

Commentary

Pseudocyst formation is uncommon but clinically important complication of ventriculoperitoneal (VP) shunt surgery.^[1,2] Its incidence is about 0.7%–4.5%, and characterized by progressive accumulation of cerebrospinal fluid (CSF) around the distal end of the shunt and becomes encased in fibrous tissue surrounded by peritoneum or gut wall and may extend along the shunt track over the anterior abdominal wall, usually causing hindrance of CSF absorption, which being poorly or complete absent, producing local intra-abdominal swelling, and associated with malfunctioning of VP shunt with features of raised intracranial pressure.^[2-4]

Various factors responsible for pseudocyst formation include chronic smoldering abdominal cavity infection, repeated VP shunt revisions, obstruction, or dislodgement of VP shunt catheter.^[4-6] Pathogenesis still remains elusive probably loss of absorptive capacity of CSF within the abdominal cavity may result from subclinical peritonitis causing the formation of multiple adhesions, septation, and band in the abdominal cavity. Yet another important factor is associated higher infection rate of cyst fluid, which is highly variable and ranges from 17% to 80% and commoner isolated pathogenic microorganisms include *Staphylococcus epidermidis*, *Staphylococcus aureus*, or *Streptococcus*.^[4,7]

The spectrum of clinical features includes abdominal pain with possible presence of a palpable mass along with feature of VP shunt malfunction associated with low-grade infection, most frequently occur in the pediatric population. Pediatric patients most often present with neurological sequelae, unlike the adult's counterpart presenting more commonly with abdominal complaints many years after initial VP shunt placement surgery.^[3,5,6]

The diagnosis is usually done with ultrasound abdomen revealing the presence of localized cyst with embedded distal end of VP shunt catheter. The treatment aim includes surgical drainage of loculated CSF, confirming or ruling out the presence of CSF infection, and appropriate microbial culture sensitivity based antimicrobial therapy and provision of alternative CSF diversion surgery for permitting CSF drainage conduit.^[3]

Various surgical options for the treatment of pseudocyst include surgical drainage employing either minimally invasive laparoscopic or exploratory surgical approaches.

Diyora *et al.* managed their cases with exploratory laparotomy and revision VP shunt. Intraoperatively, the distal end of the VP shunt was lying coiled just beneath the abdominal wall in a small cavity, distal slit valve was noted to be blocked and CSF was slowly draining out from proximal slits and patient had a good neurological outcome.^[1]

However, controversy exists regarding revision shunt surgery and placement into the abdominal cavity, or ventriculoatrial shunt, or VP shunt. Sharifa observed pseudocyst development is an indication of poor absorbing CSF capacity, and hence, reimplantation of VP shunt distal catheter inside the peritoneal cavity may not be successful and usually associated with repeated postrevision failure.^[7] Shah *et al.* also favored ventriculoatrial or ventriculoplural shunt after culture-based antimicrobial therapy for the appropriate duration or in the absence of infection, the best course of action involves drainage of the pseudocyst followed by the placement of a ventriculoatrial shunt.^[8]

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