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CASE REPORT

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# Extrusion of peritoneal catheter through the mouth

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**Abstract** A case is reported in which the peritoneal catheter of a ventriculoperitoneal shunt entered the thoracic cavity, perforating the tracheobronchial tree and finally extruding through the mouth.

**Key words** Cerebrospinal fluid · Complication · Diaphragm · Hydrocephalus

## Introduction

Ventriculoperitoneal shunts have for many years been advocated as the treatment of choice for hydrocephalus, because complications are less severe [5, 9, 11]. The variety of different complications seen, however, makes a long list [10, 12, 14–18], and they seem to be very capricious. Various thoracic complications have been described [2, 4, 20], but to our knowledge extrusion of the abdominal catheter through the mouth had not been previously reported.

## Case report

An 8-month-old female child was initially admitted to our unit because of rapid head growth with bulging of the fontanel. Communicating hydrocephalus was diagnosed by CT scan (Fig. 1) and a right ventriculoperitoneal shunt was inserted, using a medium-pressure Holter valve with soft tubing. The postoperative course was totally uneventful.

Six months after placement of the shunt, the patient returned with a most unusual complication: after a sudden onset of severe cough and respiratory distress, the mother reported having seen the derivative catheter extruding through the mouth while the respiratory difficulty persisted. This was confirmed on examination (Fig. 2). There were no neurological signs, and clear CSF dripped from the tip of the catheter. A chest and abdomen radiograph showed the abdominal catheter ascending through the chest (Fig. 3), and skull radiograph demonstrated the tip of it in the oral cavity (Fig. 4).

The shunt was revised. At the time of intubation, the catheter was seen to be coming through the trachea, causing difficulty with ventilation and placement of the endotracheal tube.

An exploratory laparotomy was performed and revealed firm adhesions in the abdominal cavity with a gross band of fibrous tissue surrounding the catheter, which had travelled above the liver towards the diaphragm and into the chest. The catheter was retrieved, sectioned, and reinserted at a shorter length into the peritoneal cavity. The rest of it was removed through the mouth. No attempt was made to identify the site at which the diaphragm had been perforated. A postoperative radiograph confirmed appropriate location of the shunt tip (Fig. 5). The patient's cough and respiratory distress disappeared and she recovered satisfactorily from surgery.

## Discussion

Migration of peritoneal catheters, whether soft or wired [4, 8, 18], has been reported to occur via different routes

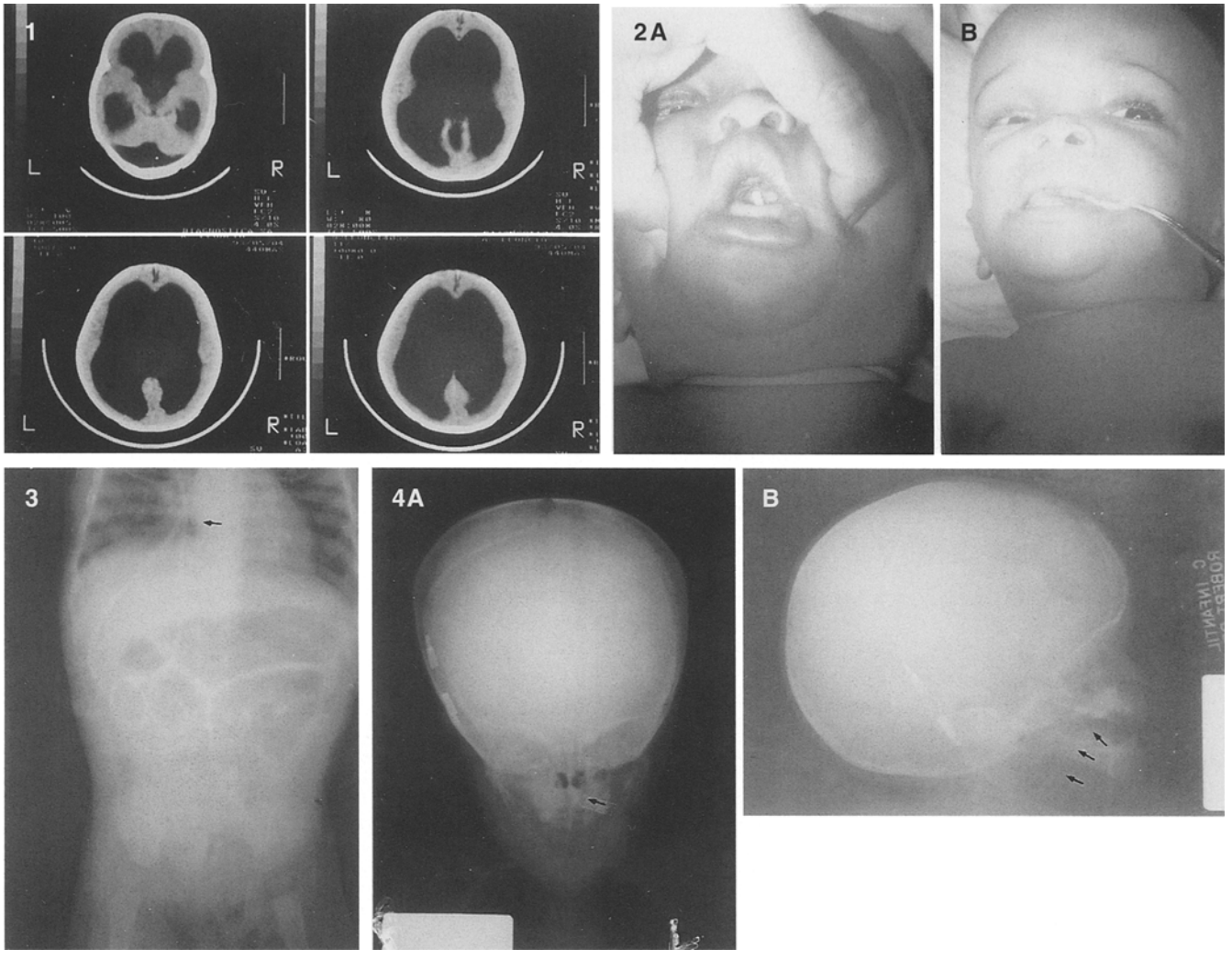


**Fig. 1** Admission CT scans showing hydrocephalus

**Fig. 2A, B** Clinical photographs showing the extrusion of the catheter through the mouth

**Fig. 3** Radiograph showing the peritoneal catheter ascending through the chest (*arrow*)

**Fig. 4A, B** Skull radiographs show the catheter in the oral cavity (*arrows*)

[2, 4, 6, 8, 14, 15, 17, 18, 20]. How the catheter migrated has been the subject of differences of opinion [2, 4, 8, 14, 20]. In our opinion, why it occurs is of great importance. We firmly believe that intestinal movements may exert a "pushing" effect, helping the catheter to travel in a random manner, in combination with rejection as an individual response to what could be considered a foreign body. An inflammatory reaction might be an added factor, as previously described [14, 18, 20].

In the case reported by Jubert and Stephanov [8], the presence of an anatomical or previously existing passage

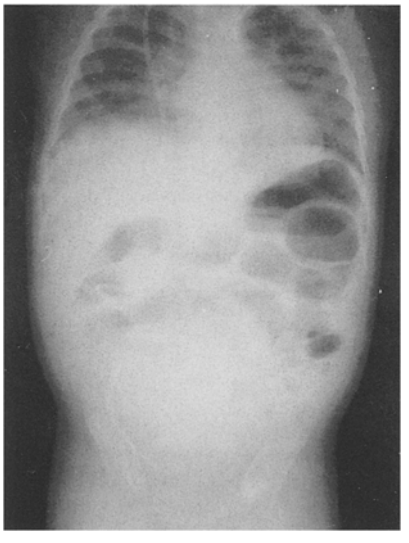

**Fig. 5** Postoperative radiograph showing the peritoneal catheter cut to a shorter length

does not seem necessary for the catheter to travel, although in the cases of thoracic migration, the Morgani or Bondelek hiatus could have facilitated the drifting of the tubing as has been suggested [4, 7, 20].

It is difficult to follow the trail of the catheter. We agree with Horwitz [6] that it is impractical to take periodic abdominal X-rays, especially if patients are asymptomatic.

Since thoracic complications seem to have been the most significant problems with ventriculoperitoneal shunts, causing serious respiratory distress in some of the reported cases [2, 4] and the one described here, our suggestion is that leaving a shorter peritoneal catheter may help to avoid thoracic migration of ventriculoperitoneal shunts.

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