Spontaneous extrusion of the abdominal tube through the umbilicus complicating peritoneal shunt for hydrocephalus

Case report

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This paper reports the spontaneous extrusion of the abdominal portion of a ventriculoperitoneal shunt through the umbilicus. Some of the possible predisposing factors are discussed.

**KEY WORDS** • hydrocephalus • ventriculoperitoneal shunt • extruded abdominal shunt • umbilical fistula

Abdominal complications have been reported after the placement of ventriculoperitoneal shunts for the relief of hydrocephalus. The commonest of these is obstruction due to fibrous encasement of the peritoneal tip.

Other complications described include blocking or kinking of the distal tube, and its slipping out of the peritoneal cavity through the operation wound; migration of the shunt or its component parts into the abdomen; infection and cerebrospinal fluid (CSF) fistula; paralytic ileus in the immediate postoperative period; failure of peritoneal absorption of the diverted CSF; perforation of the bowel by the abdominal tube; development of a hydrocele which may require surgical excision; and the appearance of a cyst of the abdominal wall years after the establishment of the shunt system.

One peculiar local cultural problem in Nigeria involves mothers pulling the distal thoracoabdominal catheter out of the abdomen; they apparently think the catheter is a worm. The purpose of this communication is to add another abdominal complication, namely, the spontaneous extrusion of the distal (peritoneal) tube through the umbilicus.

**Case Report**

A girl, the third child in the family, was born at Offa General Hospital, Nigeria, on August 19, 1971, after a full-term normal pregnancy and uneventful labor. She was normal at birth and remained in good health thereafter until the fourth month of her life when her mother noticed that the child's head was abnormally large. The enlargement progressed rapidly, and the child was referred to University College Hospital, Ibadan, for investigation. The child's par-
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teents were both young, and there was no other instance of hydrocephalus in the family.

When examined on April 7, 1972, the child appeared active, well-nourished, and healthy. She was clinically hydrocephalic with a head circumference of 55 cm, and a widely open, full, tense anterior fontanel that measured 12 cm in the coronal plane and 7 cm in the sagittal. There was a minimal sun-setting appearance of the eyes. The chest circumference was 46 cm. The hydrocephalus was later confirmed by air ventriculography. On May 5, 1972, a ventriculoperitoneal shunt with a Till-Dahl-Wade valve was inserted. The tip of the abdominal tube was occluded by a double ligature, and a narrow slit about 3 cm long through which CSF freely drained was made on one side of the tube proximal to the tip of the tube.

The hydrocephalus was immediately controlled. The child was discharged home on May 20, 1972. On July 28, 1972, the child was brought to the hospital by her mother 48 hours after she had noticed that “a white rubber,” the peritoneal tube, had come out through the umbilicus (Fig. 1). There were no other symptoms. The child was immediately started on a course of tetracycline, 125 mg every 6 hours for one week. The shunt was draining clear CSF slowly and steadily through the slit at the lower end of the extruded tube (Fig. 1). The abdominal and other wounds made during the shunt operation on May 5 had all healed soundly.

The umbilicus looked normal and there was no sign of infection. On July 29, the abdominal tube was replaced, and the CSF obtained during the operation was bacteriologically sterile. The child was discharged home after 10 days and has since remained well.

Discussion

It is known that foreign bodies in the peritoneal cavity can be discharged through the umbilicus. Bailey and Love,7 who described the umbilicus as “a creek into which one of many fistulous streams may open,” reported the discharge through the umbilicus of stones released after the perforation of an inflamed gall bladder. This phenomenon is explicable on anatomical and developmental grounds. First, there are five ridges in the peritoneum that line the lower part of the anterior abdominal wall, which converge in the midline at the umbilical region.9 Peristaltic and omental activities can thus direct foreign bodies in the peritoneal cavity toward the umbilicus. Second, the umbilicus is a centrally situated scar; in the presence of soundly healed surgical wounds, the umbilicus becomes an area of anatomical weakness through which a foreign body in the peritoneal cavity, like the distal end of the shunt system in this instance, can be extruded to the exterior. Another possibility is that the umbilical end of the vitello-intestinal duct might have remained patent in this patient, thus providing an outlet for the extrusion of the peritoneal end of the shunt system.

References

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Fig. 1. Photograph of hydrocephalic child, showing peritoneal tube extruded through the umbilicus.


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