

RETROGRADE VENTRICULOPERITONEAL SHUNT MIGRATION

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ABSTRACT

Ventriculoperitoneal shunts are one of the common treatments for management of hydrocephalus and shunt migration is a significant problem with a reported incidence of up to 10%. A 4 month old girl was presented to us with a previous history of shunt placement twice and an endoscopic third ventriculostomy and repeated meningitis which prompted removal of the shunts. She presented with active meningitis again and was treated appropriately and a Chhabra shunt was placed which migrated intraventricularly after 2 and a half month. Infection was believed to be a prompting factor here. A Pudenz shunt was subsequently placed and she had a good recovery at 6 months of follow up.

KEY WORDS: Hydrocephalus; Ventriculoperitoneal Shunt, Ventriculostomy; Meningitis.

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INTRODUCTION

Ventriculoperitoneal (VP) shunts are the mainstay of treatment for hydrocephalus which makes their complications an important avenue for discussion. The common complications being obstruction, infection and blockage while migration being an unusual complication.¹ The incidence of shunt migration has reported to be as high as 10% in some studies.² Ventriculo-peritoneal shunt migration to mouth, thorax, transdiaphragmatic, heart, pulmonary artery, breast, stomach, gallbladder, liver, umbilicus, colon, inguinal hernia sac, bladder, vagina, anus, and scrotum have been reported in the literature.³ Here we present a case of a 4 month old girl with retrograde migration of the entire shunt system into the lateral ventricle.

CASE PRESENTATION

A four month old girl was brought to the Neurosurgical Unit of Combined Military Hospital, Peshawar with complaints of fever and depressed consciousness. She had a previous history of ventriculoperitoneal (VP) shunting for hydrocephalus. Initially she was shunted with a Chhabra shunt (G. Surgiwear Ltd., India) on the left side but had to be removed due to post-operative meningitis following

which another shunt was placed on the right side. This too had to be removed due to meningitis. The child then underwent an endoscopic third ventriculostomy (ETV) which was deemed a failure.

At presentation the infant had a fever of 102.4 degrees Fahrenheit and decreased level of consciousness. On examination the head was larger than usual with a bulging fontanelle and 'sunset eyes'. There were operative scars over Keen's point (2.5 cm superior and posterior to the top of the pinna) and over the left Kocher's point (2-3 cm from midline approximately in the mid pupillary line and 1 cm anterior to the coronal suture) which was consistent with previous surgeries. CSF examination was suggestive of bacterial meningitis.

She was initially treated with intravenous broad spectrum antibiotics for 10 days followed by oral antibiotics for 7 days till she was rendered afebrile. Repeat CSF examination revealed normal cytology. She was then planned for placement of a medium pressure Chhabra shunt. Following surgery she improved with regard to head size, level of consciousness and sunset eyes. However after 2 and half months she presented with acute hydrocephalus. X-ray head (Figure 1) showed shunt having migrated to lie completely within the lateral ventricle in its entirety. She was offered neuroendoscopy for removal of the migrated shunt system along with revision of the shunt with a medium pressure Pudenz shunt. She had an uneventful recovery and is currently doing well at 6 months of follow up.

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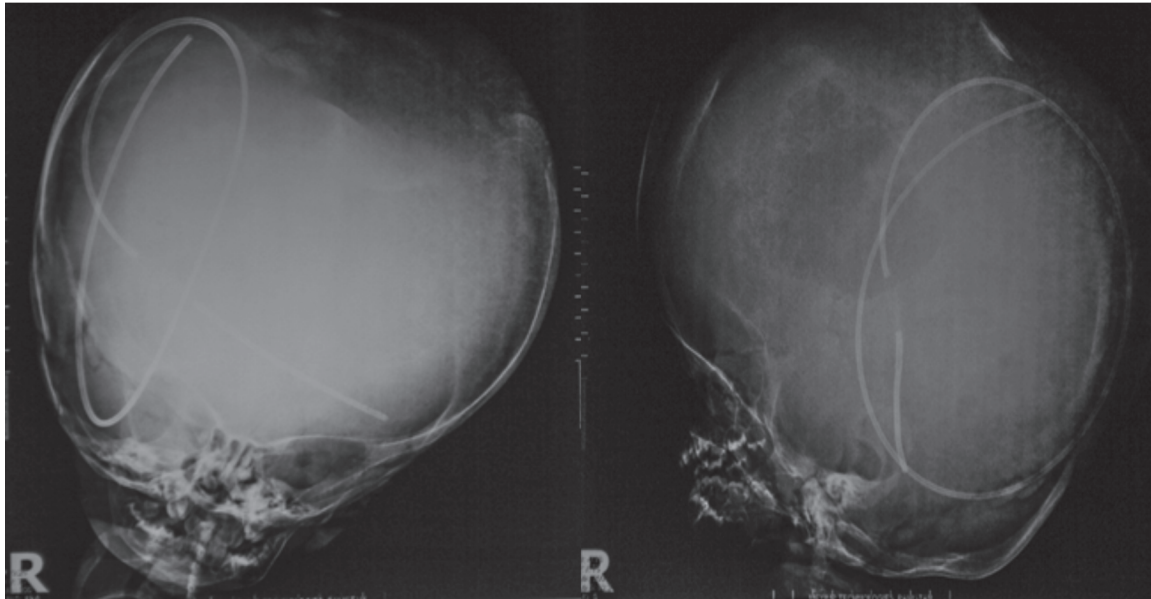


Figure 1: X-ray AP & Lateral view of skull showing Chhabra shunt migrated into the lateral ventricle in a four months old girl.

DISCUSSION

Ventriculoperitoneal shunts are the most commonly used option for CSF diversion. Total retrograde migration of the entire shunt system into the lateral ventricles is rare. Several mechanisms have been described to explain this pattern of migration including excessive head and neck movements, high intra-abdominal pressure or anchoring to a point of calcification around the tube.^{3,4} Technical fault has also been cited as a reason for shunt migration.⁵ However, in this particular case, the patient had repeated post-operative meningitis following previous attempts at shunt placement. The patient previously had a Chhabra shunt in place which has been cited to have a migration incidence of 6.3%.⁶ The shunt was revised with a medium pressure Pudenz shunt which has a silicone elastomer diaphragm within the reservoir which we hoped would prevent retrograde migration as well as other complications associated with a Chhabra shunt. Migration of the peritoneal shunt catheter has been reported in literature^{7,8} as well as migration of the ventricular catheter and reservoir into the cavity of a subdural hematoma however retrograde migration into the ventricle has not been reported.⁹ Follow up at 6 months has shown no further complications and the shunt is currently in place and working well.

CONCLUSION

Retrograde migration is an uncommon but important to recognize complication of ventriculoperitoneal shunts. Keeping in view the mechanisms already mentioned, we would like to make an observation that the patient's previous history of infection and shunt failure may have also contributed towards

retrograde migration of the shunt. We believe that meticulous technique is still the best way to prevent this complication. A Pudenz shunt also seems to be effective in preventing it because of its design characteristics.

REFERENCES

1. Drake JM, Kestle JR, Tuli S. CSF shunts 50 years on-past, present and future. *Childs Nerv Syst* 2000;16:800-4.
2. Ahmed A, Sandlas G, Kothari P, Sarda D, Gupta A, Karkera P, et al. Outcome analysis of shunt surgery in hydrocephalus. *J Indian Assoc Pediatr Surg* 2009;14: 98-101. doi: 10.4103/0971-9261.57700
3. Shahsavaran S, Kermani HR, Keikhosravi E, Nejat F, Khashab ME. Ventriculoperitoneal shunt migration and coiling: A report of two cases. *J Pediatr Neurosci* 2012;7: 114-6. doi: 10.4103/1817-1745.102572
4. Martínez-Lage JF, Poza M, Izura V. Retrograde migration of the abdominal catheter as a complication of ventriculoperitoneal shunts: The fish hook sign. *Childs Nerv Syst* 1993;9:425-7. [PubMed: 8306361]
5. Gupta PK, Dev EJ, Lad SD. Total migration of a ventriculoperitoneal shunt into the ventricles. *Br J Neurosurg* 1999;13:73-4.
6. Warf BC. Comparison of 1-year outcomes for the Chhabra and Codman-Hakim Micro Precision shunt systems in Uganda: a prospective study in 195 children. *J Neurosurg* 2005;102 (4 Suppl):358-62.
7. Sekerci Z, Iyigün O, Rizalar R, Bozkurt G, Çokluk C, Rakunt C, et al. Migration of the distal catheter

- of a ventriculoperitoneal shunt into the abdominal wall. Turk Neurosurg 1993;3:125-7.
8. Touho H, Nakauchi M, Tasawa T, Nakagawa J, Karasawa J. Intrahepatic migration of a peritoneal shunt catheter: case report. Neurosurgery 1987;21:258-9.
9. Villarejo F, López Martin V, de Castro A, Blazquez MG, Muñoz J. Migration of the Pudenz reservoir

and the ventricular catheter into the cavity of a subdural haematoma: case report. Neurochirurgia (Stuttg) 1983;26:21-2.

CONFLICT OF INTEREST Authors declare no conflict of interest. GRANT SUPPORT AND FINANCIAL DISCLOSURE None declared.
