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Case Report

A ventriculoperitoneal shunt incidentally found in the stomach

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ABSTRACT

We report a case of a ventriculoperitoneal shunt incidentally found within the stomach while the patient was undergoing a percutaneous endoscopic gastrostomy (PEG) tube placement. Among the complications of ventriculoperitoneal shunt placement, bowel perforation is rare a complication found in 0.01%–0.07% of cases, and typically occurs in premature infants and neonates [1]. To date, less than 100 such cases have been recorded of which only a few have appeared in the radiological literature. Here we discuss the current literature, the radiological features, clinical presentations and the management.

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Introduction

The placement of a ventriculoperitoneal shunt is the most common procedure to treat communicating and noncommunicating hydrocephalus. Several complications may arise, including shunt obstruction, kinking, breaks, infection, overshunting with accompanying subdural hematoma formation and abdominal complications. Among the various complications 25% are abdominal including cerebrospinal fluid (CSF) pseudocyst, omento-mesentery infiltration, abdominal abscess, and rarely bowel perforation. The sigmoid and transverse colons are the most common sites of perforation followed by the stomach. Bowel perforation is asymptomatic in almost 50% of cases; however, this complication has a mortality rate of 15% [2]. Therefore, early recognition and awareness

play a crucial role. We present a case of a 72-year-old male undergoing a PEG tube placement who was incidentally found to have a ventriculoperitoneal (VP) shunt ending in the fundus of the stomach.

Case report

A 72-year-old male with a past medical history of cerebral aneurysm clipping in 2011 status post VP shunt placement, seizures, transfusion dependent anemia and recent diagnosis of West Nile encephalitis presented to the emergency department for failure to thrive and was subsequently admitted for management of fever of unknown origin. Gastroenterology was consulted for PEG tube placement for low PO uptake.

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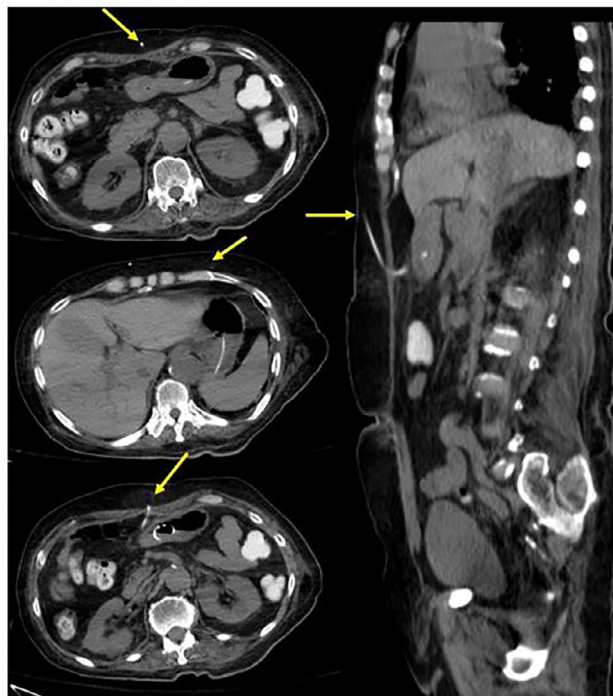
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Fig. 1 – Endoscopy. Visualized ventriculoperitoneal (VP) shunt entering at the antrum and ending in the fundus.



Axial and sagittal CT
Note the VP shunt ending in the stomach

Fig. 2 – Axial and sagittal CT. Note the ventriculoperitoneal (VP) shunt ending in the stomach.

During the procedure another tube was found within the stomach (Fig. 1). The tube was initially thought to be a retained enteric tube; however, there were some difficulties in attempts to remove the tube. Further chart reviews revealed a previous VP shunt history. A new PEG tube was successfully placed, and a following CT abdomen and head confirmed the presence of a VP shunt terminating in the stomach fundus (Figs. 2 and 3). During hospitalization the patient was found to be anemic with GUIAC positive test requiring blood transfusions.

On physical exam patient was cachectic, nonverbal, and contracted. The patient gestured with his right hand indicating that he had pain in the left sided neck. He had a residual left hemiplegia due to prior cerebrovascular accident (CVA).

The patient's Omayya port of the VP shunt was palpable in the right frontal lobe. The shunt was palpable over the right clavicle.

The timing or facility were the VP shunt was placed was unknown. The patient was treated with antibiotics. Shunt removal was initially considered, however the patient was found to be clinically stable and his fever resolved with antibiotics, and therefore surgery was not offered.

There was no evidence of shunt malfunction, or of retrograde flow of stomach contents into the shunt. Evaluation of shunt function was somewhat limited due to the patient's nonverbal baseline physical exam; however, there was no evidence of hydrocephalus on head CT. The patient was febrile on admission, but his fever improved after Zosyn and Vancomycin and therefore his fever was attributed to his known urinary tract infection (UTI).

Discussion

Hydrocephalus was described back to the era of Hippocrates, Galen, and early and medieval Arabian physicians. Different techniques with varying degrees of success for the treatment of hydrocephalus existed until the invention of valve and silicone shunt in the 1960s. This led to a worldwide therapeutic breakthrough [3,4]. Cerebral shunt catheters are most commonly placed in the peritoneal cavity; however, other locations include the right atrium and pleural cavity.

Ventriculoperitoneal surgery cause multiple complications, from surgical related complications such as infection and bleeding, mechanical complications such as obstruction, kinking, breaks and migration, slit ventricle syndrome, overshunting with associated subdural hematoma formation and abdominal complications. Abdominal complications comprise 25% of VP surgery complications, and include intestinal volvulus, CSF-pseudocyst, infected fluid collection, abdominal abscess, and rarely bowel perforation[6,9].

Bowel perforation is a rare complication occurring in only 0.01%-0.07% of patients [5].

The colon is the most common site followed by the stomach. Most of the cases are asymptomatic. This is thought to be secondary to fibrous encasement of the catheter throughout its intraperitoneal course [8], which prevents the bowel contents from spilling into the peritoneal cavity and producing peritonitis. Possible symptoms related to bowel perfora-

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