

Is it Leaking or Knot? An Unexpected Complication of Intrathecal Therapy

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Introduction

- Intrathecal therapy has traditionally been used for pain amelioration in cancer patients, but now has indications for nonmalignant chronic pain.
- Due to its expanding use, it is imperative to understand the risks associated with management and removal.

Case Report

- 52-year-old female with uncontrolled neck and bilateral arm pain secondary to CRPS.
- Flowonix intrathecal pump placed in right gluteal region.
- Pump malfunctioned, replaced with Medtronic intrathecal pump and catheter. Old (Flowonix) catheter tied off within the gluteal pocket using a suture and left in place.
- Years later, she had significant weight loss and began experiencing swelling/tenderness in the pocket.
- Capsulectomy along with removal of the intrathecal pump was performed. Pump was placed in the abdomen for improved patient comfort using an extension and tunneling device.
- 12 days post pump revision - fluid reaccumulated in gluteal pocket (**Figure 1**). 675 cc of serosanguineous fluid drained with negative cultures.
- CT abdomen showed fluid collection in right gluteal region (area of previous pump) and a fluid collection adjacent to pump in the subcutaneous right abdomen (**Figure 2**).
- Serosanguinous fluid continued to reaccumulate. JP drain placed.
- 18 days post pump revision - presented to ED with postural headache after JP drain placement.
- Surgical exploration confirmed CSF leak caused by old catheter, which had been tied off using a suture. CSF noted to be leaking proximally, as the suture eroded through the catheter. Old catheter was removed.
- Pump and functional catheter left in place. Fluid accumulation resolved within 24 hours of catheter removal.

Discussion

- Despite widely available literature discussing intrathecal pump *placement* complications, accounts of complications after the removal of chronically placed catheters are insufficient.
- No guidelines dictating the preferred method and in which cases a nonfunctional intrathecal catheter should be removed → variation in clinical practice.
- Case underscores the need to discuss the pros and cons of removing nonfunctional catheters, suggesting that timely removal during pump removal/replacement could prevent further complications.



Figure 1. Fluid accumulation in the right gluteal region.



Figure 2. Axial CT abdomen demonstrating 11.7 x 8.3 x 11.3 cm fluid collection in the right gluteal region (area of the previous pump) as well as a 7 x 3.8 cm fluid collection adjacent to pump in the subcutaneous right abdomen.

Conclusion

- Studies comparing techniques for proper occlusion of a nonfunctional catheter and the related outcomes would benefit practitioners who utilize intrathecal pumps.
- Currently a need for a retrospective studies to reevaluate the current prevailing practice in regards to intrathecal catheter and pump management due to the current gap in the literature and lack of guidelines surrounding the removal of chronically placed catheters.

References

1. Offield LB, Fernandez VE. Case Report: An Unexpected Complication of Intrathecal Therapy. AA Pract. 2024 Apr 8;18(4):e01774. doi: 10.1213/XAA.0000000000001774. PMID: 38587301; PMCID: PMC11057487.
2. Delhaas EM, Huygen FJPM. Complications associated with intrathecal drug delivery systems. BJA Educ. 2020 Feb;20(2):51-57. doi: 10.1016/j.bjae.2019.11.002. Epub 2019 Dec 12. PMID: 33456930; PMCID: PMC7807963.
3. Leonardo A, Frizon MD, Navin C, Sabharwal BS, Tanmoy M, et al.. Removal of intrathecal catheters used in drug delivery systems. Neuromodulation. 2018;21:665-668
4. Kumar K, Kelly M, Pirlot T. Continuous intrathecal morphine treatment for chronic pain of nonmalignant etiology: long-term benefits and efficacy. Surg Neurol. 2001 Feb;55(2):79-86; discussion 86-8. doi: 10.1016/s0090-3019(01)00353-6. PMID: 11301086.
5. Peter S. Staats, MD, MBA, Complications of Intrathecal Therapy, *Pain Medicine*, Volume 9, Issue suppl_1, May 2008, Pages S102-S107,
6. Wilkes D. Programmable intrathecal pumps for the management of chronic pain: recommendations for improved efficiency. *J Pain Res*. 2014;7:571-577 <https://doi.org/10.2147/JPR.S46929>
7. Deer TR, Pope JE, Hayek SM, et al.. The polyanalgesic consensus conference (PACC): recommendations for intrathecal drug delivery: guidance for improving safety and mitigating risks. Neuromodulation. 2017;20:155-176.