



“The Skunk That Wasn’t”: An Unusual Presentation of Intrathecal Pump Withdrawal

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INTRODUCTION

- Failed Back Surgery Syndrome (FBSS) characterized by chronic back pain following spinal surgery is an increasingly common sequela
- Lifetime prevalence of 60-80%
- 20.4% of adults in the United States suffer from chronic nonmalignant pain¹
- Treatment of chronic nonmalignant pain requires individualized and multidisciplinary approach:
 - Occupational and physical therapy
 - Psychotherapy
 - Analgesics and interventional pain treatment (i.e., epidural steroid injections, facet denervation, and SI joint injections)
- Conservative management of FBSS is ineffective in many patients necessitating more invasive interventions
 - Spinal cord stimulators, percutaneous fusion, and intrathecal pumps
- Intrathecal drug delivery systems (IDDS) are safe and effective in treating intractable pain – however, it is not without complications such as withdrawal, which can be life-threatening.

MATERIAL AND METHODS

The case report is devoid of patient-identifiable information, and therefore it is exempt from IRB review requirements as per University of Mississippi Medical Center policy. Informed consent was obtained from the patient for this poster presentation.

CASE REPORT

- 79-year-old male
- Past Medical and Surgical History:**
 - Low back pain status post fall of his roof in 2007
 - Lumbar decompression for burst fracture (2007)
 - L1-S1 (2007) and SIJ (2011) fusion
- Treatment:**
 - Failed multiple conservative measures of pain control
 - First intrathecal Morphine pump placed in 2008 with good pain control
 - Replaced twice due to end of battery life without incident, most recently 6 months ago
 - Intrathecal dose: 1.2 mg of Morphine per day
- Presentation:**
 - 4 episodes over the course of 6 months – 2/3 days of transient subjective perception of opioid withdrawal
 - Symptoms comparable to prior withdrawal episodes of worsened pain, profuse diaphoresis, restlessness, fatigue, and abnormal smell - “Skunk-like”
 - Usually resolved with minimal oral opioid (2-3 doses) with no further intervention or adjustment of intrathecal pump
 - Some episodes required ED visits
 - No evidence of any neurological deficit
 - Multiple interrogations of the pump
 - No signs of malfunction – appropriate volume remained each time

CASE REPORT (CONTINUED...)

- Direct imaging – the catheter appeared normal and ended at T12 (**Image 1**)
- Catheter dye study:
 - No extravasation of dye outside of pump (**Image 2**)
 - Dye tracked back into intrathecal space (**Image 1**)
- MRI: no evidence of catheter tip granuloma
- Likely etiology:**
 - Possibly experiencing partial temporary blockage of the catheter as it traverses the subcutaneous tissue in certain positions and resolves with change in position
 - Patient tended to lie on the left side more often with symptoms occurring usually after a long night’s sleep
 - Possible intermittent motor stalls:
 - Has been reported in certain pumps near the end of service life
 - Pumps are not designed for hard stops or alarms for motor stalls²
 - Motor stalls could lead to underdosing and withdrawal symptoms
- Plan:**
 - Given multiple episodes of withdrawal-like symptoms and potential for an episode to progress to life-threatening events
 - Decision was made to replace the entire intrathecal pump and catheter, despite no obvious signs of malfunction of the pump or catheter
 - Patient had an uneventful replacement and has been asymptomatic since
 - During replacement, areas of potential kinking were identified

DISCUSSION

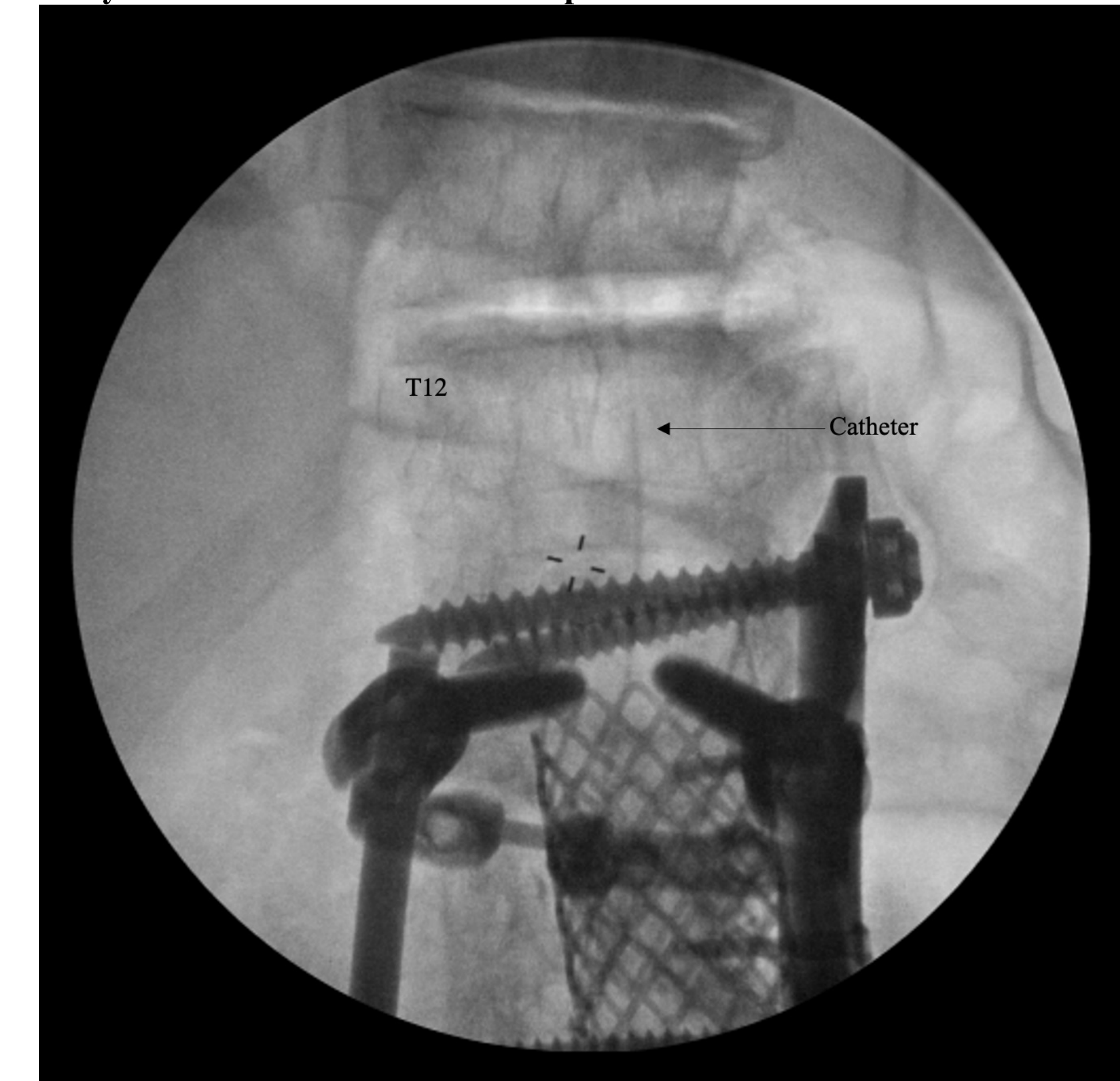
- Chronic back pain has a 50% success rate after receiving a single lumbar operation; the success rate decreases to 5% in patients who have been operated 4 times³
- Increase prevalence of FBSS
- Patients with FBSS have increased pain intensity, lower quality of life, and higher rates of unemployment and disability⁴
- Conservative measures usually fail, and more invasive management is required
- IDDS has shown to be more effective and produce fewer side effects than systemic opioids⁵ but not without complications
- Side effects of IDDS
 - Highly individualized; range from constipation, dysphoria, and anxiety to pump malfunction, infection, catheter granuloma, neurological deficits, filling and programming errors, and catheter migration
 - Complications can lead to intolerance, life-threatening overdose, and withdrawal
- Important for skilled and trained Pain physicians to carefully select, trial, manage, and more importantly recognize the complications of IDDS – even if all testing returns as “normal”

REFERENCES

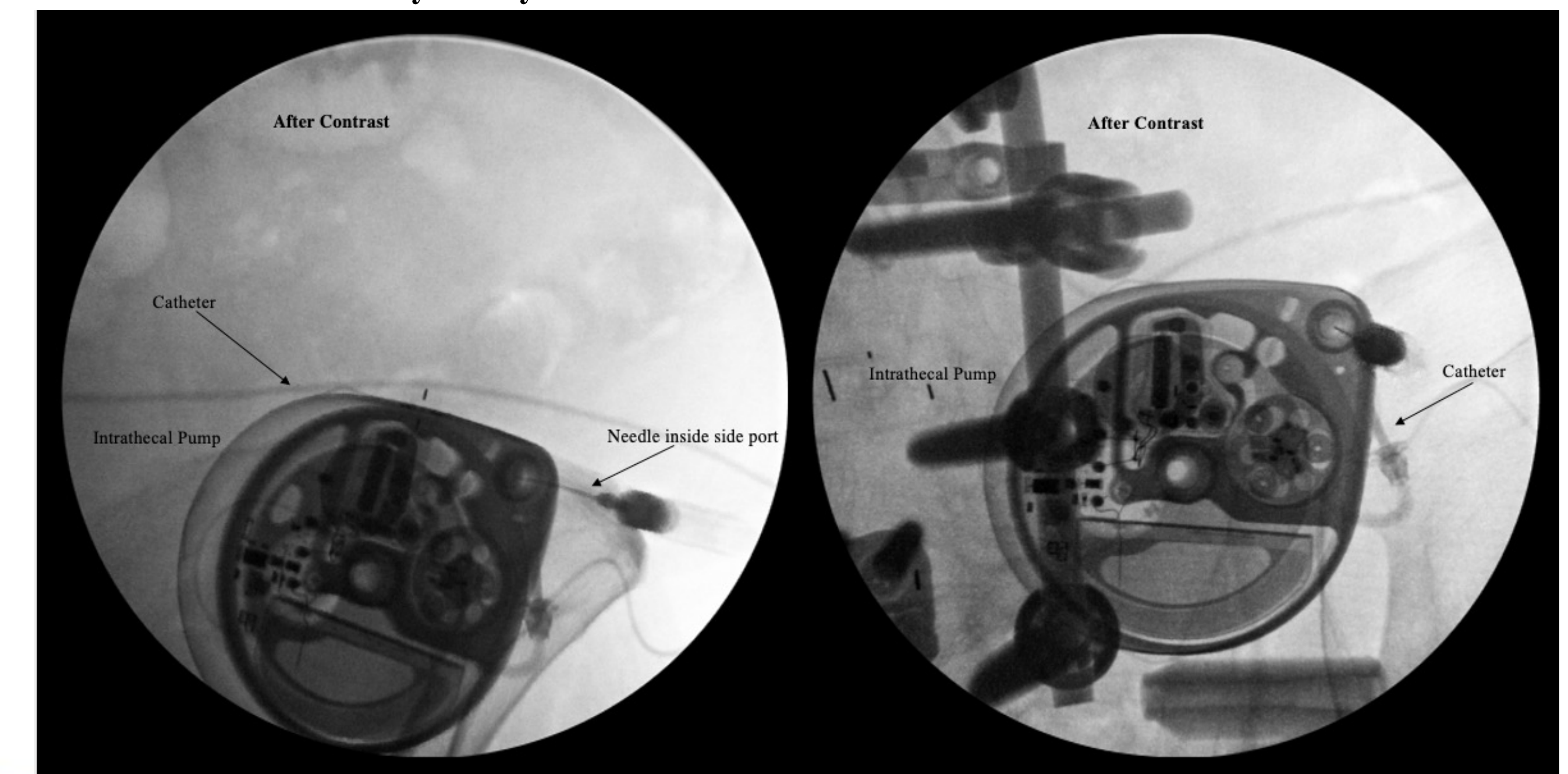
- Dahlhamer J, Lucas J, Zelaya, C, et al. Prevalence of Chronic Pain and High-Impact Chronic Pain Among Adults — United States, 2016. *MMWR Morbidity and Mortality Weekly Report*. 2018;67(36):1001-1006. doi:https://doi.org/10.15585/mmwr.mm6736a2
- Prager J, Deer T, Levy R, et al. Best Practices for Intrathecal Drug Delivery for Pain. *Neuromodulation: Technology at the Neural Interface*. 2014;17(4):354-372. doi:https://doi.org/10.1111/ner.12146
- Chan C, Peng P. Failed Back Surgery Syndrome. *Pain Medicine*. 2011;12(4):577-606. doi:https://doi.org/10.1111/j.1526-4637.2011.01089.x
- Orhurhu VJ, Chu R, Gill J. Failed Back Surgery Syndrome. *StatPearls [Internet]*. Published online January 2023. Accessed August 13, 2023. https://www.ncbi.nlm.nih.gov/books/NBK539777/
- Kumar K, Kelly M, Pirlot T. Continuous intrathecal morphine treatment for chronic pain of nonmalignant etiology: long-term benefits and efficacy. *Surgical Neurology*. 2001;55(2):79-86. doi:https://doi.org/10.1016/s0090-3019(01)00353-6

IMAGES

1: Dye outlined the catheter with tip at T12 vertebral level



2: Intrathecal catheter dye study



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