

PHOTOCLINIC

A newborn female was brought to the Neurosurgical Clinic of Taleghani Hospital with an irregular mass in the lower back. On clinical examination the sac was found to be 5x6 cm in size and tense on palpation. The patient was born 6 days before the expected date of confinement (EDC). The head was grossly enlarged with a circumference of 49 cm. The fontanel was bulging and fully obliterated with completely split sutures and dilated veins on thin scalp. She had sunset eyes and paraplegia of the lower extremities.

Brain CT scan revealed huge hydrocephalus. The patient was scheduled for a ventriculo-peritoneal (VP) shunt. A right frontal catheterization was performed for entry to the ventricle. Peritoneal insertion was done through a skin incision about 5 cm below the costal margin in the right upper quadrant.

Two days after operation, there was a marked reduction in the fontanel tension and a shrinkage in the myelomeningocele sac size and all the signs and symptoms of raised intracranial pressure (RICP) disappeared.

The second operation was performed ten days later aimed at the total dissection with removal of the sac. After removal, the dural sac was seen to be obstructed by a glistening white dura and the nerve roots were seen embedded inside the sac. After circumferential dissection, the sac was removed and anatomic layers were closed orderly.

Four months later, the patient was re-admitted with signs of RICP similar to those before the shunt installation and was considered to be due to shunt malfunction.

On physical examination, penetration and protrusion of the peritoneal catheter was seen approximately 7 cm from the umbilicus.

The sites of incision at the right frontal, the RUQ and lower back were intact (Figure 1). With percutaneous tapping, CSF was not obtained from the tip of peritoneal catheter.



The tubing was withdrawn without laparotomy and replaced with another atrial tube in the atrium of the heart. Wide spectrum antibiotics were administered before and after the operation.

Your Diagnosis?
See next page for diagnosis

Photoclinic Diagnosis: Protrusion of Peritoneal Part of VP Shunt Catheter from Umbilicus

Shunt complications are numerous and categorized into three groups: mechanical failure, infection and functional failure. Late umbilical protrusion of the peritoneal catheter is a rare complication of VP shunt in a hydrocephalic patient secondary to myelomeningocele.

Approximately 90% of children with myelomeningocele have active or arrested hydrocephalus at birth or within a few weeks after birth when combined with the Arnold-Chiari malformation.¹

In our patient, progressive hydrocephalus was treated by placement of the shunt and then delayed closure of the sac was performed.²

Shunt complications are numerous.³ These complications can be categorized into three groups: 1) Mechanical failure related to improper function of the device.^{4,5} 2) Infection related to implanted foreign material.⁶ 3) Functional failure resulting from an inadequate flow rate of shunt.⁷

Factors relating to shunt failure have three potential origins: the surgeon, the patient and the shunt. Shunt complications are in fact more often related to a combination of factors. The rigidity of the tube particularly before complete closure of the umbilicus is responsible.

Prophylaxis of infection⁸ is to be emphasized and correction of the mechanical failure may be achieved by withdrawal of the tube and selection of an alternative pathway.

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