

Using Ultrasound Guidance to Recognize and Correct A Flipped Intrathecal Pump in the Pain Clinic: A Case Report

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Introduction

- An intrathecal (IT) drug delivery system is an FDA approved intervention for pain and spasticity management to deliver medications such as opioids or baclofen.
- The IT pump medication reservoir is implanted subcutaneously and requires regular interval filling every few weeks to months.
- Failure to ensure proper access of the pump reservoir before injecting medication is a significant safety issue as spilling of drugs can lead to drug overdose or withdrawal.
- We present a medically challenging case of a flipped IT pump detected in the clinic during a medication refill visit. The complication was corrected using ultrasound guidance.

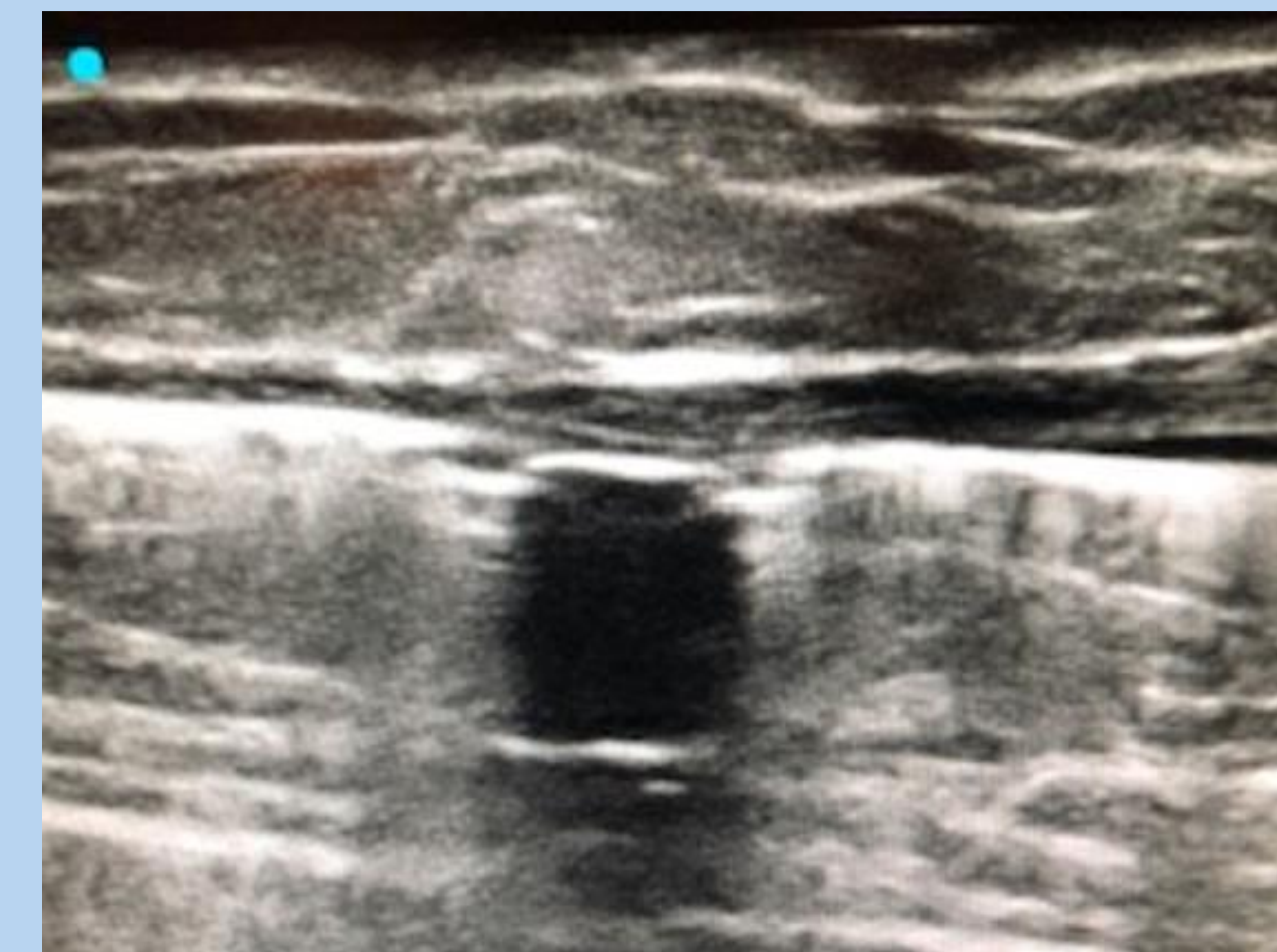
Case Report

We present a case of a 62-year-old male with a past medical history of two organ transplants, degenerative disc disease and chronic lower back pain who underwent Synchromed II IT drug delivery system implantation for management of central pain syndrome after failing oral opioid therapy. The patient tolerated initial placement without complications. His treatment regimen consisted of Hydromorphone 0.16mg and Bupivacaine 6mg daily. Three months after pump implantation, the patient presented for reservoir fill. Using the manufacturer provided kit including template and needle, it was impossible to access the reservoir fill port. Finally, the pump was scanned with ultrasound and the port could not be visualized. At this point, the patient volunteered that the pump had been quite mobile and he felt it flipping at times. The pump was then manually flipped and scanned with ultrasound again, which then clearly revealed the reservoir access port (RAP).

Discussion

Reservoir fill is a high-risk procedure and errors can potentially be lethal. Accessing a pump reservoir becomes challenging if there is a significant change in a patient's weight. Pump movement is often attributed to sudden weight loss. Ultrasound scanning can help visualize the exact location of the RAP at the bedside, especially if fluoroscopy is not available. While the use of ultrasound in difficult cases is well known, we believe this is the first case of utilizing ultrasound visualization to confirm the flipped orientation of an IT pump and guide reorientation. Without ultrasound visualization, more costly and time intensive imaging studies would be needed, which may also delay medication refill. While the pump placement will ultimately need to be revised and anchored in the OR, ultrasound guidance permitted the reorientation of the pump and medication refill during the same clinic visit. This is paramount in patients with IT pumps for any indication, as patients can suffer life-threatening side effects from withdrawal from medications such as hydromorphone or baclofen. Therefore, ultrasound is a useful imaging modality in the clinic to diagnose, visualize, and correct potential IT pump malfunctions.

Imaging



Ultrasound imaging of flipped pump reservoir fill port

References

