ACCADEMIA di FORMAZIONE

SIMTI

Emoglobinopatie: supporto trasfusionale e nuovi approcci terapeutici

Gestione accessi venosi

Giovanna Leone

Responsabile UOS Aferesi

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La sottoscritta Giovanna Leone, in qualità di Relatrice
dichiara che

nell'esercizio della Sua funzione e per l'evento in oggetto, NON È in alcun modo portatore di interessi commerciali propri o di terzi; e che gli eventuali rapporti avuti negli ultimi due anni con soggetti portatori di interessi commerciali non sono tali da permettere a tali soggetti di influenzare le mie funzioni al fine di trarne vantaggio.

Therapeutic Apheresis and Dialysis

REVIEW | Full Access

Vascular access in therapeutic apheresis: One size does not fit all

Mohadese Golsorkhi, Anoush Azarfar, Amir Abdipour

First published: 18 January 2022 | https://doi-org.opbg.idm.oclc.org/10.1111/1744-9987.13799

Abstract

Background

Therapeutic apheresis has been used in treating hematological and non-hematological diseases. For a successful procedure, efficient vascular access is required. Presently, peripheral venous access (PVA), central venous catheterization (CVC), implantable ports, and arteriovenous fistulas (AVFs) are used. This review aims to evaluate different type of access and their pros and cons to help physicians determine the best venous access.

Methods

The electronic search included PubMed and Google Scholar up to November 2020. The Mesh terms were apheresis, peripheral catheterization, central catheterization, and arteriovenous fistula.

Results

A total of 228 studies were found through database searching. Two independent authors reviewed the articles using their titles and abstracts; 88 articles were selected and the full text was reviewed. Finally, 26 were included. The inclusion criteria were studies incorporating patients with any indication for apheresis.

Conclusion

PVA has been promoted in recent years in many centers across the United States to lower the rate of complications associated with vascular access and to make this procedure more accessible. Several factors are involved in selecting appropriate venous access, such as the procedure's duration and frequency, patient's vascular anatomy, and staff's experience. In short-term procedures, temporary vascular access like PVA or CVC is preferred. Permanent vascular access such as AVF, tunneled cuffed central lines, and implantable ports are more beneficial in prolonged treatment period but each patient has to be evaluated individually by apheresis team for the most appropriate method.

duration

frequency

Vascular anatomy

Staff's experience

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REVIEW | Free Access

Cellular collection by apheresis

Anand Padmanabhan

First published: 14 February 2018 | https://doi-org.opbg.idm.oclc.org/10.111

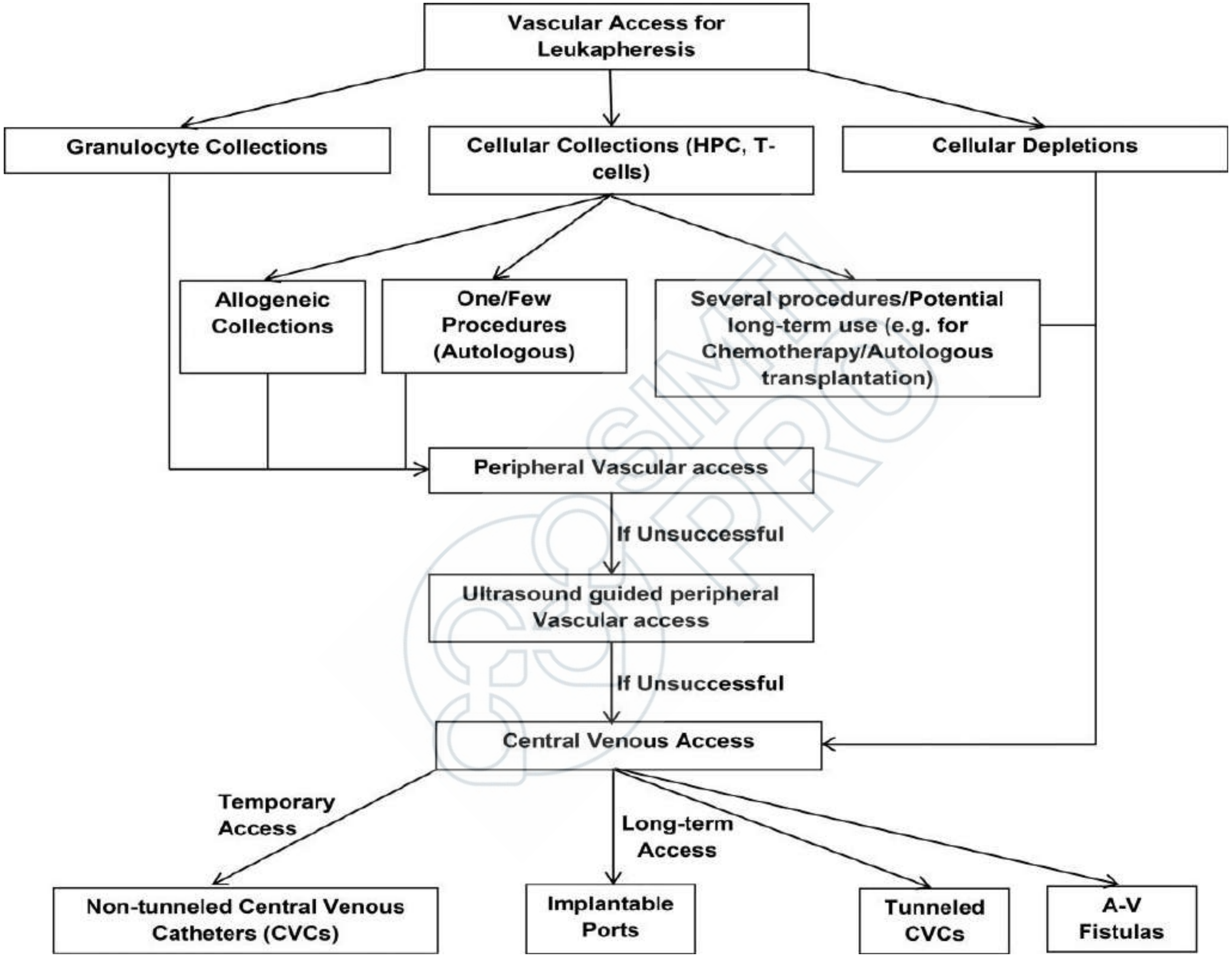
Leukocytapheresis is an important type of apheresis procedure with relevance to transplantation and cellular therapy. The nature of the collection and the needs of the patient often dictate the type of vascular access needed, not only for their leukocytapheresis procedure but also for any additional access needs after the leukocytapheresis has been successfully completed. Below, different types of leukocytapheresis procedures are described followed by a discussion of important considerations related to attaining adequate vascular access to enable safe and effective cellular collections.

Table 1. Settings, advantages, and disadvantages of various vascular access types in leukocytapheresis[a]

Access type	Setting	Advantages	Challenges
Peripheral veins	Adequate veins; one or few procedure(s) anticipated	No complications related to CVCs	Hematoma, hands outstretched for prolonged period (if antecubital vein access); ultrasound point of care devices not always available
Non-tunneled CVCs	Veins not adequate; one or few procedure(s) anticipated	Supports high flow rates (>100 mL/min); faster completion of procedure	Risks associated with CVCs, infection, thrombosis, catheter displacement/bleeding
Tunneled CVCs	Veins not adequate; several procedures anticipated; potential long-term (weeks/months) use (e.g., for chemotherapy)	Supports high flow rates (>100 mL/min); faster completion of procedure; lesser likelihood of infection/displacement relative to non-tunneled CVCs	Risks associated with tunneled CVCs, infection, thrombosis
Port-CVCs	Veins not adequate; several procedures/weeks-months of access anticipated	Flow rates vary by device; cosmetically, less displeasing than CVCs; lesser likelihood of infection/displacement	Infection, thrombosis; sometimes breast tissue in females makes access difficult and painful

[a] Arteriovenous fistulae/grafts are not discussed here because of their rarity in this setting.

Cellular collection by apheresis



Transfusion, Volume: 58, Issue: S1, Pages: 598-604, First published: 14 February 2018, DOI: (10.1111/trf.14502)

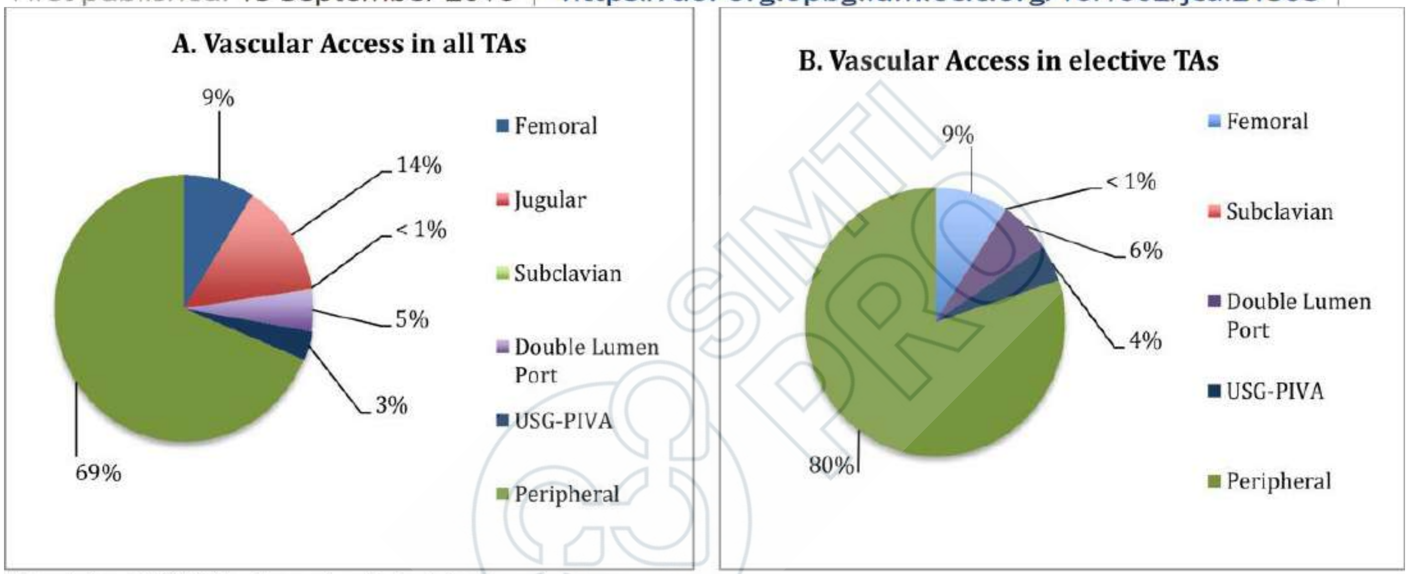
Journal of Clinical Apheresis
ASFA

COMMENTARY | Full Access

Is peripheral access for apheresis procedures underutilized in clinical practice?—A single centre experience

Daniel Putensen, David Leverett, Bhavika Patel, Jasmin Rivera

First published: 15 September 2016 | https://doi-org.opbg.idm.oclc.org/10.1002/jca.21508 |



Abbreviations: USG-PIVA, ultrasound-guided peripheral vascular access.

Between 1st January 2014 and 31st December 2015 a total of 3714 apheresis procedures were performed on 1061 patients (632 male, 429 female) with a mean age of 45 years (range 8–90 years). Of the 3714 procedures, 196 were performed on 27 patients younger than 18 years with a mean age of 15 years (range 8–17 years). The modes of vascular access used in all apheresis procedures (elective and emergency) were: peripheral in 2552 (69%) procedures, of which 131 (3%) were ultrasound-guided peripheral vascular access (USG-PIVA); femoral CVC in 331 (9%) procedures; jugular CVC in 511 (14%) procedures; subclavian CVC 2 (<1%) and double lumen ports in 187 (5%) procedures.

The modes of peripheral vascular access in elective procedures were: auto HPC-A 352 (88%), donor HPC-A 444 (97%), MNC-A 82 (93%) and aRCEx 1569 (80%).

NIVAS
National Infusion and Vascular Access Society

Challenges of vascular access in red cell exchange in sickle cell patients

Daniel Putensen

Sickle cell disease (SCD) is one of the most common severe autosomal recessive blood disorders worldwide. It is characterised by anaemia and recurrent ischaemic episodes in multiple sites. Central to the pathophysiology is the replacement of normal haemoglobin by haemoglobin S (HbS), as a result of a point mutation. This variant polymerises on deoxygenation, which leads to increased red blood cell (RBC) rigidity, haemolytic anaemia and vaso-occlusion. An estimated 10 000–15 000 people are affected in the UK alone (Brousse et al, 2014). SCD can affect multiple organs. One of the most feared complications is cerebrovascular vascular access. It may be performed either manually or, more efficiently, by an apheresis machine, which separates the patient's blood by centrifugal force into RBCs and plasma. The patient RBCs are then collected in a 'waste bag', while the plasma and donated RBCs are mixed and returned back to the patient. The apheresis machine can be programmed to calculate the amount of donated blood required to achieve the patient's desired level of HbS and haemoglobin. Two vascular access sites are necessary.

Several SCD-specific factors contribute to vascular access challenges. The requirement is more time consuming. For a small number of patients neither of the above approaches are possible, and a permanent indwelling line such as a double-lumen central venous port might be an alternative. Some hospitals report success with arteriovenous fistulas for RCE. However, more experience is needed.

Generally, the best option for long-term vascular access in SCD patients seems to be repeated peripheral cannulation, either of palpable superficial or deep veins (ultrasound-guided). In this chronic condition, an awareness of the long-term implications of any approach is essential. BJN

Review > Pediatr Emerg Med Pract. 2017 Jun;14(6):1-20.

Vascular Access in Pediatric Patients in the Emergency Department: Types of Access, Indications, and Complications

Rachel Whitney [1], Melissa Langhan [2]

Affiliations + expand

PMID: 28562239

Abstract

Vascular access is a potentially life-saving procedure that is a mainstay of emergency medicine practice. There are a number of challenges associated with obtaining and maintaining vascular access, and the choice of the route of access and equipment used will depend on patient- and provider-specific factors. In this issue, the indications and complications of peripheral intravenous access, intraosseous access, and central venous access are reviewed. Timely and effective assessment and management of difficult-access patients, pain control techniques that can assist vascular access, and contraindications to each type of vascular access are also discussed.

Tables and Figures

Table 1. Difficult Intravenous Access Prediction Score[10]

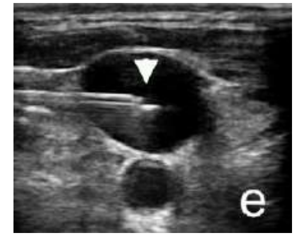
Variable	Point Value		Score
Vein visible after tourniquet	Visible	0	
	Not visible	2	______
Vein palpable after tourniquet	Palpable	0	
	Not palpable	2	______
Age	≥ 3 years	0	
	1-2 years	1	
	< 1 year	3	______
History of prematurity	Full-term	0	
	Premature	3	______
		Total	______

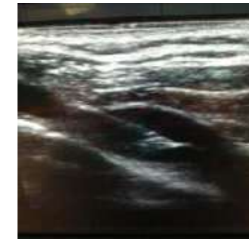
The sum of point values of the variables noted is the DIVA score (range, 0-10).
A DIVA score ≥ 4 indicates that extra consideration may be needed before placing a peripheral intravenous catheter.
Abbreviation: DIVA, difficult intravenous access.

DIVA score ≥ 4 fallimento al primo tentativo > 50%

- La **maggioranza dei pz candidati ad aferesi DIVA ≥ 4**
- Durata delle agocannule perifefriche standard < 24 h, riposizionamento ad ogni procedura aferetica

VENIPUNTURA ECOGUIDATA





Fortemente raccomandata dalle linee guida ed ideale per localizzare-pungere-cannulare vene > 0,7 cm di profondità)

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

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International evidence-based recommendations on ultrasound-guided vascular access

Table 3 Recommendations on ultrasound vascular access in neonates and children

Ultrasound vascular access in neonates and children

Domain code	Suggested definition	Level evider
D4.SD1.S1–2	Ultrasound guidance should be routinely used for short- and long-term central venous access in children and neonates	A
D4.SD1.S3	Ultrasound vessel imaging with ultrasound assistance as "a minimum" should be routinely performed before internal jugular vein puncture in neonates	A
D4.SD1.S4	In neonates, ultrasound screening should be used before subclavian vein puncture. Ultrasound-guided puncture should be considered for catheterization using the supra-clavicular route, but this technique requires experienced operators	C
D4.SD1.S5	Ultrasound vessel screening should be routinely used before femoral vein puncture. Ultrasound-guided femoral puncture is recommended to decrease inadvertent arterial puncture	B
D4.SD1.S6	Ultrasound guidance can be considered when difficult peripheral venous access is required in areas such as the antecubital fossa and ankle. Blind deep antecubital fossa puncture should disappear	C
D4.SD1.S7	Ultrasound-guided arterial catheterization improves first-pass success and should be used routinely in children and neonates	A
D4.SD1.S8	After central venous catheter placement in paediatric patients including neonates, the ultrasound equipment should remain easily accessible at the patient's bedside to detect early life-threatening catheter-related complications such as pneumothorax, cardiac tamponade and hemothorax	B
D4.SD1.S9	There is no ideal site for cannulation in children; the best site should be determined after ultrasound examination	A

Journal of Clinical Apheresis

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RESEARCH ARTICLE | Full Access

Ultrasound-based criteria for adequate peripheral venous access in therapeutic apheresis procedures

Eric Salazar, Faaria Gowani, Francisco Segura, Heather Passe, Lamesha Seamster, Bettie Chapman, Felicia Joubert, Stephanie Hopson, Tracy Easley, Salvador Garcia, Robin Miguel ... See all authors

Abstract

Background

Apheresis procedures require adequate vascular access to achieve adequate inlet flow rates. Central dialysis-type catheters are often used in apheresis, despite their multiple risks. Peripheral venous access is a safe and effective option for many patients.

Aim

We previously demonstrated that ultrasound guidance reduces central venous catheter use in apheresis patients; however, no validated criteria for preprocedural evaluation of peripheral veins exist. Here, we hypothesized that ultrasound-based criteria could predict the adequacy of a peripheral vein for apheresis procedures.

Patients/Methods

In this pilot cohort study, we reviewed the procedural outcomes for 50 cases of peripheral venous procedures that used our ultrasound-based criteria.

Results

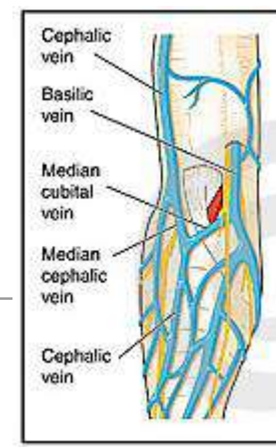
Of the procedures that met our criteria, 96% (46/48) were successfully completed. Overall, our criteria had 100% sensitivity, 50% specificity, 96% positive predictive value, and 100% negative predictive value.

Conclusion

Our criteria justify an evidence-based ultrasound-guided standard for evaluation of peripheral venous access for apheresis procedures.

TABLE 1. Ultrasound-based criteria for adequate peripheral venous access

1. Blood vessel is fully compressible with pressure from ultrasound probe
2. Vein is at least 2 cm in length and straight
3. Vein is <10 mm depth from the surface of the skin
4. Vein is at least 3 mm in diameter
5. Vein is patent with blood pressure cuff = 40 mm Hg
6. Vein lumen is free of any echogenicity (thrombus)
7. Vein is patent at rest (no tourniquet or bp cuff)



Journal of Clinical Apheresis
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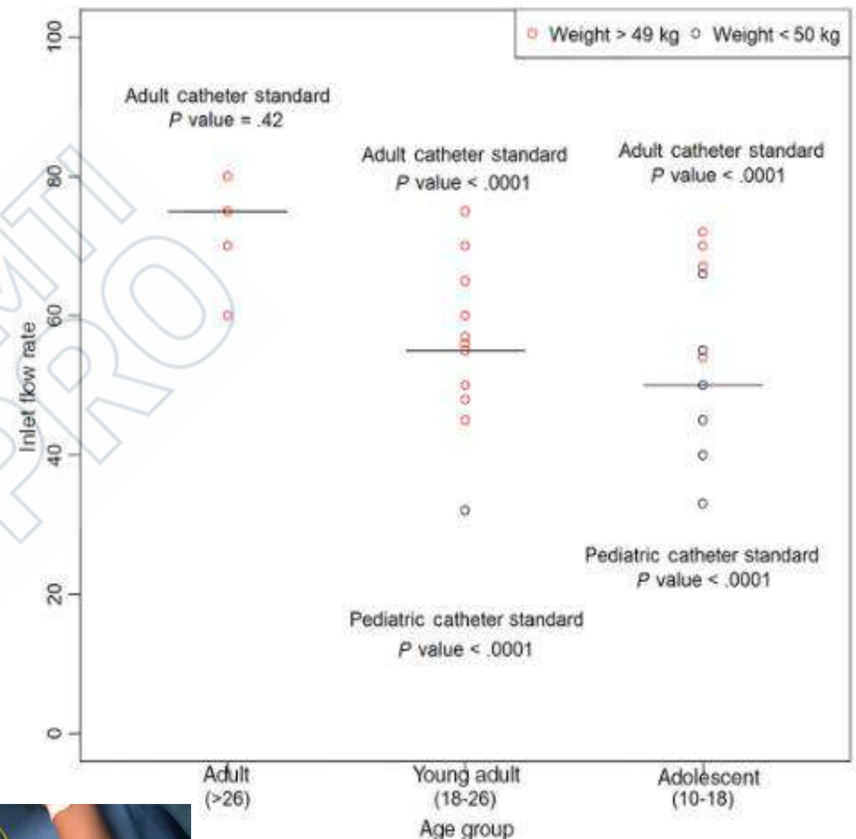
RESEARCH ARTICLE | Full Access

Novel use of a midline catheter for therapeutic and donor apheresis in children and adults

Colleen Casacchia, Maria Lozano, John Schomberg, Jennifer Barrows, Tamara Salcedo, Geetha Puthenveetil

Eighteen subjects received a total of 100 midline catheters for 73 apheresis procedures. Inlet flow rates ranged from 45 to 80 mL/min, TBV ranged from 2872 to 20 000 mL, and procedure time ranged from 1.25 to 7 hours. Inlet flow rates met or exceeded the recommended inlet flow rates for apheresis in children and adults (P < .0001). No adverse events occurred.



All subjects received a 4 French (6 cm) or 5 French (8 cm) power-injectable midline catheter (POWERWAND XL, Access Scientific, LLC, San Diego, California) with a high-flow capacity up to 180 mL/min. This is an off-label use.

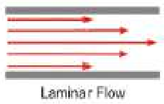
Midline catheters may provide a safe and effective alternative to the placement of superficial peripheral intravenous (PIV) catheters and CVADs for apheresis in the pediatric setting.

Il giusto catetere, una scelta difficile: le domande che ci dobbiamo fare…

Il posizionamento di un accesso venoso nel bambino deve essere fatto in maniera «sartoriale»

Calibro e lunghezza

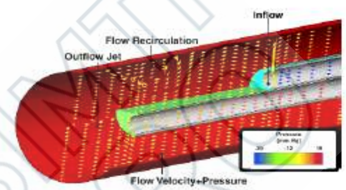
Legge di Hagen - Poiseuille



$$Q = \left[\frac{\pi \ r^4}{8\mu L}\right]\Delta P$$

La legge di Poiseuille mette in relazione la viscosità di un fluido newtoniano in regime laminare alla conducibilità idraulica (il flusso risulta direttamente proporzionale alla sezione ed inversamente proporzionale alla lunghezza del tubo).

Quota di ricircolo



La quota di ricircolo varia con il variare della distanza tra i fori di aspirazione e restituzione

Tip's gap	Quota di ricircolo
2.0 cm	8.4 %
2.5 cm	4.4 %
3.0 cm	2.4 %

Scelta del catetere

Cateteri cuffiati tunnellizzabili

< % complicanze infettive e meccaniche
Prolungato periodo di utilizzo

Cateteri non tunnellizzabili

> % complicanze infettive e meccaniche
Ridotto periodo di utilizzo
< 3 sett (CICC)
< 5 gg (FICC)

Scelta dei materiali

Poliuretano power injectable (P-UR) caratteristiche strutturali

- ✓ > resistenza alla tensione ed ai carichi di rottura del catetere e delle connessioni
- ✓ > resistenza alle sollecitazioni pressorie endoluminali
- ✓ < spessore parietale
- ✓ < grip della superficie

- Children less than 30 kg will usually not have peripheral veins with sufficient diameter for apheresis procedures to be accomplished with large gage needles. The access for drawing blood into the cell separator is critical, requiring a vein large enough for a 16-gage steel needle and resilient enough to withstand flow rates of 2 ml/kg/minute

Table 3. Suggested size and selection of vascular access for pediatric patients

Patient size	Catheter size; source
Neonate	Dual-lumen 7.0; French
3–6 kg	Dual-lumen 7.0; French
	Triple-lumen 7.0; French
6–30 kg	Dual-lumen 8.0; French
>15 kg	Dual-lumen 9.0; French
>20 kg	Dual-lumen 10.0; French
>30 kg	Triple-lumen 12; French

Seminars in Dialysis

THERAPEUTIC APHERESIS FOR NEPHROLOGISTS | Full Access

Therapeutic Apheresis in Children: Special Considerations

Stuart L. Goldstein

FATTORI CHE INFLUENZANO IL FLUSSO

L' ASPIRAZIONE E' IL PROBLEMA PRINCIPALE!!!

Non tutti i dispositivi consentono un prelievo adeguato, dipendente da:

- Calibro del catetere
- Calibro della vena
- Lunghezza
- Posizione della punta
- Percorso del catetere-fissaggio dell'exitsite

LA REINFUSIONE

Dipendente solo dal materiale

Per resistenza a danni strutturali da iniezione ad elevate pressioni

- Poliuretano di IIIª generazione
- **Power injectable**: flussi da 3 a 10 ml/sec

Anche il separatore cellulare ha il suo ruolo… settaggio di allarme e blocco su valori di pressione bassi

DIVERSE SITUAZIONI CLINICHE

- **Procedure singole o a breve termine**

  Accessi venosi posizionati e rimossi in occasione della procedura o per procedure ripetute della durata ≤ 30 gg

- **Procedure periodiche a medio-lungo termine**

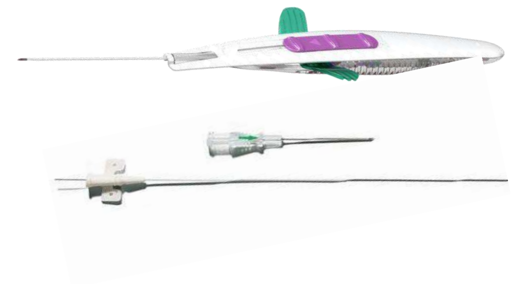
  Necessità di un accesso venoso stabile per procedure con durata ≥ 30 gg

CONSIDERIAMO LE DIVERSE OPZIONI…

1. **Catetere venoso periferico (CVP) + CVP**
2. **CVP + CVC**
3. **CVC + CVC**
   - CVC bilume breve termine
   - CVC bilume lungo termine

1

CVP + CVP



QUALI CVP PER ASPIRAZIONE?

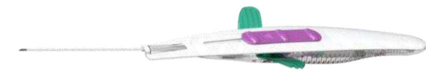
- AGOCANNULE 20-18-16-14 G in vene periferiche del braccio
- MINIMIDLINE 20-18 G/3-4 F

-In v sup visibili/palpabili, puntura ed incannulazione diretta: v. antecubitale, v. cefalica, v. basilica
- In v. profonde, puntura ed incannulazione ecoguidata: v. basilica, v. brachiale, v. cefalica, v. femorale sup

QUALI CVP PER REINFUSIONE?

- QUALUNQUE CANNULA CORTA DI CALIBRO> 20 G
- MINIMIDLINE **POWER INJECTABLE** ≥ 22 G O MINIMIDLINE NON POWER INJECTABLE >20 G O > 3 FR
- MIDLINE > 3 FR

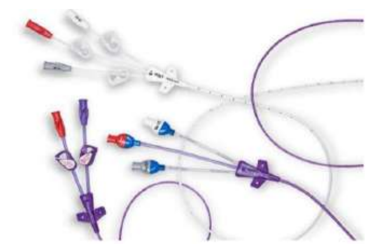
2 CVP + CVC



Il CVP dovrà essere inserito ex novo, utilizzato per **ASPIRAZIONE/REINFUSIONE**

- Scegliere il dispositivo e la vena **in base al flusso in aspirazione** consentito **dal CVC** già **presente** in sede

3 CVC + CVC



QUALI CVC PER ASPIRAZIONE?

- CVC monolume di calibro adeguato/CVC bilume di grosso calibro, compatibilmente corti, con tragitto rettilineo e con punta in GCA/atrio dx

QUALI CVC PER REINFUSIONE?

- Qualunque CVC di qualunque tipo

BREVE TERMINE (< 7 GG)

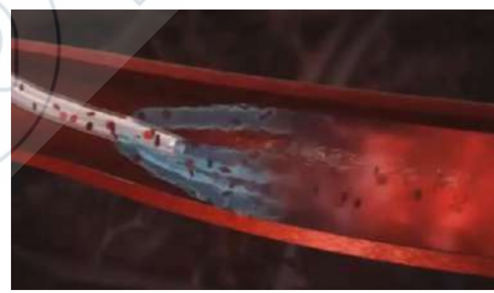
Agocannule periferiche corte a lunga permanenza (2-4,5 cm)

BD NEXIVA

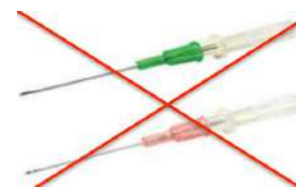
Power Injection Flow Rates

Gauge and Length	BD Catalog #	Max Flow Rate (mL/sec)	Max Injector Setting (PSI)
22 G 1.00 IN	383591	6.5	325
20 G 1.00 IN	383592	10.0	325
20 G 1.25 IN	383593	10.0	325
18 G 1.25 IN	383594	15.0	325

- ➢ Puntura diretta o ecoguidata
- ➢ Alette di stabilizzazione integrate
- ➢ Sistema chiuso (minor contaminazione ed infezione)
- ➢ **Power injectable** (da 3 a 15 ml/sec)
- ➢ Rapido reintegro volemico
- ➢ Uso intra-ospedaliero

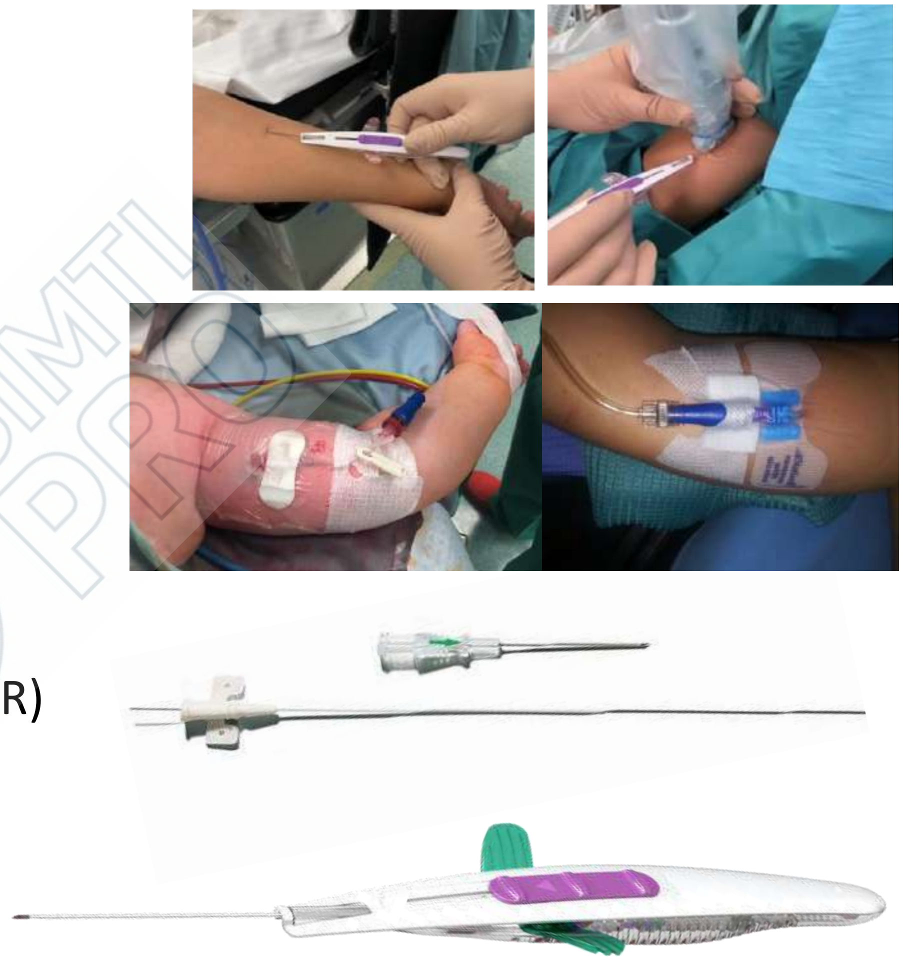


LE CANNULE CORTE E RIGIDE SENZA ALI DI STABILIZZAZIONE HANNO VITA BREVE PER DISLOCAZIONE, INFILTRAZIONE, TROMBOSI/FLEBITE



BREVE TERMINE (< 30 GG)

Agocannule periferiche lunghe (Mini-midline 6-15 cm)



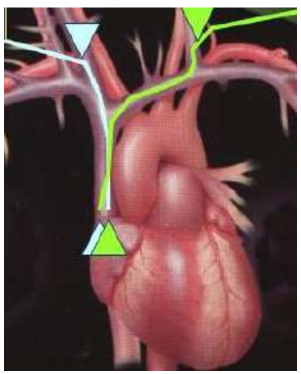
- Posizionamento per puntura diretta
- Posizionamento ecoguidato (punta tratto brachiale v. ascellare
- **Power injectable** (POWERGLIDE, SELDIPUR)
- Uso intra-ospedaliero

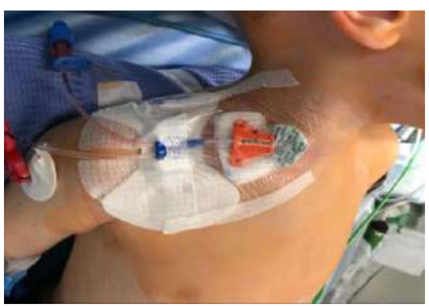
BREVE TERMINE (< 1 mm)

CICC

Cateteri venosi centrali ad inserzione centrale

Approccio cervico-toracico
(VGI, V. Anonima, V. Succlavia, V. Ascellare)

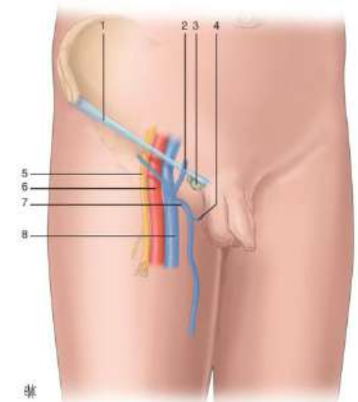




FICC

Cateteri venosi centrali ad inserzione femorale

Approccio inguinale
(V. femorale com. V. femorale sup.)



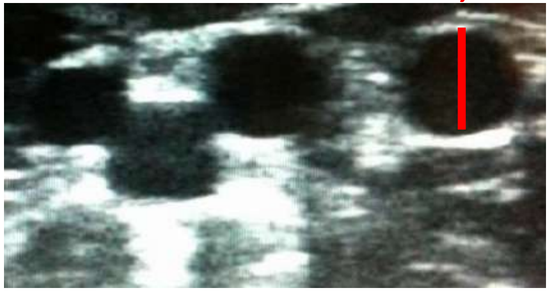
- Mono, bi e trilume
- Posizionamento ecoguidato
- FICC inserzione in regime d’urgenza
- Posizione punta in GCA/atrio dx
- Maggiore rischio CRBSI
- Uso intra-ospedaliero

MEDIO TERMINE (< 4/6 mm)

Midline «midclavicular»

- Mono e bilume
- Posizionamento ecoguidato vene profonde terzo medio del braccio
- Punta tratto toracico v. ascellare/v. succlavia
- **Power injectable**
- Basso rischio CRBSI
- Uso intra/extra-ospedaliero

Vena > 0,3 cm



Il solo limite è il diametro della vena
Vena ≥ 0,3 cm: Midline 3 Fr monolume, il più piccolo a disposizione

MEDIO TERMINE (< 4/6 mm)

PICC

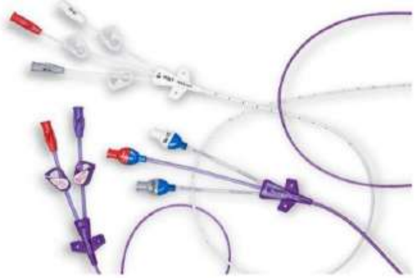
Cateteri venosi centrali ad inserzione periferica

Puntura v. basilica

Puntura v. ascellare e tunnellizzazione

Puntura v. femorale superficiale

- Mono, bi, e trilume
- Posizionamento ecoguidato vene profonde terzo medio del braccio/terzo medio della coscia
- Posizione punta in GCA
- **Power injectable**
- Basso rischio CRBSI
- Uso intra/extra-ospedaliero



Il solo limite è il diametro della vena
Vena ≥ 0,3 cm: PICC 3 Fr monolume, il più piccolo a disposizione

Complicanze associate ai CVC

COMPLICANZE IMMEDIATE/PRECOCI

- Insucceso di venipuntura
- Puntura arteriosa accidentale
- Pneumotorace (PNX)
- Emotorace
- Tamponamento cardiaco
- Artimia
- Embolia

COMPLICANZE TARDIVE

- Embolie
- Trombosi
- Tamponamento cardiaco
- Danno linfatico
- Danno vascolare
- Infezioni (CRBSI)
- L'occlusione del catetere
- La rottura del catetere
- La sindrome di Pinch-Off
- Infezioni al flusso sanguigno catetere correlate CLABSI
- Infezioni dell'exit site

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RESEARCH ARTICLE | Full Access

Use of dual lumen ports for red blood cell exchange: A comparison of adults and children with sickle cell disease

Leon Su, Frank Nizzi, Ramin Jamshidi, Esteban Gomez, Ajay Perumbeti, Lucia Mirea, Sanjay Shah

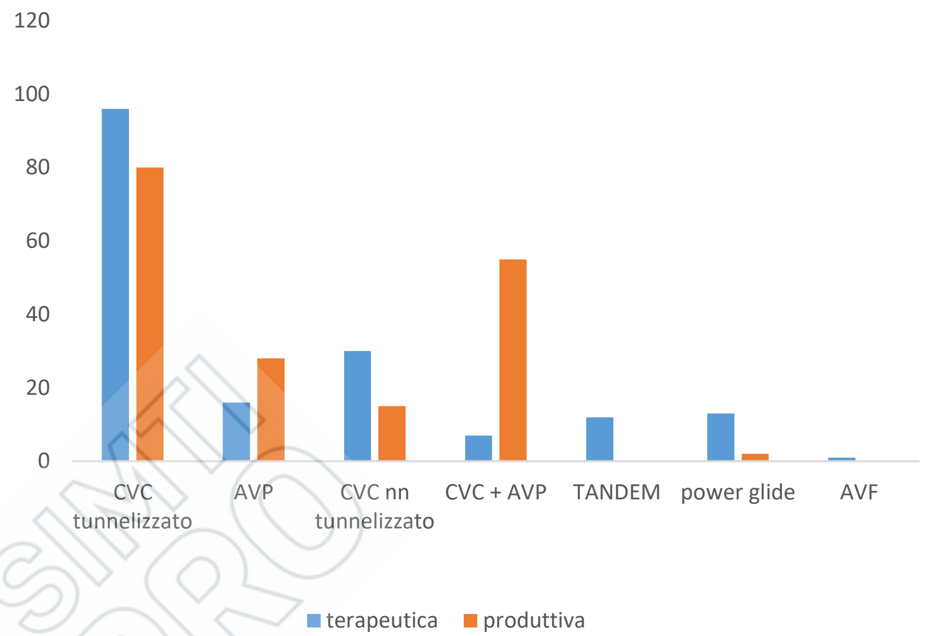
Medical records were reviewed for 685 RBC exchange procedures performed on 25 patients (11 pediatric and 14 adult) between November 2014 to November 2018

Compared to adults, pediatric patients had slower average maximum inlet speed (42 vs 53 mL/min, $P < .01$), but shorter procedure time (60 vs 75 minutes, $P < .01$) and lower rate of access alarms (1% vs 11%, $P < .01$). Overall, 0.29 thrombotic events per 1000 port days and 0.04 infections per 1000 port days were observed

TABLE 3. Port characteristics of sickle cell patients with dual lumen ports undergoing RBC exchange

Characteristic	Pediatrics (N = 11)	Adults (N = 14)	*P*-value
Type of Port, N (%)			
Bard 9.5F Dual lumen Powerport	8 (73%)	4 (29%)	.05
Angiodynamics 11.4F Dual lumen Port	3 (27%)	10 (71%)	
Port Location (Body), N (%)			
Upper chest	7 (64%)	11 (79%)	.65
Lateral chest wall	4 (36%)	3 (21%)	
Vascular approach, N (%)			
Internal jugular	10 (91%)	7 (50%)	.04
Subclavian	1 (9%)	7 (50%)	
Thrombotic complication(s) related to port, N (%)	2 (18%)	5 (36%)	.41
Time (months) to thrombotic complication, mean (SD)	22.5 (6.4)	20 (15.9)	.70
Median (IQR)	22.5 (18-27)	22 (6-23)	
Infectious complication(s) related to port, N (%)	0 (0%)	1 (7%)	1.00

Esperienza Accesso vascolare in OPBG dal 2022 al 2023



N° pazienti totali 355

Età 12 aa (0.1 aa -28 aa)

Peso 30 kg (3 kg – 82 kg)

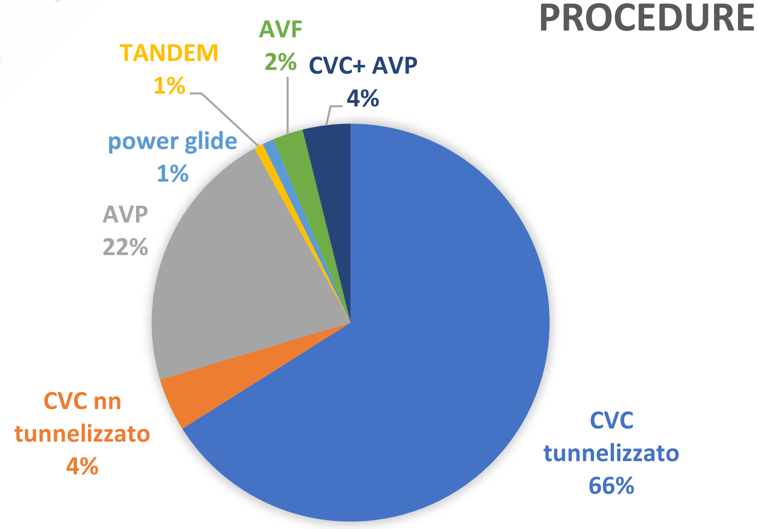
N° paz 179 aferesi produttiva

N° paz 170 aferesi terapeutica

N° procedure 1620

N° procedure terapeutica 1374

N° procedura produttiva 246



CONCLUSIONI

PERCORSO DEDICATO

FORMAZIONE

TEAM AV

GRAZIE
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