

# Continuous Median and Radial Nerve Blocks for Hand Burn Management: A Case Report

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## Background

- Historically, opioids have been the primary analgesic modality for management of burn pain
- In addition to their common side effects, opioids may also be associated with hyperalgesia in the burn population (1)
- Continuous peripheral nerve blocks (cPNBs) offer intense, site-specific analgesia with limited systemic side effects and are primarily used following orthopedic procedures (2, 3)
- cPNBs may be used in the burn population to limit the need for opioid analgesics and facilitate bedside wound management that may have otherwise required general anesthesia (5)
- We present a case in which continuous blocks of the median and radial nerves were utilized to provide highly site-specific analgesia during bedside wound debridement in a patient with burns to his hand

## Methods

- A 40-year-old male presented with 4% TBSA burns to the face, neck, and bilateral hands
- Attempts at bedside debridement of eschars of the left hand (Figure 1), were unsuccessful due to severe pain despite high doses of opioids
- cPNBs targeting the median and radial nerves were planned and the median nerve was identified in cross-section using a 15-to-4 MHz 38-mm linear array ultrasound transducer at the level of the mid-forearm
- A 17-gauge (G) Tuohy needle was inserted using an in-plane, ultrasound guided technique to a point adjacent to the median nerve and approximately 5 mL of 2% lidocaine was used to dissect the plane around the epineurium (Figure 2a). A 19G flexible perineural catheter was then inserted under ultrasound guidance
- The proper position of the catheter tip adjacent to the nerve was confirmed by injecting 1 mL of 2% lidocaine via the catheter and observing the spread under ultrasound visualization
- This technique was then repeated for the radial nerve at the mid-forearm level (Figure 2b)
- Both catheters were secured and a continuous infusion of ropivacaine 0.2% was infused via each catheter (1 mL continuous with a 2 mL patient-controlled bolus and a 30-minute lockout)

## Figures



Figure 1: The patient had burn wounds confined primarily to the median and radial nerve distributions.

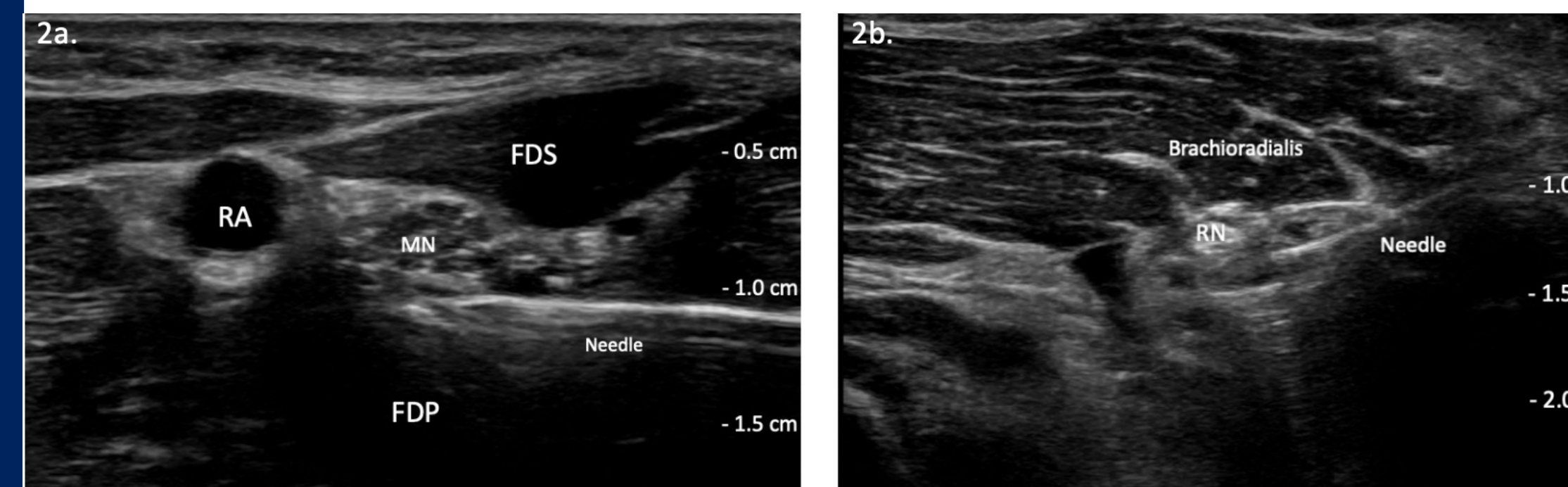


Figure 2a and 2b: Block needle advanced adjacent to the median nerve (2a) and radial nerve (2b).

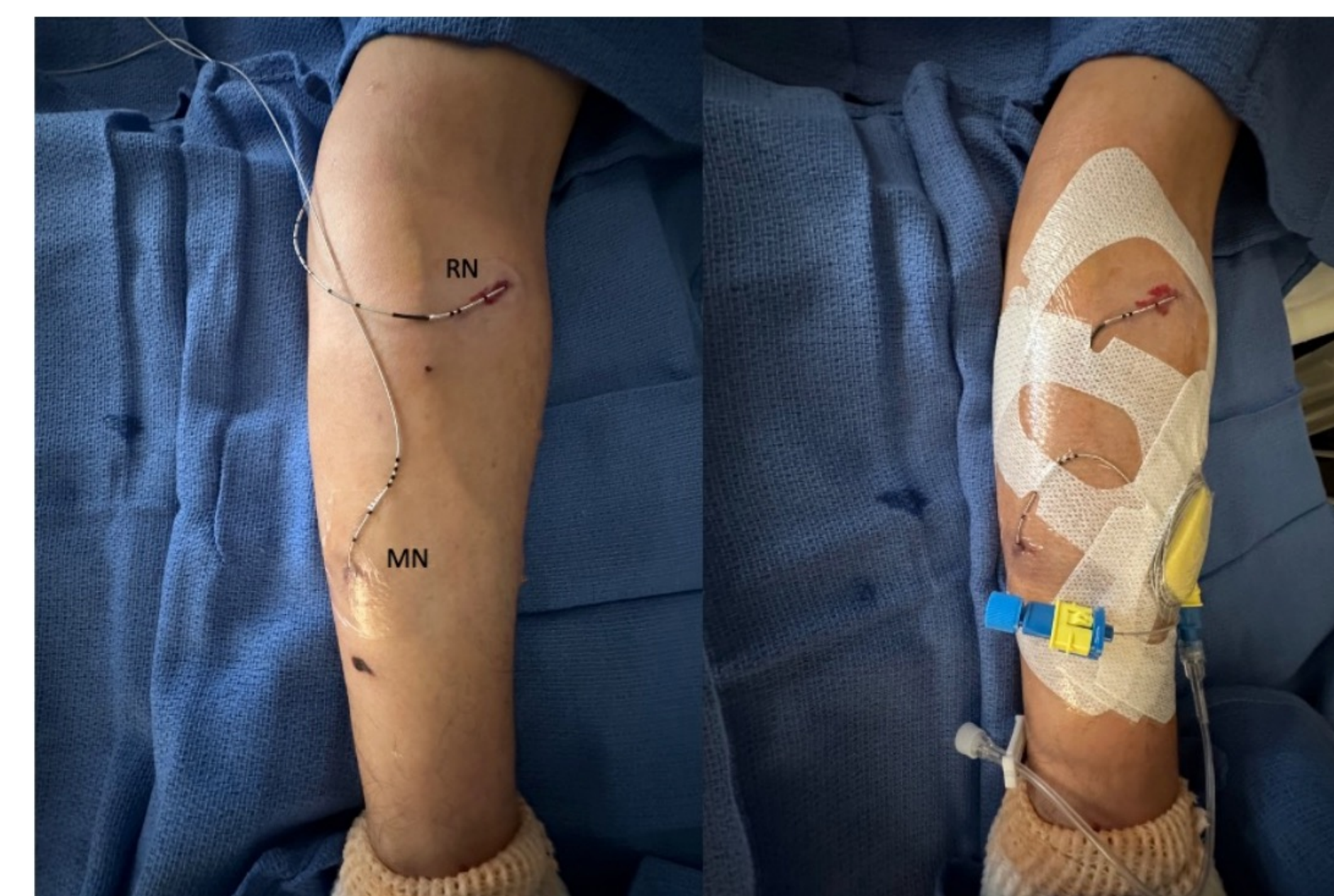


Figure 3: Median and radial perineural catheters secured with 2-octyl cyanoacrylate and transparent dressings.

## Results

- The patient's pain scores reduced from 10/10 to 3/10 at rest and 4/10 during bedside burn debridement
- The nerve blocks allowed for bedside debridement to be performed daily and significantly improved the patient's ability to participate in physical therapy
- On the third day following cPNB placement, the patient was taken to the operating room to undergo surgical excision and dressing placement
- The catheters were subsequently removed postoperatively
- The patient was then discharged with an oral regimen consisting of scheduled non-opioid analgesics and oxycodone as needed
- No complications from the nerve blocks were observed

## Discussion

- This case highlights the utility of cPNBs in managing severe burn pain and their ability to provide very precisely targeted analgesia
- Our patient's analgesia and preserved motor function allowed him to continue physical therapy and undergo daily bedside wound debridement that may have otherwise required general anesthesia
- cPNBs will continue to play a significant role in the management of burn pain

## References

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