

Suspicion for malpositioned ventriculoperitoneal shunt diagnosed with bedside ultrasound

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Case presentation

A 27-year-old female presented to the emergency department with approximately eight hours of abdominal pain, nausea and vomiting, and abdominal wall swelling. She denied fevers or chills, or any recent history of abdominal trauma. She recently had a ventriculoperitoneal (VP) shunt placed six weeks ago for a cerebrospinal fluid leak with recurrent headaches associated with a Chiari I malformation. She was mildly tachycardic, with otherwise normal vital signs. Physical exam revealed a subcutaneous fluid collection measuring approximately 10 cm × 10 cm with mild associated erythema in the right upper quadrant near her postoperative site.

Bedside ultrasound revealed a hypoechoic fluid collection surrounding a tubular foreign body found to be the patient's malpositioned VP shunt, which had externalized through her peritoneum and abdominal muscles (Figure 1). In the operating room, this shunt was externalized from the abdominal cavity and attached to a drainage bag, and subsequently completely removed several weeks later.

Interestingly enough, she had a VP shunt replaced several months later due to worsening headaches, only to have the same repeat complication of abdominal wall perforation. At that time,

the emergency physician used a CT scan for evaluation of her complication (Figure 2).

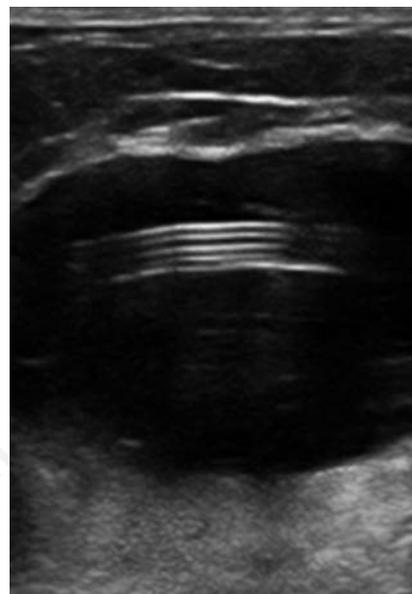


Figure 1. Bedside ultrasound revealing a hypoechoic fluid collection with a tubular foreign body.

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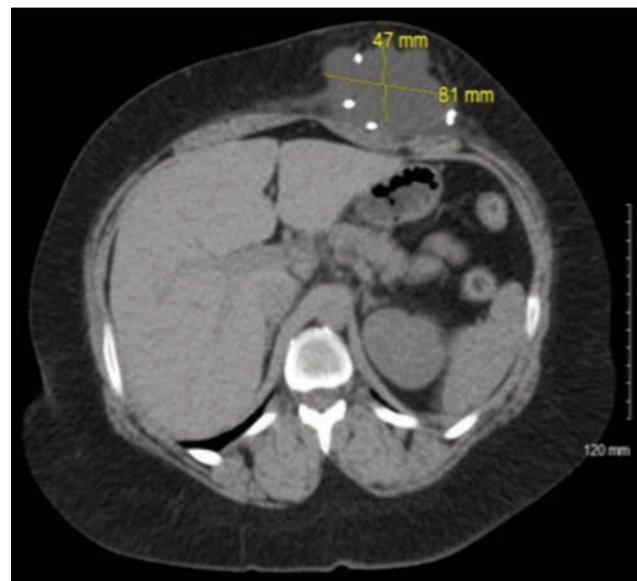


Figure 2. CT scan of the abdomen and pelvis with large fluid collection subcutaneously located in the LUQ, 4.7 × 8.1 mm in size at the largest cross section.

Diagnosis

This patient was diagnosed with a malpositioned VP shunt with abdominal wall fluid collection utilizing bedside ultrasound. There have been prior reports of extrusion of the peritoneal end of the VP shunt, including through the abdominal wall, umbilicus, and anus, all of which are rare complications.¹ The pressure of the tip of the catheter on the local abdominal wall or viscera can lead to inflammation and erosion.² Predisposing factors include infection, tube obstructions and multiple shunt revisions.³

References

1. Birbilis T, Theodoropoulou E, Matis G. Spontaneous externalization of peritoneal catheter through the abdominal wall in a patient with hydrocephalus: A case report. *Cases J* 2009;16:6898.
2. Kanojia R, Sinha SK, Rawat J, et al. Unusual ventriculoperitoneal shunt extrusion: Experience with 5 cases and review of the literature. *Pediatr Neurosurg* 2008;44:49-51.
3. Mobley L, Doran S, Hellbusch L. Abdominal pseudocyst: predisposing factors and treatment algorithm. *Pediatr Neurosurg* 2005;41:77-83.

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