

Prolapse of ventricular shunt tube from rectum in a child with congenital hydrocephalus

Upadhyay PK^{1*}, Tiwary Geeta²

1. Head of neurosurgery department, Institute of human behavior and allied sciences hospital New Delhi India 110095
2. Senior consultant, Red Cross hospital, Seema puri, New Delhi, India 110096

*Corresponding author: Dr P K Upadhyay, Head, Dept of Neurosurgery, Type VI /5, IHBAS Campus, Dilshad Garden, New Delhi, India 100095, Mail: upadhyaypk5@yahoo.co.in

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ABSTRACT

Shunt prolapse through anus a rare complication of Shunting. It is fraught with further serious complications. Proper management with shunt tube exteriorization and followed by removal and reinsertion. Per anal prolapse and its treatment is described.

Key words: Ventriculoperitoneal shunt, shunt Complications, shunt prolapse, transanal prolapse, per rectal prolapse

Abbreviation: VPS- ventriculoperitoneal shunt; CSF - cerebrospinal fluid; MRI - magnetic resonance imaging; EVD - external ventricular drain

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1. INTRODUCTION

Ventriculoperitoneal shunt (VPS) is the most widely used procedure in the treatment of hydrocephalus. Complications associated with this invasive procedure includes disconnection, breaking and kinking (Matsuoka et al. 2008) of the tube, tip occlusion of the tube, cerebrospinal fluid (csf) Loculation, Shunt infection, Intestinal obstruction, Migration of shunt and perforation of internal organs (Agha et al., 1986; Pierce et al. 1975; Surchev J et al. 2002) gastrointestinal perforation is very rare complication, occurring in less than 0.1% of patients (Sathyanarayana et al. 2000) and the mortality is approximately 15% (Snow et al. 1986). The initial symptoms of colon perforation include meningitis following shunt infection, abdominal symptoms, seizure, fever, and increased intra cranial pressure due to shunt failure. Rarely can it protrude through chest wall as well (Borkari et al. 2008). Uncommon complications consist of migration of catheter into stomach, gall bladder, urinary bladder, vagina, liver, scrotum, and diaphragm (Fischer et al 1983; Frazier et al. 2002). Cases of extrusion of the distal shunt catheter through healed abdominal and neck incisions have been reported in literature (Frazier JL et al. 2002; Whittle et al. 1983). Various pathogenesis has been described for its generation (Agha et al. 1983; Wilson 1966). The period between shunting and discovery of bowel perforation varies from 2 month to 7 years (Schulhof et al 1975). Initial symptoms of colon perforation include meningitis following shunt infection, abdominal symptoms seizure, fever, and increased intra cranial pressure due to shunt failure. Perforation can often occur without evidence of peritonitis (Abu-Dalu et al 1983).

2. CASE REPORT

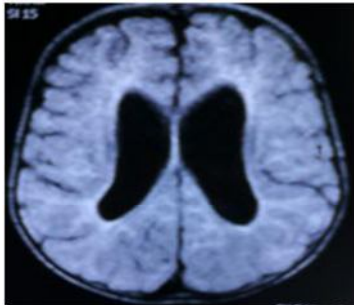
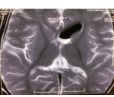
6 month boy with congenital aqueductal stenosis (photograph 1,2) with hydrocephalus was operated by right sided ventriculoperitoneal shunt (VPS) using standard technique. Patient was discharged after suture removal. He was well for three months then one day he presented in out patient department as shunt tube protruding from anus (photograph 3). X ray also confirmed it (photograph 4), MRI showed pneumocephalus (photograph 5). Patient was shifted to operation theatre and under local anesthesia and antibiotic cover with aseptic precaution shunt tube was exteriorized through abdominal wound to function as external ventricular drain (EVD), (photograph 6 & 7). Csf culture and routine csf analysis continued till the parameters became normal. Under general anesthesia reinsertion of new shunt was done. Post operative period was uneventful and the patient was discharged. There on in follow up to one year no complications has occurred and the child is doing well clinically and radiologically (photograph 8).

3. DISCUSSION

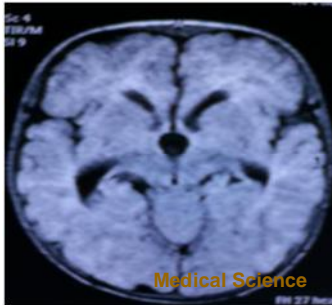
V-P shunt is the most commonly performed procedure for management of hydrocephalus. V-P shunt related complications remain a persistent problem in clinical practice (Borkari et al. 2008). Wide varieties of abdominal complications have been reported with V-P shunt and incidence ranges from 5-25% (Agha et al. 1983). Various hypothesis have been put forward various hypotheses have been put forward regarding mechanism of extrusion of VP shunt. Etiology of early extrusion of shunt may include focal wound dehiscence and infection while delayed presentation may be attributed to ischemic necrosis of dermis overlying shunt components. Other factors that may contribute to shunt extrusion include poor host immunity, factors related to surgical technique and Bio reactivity of shunt components. Superficial shunt catheter placement during

Pneumocephalus:

Pneumocephalus is commonly encountered after neurosurgical procedures but can also be caused by craniofacial trauma and tumors of the skull base and rarely, can occur spontaneously. Contributing factors for the development of pneumocephalus include head position, duration of surgery, nitrous oxide (N₂O) anesthesia, hydrocephalus, intraoperative osmotherapy, hyperventilation, spinal anesthesia, barotrauma, continuous CSF drainage via lumbar drain, epidural anesthesia, infections, and neoplasms. Clinical presentation includes headaches, nausea and vomiting, seizures, dizziness, and depressed neurological status.



Photograph 1
Preoperative MRI of brain



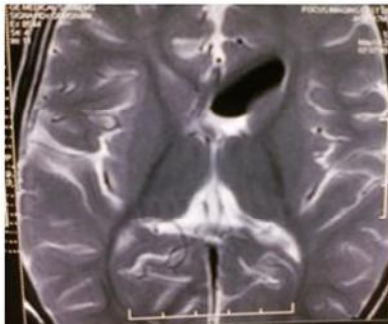
Photograph 2
Pre operative MRI of ventricles



Photograph 3
Rectal prolapsed of VPS tube



Photograph 4
X-ray confirming per rectal prolapsed



Photograph 5
MRI showing pneumocephalus



Photograph 6
Peroperative picture showing VPS

subcutaneous tunneling can also predispose to infection from overlying dermal folliculitis to spread to the subcutaneous space causing dehiscence of overlying skin and extrusion of shunt catheter (De Sousa et al. 1979; Whittle et al. 1983). Bowel perforation caused by displacement of a VP shunt tube is very rare. The first reported case of bowel perforation was described in 1996 (Wilson, 1966). Either early perforation of bowel at the time of surgery and subsequent traction and expulsion of the shunt occurs in early presenting cases while ischemic necrosis and late perforation and expulsion of shunt through rectum occurs in late onset prolapse from gastro intestinal tract.

4. RESULT

The chances for complication remains in the procedure but with due diligence and precautions the complications may be reduced and if occurs can be managed successfully.

5. CONCLUSION

In our case it appears that chronic necrosis of bowel was associated with peristaltic traction leading to prolapse through Rectum.

FUTURE ISSUES

In future VPS has to be developed which has less chances of perforation to the tissues so that it does not come out of body.

DISCLOSURE STATEMENT

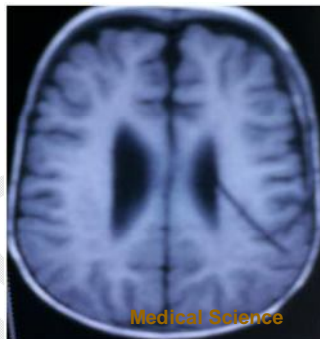
There is no financial support for this research work from any agency

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Photograph 7
Post operative picture of EVD



Photograph 8
MRI of brain showing VPS and absence of pneumocephalus

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