

Pediatric Ambulatory Continuous Peripheral Nerve Blocks

Sible Antony, MD^a, Harshad Gurnaney, MBBS, MPH^b,
Arjunan Ganesh, MBBS^{b,*}

KEYWORDS

- Pediatric regional anesthesia • Continuous peripheral nerve blockade • Ambulatory
- Peripheral nerve catheters • Complications

KEY POINTS

- Peripheral nerve blockade including continuous peripheral nerve blockade is gaining in popularity in pediatric anesthesia; however, ambulatory it is not commonly used in pediatric anesthesia practice.
- Surgical procedures that result in considerable pain beyond 24 hours may be indications for ambulatory continuous peripheral nerve blockade when appropriate.
- Use of ambulatory continuous peripheral nerve blockade in children has the potential to increase patient and family satisfaction and reduce postoperative costs and side effects.
- Although complications like pericatheter leakage, premature dislodgement, and block failure may occur, serious complication (permanent nerve injury, local anesthetic toxicity, infection) are rare.
- A dedicated program that includes selection of appropriate patients and procedures, aided by sound patient and family education and backed up by close regular follow-up is key to its success.

INTRODUCTION

Regional anesthetic techniques in children have been shown to help decrease postoperative opioid consumption and reduce side effects such as postoperative nausea and vomiting.¹ Single injection techniques, which are currently commonly used in most pediatric practices, only provide analgesia for 12 to 16 hours.² Although regional

Disclosure Statement: None.

^a Department of Anesthesiology and Critical Care, The Children's Hospital of Philadelphia, 34th and Civic Center Boulevard, Philadelphia, PA 19104, USA; ^b Department of Anesthesiology and Critical Care, The Children's Hospital of Philadelphia, Perelman School of Medicine, University of Pennsylvania, 34th and Civic Center Boulevard, Philadelphia, PA 19104, USA

* Corresponding author.

E-mail address: GaneshA@email.chop.edu

Anesthesiology Clin ■ (2018) ■–■
<https://doi.org/10.1016/j.anclin.2018.05.003>

1932-2275/18/© 2018 Elsevier Inc. All rights reserved.

anesthesiology.theclinics.com

anesthesiologists can add analgesic adjuvants to help prolong the duration of this initial block, many operative procedures result in acute pain lasting beyond 16 hours. A potential solution to provide extended analgesia and decrease the length of stay in the hospital is through the use of continuous peripheral nerve blockade (CPNB). Although many pediatric practices have used CPNB for inpatient use, the use of ambulatory CPNB is very limited in pediatric practice.

Ambulatory CPNB have long been used for adult orthopedic procedures³⁻⁵; however, using home catheters for pediatric patients is still not very common.⁶ Some of the challenges that may be encountered when using such catheters in pediatric patients are addressing concerns about safety in children, minimizing the risks of catheter dislodgement/leakage, patient/parent education, and maintaining appropriate follow-up while the catheter is in place or removed.

This review examines the current use of pediatric home catheters described in the literature. Common obstacles and complications encountered with existing home catheter techniques are also reviewed. As anesthesiologists in our current health care environment, we should be searching for ways to provide safe and cost-effective care for patients while improving patient satisfaction and expediting recovery.

INDICATIONS FOR OUTPATIENT PERIPHERAL NERVE CATHETERS

Ambulatory peripheral nerve catheters in the pediatric population are indicated for procedures where the pain from the operative procedure is expected to last longer than the duration of a single injection peripheral nerve block (about 12–20 hours).⁷⁻¹¹ Common strategies used to prolong the duration of a single injection block include increasing the concentration of the local anesthetic and use of additives (eg, clonidine, dexamethasone) to the local anesthetic injectate.^{2,12,13} Even with these strategies, a single injection peripheral nerve block is unable to provide reliable analgesia beyond 20 hours. In these patients, CPNB provides an effective method to prolong the analgesic benefits of a peripheral nerve block for 48 to 72 hours postoperatively. Additional benefits from the use of CPNB include discharge home on the day of surgery, reduced postoperative opioid use, and improved patient satisfaction.^{7,9,10,14}

Indications by Continuous Peripheral Nerve Blockade Location

Common indications for CPNB in pediatric patients include femoral CPNB for arthroscopic or open knee procedures, sciatic CPNB for foot and ankle procedures, lumbar plexus CPNB for major hip surgery, interscalene for shoulder rotator cuff repairs, and infraclavicular for major reconstruction in the upper extremity at or below the distal humerus^{9,11,15,16} (**Table 1**). One of the areas of increasing interest has been the use of ambulatory thoracic paravertebral catheters for pectus excavatum repair surgery and other operative procedures.^{17,18} There is a case series reporting the use of transversus abdominis plane block for lower abdominal procedures in pediatric patients in the inpatient setting.¹⁹

TECHNIQUES FOR PERIPHERAL NERVE CATHETERS

Ultrasound Guidance or Nerve Stimulation

The widespread use of ultrasound guidance to place the needle near the nerve, subsequently thread the perineural catheter, and confirm the location of the spread of the local anesthetic around the nerve has led to the question about the role of nerve stimulation in guiding the placement of a peripheral nerve catheter.^{10,20-22} A recent meta-analysis reported a higher success rate of placement of the catheter and a lower risk of a vascular puncture when ultrasound guidance was compared with nerve stimulation.

Download English Version:

<https://daneshyari.com/en/article/8610577>

Download Persian Version:

<https://daneshyari.com/article/8610577>

[Daneshyari.com](https://daneshyari.com)