

Brachial Plexus Catheter Approach as a Bridge to Peripheral Nerve Stimulation in Metastatic Cancer Pain

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Introduction

Cancer-related bone pain is common, debilitating, and frequently refractory to systemic therapies.¹

Patients with metastatic disease experience:

- Prolonged hospitalizations due to uncontrolled pain
- Opioid-related adverse effects
- Limited therapeutic alternatives

Opioids = cornerstone of severe cancer-related pain but can lead to:

- Adverse effects
- Tolerance
- Reduced quality of life

Peripheral nerve stimulation (PNS): Emerging therapy for refractory cancer pain but typically performed in the outpatient setting.

We describe the inpatient use of a **continuous brachial plexus catheter as a bridge to PNS** in a patient with severe metastatic humeral pain, highlighting the value of collaboration between acute and chronic pain services.

Method

This report describes a single-patient case.

Per institutional policy, the case was deemed exempt from IRB review as it contains no patient-identifiable information.

Written informed consent for procedures and publication was obtained from the patient.

Case Description

A 92-year-old man with lung adenocarcinoma, chronic kidney disease, and chronic anticoagulation presented with **severe right upper extremity pain** secondary to **lytic metastatic disease** of the humerus and a pathologic fracture. Remained hospitalized for several months due to refractory pain.

Pain management

- Limited by comorbidities and adverse effects including:
 - somnolence from gabapentin and ketamine
 - contraindications to NSAIDs
- Was inadequately maintained on methadone, oxycodone, and oral dexamethasone

Acute pain service consult

- Placed an **ultrasound-guided interscalene continuous catheter** targeting the C5–C7 nerve roots, infusing **0.2% ropivacaine at 4 mL/hour**.
- Resulted in: **marked pain reduction** (Table 1) and **improved alertness**
- Prolonged catheter dependence raised concerns regarding discharge feasibility and long-term management.

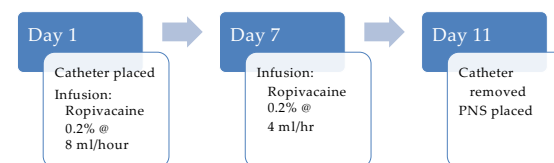
Multidisciplinary coordination:

- Transitioned from continuous catheter after 10 days to **dual-lead brachial plexus PNS**.
- After 3 days of subthreshold stimulation, **complete pain relief was achieved**.
 - Patient was weaned off opioids and discharged to hospice with the PNS in situ.

Table 1: Opioid requirements and pain scores before and after catheter placement

	Milligram Morphine Equivalents (MME) Value	Left Upper Extremity Pain Score
1 week prior to catheter placement	53.5 – 91 MME/day	7-8/10
During continuous catheter infusion	35.3 MME/day (from methadone only)	0-1/10

Figure 1: Timeline



Discussion/Conclusion

Interventional pain techniques: effective for cancer-related pain

- Non-neuraxial catheter-based approaches remain underutilized and understudied²
- Ultrasound-guided peripheral nerve blocks and continuous catheters may provide substantial, opioid-sparing analgesia with a favorable safety profile and longer duration than single-shot blocks.^{3,4}

Barriers to broader adoption include:

- Catheter migration, infection risk, MRI compatibility, follow-up infrastructure.⁵

Continuous peripheral nerve catheters can serve as an effective inpatient bridge to peripheral nerve stimulation.

- Close collaboration between acute and chronic pain services addresses immediate analgesic needs and long-term goals.

This model highlights the **potential role of transitional pain services in complex oncology patients**, where prolonged hospitalization, frailty, and refractory pain necessitate **flexible, multidisciplinary approaches**.

- Broader adoption of such strategies may *expand access to neuromodulation and improve quality of life* in patients with advanced cancer.

References

