Intrathecal Baclofen Pump Failure Considerations within Chronic Spasticity Transition of Care

Robert Tran, BS[1,2]; Justin Liao, BS[1,2]; Brian Vu, MD[2]; Vedant Dayal[3]; Michael Haupt, MD[2]; Rakhi Dayal, MD[2]

1 University of California, Irvine School of Medicine • **2** University of California, Irvine; Department of Anesthesiology & Perioperative Care • **3** Vanderbilt University

UC Irvine



INTRODUCTION

- Intrathecal baclofen (ITB) is an established therapy for severe spasticity following spinal cord injury.
- Long-term management may be complicated by escalating dose requirements, catheter complications, and recurrent withdrawal-like symptoms.[1,2]
- Distinguishing true hardware malfunction from reversible causes of worsening spasticity can be clinically challenging.

CASE PRESENTATION

History

A 63-year-old man with complete AIS A T7-T8 spinal cord injury, paraplegia, and neurogenic bowel and bladder presented for transition of ITB pump care. History of catheter scarring and reported baclofen crystallization requiring hardware revision in 2014

Progression

ITB dose escalation **400 → 960 mcg/day**

↓

Severe rebound spasticity with episodes strong enough to eject him from wheelchair; required 60–80 mg/day oral baclofen

↓

Concurrent UTI / urinary pathology treated with antibiotics. Spasticity improved during antibiotic therapy but worsened following bladder instillations, suggesting bladder irritation as a potential trigger.

↓

Diagnostic concern: **ITB pump/catheter failure vs. reversible urinary trigger**

Follow-Up & Diagnostic Confirmation

• 1-Month Follow-up: Improved spasm control with mirabegron, methenamine, and PRN diazepam (0/10 pain).

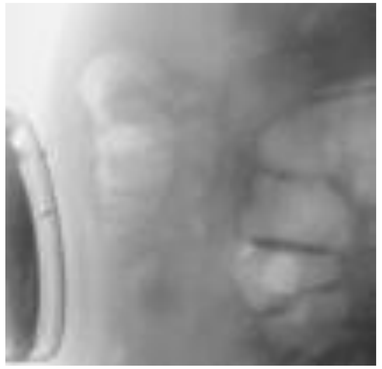
• Post-UTI Treatment: Intrathecal dye study demonstrated **NO evidence of pump or catheter malfunction**.

• Reprogrammed with flex dosing (5% TDD increase: 893.6 → 938.3 mcg/day).

RADIOGRAPHIC & DYE STUDY IMAGING



ITB Pump & Reservoir



Intrathecal Dye Study



Catheter Course & Integrity

DIAGNOSTIC CHALLENGE: ITB FAILURE vs. REVERSIBLE TRIGGERS

Features Raising Malfunction Concern

- Progressive dose escalation (400 → 960 mcg/day)
- Increasing breakthrough spasticity
- Severe rebound episodes with functional consequences
- Prior catheter/hardware revision
- Increased reliance on oral baclofen

Potential Non-Device Contributors

- Active / recurrent urinary tract infection (UTI)
- Neurogenic bladder with distention
- Bladder irritation from intravesical therapy
- Neurogenic bowel dysfunction
- Fluctuation in spasticity despite stable ITB therapy

DISCUSSION

- Refractory spasticity in chronic ITB therapy may reflect device malfunction, physiologic triggers, or a combination of both.[3]
- In this patient, prior hardware revision and escalating dose requirements strongly mimicked catheter failure. However, symptom correlation with bladder therapy provided a key non-device alternative.
- Resolution of UTI followed by a normal intrathecal dye study ruled out pump failure.
- **This case underscores the importance of systematically treating reversible triggers prior to undertaking invasive hardware revisions.**

KEY CLINICAL TAKEAWAYS

1. Escalating ITB requirements ≠ Automatic Pump Failure

2. UTI and bowel/bladder distention can mimic device failure.

3. Prior hardware complications warrant a lower threshold for pump interrogation.

4. Treat acute noxious triggers before ordering/interpreting dye studies.

5. Integrate dose trajectories, refill history, and oral adjuncts during care transitions.

Scan QR code for references: