Case Report

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Penetration of Ventriculoperitoneal Shunt into the Transverse Colon and Anal Extrusion in a Child: A Rare Case Report

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ABSTRACT

Ventriculoperitoneal (VP) shunt placement is the most common procedure used in the treatment of hydrocephalus. However, it has been associated with several complications. Herein, we report penetration of VP shunt into the transverse colon and anal extrusion in a 5-year-old child who was a case of congenital hydrocephalus. The patient underwent laparotomy. The tube was palpated to be in the sigmoid colon. The shunting tube was removed and transverse colon was repaired.

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Introduction

Ventriculoperitoneal (VP) shunt placement is a standard procedure used in the treatment of hydrocephalus (1). Although VP shunt placement is easy, it may causes serious and life-threatening complications (2). Abdominal complications accounts for 25% of all complications of VP shunt (3). The mortality rate is 15%; therefore, early diagnosis is crucial to improve survival. Prognosis is good if the patient is asymptomatic (4). We hereby report penetration of VP shunt into the transverse colon and anal extrusion in a 5-year-old child.

Case Report

A 5-year-old boy presented to us because of extrusion of tube from the anus. The patient had a 4-month history of intermittent extrusion of shunting tube from the anus. The VP shunt had been installed at the age of 45 days because of congenital hydrocephalus. Afterward (1 month ago), VP shunt had been replaced by another shunt because of headache, loss of consciousness and malfunction of shunt the without regarding the patient's history about the extrusion of the tube from the anus during defecation. The patient did not have any abdominal complaints.

On physical examination, the child was alert. Neurologic examination was normal. The abdomen was normal in physical examination. Vital signs were normal, too. There was no evidence of peritonitis or meningitis. The distal end of the VP shunt was passed through the anus. The patient was admitted. In laboratory tests, white blood cell count was normal. The tube was seen to be entering to the rectum in X-ray (Figure 1).

The patient underwent surgery. A small incision was made behind the ear by the surgeon. The reservoir and cerebral shunt were removed. The tube at distal to the reservoir was disconnected by the surgeon and wound was repaired after inserting a drain. A clamp was placed at the distal of tube to prevent its retraction. As the tube was seen to be entering into the rectum in X-ray, a lower midline incision was made on the abdomen. The tube was palpated in the sigmoid colon. In exploration, the tube was entered to the transverse colon near the hepatic flexure region (Figure 2). Another incision was made in the right upper quadrant region. There was adhesion between tube and colon close to the penetration. The tube was sent to the colon, and its distal end was pulled out from the anus. Transverse colon was repaired (Figure 2).

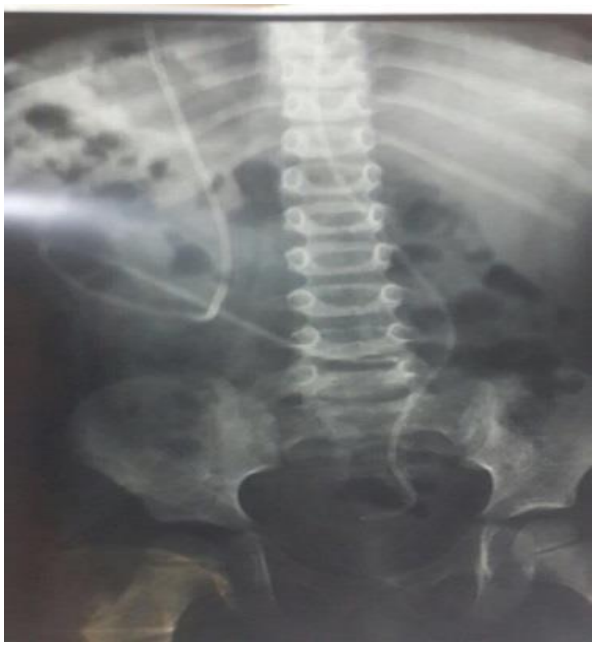

Figure 1. The tube was seen to be entering to the rectum in X-ray

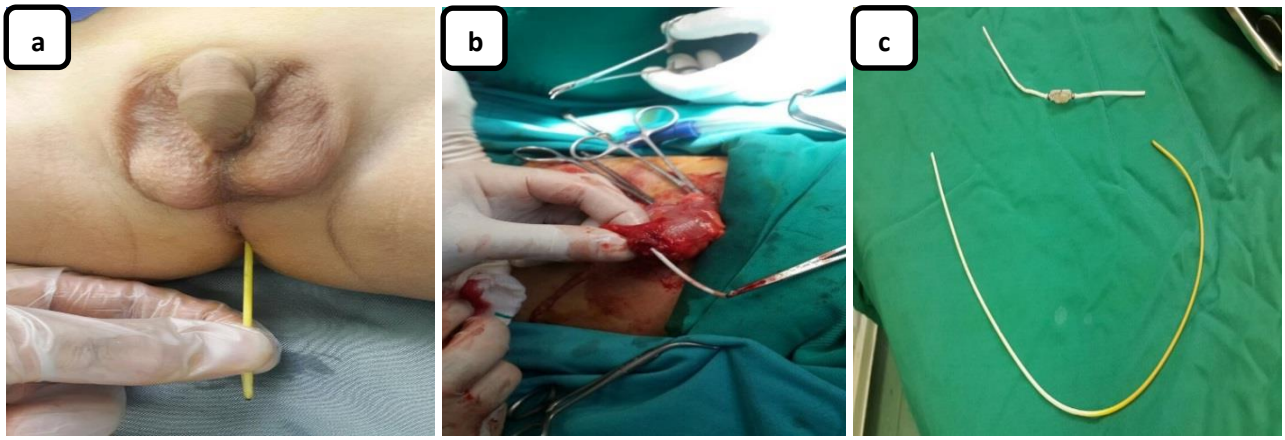

Figure 2. (a) Anal extrusion of shunting tube in a 5-year-old child. (b) Intraoperative view of the entrance of tube to the colon. (c) The shunting tube which was removed by surgery

Broad-spectrum antibiotics were administered. The feeding was started 2 days after surgery, and the patient was discharged 3 days after surgery.

Discussion

Congenital hydrocephalus typically results from a problem in cerebrospinal fluid (CSF) flow or absorption as well as an increase of CSF production in rare condition (5). VP shunt placement is a standard procedure in the treatment of hydrocephalus (6). VP shunt diverts the CSF into the peritoneal cavity (7). However, it has been associated with several complications including peritoneal pseudocyst, intestinal volvulus, extrusion through the scrotum, umbilicus, vagina, gastrointestinal tract, pseudotumor of the mesentery and inguinal hernia, ascites, and peritonitis (1, 4, 8, 9). Abdominal complications accounts for 25% of all complications of VP shunt (7). The mortality rate is 15% (2), therefore early diagnosis is very important to improve survival. Bowel perforation is a rare complication and accounts only for 0.1-0.7% of abdominal complications (1). Colon is the most common site of bowel perforation. Protrusion of the tube from the anus is a common presentation, although over half of patients are asymptomatic (9). The mechanism of anal extrusion is not fully clear. It is possible that local inflammatory reactions and fibrosis around the distal tube may result in adhere to bowel, penetration and its perforation (10). In our case, adhesion was found between the tube and the colon near the penetrating site. Weakened intestinal wall resulting from weak innervation in congenital hydrocephalus is a predisposing factor for this problem (4). Our patient was a case of congenital hydrocephalus which this condition may involve in penetration. Over 50% of patients are asymptomatic (9). If there is no evidence of peritonitis or abdominal abscess, tube removal can be performed by laparotomy or even through percutaneous (11). In our case, because the tube was seen to be entering into the rectum in X-ray, laparotomy was performed.

To our knowledge, only a few cases of penetration of VP shunt into the transverse colon have been reported. The surgeon should be aware of complications of VP shunt.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

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