



Tenfold PCA Opioid Dosing Error and Delayed Recovery: A Cautionary Case Report



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Introduction

Background: Patient-controlled analgesia (PCA) is widely used for postoperative pain control but carries risk of dosing errors.

Safety Measures: Lockout parameters and monitoring are critical to reduce adverse events.

Focus of Concern: While life-threatening complications (e.g., respiratory depression) are emphasized, earlier opioid-related effects—such as gastrointestinal dysmotility and nausea—may serve as warning signs of overdose.^{1,2}

Physical Exam

After administration of a total 16 mg (320 OME) of IV Hydromorphone in a 10-hour period

General: In no apparent distress

Pulmonary: Spontaneous breathing in room air with no wheezing or productive

Strength: 5/5 on all extremities

Neurological: Normal without focal deficits with normal speech. Alert and oriented to person, place and time.

Case Description

51-year-old opioid naïve man with a history of lumbar spinal stenosis underwent L2–L5 laminectomy with medial facetectomies. On postoperative day one, the patient was placed on PCA for pain optimization by the surgical team. Due to poorly controlled pain, the inpatient pain service was consulted for further evaluation and recommendations.

Our team noted a PCA programming error, and the patient had been receiving ten times the intended dose of IV hydromorphone from 0.2 mg to 2 mg per dose with a total of 16 mg (320 OME) over the course of one day. Although the patient did not experience life threatening complications of opioid overdose such as respiratory depression, bradycardia, or severe CNS depression, the patient experienced more benign opioid-related complications including constipation, urinary retention, and nausea.

The PCA was discontinued, and the patient was transitioned to oral opioids with adjuncts. Due to this error, the patient required an extended stay to manage the nausea and constipation, requiring ondansetron and milk of magnesia to return to baseline gastrointestinal function. Within 24 hours from the error, the patient reported that the pain was tolerable, and gastrointestinal and urinary symptoms had improved.

Clinical Takeaways

Case Focus: Non-respiratory complications of opioid overdose due to PCA programming error.

Outcome: Patient developed bowel dysmotility and nausea, delaying recovery and discharge.

Root Cause: Existing guardrails were bypassed inadvertently from an unexpected “ICU mode” setting which allowed excessive dosing despite double clinician oversight during programming and syringe changes.

System Factors: PCA errors often arise from human or system failures.

Prevention Strategies:

- Double-check protocols
- Smart-pump safety features
- Standardized order sets
- Strong interdisciplinary communication

Takeaway: Continuous staff education and periodic system evaluation remain essential for patient safety.

References

1. Zeng, Xianzheng, et al. “Patient Controlled Subcutaneous Analgesia of Hydromorphone Versus Morphine to Treat Moderate and Severe Cancer Pain: A Randomized Double-Blind Controlled Trial.” *Journal of Pain and Symptom Management*, vol. 67, no. 1, 2024, pp. 50–58.

2. Alinejadfard, M., et al. “Efficacy and Safety of Hydromorphone for Cancer Pain: A Systematic Review and Meta-Analysis.” *BMC Anesthesiology*, vol. 24, 2024, article 283, <https://doi.org/10.1186/s12871-024-02638-y>.