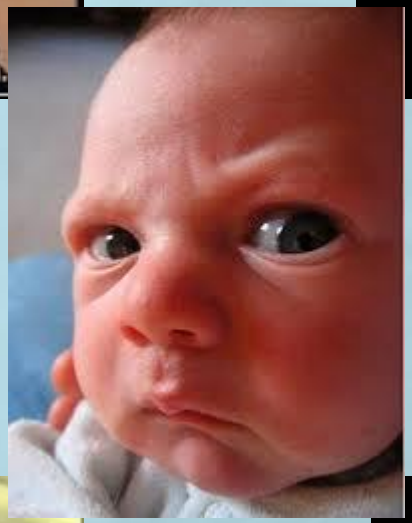
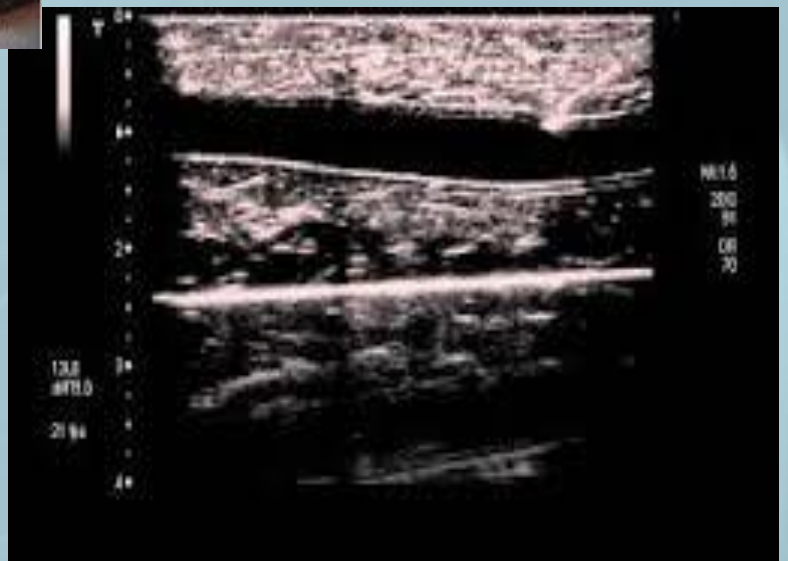
RUOLO DELL'ECOGRAFIA NEL CATETERISMO VASCOLARE E NEI BLOCCHI ANTALGICI PEDIATRICI

Dott. Milo Vason
U.O. Anestesia e Rianimazione Ospedaliera
Azienda Ospedaliero-Universitaria S. Anna
Cona-Ferrara


Short Axis View
Internal Jugular Vein / Carotid Artery
Short Axis View
Screen Marker to Left
e questo ci permette di orientarci mentre poniamo
l'ago sotto il collo del paziente e cannuliamo la vena.





Intensive Care Med. 2008 Nov;34(11):2100-5 doi: 10.1007/s00134-008-1210-9 Epub 2008 Jul 11

Safety and efficacy of ultrasound assistance during internal jugular vein cannulation in neurosurgical infants.

Lamperti M1, Caldiroli D, Cortellazzi P, Vailati D, Pedicelli A, Tosi F, Piastra M, Pietrini D.
1Department of Neuroanaesthesiology, National Neurological Institute C. Besta, Milan, Italy.

- **OBJECTIVE:**
- **Ultrasound guidance (USG) for internal jugular cannulation is the best solution in difficult settings where paediatric patients are involved**. This is an outcome study on efficacy and complications of the USG for the internal jugular vein (IJV) cannulation in neurosurgical infants as well as an ultrasound study of anatomical findings of the IJVs in infants.

- **DESIGN AND SETTINGS:**
- A prospective study conducted in two Academic Neurosurgical hospitals.

- **PARTICIPANTS:**
- In 191 babies (body weight <15 kg), anatomical findings were studied. We performed CVC echo guided placement in 135/191 infants (weighting <10 kg).

- **RESULTS:**
- After a brief training period, both institutions adopted a common protocol and USG device. We obtained successful cannulation in all patients. Carotid puncture (1.5%) was the only main complication registered and minor complications were poor. Time required for cannulation was 12.5 +/- 5.7 min. Anatomical findings (in 191 patients) were IJV laterality in 34.6% cases, IJV antero-lateral in 59.7% and anterior in 5.7%. A linear relation was found between weight and internal jugular vein diameter even if R(2) = 0.43 and the model cannot be used to predict the exact size of the vein. In 62/135 babies weighting <10 kg, anatomical measurements were done in supine and Trendelemburg position. Trendelemburg position increases significantly (P < 0.001) IJV diameter, but not IJV depth.

- **CONCLUSIONS:**
- **We considered ultrasound guidance as the first choice in infants because it can enhance IJV cannulation success, safety, and allows one to measure relationships and diameter of the IJV and optimise the central line positioning.**

Curr Opin Organ Transplant. 2009 Jun;14(3):281-5 doi: 10.1097/MOT.0b013e328329400c.

Quality improvement: ultrasonography-guided venous catheterization in organ transplantation.

Sabate A1, Koo M.

1Department of Anaesthesiology and Reanimation, Hospital Universitari de Bellvitge, IDIBELL, Universitat de Barcelona, Barcelona, Spain.

•PURPOSE OF REVIEW:

Central venous catheterization (CVC) is a procedure, not exempt of risk. Transplantation patients represent by themselves a high-risk group for CVC. Ultrasonography provides us of the exact localization of the target vein and its relationship with artery and nerve structures, detecting anatomic variations and thromboses of vessels. A description of technical skills, a review of the clinical evidence of ultrasonography-guided CVC and basic training guidelines are presented.

•RECENT FINDINGS:

The internal jugular vein is the most common target vein selected because it is easier and safer, therefore it is the target vein recommended for learning the ultrasonography procedure. For subclavian-axillar vein insertion, the more distal (deltoid) access is the preferred approach; the supraclavicular access has been described with high success in paediatric patients. Anatomic variations of the venous system are not uncommon; small size, overlap artery and tissue oedema around the neck are the main causes of CVC failure. **Training guidelines for ultrasound-guided vascular catheterization are necessary, and skill maintenance is crucial**.

Acad Emerg Med. 2014 Sep;21(9):981-6 doi: 10.1111/acem.12460.

Ultrasound assistance for central venous catheter placement in a pediatric emergency department improves placement success rates.

Gallagher RA1, Levy J, Vieira RL, Monuteaux MC, Stack AM.

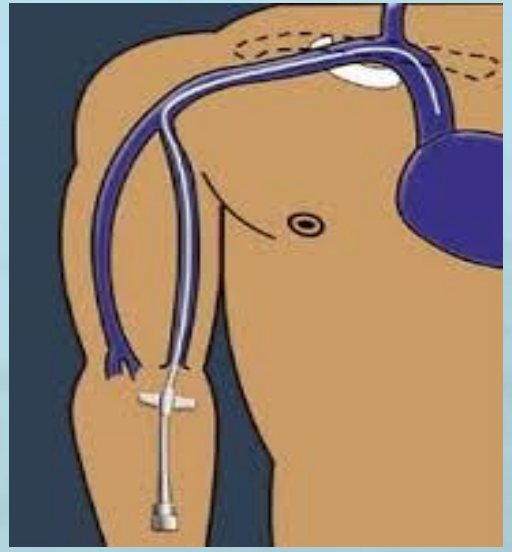
1The Department of Pediatrics, Division of Emergency Medicine, Boston Children's Hospital, Boston.

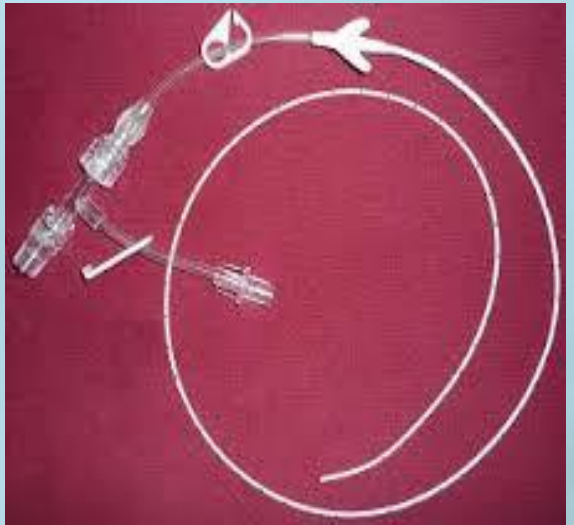
- **OBJECTIVES:**
- **The use of ultrasound (US) has been shown to improve success rates and reduce complications of central venous catheter (CVC) placement in adult emergency department (ED) patients. The authors sought to determine if US assistance for CVC placement is associated with an increased success rate in pediatric ED patients.**

- **METHODS:**
- This was a retrospective cohort study of CVC placement in a pediatric ED from January 2003 to October 2011. Data were extracted from a procedure log created to record details entered by physicians at the time of CVC placement, including indication, location, complications, and information regarding use of US. All femoral vein and internal jugular vein CVC placement attempts performed by, assisted with, or directly supervised by pediatric emergency physicians (EPs) were included. Characteristics of procedures performed with and without US assistance were compared, controlling for patient and physician factors. The primary outcome was the success rate of CVC placement.

- **RESULTS:**
- There were 168 patients undergoing CVC placement attempts. **The proportion of successful placement attempts was significantly higher when using US assistance (96 of 98) compared to those without (55 of 70; 98% vs. 79%,** odds ratio [OR] = 13.1, 95% confidence interval [CI] = 2.9 to 59.4). When controlling for patient- and physician-specific factors, success rates remained significantly higher.

- **CONCLUSIONS:**
- **Ultrasound assistance was associated with greater likelihood of success in CVC placement in a pediatric ED.**





Acta Anaesthesiol Scand. 2013 Mar;57(3):278-87. doi: 10.1111/aas.12024. Epub 2012 Dec 17.

Peripherally inserted central catheters in infants and children - indications, techniques, complications and clinical recommendations.

Westergaard B1, Classen V, Walther-Larsen S.1Department of Anaesthesia, Juliane Marie Centre, Copenhagen University Hospital Rigshospitalet, Copenhagen, Denmark.

- **Venous access required both for blood sampling and for the delivery of medicines and nutrition is an integral element in the care of sick infants and children. Peripherally inserted central catheters (PICCs) have been shown to be a valuable alternative to traditional central venous devices in adults and neonates.**

- In this study, we therefore review the indications, methods of insertion and complications of PICC lines for children beyond the neonatal age to provide clinical recommendations based on a search of the current literature.

- **PICCs emerge as a safe and valuable option for intermediate- to long-term central venous access in children both in and out of hospital. Insertion can often be performed in light or no sedation, with little risk of perioperative complications. Assisted visualisation, preferably with ultrasound, yields high rates of insertion success. With good catheter care, rates of mechanical, infectious and thrombotic complications are low and compare favourably with those of traditional central venous catheters.**

J Pediatr Hematol Oncol. 2015 Oct;37(7):e421-3. doi: 10.1097/MPH.0000000000000369.

Peripherally Inserted Central Venous Catheters in Pediatric Hematology/Oncology Patients in Tertiary Care Setting: A Developing Country Experience.

Fadoo Z1, Nisar MI, Iftikhar R, Ali S, Mushtaq N, Sayani R.

1*Department of Pediatrics and Child Health and Department of Oncology †Department of Pediatrics and Child Health §Department of Radiology, Aga Khan University ‡Aga Khan University Medical College, Karachi, Pakistan.

- **PURPOSE:**
- **Peripherally inserted central venous catheters (PICC) have been successfully used to provide central access for chemotherapy and frequent transfusions.** The purpose of this study was to assess the feasibility of PICCs and determine PICC-related complications in pediatric hematology/oncology patients in a resource-poor setting.

- **METHODS:**
- All pediatric patients (age below 16 y) with hematologic and malignant disorders who underwent PICC line insertion at Aga Khan University Hospital from January 2008 to June 2010 were enrolled in the study. Demographic features, primary diagnosis, catheter days, complications, and reasons for removal of device were recorded.

- **RESULTS:**
- Total of 36 PICC lines were inserted in 32 pediatric patients. Complication rate of 5.29/1000 catheter days was recorded. Our study showed comparable complication profile such as infection rate, occlusion, breakage, and dislodgement. The median catheter life was found to be 69 days.

- **CONCLUSIONS:**
- **We conclude that PICC lines are feasible in a resource-poor setting and recommend its use for chemotherapy administration and prolonged venous access**

Ann Hematol. 2015 Nov;94(11):1765-76. doi: 10.1007/s00277-015-2481-1. Epub 2015 Aug 25.

Recommendations for the use of long-term central venous catheter (CVC) in children with hemato-oncological disorders: management of CVC-related occlusion and CVC-related thrombosis. On behalf of the coagulation defects working group and the supportive therapy working group of the Italian Association of Pediatric Hematology and Oncology (AIEOP).

Giordano P1, Saracco P2, Grassi M1, Luciani M3, Banov L4, Carraro F5, Crocoli A6, Cesaro S7, Zanazzo GA8, Molinari AC4; Italian Association of Pediatric Hematology and Oncology (AIEOP).

1Department of Biomedicine and Human Oncology, Pediatric Unit, University of Bari "Aldo Moro", Bari, Italy.
2Department of Pediatrics, Hematology Unit, University of Turin, Turin, Italy.
3Department of Pediatric Hematology Oncology, Bambino Gesù Children Hospital, Rome, Italy.
4Thrombosis and Hemostasis Unit, Giannina Gaslini Children's Hospital, Genoa, Italy.
5Pediatric Hematology Oncology and Bone Marrow Unit, Ospedale Infantile Regina Margherita, Turin, Italy.
6Department of Surgery, General and Thoracic Surgery Unit, Bambino Gesù Children Hospital, Rome, Italy.
7Pediatric Hematology Oncology Unit, Azienda Ospedaliera Universitaria Integrata, Verona, Italy.
8Institute for Maternal and Child Health IRCCS Burlo Garofolo, Trieste, Italy.

- **Central venous catheters (CVC), used for the management of children with hemato-oncological disorders, are burdened by a significant incidence of mechanical, infective, or thrombotic complications.**

- The Italian Association of Pediatric Hematology and Oncology (AIEOP) reviewed the pediatric and adult literature to propose the first recommendations for the management of CVC-related occlusion and CVC-related thrombosis in children with hemato-oncological disorders.

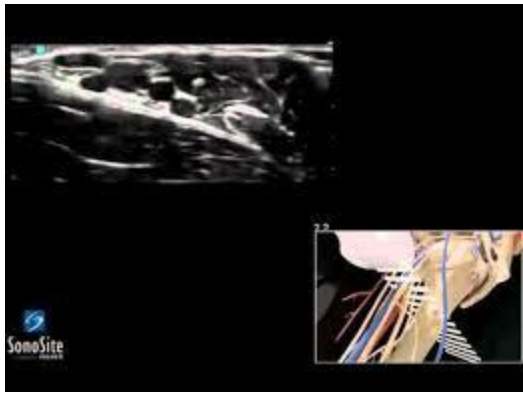
Reg Anesth Pain Med. 2010 Mar-Apr;35(2 Suppl):S74-80. doi: 10.1097/AAP.0b013e3181d34ff5.

The American Society of Regional Anesthesia and Pain Medicine and the European Society of Regional Anaesthesia and Pain Therapy joint committee recommendations for education and training in ultrasound-guided regional anesthesia.

Sites BD1, Chan VW, Neal JM, Weller R, Grau T, Koscielniak-Nielsen ZJ, Ivani G.

1Dartmouth-Hitchcock Medical Center,Lebanon, NH 03756, USA

- **Ultrasound-guided regional anesthesia (UGRA) is a growing area of both clinical and research interest**.
- The following document contains the work produced by a joint committee from ASRA and the European Society of Regional Anesthesia and Pain Therapy. This joint committee was established to recommend to members and institutions the scope of practice, the teaching curriculum, and the options for implementing the medical practice of UGRA.This document specifically defines the following:1. 10 common tasks used when performing an ultrasound-guided nerve block,2. The core competencies and skill sets associated with UGRA,3. A training practice pathway for postgraduate anesthesiologists, and4. A residency-based training pathway.In both the residency and postgraduate pathways, training, competency, and proficiency requirements include both didactic and experiential components.
- **The Joint Committee recommends that the decision to grant UGRA privileges be based at the individual institution level. Each institution that conducts UGRA is encouraged to support a productive quality improvement process.**


SonoSite

Paediatr Anaesth. 2012 Oct;22(10):995-1001. doi: 10.1111/pan.12003.

Everyday regional anesthesia in children.

Marhofer P1, Ivani G, Suresh S, Melman E, Zaragoza G, Bosenberg A.

1Department of Anaesthesia, Intensive Care Medicine and Pain Therapy, Medical University of Vienna, Vienna, Austria.

- **Regional anesthesia in children is an evolving technique with many advantages in perioperative management.** Although most regional anesthesia techniques are sufficiently described in the literature, the implementation of these techniques into daily clinical practice is still lacking.

- **The main problems associated with pediatric regional anesthesia (PRA) include the appropriate selection of blockade, the management around the block, and how to teach these techniques in an optimal manner**.

Singapore Med J. 2013 Nov;54(11):e218-20.

Ultrasonography-guided ilioinguinal-iliohypogastric nerve block for inguinal herniotomies in ex-premature neonates.

Lee S1, Tan JS.

1Department of Paediatric Anaesthesia, KK Women's and Children's Hospital, 100 Bukit Timah Road, Children's Tower Level 2, Singapore 229899

- **The ilioinguinal-iliohypogastric (IG-IH) nerve block provides effective opioid-sparing analgesia for inguinal surgeries**. A recent retrospective review of 82 ex-premature neonates who underwent inguinal herniotomy at KK Women's and Children's Hospital, Singapore, reported a **success rate of 89% for landmark-guided IG-IH blocks.**

- All blocks in that study were performed by senior paediatric anaesthetists using the landmark-based technique, which relies on fascial clicks. **Ultrasonographic guidance has been reported to improve the success of IG-IH blocks in older children to up to 94%.**

Anesthesiol Clin. 2014 Mar;32(1):263-79. doi: 10.1016/j.anclin.2013.10.008. Epub 2013 Dec 8.

Ultrasound for regional anesthesia in children.

Suresh S1, Sawardekar A2, Shah R2.

1Department of Pediatric Anesthesiology, Ann & Robert H. Lurie Children's Hospital of Chicago, Feinberg School of Medicine, Northwestern University, 225 East Chicago Avenue, Box 19, Chicago, IL 60611, USA. 2 Department of Pediatric Anesthesiology, Ann & Robert H. Lurie Children's Hospital of Chicago, Feinberg School of Medicine, Northwestern University, 225 East Chicago Avenue, Box 19, Chicago, IL 60611, USA.

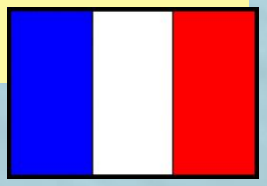
- The use of regional anesthesia in children is increasing. Rapid advancement in the use of ultrasound guidance has allowed for a greater ease in performing peripheral regional anesthesia in pediatrics. Successful peripheral nerve blockade provides children with analgesia that will improve their operative

Eur J Anaesthesiol. 2014 Jun;31(6):327-32. doi: 10.1097/EJA.0000000000000040.

Ultrasound-guided tranversus abdominis plane block for herniorrhaphy in children: what is the optimal dose of levobupivacaine?

Sola C1, Menace C, Rochette A, Raux O, Bringuier S, Molinari N, Kalfa N, Capdevila X, Dadure C.

1From the Department of Anaesthesia and Critical Care Medicine, Lapeyronie University Hospital (CS, CM, AR, OR, SB, XC, CD), Department of Biostatistics, Epidemiology and Medical Information, La Colombière University Hospital (SB, NM), and Department of Abdominal and Urological Surgery, Lapeyronie University Hospital, Montpellier, France (NK).



- Regional anaesthesic techniques are commonly used for the management of pain following lower abdominal surgery in children. The transversus abdominis plane (TAP) block has shown promise for perioperative analgesia.
- To evaluate the optimal dose of levobupivacaine for successful ultrasound-guided TAP block in children.
- Twenty-seven consecutive children aged 1 to 5 years scheduled for day-case elective herniorrhaphy.
- After induction of general anaesthesia, ultrasound-guided TAP block was performed with a fixed volume of 0.2 ml kg (-1) of levobupivacaine solution. Block failure was defined as a 20% increase in heart rate or mean arterial pressure from baseline. Rescue analgesia consisted of intravenous remifentanil infusion during surgery and intravenous nalbuphine in the postanaesthetic care unit (PACU). Patients were assessed using the FLACC (face, legs, activity, cry and consolability) pain scale, the rescue analgesic consumption in the PACU and day-case unit and the postoperative pain measure for parents score at home.

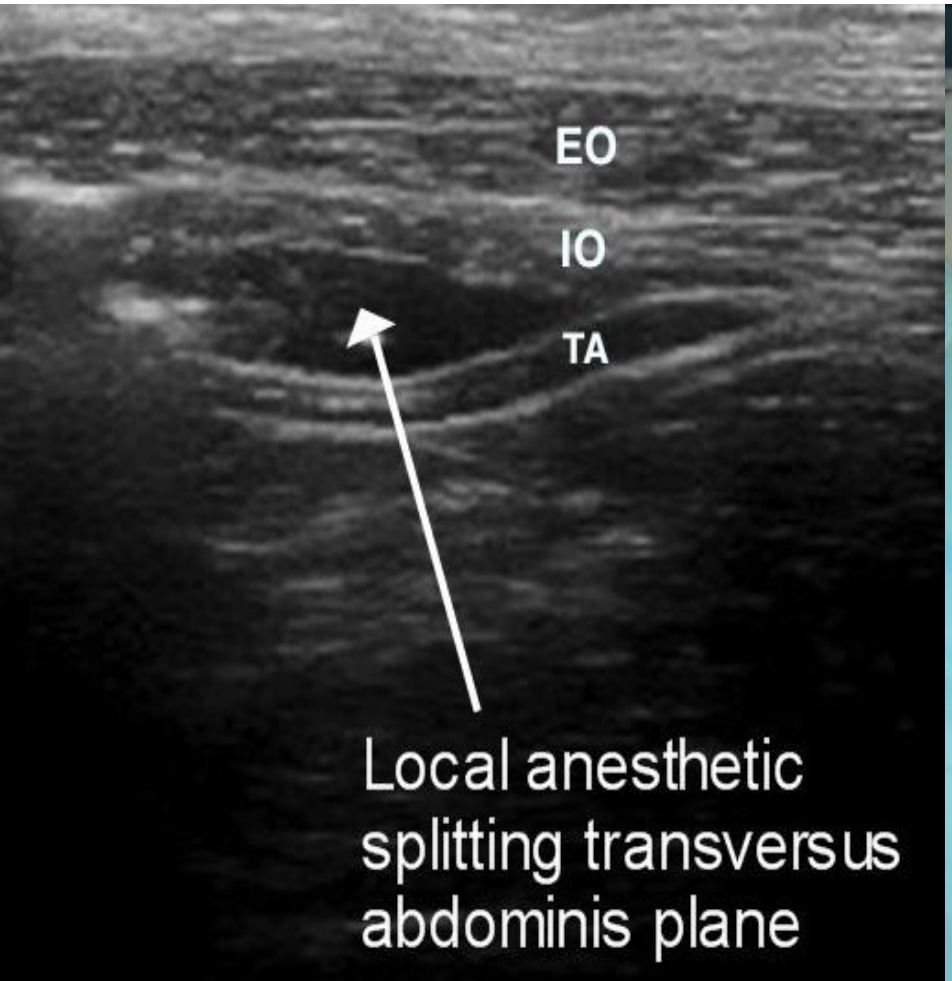
- CONCLUSION:
- As part of a multimodal analgesia strategy, ultrasound-guided TAP block with 0.2 ml kg (-1)of 0.2% levobupivacaine provides successful peroperative analgesia in 95% of children who underwent herniorrhaphy

TAP Block

(Trasversus Abdomen Percutaneous Block)

ECM Anestesia-Rianimazione, Vol 17, Jan 2012, pag. 1-7

L- Bupivacaina 0.25% 0.3 ml/kg/lato



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