

## Rectal migration of Ventriculo-peritoneal shunt: a rare case report

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**Abstract:** Colonic perforation following ventriculoperitoneal shunt is a rare complication. The common treatment is to remove the perforating catheter and replace with new one. In this case report we reported a rare case of colonic perforation following VP shunt and its anal migration. We have discussed its pathogenesis, management strategy and review of literature.

**Key words:** Ventriculoperitoneal shunt, anal migration

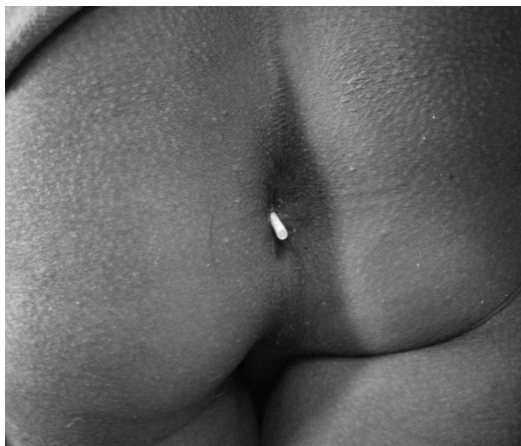
### Introduction

Ventriculoperitoneal shunt (VPS) is the most common treatment for hydrocephalus, but it can have serious complications. The migration of the distal catheter within the bowel so that it protrudes through the anus is a relatively rare complication, but it can result in a potentially serious infectious complication, sepsis, or even death. We reported a rare case of peritoneal shunt catheter migrated through the anus and its review of literature.

### Case report

An 18 – month presented to us with complaints that the child protruded a white tube per anus on defecation for last one day with clear fluid dripping from it (Figure 1). The child had undergone the right-sided VP shunt (Chhabra-slit-in-spring silicone medium pressure shunt) procedure 8 months

back for congenital hydrocephalus. On examination, the child was afebrile, alert and had no neck rigidity, and the abdomen was soft. On rectal examination, there was a white tube coming from beyond the reach of finger. Total leukocyte count (TLC) was 7200/cumm. An ultrasonography (USG) abdomen was normal. Plain-film radiographs of the abdomen showed the distal catheter within the colonic lumen and traversing the sigmoid colon and rectum (Figure 2). The child was operated and the shunt was cut at abdominal surface through a small incision. The rest of the distal tube was extracted per rectum. The proximal tube was taken out as external drainage. On antibiotics, the child improved. The cerebrospinal fluid (CSF) culture done after 3 weeks was sterile and so a revision of shunt was done on the left side. The child was asymptomatic at 2 years follow-up.



**Figure 1** - Distal Shunt tube protrudes through anus abdomen



**Figure 2** - X-ray film of standing

## Discussion

VP shunting is a procedure commonly used to treat obstructive or normal-pressure hydrocephalus in neurosurgery. VP shunt placement is often accompanied by various complications such as ventriculitis, meningitis, and sepsis and may cause several rare abdominal complications, including intestinal volvulus, pseudocyst, and extrusion

through the scrotum, colon, anus, umbilicus, vagina, bladder, or heart. Spontaneous bowel perforation is a rare complication of VP shunt surgery, occurring in only 0.01%–0.07% of cases; however, the mortality rate, which is due to intracranial or intra-abdominal infections, is considerably high at about 15% of all such reported cases [1-3].

The exact pathogenesis of spontaneous bowel perforation is unclear having been first reported by Wilson and Bertran [4] in two pediatric patients. Since the initial report, there have been approximately 90 documented cases in the literature regarding VPS-induced bowel perforation. In cases that have warranted surgical intervention, or by autopsy, the authors have described an encasing fibrotic scar anchoring the tubing to an area of the bowel and causing ulceration, and theoretically, eventual perforation”.

The possible other factors responsible for bowel perforation are thin bowel wall in children, sharp and stiff end of the VP shunt, use of trocar by operating surgeons, chronic irritation by the shunt, previous surgery, infection and silicone allergy.

Management of bowel perforation is highly individualized and dependent upon the presenting signs and symptoms of the patient. Immediate externalization is necessary to maintain shunt patency, as well as to limit the retrograde spread of bacteria along the shunt system, which can cause ventriculitis or meningitis [5]. If there is a concern of abdominal abscess or peritonitis, laparotomy is the preferred treatment choice to manage the bacterial infection. [6,7] However, in cases where there is no evidence

of peritoneal involvement and the patient's exam remains benign, it is believed that the fistulous opening should close spontaneously after removal of the catheter[8], as in our case. Importantly, when re-shunting a patient, we highly recommend choosing a different terminus outside the abdominal cavity, as there remains the concern that the factors leading to bowel perforation are still present, such as the atrium (as in our case) or pleura.

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