Laparoscopic management of CSF pseudocyst abdomen

R. Handa, M. M. Harjai, R. Kale

Department of Paediatric Surgery, Army Hospital (Research and Referral), New Delhi, India
Correspondence: Dr Rakesh Handa, A-49 New Friends Colony, New Delhi - 110065, India. E-mail: drrakeshanda@gmail.com

ABSTRACT

Cerebrospinal fluid (CSF) pseudocyst formation is an uncommon cause of ventriculoperitoneal shunt malfunction in children. Standard management consisted of laparotomy with repositioning of the shunt and drainage of the pseudocyst. Recurrence of pseudocyst in these patients is well known and resulted in multiple laparotomies and eventually a ventriculo-atrial shunt. We managed a patient laparoscopically with drainage of the pseudocyst and repositioning of the shunt. The patient experienced no complications from the procedure, and there has been no recurrence of the pseudocyst in 2 years of follow-up. This technique has proven to be safe, with results comparable to the conventional open technique.

KEY WORDS: Ventriculoperitoneal shunt, CSF pseudocyst, Laparoscopic management

The established method for management of hydrocephalus today is diversion. Various types of valved and valveless assemblies have been described for the process. All are often associated with complications. The ideal system has yet not been devised. We have been using valve-regulated ventriculoperitoneal shunt with a slit lower end. Various complications have been described with this method; we describe an uncommon abdominal complication: pseudocyst formation, which was managed successfully by the laparoscopic method, thus avoiding the associated complications of open laparotomy.

CASE REPORT

A 10-month-old boy, a case of congenital hydrocephalus, had undergone a right ventriculoperitoneal shunt in January 2003. In May 2003, he presented with gradually increasing lump abdomen with shunt malfunction of the lower end. Examination revealed the blocked lower end of the ventriculoperitoneal shunt catheter with a well-defined lump left lower abdomen. Ultrasound examination confirmed it to be a case of pseudocyst abdomen. During a 3-port laparoscopic correction, the encysted ventriculoperitoneal shunt catheter was freed by incising the sheath around it, and the loculated collection drained. Cerebrospinal fluid (CSF) from the pseudocyst was clear and sterile on culture. Patency of the shunt was confirmed by visualization of dripping CSF from the peritoneal end of the catheter [Figure 1]. The ventriculoperitoneal shunt catheter end was repositioned subdiaphragmatically. The bowel adhesions in the pseudocyst were seen to be nonobstructive and so no further dissection was done. Postoperative recovery was uneventful. The patient is under regular follow up with no further complications.

DISCUSSION

Ventriculoperitoneal shunts provide an effective means of decreasing intracranial pressure and diverting CSF. A variety of complications may be seen, however, with the peritoneal limb. Abdominal pseudocysts are rare complications of ventriculoperitoneal shunting for hydrocephalus. Harsh, in 1954, first described a CSF pseudocyst, an
Handa R, et al: Laparoscopic management

intra-abdominal collection of CSF.[1] The incidence of this condition varies from 1 to 4.5%. [2]

The pathophysiology is not clearly understood, although hardware infection, high protein content of CSF, peritoneal adhesions, and a malabsorption syndrome associated with an antigen-antibody reaction after immunization are implicated in the etiology. The condition is often being precipitated by a recent inflammatory or infective process or recent surgery.[1] Larger pseudocysts tend to be sterile, whereas smaller pseudocysts are more often infected. Infection, while an important factor, is not likely to account for all cases of pseudocysts as in our case where the CSF collection was sterile. The time from the last shunting procedure to the development of the abdominal pseudocyst ranges from 3 weeks to 5 years.[4]

Traditionally, CSF pseudocyst is treated by a formal laparotomy, and includes various types of shunts revisions. An extensive review revealed scanty literature on laparoscopic management of this complication. Laparoscopic retrieval of catheter parts, accomplished through 3-mm to 5-mm ports with the help of delicate laparoscopic instruments, minimizes the risk of a laparotomy, and the formation of intraperitoneal adhesions. Furthermore, laparoscopy allows visual confirmation of the adequate flow of the CSF from the end of the catheter after it is repositioned. However, the greatest advantage of laparoscopy lies in its ability to assess the entire abdominal cavity for the presence of adhesions and undertake adhesiolysis whenever necessary. This allows placement of the catheter in the quadrant of the abdomen with the maximum absorptive surface. Using the technique of laparoscopy, Kim et al. excised a portion of a CSF pseudocyst, removed the shunt catheter from the residual cavity, and repositioned it within the peritoneal cavity in a 12-year-old boy. There was no recurrence after 12 months of follow up.[5] Brunori et al. performed a laparoscopic drainage of a pseudocyst containing 2 l of fluid and retrieved the catheter from the peritoneal cavity.[6] Jain et al. from India also managed two cases of the pseudocysts laparoscopically in adults and salvaged the catheters in these patients.[7] Esposito et al. recommended that laparoscopy is very safe in patients with abdominal complications of ventriculoperitoneal shunts especially in adhesions and pseudocyst formation.[8]

To summarize, ventriculoperitoneal shunts that malfunction secondary to intra-abdominal processes (adhesions, pseudocyst) are readily salvaged using the laparoscopic technique, thus avoiding the attendant complications of open laparotomy.

REFERENCES