

Shunt malfunction due to proximal migration and subcutaneous coiling of a peritoneal catheter

Sir,

Proximal upward migration of the shunt catheter is a rare complication of the ventriculo-peritoneal shunt for congenital hydrocephalus.^[1-15] A 5-month-old male child underwent right ventriculo-peritoneal shunt for the congenital hydrocephalus at the age of 3 months. He was doing apparently well after surgery. However, again his head started to increase in size. Also, prior to that, the mother noticed swelling over the shunt chamber region [Figure 1]. Computed tomography (CT) scan showed that the shunt was malfunctioning [Figure 2]. Repeat X-ray showed coiling of the shunt tube at the level of scalp and neck [Figure 3]. The shunt revision was performed and the child is doing well. The entire length of distal tubing from a ventriculo-peritoneal shunt can migrate into the subgaleal space, and can result in shunt obstruction.^[11,13] The peritoneal catheters can lie in a subgaleal pocket in the occipital region in a tightly coiled fashion,^[9] in the subgaleal space,^[6,9] scalp,^[2] into the scalp and the clavicular area,^[2] in the subcutaneous tissues at the supraclavicular region,^[16] and the thoracic wall.^[15] As in the present case, it has been found that coiling of catheter takes place in the loose part of the skin^[2] and most migrations occur in the early postoperative period up to 3 months.^[17,18] Many factors have been proposed for the development of upward migration, including the gradient between intracranial and intra-abdominal pressure as the cause of catheter displacement, the course of subcutaneous tract of the tube not being straight, incorrect fixation of the ends of the system,^[19] vigorous flexion-extension movement of the head acting as a windlass and facilitating upward movement of the peritoneal catheter (windlass effect).^[2,6,12] A mechanism of "retained memory" of the shunt tubing has also been proposed as the appearance of the coiling is similar to that in the supplied packaging.^[9] Tortuous subcutaneous tract associated with neck movements, negative sucking intraventricular pressure and positive pushing



Figure 1: Clinical photograph showing the swelling at the site of shunt chamber

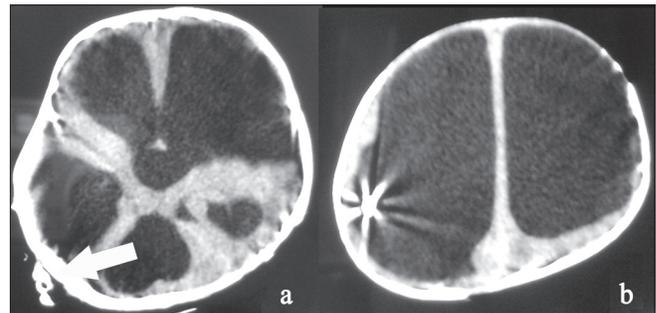


Figure 2: CT scan showing subgaleal coiling of the shunt tube

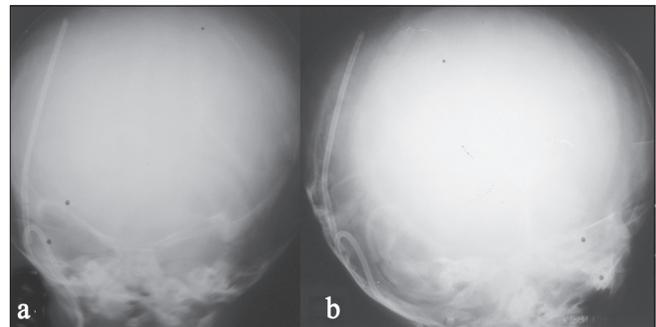


Figure 3: Plain radiograph showing subcutaneous coiling of the peritoneal catheter in the patient's neck (arrows)

intra-abdominal pressure also have been thought to contribute to upward migration of shunt catheter.^[17] A large dural hole (in the present case, this cortical mental provided more space) around the ventricular catheter may predispose to periventricular CSF collection and easy migration of the valve system,^[2] and further the obstruction of the catheter allows continuous CSF flow through the dural opening leading to the formation of

subcutaneous tract, which helps in the migration of the catheter and subsequent coiling.^[14] The diagnosis can easily be accomplished by palpation of the integrity of the drainage system and may be confirmed by shunt radiographs.^[16] The treatment recommended for ventricular shunt migration is removal of the migrated shunt tube and replacement,^[18] and this complication can be prevented by securing the shunt near the site of motion.^[11]

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