



INTRATHECAL PUMP: MEDICATION PURGE

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INTRODUCTION

Intrathecal targeted drug therapy is the administration of analgesic and/or anti-spasmodic medications directly into a patient’s spinal fluid for pain and spasticity control. With the use of intrathecal drug delivery system, providers can use much lower doses of analgesics to improve pain control, while limiting the side effect burden associated with higher doses of systemic analgesics^[1]. However, there are several risks in using IDDS, such as complications associated with catheter insertion, surgical pump implantation, device management, drug refills, and drug side effects^[2].

PATIENT HISTORY

- 72 year old male
- Degenerative disc disease
 - Status post laminectomy
 - Chronic low back pain

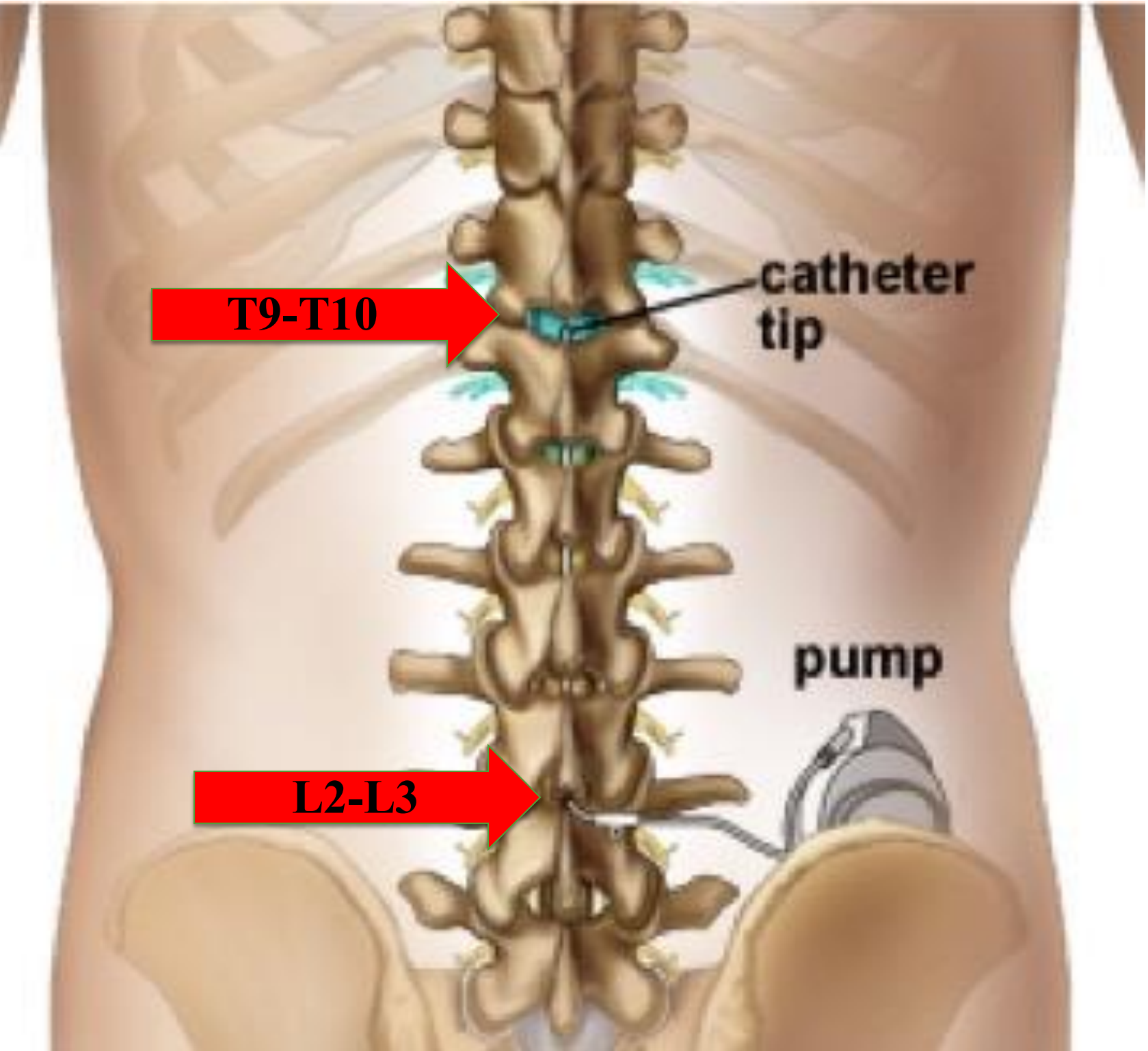
Past Treatments (with no relief)

- Epidural steroid injections
- Sacroiliac joint injections
- Spinal cord stimulator trial
- Hydrocodone

Diagnoses

- 1) Post laminectomy syndrome
- 2) Facet mediated pain
- 3) Myofascial dysfunction

Intrathecal Pump Perm

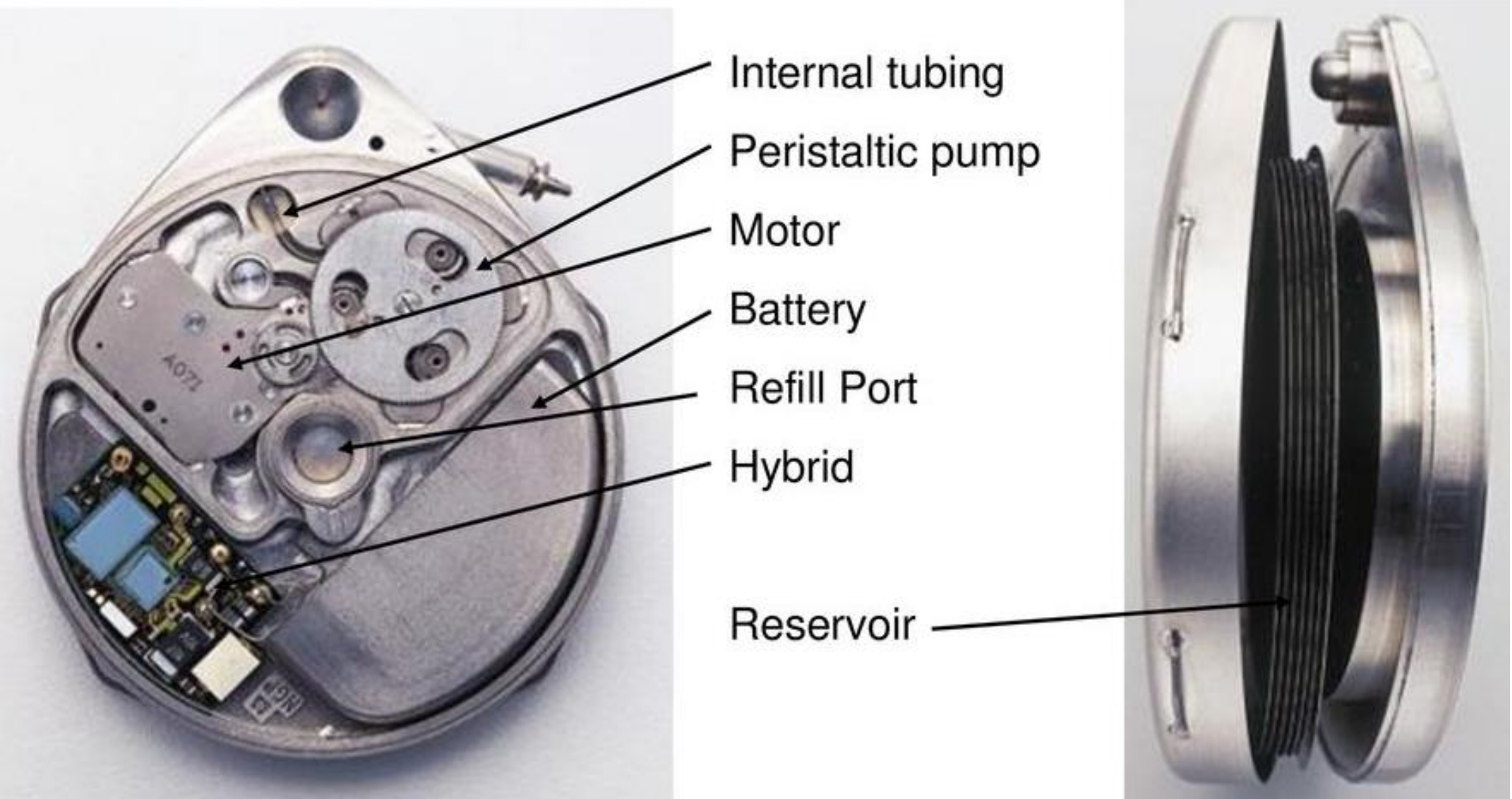


Trial

- Morphine 100mcg in 1mL
- Reported >50% pain relief

Pump Implantation (11/11/2022)

- Medtronic SYNCHROMED™ II
- Implantation under fluoroscopic guidance entering at L2-3 with tip at T9-10
- Reservoir: morphine 1 mg/mL
- Pump ran at trickle rate: 60 mcg/day



Post Procedure Follow Up

Interrogation (11/22/22)

Discrepancy noted between the medication listed in Epic (morphine 1 mg/mL) and medication listed upon pump’s interrogation (morphine 10 mg/mL)

Ad-Hoc Infusate Replacement Process

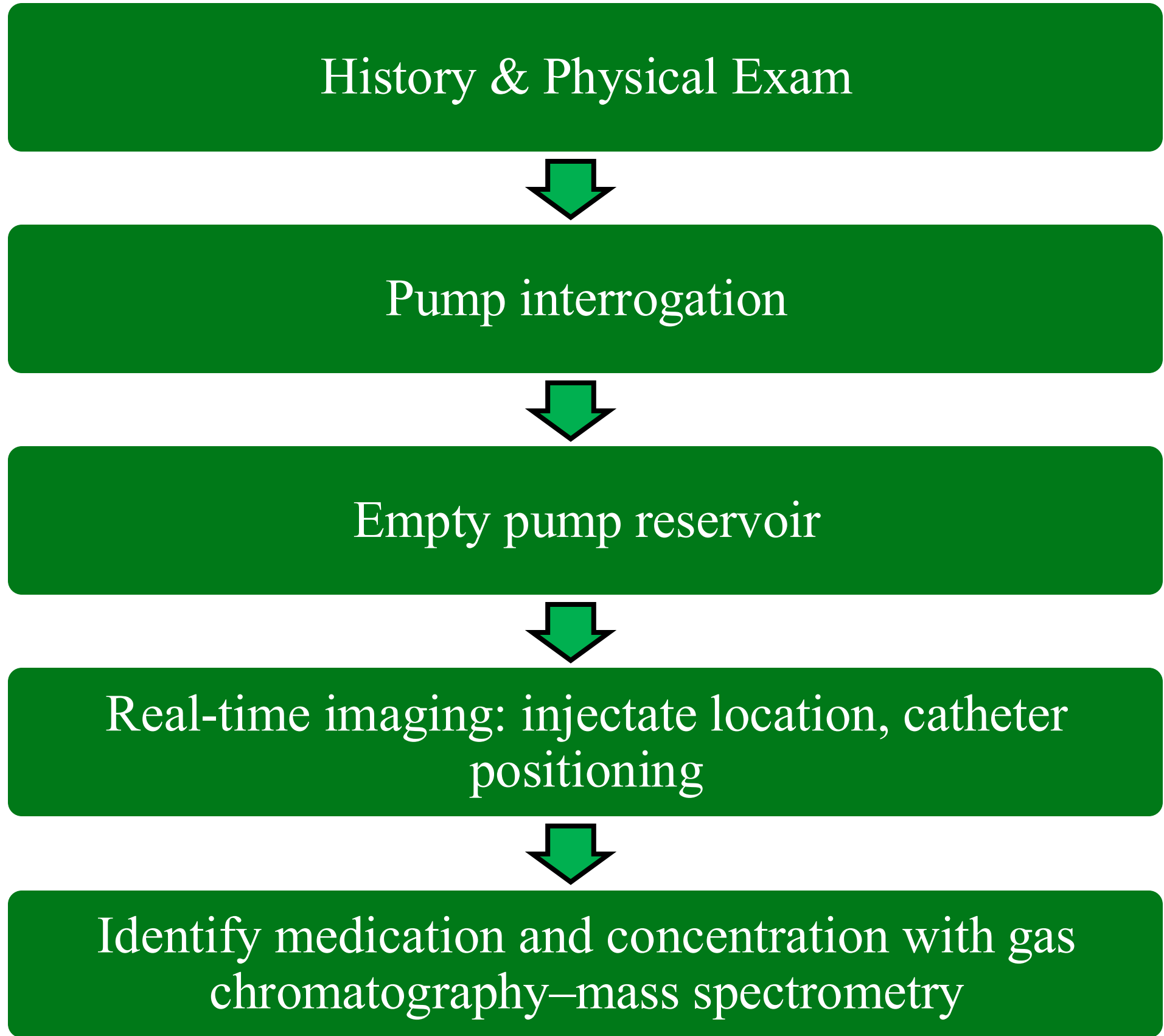
1. Standard pump refill with morphine 1 mg/mL performed under ultrasound guidance
2. Flushing of pump’s internal tubing and dead space
 - Under fluoroscopy, a non-coring needle inserted through pump’s lateral septum to clear catheter of medication
 - Catheter was then primed via fluid contained in the internal pump system via a bridge bolus over a 10-minute period
 - This process was completed three times
 - A final bridge bolus cleared catheter of CSF and filled catheter with correct morphine concentration

IDDS Risks

- Catheter complications: migration, laceration, occlusion, disconnection
- Pump complications: rotor corrosion, electronic failure, low battery life
- MRI complications
- Human error: schedule mistakes, miscalculations of dead space, programming mistakes, incorrect refilling
- Procedure complications: bleeding, infection, CSF leak

IDDS Safety

- Drug mixtures & pump programs double-checked by clinicians
- Refill procedures done by experts
- 24/7 medical coverage for complications
- Safety Protocol Example:



DISCUSSION

The clinical impact of this case report highlights the cautions that must be taken when using an IDDS. In addition to educating the patient on risks and benefits of IDDS, it is paramount that providers understand the technical build of the pump and have a standard protocol for navigating pump malfunctions/therapy issues.

REFERENCES

1. Wang, Josef K., Lee A. Nauss, and Juergen E. Thomas, Pain Relief by Intrathecally Applied Morphine in Man. *Anesthesiology*, 1979. 50(2): p. 149-151.
2. Staats, P.S., Complications of Intrathecal Therapy. *Pain Medicine*, 2008. 9(suppl 1): p. S102-S107.
3. *Delhi Pain Management Centre*, <http://painhospital.in/intrathecal-pump-implant/>.
4. K., Kumar, et al. “Synchromed II Programmable Implantable Drug Pump.” *SlidePlayer*, <https://slideplayer.com/slide/14722522/>.