Case Report
African Journal of Paediatric Surgery
Vol. 4 (2); Jul - Dec 2007

Trans-anal protrusion of ventriculo-peritoneal shunt catheter with silent bowel perforation: A Case Report

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Abstract

Ventriculo-peritoneal (VP) shunts insertion for the treatment of hydrocephalus has been routinely done for over a century. Care is always taken to prevent complications by paying particular attention to patient selection, shunt selection, and surgical details. Despite this and the improvement in the design of the shunt, and operative techniques with endoscopic and laparoscopic facilities, a lot of complications still attend this common surgical procedure. One of such rare complications is presented and the management discussed in this brief communication.

Keywords: ventriculo-peritoneal shunt, hydrocephalus, bowel perforation, peritoneal catheter, anus.

Running Title: Anal protrusion of a VP shunt.

Introduction

Ventriculo-peritoneal (VP) shunt is an established means for the treatment of hydrocephalus[1]. Although a simple procedure, VP shunt is fraught with many complications. One of these complications is bowel perforation and formation of a CSF-enteric fistula[2]. Bowel perforation with protrusion of VP shunt catheter from anus is reported to occur in less than 0.10.7% of cases[3,4]. Visceral perforation is an unusual but serious complication of VPs. Abdu-Dalu et al[5] reported three patients with bowel perforation who were treated successfully.

In this communication, we report a case of a functioning VP shunt catheter which had silently perforated the colon and was protrudeding from the anus in a child with a brief review of literature.

Case Report

A ten month old girl presented to our neuro-surgical service with two months history of progressive enlargement of the head, associated with poor feeding, vomiting, poor developmental milestones and spasticity of the lower limbs. Transfontanelle ultrasonography and cranial computerized tomography scan of the brain both revealed grossly dilated lateral and third ventricles with normal sized fourth ventricle suggesting aqueductal stenosis. She was a product of term pregnancy; the antenatal, perinatal, and neonatal periods were uneventful.

She had a right occipital VP shunt inserted with satisfactory improvement. Three months later, the parents noticed the distal part of the peritoneal catheter protruding from the anus and dripping a clear watery fluid (Figure 1). There were no clinical features of peritonitis and a plain abdominal X-Ray done prior to surgery did not give any additional information. A mini laparotomy was performed and the finding was that the tip of the distal catheter penetrated through the transverse colon before coming out via the anus (Figure 2).

The shunt catheter was cut at the level where it perforated the colon. The colonic perforation was then closed in two layers. The proximal part of the shunt was removed through a scalp incision. The distal part spontaneously came out with passage of stool two days later.

The post operative course was uneventful and had a new VP shunt inserted two months later, because the hydrocephalus was progressing. Patient has been followed up for about 18 months and has remained free of symptoms with normal neurological develop-

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Figure 1: Distal end of peritoneal catheter protruding from the anus. A drop of Fluid (CSF) can be seen at the tip.

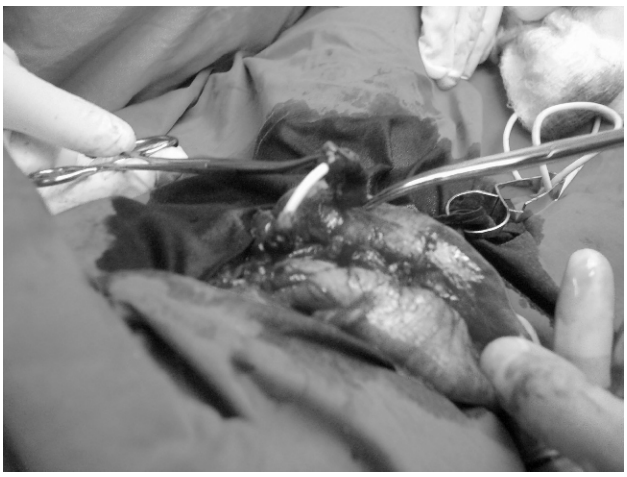


Figure 2: Peritoneal catheter surrounded by fibrous tissue just before perforating the transverse colon.

ment.

Discussion

Complications following VP shunt insertion for hydrocephalus are common in clinical practice. CSF shunt peritonitis with or without ascites, and bowel perforation are the abdominal complications that may follow VP shunt. Bowel perforation by a shunt catheter is a rare complication and used to be most common when shunt materials were made of relatively hard material[6]. The pathophysiology of bowel perforation is unclear; some believed that bowel erosion is a consequence of inflammation from pre-existing shunt-infection[7].

The patient presented had a silent bowel perforation without any clinical features of peritonitis or sepsis. Similar cases had been previously reported[8]. Delayed diagnosis can be fatal if the perforation remains unrecognized[9]. Multiple subdural abscesses secondary to ventriculitis could result from retrograde infection[10]. In the present report there was a delay in diagnosis until the tip of the shunt was out of the anus most probably because of the silent nature of the perforation, and the shunt was still functioning. The reasons given for this unusual complication include weak bowel musculature especially in patients with spinal dysraphism, use of stiff peritoneal catheter, length of the abdominal catheter, intra-operative trauma, and infection[11]. The use of unduly lengthy peritoneal catheter (>120cm) is not associated with increased rate of bowel perforation[12]. Vinchon et al[13] reported that the age of the patients at shunt insertion and the number of previous shunt revisions were not significantly associated with incidence of bowel perforation.

Fragility of tissue alone cannot fully be responsible for shunt-catheter-related bowel perforation because both children and adult could be affected[5,14]. In some cases it has been misdiagnosed as gastroenteritis[15]. The management of shunt-catheter-related bowel perfora-tion individualised depending on the state of the patient, the experience of the surgeon and the available resources and facilities.

Laparoscopic surgical intervention is preferred to open surgery because no major abdominal surgery may be required to remove the shunt[6]. In the presence

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La protrusion trans-anale du cathéter ventriculo-péritonéal avec perforation silencieuse de l'intestin: un rapport de cas

Résumé

Le traitement de l'hydrocéphalie par l'insertion du shunt ventriculo-péritonéal (VP) se fait régulièrement depuis plus d'un siècle. On prend toujours des précautions pour éviter des complications en faisant très attention à la sélection des malades, au choix du shunt et aux détails chirurgicaux. Malgré cela et l'amélioration dans la conception du shunt et les techniques chirurgicales utilisant des mécanismes endoscopiques et parascopiques, ce simple procédé chirurgical est encore caractérisé par beaucoup de complications. Nous présentons l'une de telles complications rares dont nous discutons la gestion dans cette brève communication. ***Mots-clés:*** shunt ventriculo-péritonéal, hydrocéphalie, perforation de l'intestin, péritonéal, cathéter, anus.

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