 (0.7–1.4)	1.3±0.1 (1.1–1.5)	0.91
L BaV	1.0±0.3 (0.5–1.5)	0.7±0.1 (0.5–1.0)	0.9±0.1 (0.7–1.1)	0.9±0.1 (0.6–1.1)	1.3±0.2 (0.8–1.5)	1.3±0.1 (1.1–1.5)	0.92
R FeV	2.3±0.7 (1.1–3.5)	1.4±0.2 (1.1–1.8)	2.1±0.4 (1.3–2.7)	2.2±0.3 (1.8–2.6)	2.8±0.4 (2.1–3.4)	3.2±0.2 (2.9–3.5)	0.89
L FeV	2.3±0.7 (1.1–3.5)	1.4±0.3 (1.1–1.9)	2.1±0.5 (1.6–2.9)	2.0±0.4 (1.4–2.6)	2.9±0.2 (2.5–3.3)	3.1±0.2 (2.9–3.5)	0.91
R SaV	1.3±0.5 (0.5–2.3)	0.8±0.2 (0.5–1.2)	1.0±0.3 (0.7–1.8)	1.3±0.2 (0.9–1.5)	1.7±0.4 (1.2–2.3)	1.8±0.3 (1.3–2.3)	0.88
L SaV	1.3±0.5 (0.4–2.3)	0.8±0.2 (0.4–1.1)	1.1±0.2 (0.7–1.5)	1.2±0.2 (0.8–1.4)	1.8±0.3 (1.4–2.3)	1.8±0.3 (1.4–2.3)	0.89

Values are expressed in millimeters as mean ± standard deviation (range). ICC, intraclass correlation; R, right; L, left; IJV, internal jugular vein; BCV, brachiocephalic vein; SBV, subclavian vein; EJV, external jugular vein; AxVc, axillary vein at the chest; AxVa, axillary vein at the axilla; BrV, brachial vein; BaV, basilic vein; FeV, femoral vein; SaV, saphenous vein.



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A Systematic Ultrasound Evaluation of the Diameter of Deep Veins in the Newborn: Results and Implications for Clinical Practice

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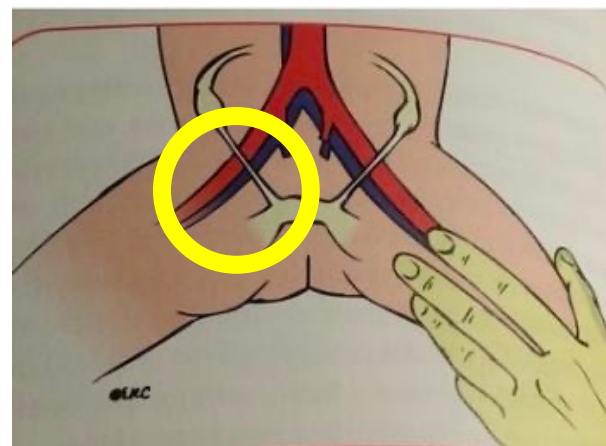
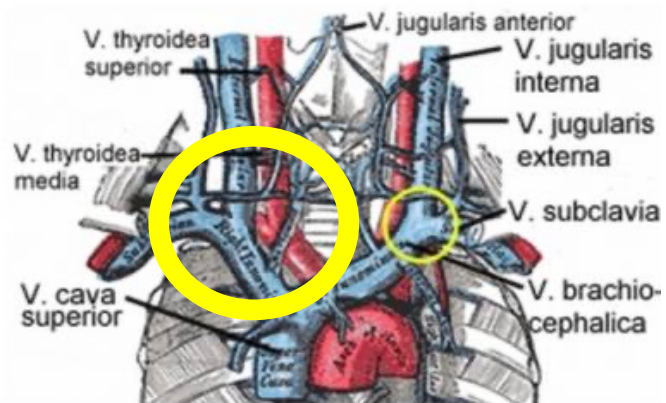
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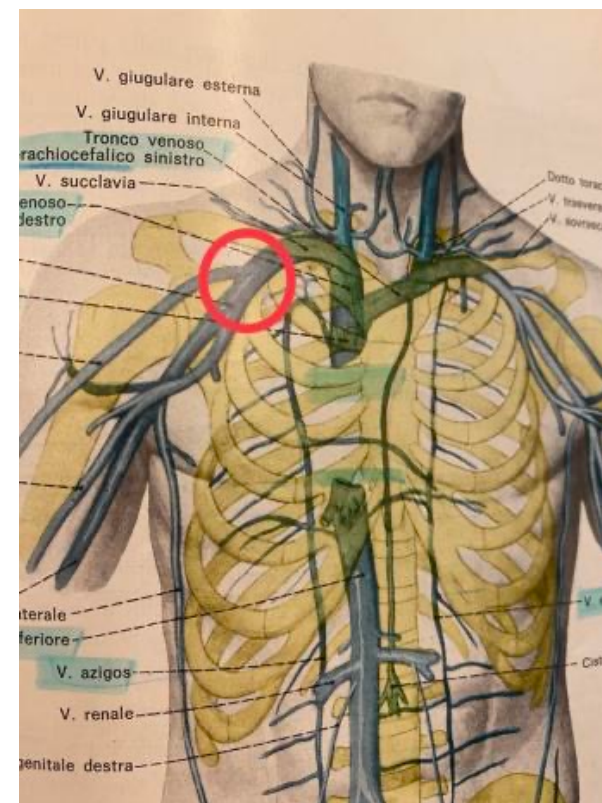




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