

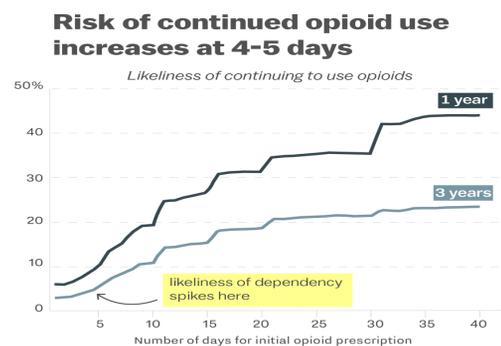
Introduction

A continuous peripheral nerve block is type of pain management that involves the insertion of a catheter near the surgical site which, will be connected to an infusion pump that will infuse local anesthetics for site specific pain control. The catheter can then be connected to a portable pump which will allow a patient to experience the post-operative effects of the local anesthetic from the convenience of their home. This will result in a shorter hospital stay, and a faster, mobile and comfortable recovery.

- The use of infusion pumps will eliminate the **unwanted side effects** of opioids, which are now the leading choice of pain management for post-op care. (**Nausea/Vomiting, Constipation, Sedation, Liver damage, and Dependence**)
- Documented **benefits** appear to be dependent on successfully improving analgesia, and include **decreasing baseline, dynamic pain, supplemental analgesic requirements, opioid-related side effects, and sleep disturbances** (Ilfeld, 2011).
- Currently, the standard treatment of post-operational care includes, nerve blocks (non-continuous), IV Opioids, Oral Opioids, and pain patches.

Disadvantages:

- More pain, more frequently (increasing the dose and amount of medication patients take)
- Unwanted side effects
- Slower recovery period due to immobility



Objectives

- Describe the current standard of treatment and its disadvantages
- Describe the advantages of CPNB
- Discuss whether the continuous blocks have the ability to become the new standard of treatment

Methods

- The main goal of this study was to compare effects of the continuous peripheral nerve block compared to oral opioids in post-operative management. **The study looked at the pros and cons of the portable infusion pump and determined how patients' reacted to its ease of use.**

Patients were given daily surveys consisting of questions asking about pain, the pump's ease of use, mobility, and overall comfort. Forty patients were selected for the study, all of which underwent Open Rotator Cuff Repairs (Ilfeld, 2005).

- (Xavier, 2005) The main goal of this study was to analyze the **post-operative complications (infection, neurological damage, technical difficulties with the pump)** of a continuous peripheral nerve block. 1,416 patients undergoing orthopedic surgery were selected for this study, which took place in both the ward and the patients' place of residence. Postoperative analgesia was provided by continuous perineural infusion, by perineural patient-controlled analgesia with or without continuous infusion, or by bolus administration of 0.2% ropivacaine or 0.25% bupivacaine three times a day. Each participating anesthesiologist chose the method of administration and the local anesthetic used (2). The continuous infusions were run from 2 to 7 days. These patients were also surveyed daily to obtain data.

Results

- After the three days, patients with the continuous peripheral nerve block reported a **1/10** on the pain scale compared to the placebo group of **3/10**. Furthermore, the patients with the infusions pumps reported **less insomnia, less discomfort and an overall better experience** (Ilfeld, 2005).
- (Xavier, 2005) Patients reported **faster recovery** due the **ambulatory** nature of the pumps. They were able to start moving faster with the **continuous block of pain**, increasing their strength and encouraging their rehabilitee process. There was a significance ($P < 0.001$) showing that **patients used a decrease of oral pain medication** in weeks following the procedure. There were no significant complications, including infections, lesions, or nerve injuries.

Table 2. Incidence of Serious Adverse Events in All CPNB Groups

Serious Adverse Events	n (%) among the Selected CPNBs [95% CI]							
	Interscalene (n = 256)	Axillary (n = 126)	PCB (n = 20)	Femoral (n = 683)	Fascia I (n = 94)	Sciatic (n = 32)	Popliteal (n = 167)	Distal (n = 38)
Patients (n)	4	1	3	3	0	0	0	1
Nerve lesions	0	0	0	3 (0.4)	0	0	0	0
Acute respiratory failure	2 (0.8)	0	0	0	0	0	0	0
Laryngeal and recurrent laryngeal nerve paralysis	2 (0.8)	0	0	0	0	0	0	0
Severe hypotension	0	0	3 (15)	0	0	0	0	0
Systemic LA toxicity	0	0	4 (20)	0	0	0	0	1 (2.5)
Seizure	0	1 (0.8)	0	0	0	0	0	0
Abscess	0	0	0	1 (0.14)	0	0	0	0

Axillary = axillary catheter; CI = confidence interval; CPNB = continuous peripheral nerve block; Distal = distal nerve block catheter (cubital or median nerve); Fascia I = fascia iliaca compartment block catheter; Femoral = femoral catheter; Interscalene = catheter of the brachial plexus through interscalene approach; LA = local anesthetic; PCB = catheter in the lumbar plexus through a posterior approach; Popliteal = popliteal catheter; Sciatic = sciatic catheter through a parasacral approach.

Conclusion

Due to their benefits of minimal side effects, easy patient use, and analgesic effects, continuous peripheral nerve blocks can become the future of post-operative pain management. The infusion pumps' lightweight and mobile structure will prove to attract many patients who are often on the go and won't cause their pain to hold them back no longer. This is important for the anesthesia community in helping us provide the up most amount of care and compassion for our patients.

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