

PER RECTAL EXTRUSION OF A VENTRICULO PERITONEAL SHUNT CATHETER A CASE REPORT

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SUMMARY

A rare complication of per rectal extrusion of a ventriculo peritoneal shunt catheter occurring in a four-month old Chinese baby boy with hydrocephalus is described. Perforation of the bowel by the shunt occurred without any peritonitis or retrograde infection of the shunt system. Its pathogenesis and diagnosis are discussed.

INTRODUCTION

Hydrocephalus is a common paediatric neurosurgical problem. In children, the hydrocephalus can be a result of congenital abnormality e.g. due to aqueductal stenosis, posterior fossa tumour, Arnold Chiari Malformation, Dandy Walker Syndrome or more commonly a sequelae of meningitis. The treatment in these cases is to establish an alternate pathway for the outflow and absorption of CSF. Ventriculo-peritoneal shunt is a simple, time-proven, first-choice surgical method of treatment for hydrocephalus in most neurosurgery centres in the world, in preference to other treatments viz ventriculo-atrial shunts. In many instances, a ventriculo-peritoneal shunt is urgent in order to relieve severe increased intracranial pressure. Indeed, this simple procedure can be life-saving.

Common complications of ventriculo-peritoneal shunts are blockage and infection of the shunt

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systems respectively. The blockage can be a result of plugging of the shunt tubing by the choroid plexus in the ventricle or the omentum within peritoneal cavity. Prompt revision of the shunt system is advisable. Infection must be combated with systemic antibiotics (in some severe cases, intraventricular antibiotics) and prompt removal of the infected shunt system. Spontaneous extrusion or exteriorization of the shunt catheter through a weakened or infected abdominal wound is not too uncommon, but spontaneous per-rectal extrusion of the peritoneal shunt tubing is only rarely reported.

CASE REPORT

LMF, a full term Chinese baby boy delivered normally at Ipoh General Hospital was noted to have ruptured lumbar myelo-meningocele at birth. He was immediately referred to a Neurosurgery Unit (UKM) General Hospital, Kuala Lumpur and an emergency excision and repair was performed. His head circumference then was 35 cm (below 50th percentile).

A month later, he was found to have an enlarging head. Head circumference then was 39 cm (above 90th percentile). CT Scan confirmed hydrocephalus with pan-ventricular dilatation. A ventriculo-peritoneal shunt was performed in which a medium pressure Pudenz shunt system was used. A shunt tubing of 25 cm was introduced in the peritoneal cavity. Post operative recovery was uneventful.

Four months later while cleaning the baby after defecation, the mother noticed a tube protruding from the anus and was immediately brought back to our attention.

On examination, the baby was well, afebrile and active. The abdomen was soft with no signs of peritonitis. A 4-cm catheter tip was seen protruding out through the anal orifice, more obvious on crying (Fig. 1).

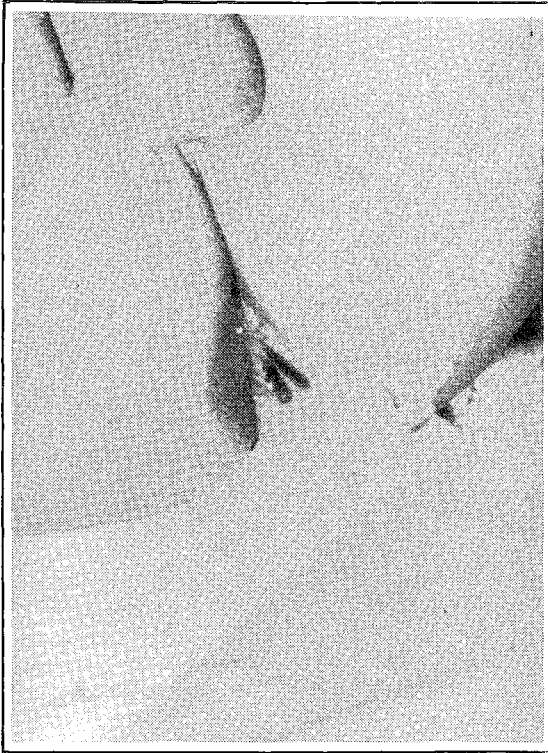


Fig. 1

Distal tip of the shunt catheter was seen clearly protruding out from the anus. About 4 cm length of catheter extruded when baby cried.

CSF was aspirated from the Pudenz pump (the cephalic end of the shunt system). It was clear and a bacteriological study did not indicate any ascending infection.

The child was however started on cefobid 200 mg b.d. 3ml of conray 280 was instilled into the shunt system and x-ray revealed clearly the whole shunt system and site of perforation at the descending colon (Fig. 2).

Emergency revision of the shunt was performed. The tube was cut at the level of the chest and the distal portion was withdrawn from the anus. A new length of catheter was re-connected

and reinserted into the peritoneal cavity. Immediate recovery was satisfactory.

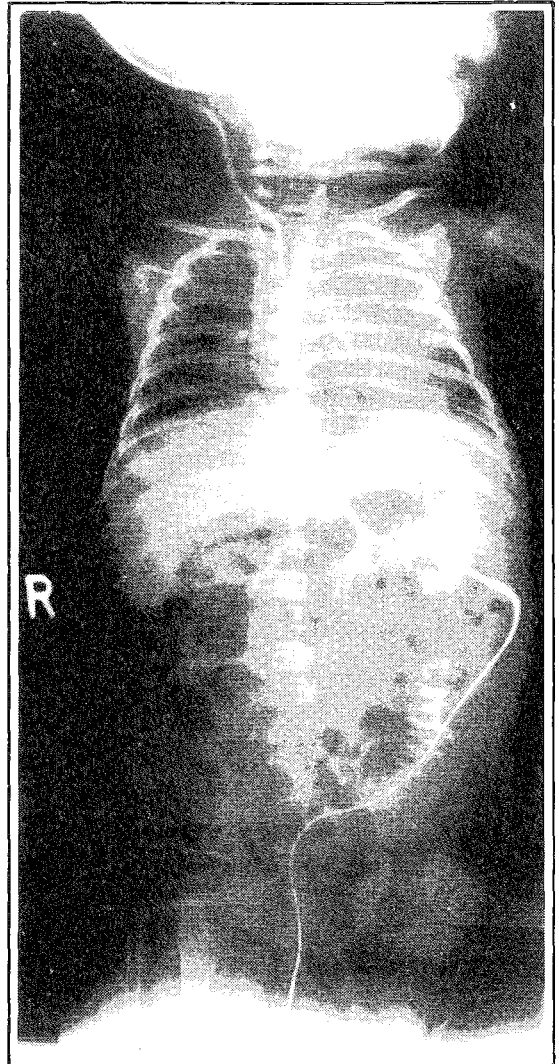


Fig. 2

CONRAY 280 was injected into the shunt system which outlined the whole length of the catheter from the head to its exit from the anus. Extravasated contrast outlined part of the descending colon at the site of perforation.

DISCUSSION

Perforation of the bowel as a complication of peritoneal shunt is rare. It has been reported in 22 instances. Rubin et al (1972) discussed two cases in which their first patient had an associated ventriculitis but no peritonitis and a jejuna perforation in the second instance was asymptomatic.

In the case of our patient, the bowel perforation by the peritoneal end of the catheter was not associated with peritonitis nor was there any ventriculitis. Perforation of the bowel in this case was diagnosed when the tube was seen protruding through the anus. Hence, it is important to note that if there was no tube extrusion, diagnosis would be difficult and possibly missed due to the absence of abnormal physical findings in the abdomen and absence of evidence of retrograde infection of the ventricular system.

The radiological studies outlined clearly a fibrous tract which was formed around the tube and similar tract was noted, too, by Rubin in his studies. It was postulated that this fibrous encasement probably had an anchoring effect of the tube on the bowel resulting in repeated pressure by its tip at a fixed point on the bowel surface, eventually leading to perforation. Subsequently, fibrosis around the site of perforation presumably held the tube secure thus preventing its withdrawal from the lumen and at the same time prevented spillage of intestinal contents into the peritoneal cavity.

In one of the cases reported by Rubin, there was persistent and recurrent *Enterobacter cloacae* ventriculitis and the peritoneal tube was found to have perforated the ileum. In the other case in which there was no associated ventriculitis, the site of perforation was in the jejunum.

Pierce and Loesser reported a case in which perforation of the intestine by a Raimondi peritoneal catheter was associated with contamination of the ventricular system with *E. Coli*.

Since bacteria are less prevalent or absent in the proximal as compared to the distal small bowel it is presumed that perforation of the more proximal small bowel (jejunum) will be less likely to be complicated by secondary retrograde ventricular contamination. In our patient however it was indeed fortunate that perforation of the large bowel was not associated with retrograde CSF contamination. This could probably be due to the continuous CSF outflow from the tip.

Though bowel perforation by ventriculo peritoneal shunt catheter is rare, this should perhaps be suspected in VP shunted patients with unusual gram negative ventriculitis.

REFERENCES

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