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Case Report
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Transanal Extrusion of a Ventriculo and Lumboperitoneal Shunt Catheters

Padilla Zegarra ED[1], Franco Chacón M[1], Pavel M[1], Llàcer-Millán E[1], Julià Verdaguer E[1], Estalella Mercade L[1], Fowler AL[2], Memba Ikuga R[1] and Jorba Martin R[1]*

[1]General Surgery Department, University Hospital of Tarragona Joan XXIII, Tarragona, Spain

[2]General Surgery Department, University Hospital Galway, Galway, Ireland

Abstract

Background: Intestinal perforation in patients with a ventricular or lumboperitoneal shunt is a rare complication, with potentially fatal consequences.

Study Aim: To present two cases of intestinal perforation secondary to ventricular and lumboperitoneal shunts insertion.

Material & Methods: We present two cases of this complication. The first is a 51 years old female with a delayed diagnosis of intestinal perforation, four years after a placement of a lumboperitoneal shunt. The second case was a 82 years old male with a diagnosis of sigmoid colon perforation, three days after a placement of a ventriculoperitoneal shunt.

Results: In both cases, a colonic perforation was diagnosed during the surgery. The catheters were removed from the colon. In the second case, a suture of the sigmoid colon was performed. Both patients had an uneventful post-operative stay.

Conclusions: The diagnosis of this type of complication, although it is usually simple, can be challenging in other occasions. Adequate and timely medical and surgical management is key to achieving a better prognosis of this entity.

Keywords: Abdominal wall abscess; Colonic perforation; Ventriculoperitoneal shunt; Lumboperitoneal shunt; Hydrocephalia

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*Correspondence:
Padilla Zegarra Erlinda Daniela, General Surgery Department, Joan XXIII University Hospital, Tarragona, Spain.
Tel: 0034 977 295 800
E-mail: erlindadpz@gmail.com

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Introduction

Ventriculoperitoneal or lumboperitoneal shunts for rerouting the cerebrospinal fluid from the subarachnoid space to the peritoneal cavity are a safe and effective treatment for Idiopathic Intracranial Hypertension (IIH) and Hydrocephalus [1].

However, this invasive technique has some complications, most of them secondary to the infection or shunt failure of the catheter [2].

Bowel perforation is an extremely rare complication of ventriculoperitoneal or lumboperitoneal shunts, with an estimated incidence between 0.01-0.07% [3]. Since its first description by Wilson et al., [4] in 1966, only 95 cases have been described in the literature. The interest of these cases lies in the unusual form of presentation of an infrequent complication.

Cases Presentation

Case 1

A 51-year-old woman with a medical history of IIH presented for placement of a lumboperitoneal shunt in March 2014. There were no apparent complications after the procedure and the outcome from the neurological point of view was favourable.

Four years later, the patient required hospitalization due to an abdominal wall abscess. The cause was not established and Computed Tomography Abdomen Pelvis (CTAP) scan was inconclusive. Two months later, she was admitted for spontaneous extrusion of the catheter through the anus. The patient also presented fever and a new abdominal wall abscess in the right flank, without signs of meningeal irritation or abdominal pain.

Broad spectrum empiric antimicrobial therapy was indicated. Reviewing the CTAP scan from the previous admission; a colonic perforation by the catheter and fistulous tract from the proximal

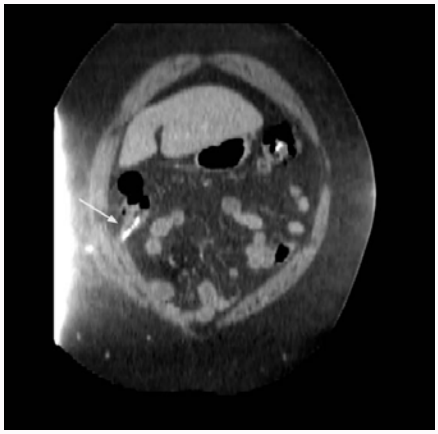

Figure 1: Colonic perforation by the catheter and fistulous tract from the proximal transverse colon to the subcutaneous tissue (Arrow).Coronal cut.

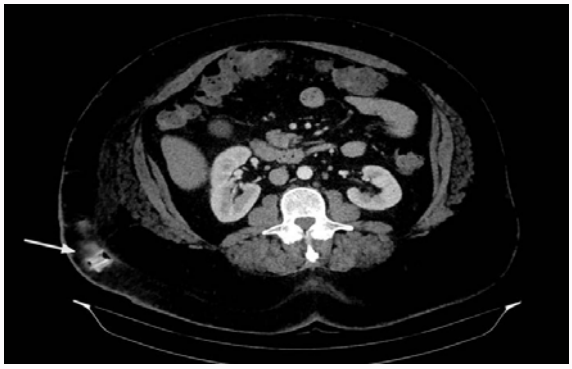

Figure 2: Fistulous tract from the previous catheter location (Arrow), abdominal right wall abscess with part of the remaining catheter in the subcutaneous fat.

transverse colon to the subcutaneous tissue was observed (Figure 1).

After the diagnosis, she was referred to our hospital, where a further CTAP scan was performed. The scan showed a fistulous tract from the previous catheter location and an abdominal right wall abscess with part of the remaining catheter in the subcutaneous fat (Figure 2).

Emergency surgery was undertaken with collaboration of Neurosurgery and General Surgery departments. The catheter was removed through lumbar access and cerebrospinal fluid samples for culture and sensitivity were also obtained; concomitantly, a debridement of the abdominal wall abscess was conducted. *Escherichia coli* was isolated both in cerebrospinal fluids and in abdominal wall abscess.

The evolution after surgery was successful, without neurological or abdominal complications.

Case 2

An 82-year-old male patient presented with idiopathic chronic hydrocephalus and underwent ventriculoperitoneal catheter placement in July 2019.

Three days after surgery, the patient was admitted in emergency room due to spontaneous transanal extrusion of the catheter, abdominal pain and fever.

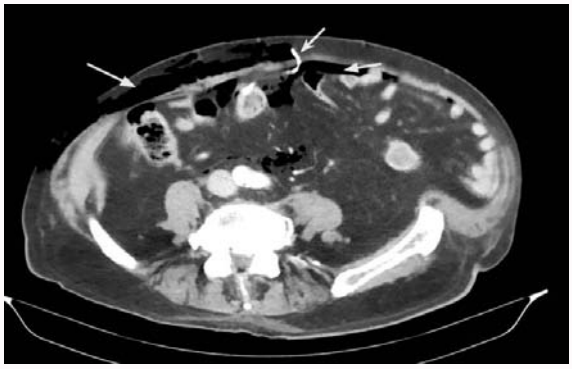

Figure 3: Ventriculoperitoneal catheter within the sigmoid colon(Stealth arrow), marked subcutaneous emphysema and pneumoperitoneum (Large and short arrow).

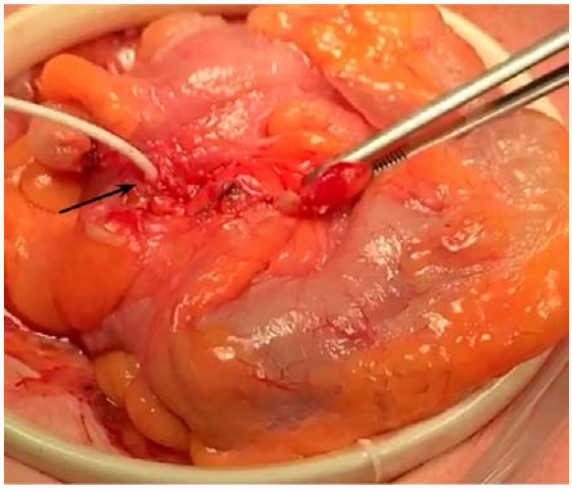

Figure 4: Point-sized perforation in sigmoid colon by the ventriculoperitoneal catheter (Stealth arrow).

A CTAP scan was performed demonstrating the ventriculoperitoneal catheter within the sigmoid colon, with its tip in the anal region. Marked subcutaneous emphysema and pneumoperitoneum was also seen (Figure 3).

An exploratory laparotomy was carried out with intraoperative findings of a point-sized perforation in sigmoid colon without evidence of intra-abdominal collections or free fluid. Simple closure of the perforation site was performed.

The patient underwent an uneventful postoperative course, with antibiotic coverage administered for 10 days despite negative culture of the catheter. There were no neurological or abdominal complications.

Discussion

Intestinal perforation following a ventricular or lumboperitoneal shunt is an infrequent complication. Current reports show a higher incidence in children compared to adults [5]. Although it can occur in any part of the gastrointestinal tract, the colon is the most common location [6].

Almost half of patients with intestinal perforation by a catheter do not have abdominal pain or other signs of intra-abdominal infection, which can make diagnosis difficult [7]. 44% of the patients have

with abdominal pain, vomiting and fever, and about 50% present symptoms of meningitis [8].

An additional challenge of this complication is the delayed nature of its appearance in relation to the initial surgery, which can range from weeks to years after the diversion procedure [9].

Overall mortality of this entity is relatively high, close to 18%, and it is increased in the event of central nervous system (22%) or abdominal infection (33%) [5]. In terms of morbidity, this complication could cause catheter dysfunction with worsening of neurological symptoms, ascites, diarrhoea, abdominal pain, etc.

The exact pathogenesis of the bowel perforation following a surgery for ventriculoperitoneal shunting is hard to establish. Some authors have described the formation of fibrosis around the catheter as the origin. They may argue that these findings can be seen both in post-mortem examination and intraoperatively, which would lead to formation of an ulceration of the intestinal tissue, eventually leading to perforation [10]. Some authors argue that it is caused by a bowel perforation during catheter placement, especially in those cases where blind technique is used.

The management of these cases has to be individualized and depends on the signs and symptoms of the patient [3,11]. The exteriorization of the catheter is mandatory. As in our second case, if an abdominal complication is present (i.e., neumoperitoneum), laparotomy will be indicated, which will also allow reparation of bowel injury. If the general status of the patient is stable, an excision of the catheter might be carried out endoscopically [12], pulling it through the anus [6], or as we described in our first case, pulling it from the lumbar access used for catheter placement four years before. In these cases, the perforation usually heals without requiring surgery, considering the chronicity of the perforation and the presence of the fibrous capsule around it [8].

Conclusions

Intestinal perforation in patients with a ventriculo- or lumboperitoneal shunt is a rare complication with potentially fatal consequences. The diagnosis of intestinal perforation may be simple when protrusion of the catheter is observed, however it can be challenging in other cases. In order to improve the prognosis of this entity, it is important to achieve an early diagnosis and to provide an adequate treatment.

References

1. Bjornson A, Tapply I, Nabbanja E, Lalou AD, Czosnyka M, Czosnyka Z, et al. Ventriculo-peritoneal shunting is a safe and effective treatment for idiopathic intracranial hypertension. Br J Neurosurg. 2019; 33: 62-70.
2. Azad TD, Zhang Y, Varshneya K, Veeravagu A, Ratliff JK, Li G. Lumboperitoneal and Ventriculoperitoneal Shunting for Idiopathic Intracranial Hypertension Demonstrate Comparable Failure and Complication Rates. Neurosurgery. 2020; 86: 272-280.
3. Sathyanarayana S, Wylen EL, Baskaya MK, Nanda A. Spontaneous bowel perforation after ventriculoperitoneal shunt surgery: Case report and a review of 45 cases. Surg Neurol. 2000; 54: 388-396.
4. Wilson CB, Bertan V. Perforation of the bowel complicating peritoneal shunt for hydrocephalus. Report of two cases. Am Surg. 1966; 32: 601-603.
5. Kornaropoulos M, Makris M, Modestou E, Karatzias V, Krikelis A, Thanopoulos A, et al. Bowel perforation by lumbar-peritoneal (LP) shunt: A rare complication of neurosurgery. Int J Surg Case Rep. 2018; 44: 217-219.
6. Birbilis T, Zezos P, Liratzopoulos N, Oikonomou A,Karanikas M, Kontogianidis K, et al. Spontaneous bowel perforation complicating ventriculoperitoneal shunt: A case report. Cases J. 2009; 2: 8251.
7. Mattei TA, Salma A, Lin JJ. Spontaneous bowel perforation from distal catheter leading to meningitis: A rare but frequently overlooked complication of ventriculoperitoneal shunts. Pediatr Neurol. 2013; 48: 477-478.
8. Bales J, Morton R, Airhart N, Flum D, Avellino A. Transanal presentation of a distal ventriculoperitoneal shunt catheter: Management of bowel perforation without laparotomy. Surg Neurol Int. 2016; 7: S1150-S1153.
9. Czajka G, Kreminski H. Cecal perforation: A rare complication of a ventriculoperitoneal shunt. JAAPA. 2018; 31: 28-31.
10. Ibrahim AWM. E. coli meningitis as an indicator of intestinal perforation by V-P shunt tube. Neurosurg Rev. 1998; 21: 194-197.
11. Martinez Hernández-Magro P, Barrera Román C, Villanueva Sáenz E, Zavala MJ. Colonic perforation as a complication of ventriculoperitoneal shunt: A case report. Tech Coloproctol. 2006; 10: 353-355.
12. Alves AR, Mendes S, Lopes S, Monteiro A, Perdigoto D, Amaro P, et al. Endoscopic Management of Colonic Perforation due to Ventriculoperitoneal Shunt: Case Report and Literature Review. GE Port J Gastroenterol. 2017; 24: 232-236.