

# Feasibility and safety of brachial plexus blocks in patients with cervical spinal cord injury undergoing upper extremity surgery

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## Introduction:

Upper extremity reconstructive surgeries can improve function in cervical spinal cord injury (SCI) patients, but this population may be considered high perioperative risk. Continuous peripheral nerve block (CPNB) may offer benefits for these patients despite preexisting neurologic symptoms.

## Methods:

A retrospective chart review was completed to evaluate CPNB-related neurologic symptoms and postsurgical opioid use from the day of surgery to postoperative day (POD) 7 and the first bowel movement after surgery in SCI patients having upper extremity surgery with a brachial plexus CPNB.

## Results:

15 patients were included in our analysis (Online Table 1). No patient had new neurologic symptoms following CPNB removal. One patient’s CPNB was removed POD 2 for shortness of breath. Most patients had a bowel movement by POD 1 (Table 2). Most patients returned to baseline daily opioid use or weaned off opioids by POD 3 (Figure 1).

## Discussion:

Brachial plexus CPNB may be safe in patients with cervical SCI and well-tolerated for 3-6 days.



**Figure 1.** Time series plots of the daily morphine milligram equivalent (MME) usage per patient from postoperative day (POD) 0 to POD 7. Thin lines represent each patient’s daily MME. Thick lines represent the mean daily MME of opioid naïve and opioid-tolerant patients. Stars indicate the day of continuous peripheral nerve block removal.

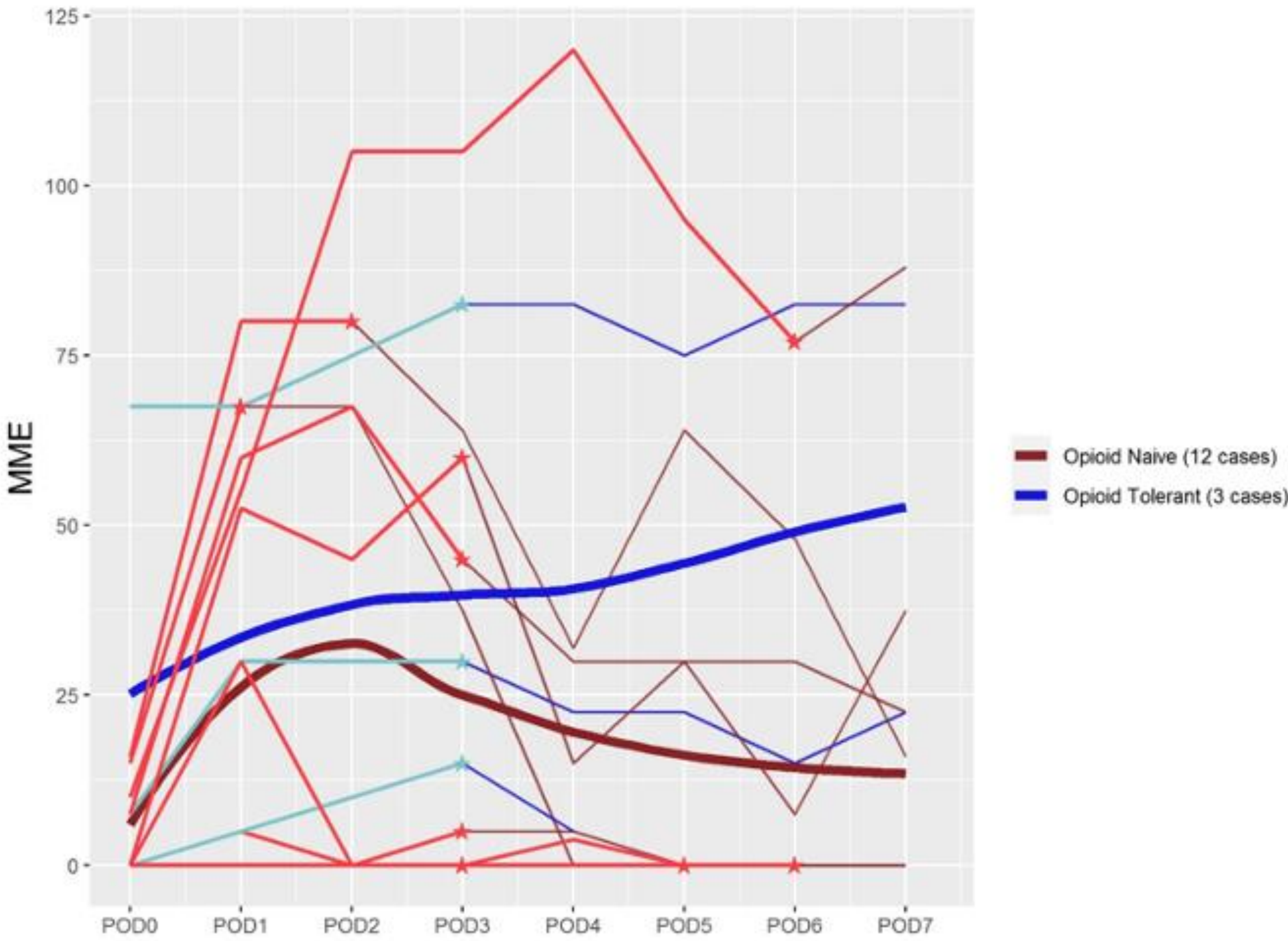


**Table 2.** Perioperative characteristics

| Case | Surgery         | GA | CPNB type                                       | Block removed | CPNB notes                                                                           | Return of BMs | Return to baseline MMED |
|------|-----------------|----|-------------------------------------------------|---------------|--------------------------------------------------------------------------------------|---------------|-------------------------|
| 1    | Tendon transfer | Y  | Infraclavicular                                 | POD 3         | Incomplete coverage of block distribution                                            | POD 1         | POD 0                   |
| 2    | Tendon transfer | Y  | Infraclavicular                                 | POD 6         | Pump refilled                                                                        | POD 0         | POD 2                   |
| 3    | Reconstruction  | Y  | Supraclavicular                                 | POD 2         | Shortness of breath                                                                  | POD 1         | Unknown                 |
| 4    | Reconstruction  | Y  | Infraclavicular                                 | POD 5         | None                                                                                 | POD 1         | POD 0                   |
| 5    | Tendon transfer | Y  | Supraclavicular                                 | POD 3         | Block removed so patient could transition heparin injection to oral anticoagulation  | POD 0         | Unknown                 |
| 6    | Tendon transfer | N  | Infraclavicular                                 | POD 3         | None                                                                                 | POD 1         | POD 0                   |
| 7    | Tendon transfer | N  | Infraclavicular                                 | POD 6         | Pump refilled                                                                        | POD 0         | POD 0                   |
| 8    | Reconstruction  | Y  | Infraclavicular                                 | POD 6         | Pain is outside of block distribution                                                | POD 1         | Unknown                 |
| 9    | Tendon transfer | Y  | Supraclavicular                                 | POD 1         | Catheter dislodged                                                                   | POD 3         | POD 4                   |
| 10   | Tendon transfer | Y  | Infraclavicular                                 | POD 3         | Pump empty                                                                           | POD 2         | Unknown                 |
| 11   | Tendon transfer | N  | Infraclavicular                                 | POD 3         | CPNB increased to 8mL/hr POD 2                                                       | POD 0         | POD 5                   |
| 12   | Tendon transfer | N  | Infraclavicular                                 | POD 3         | None                                                                                 | POD 1         | Unknown                 |
| 13   | Tendon transfer | N  | Infraclavicular                                 | POD 6         | Pump refilled                                                                        | POD 4         | POD 0                   |
| 14   | Tendon transfer | N  | Supraclavicular, single injection suprascapular | POD 3         | none                                                                                 | POD 1         | POD 0                   |
| 15   | Tendon transfer | N  | Infraclavicular                                 | POD 3         | POD 2 patient complaining of numbness – CPNB clamped for 2 hrs & decreased to 4mL/hr | POD 3         | POD 2                   |

GA = general anesthesia; CPNB = continuous peripheral nerve block; POD = postoperative day; BMs = bowel movements; MMED = morphine milligram equivalents per day

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