

A Case of Neglected VP Shunt Causing Small Bowel Gangrene

Aravind Manoharan¹, Suresh Kumar P², Sankar Subramanian³

^{1, 2, 3}SRIHER, Chennai, Tamilnadu, India

Abstract: *Ventriculoperitoneal VP shunting, a pivotal treatment for hydrocephalus, redirects cerebrospinal fluid from the brain's ventricles to the peritoneal cavity, alleviating elevated intracranial pressure. Despite its widespread use and effectiveness, VP shunting can lead to complications such as shunt malfunction, infection, and, in rare cases, bowel gangrene due to shunt migration. This report presents a case of a 63-year-old female who developed small bowel gangrene secondary to VP shunt migration. Emergency surgery revealed a 30 cm gangrenous bowel segment caused by mesenteric occlusion from the shunt. The patient underwent primary resection and anastomosis, recovering well postoperatively. This case underscores the critical need for vigilant monitoring of VP shunt placement and function to promptly address and mitigate rare but severe complications.*

Keywords: hydrocephalus, ventriculoperitoneal shunt, small bowel gangrene, shunt migration, emergency surgery

1. Introduction and Background

Ventriculoperitoneal (VP) shunting stands as a cornerstone in the management of hydrocephalus, a condition characterized by the accumulation of cerebrospinal fluid (CSF) within the brain's ventricles, leading to elevated intracranial pressure. First introduced by Holter and Gormley in the 1950s, the VP shunt has since revolutionized the treatment landscape for hydrocephalus, offering patients a viable solution to alleviate symptoms and improve quality of life (1).

Hydrocephalus encompasses a spectrum of clinical presentations, ranging from congenital malformations to acquired conditions such as intraventricular hemorrhage or meningitis. Left untreated, hydrocephalus can result in significant neurological deficits and even mortality. The VP shunt provides a means of diverting excess CSF from the cerebral ventricles to the peritoneal cavity, where it is reabsorbed, thereby mitigating intracranial pressure and ameliorating associated symptoms (2).

Despite its widespread adoption and efficacy in managing hydrocephalus, VP shunting is not devoid of challenges. Complications such as shunt malfunction, infection, and over drainage remain pertinent concerns, necessitating vigilant monitoring and prompt intervention.

Adding to all known complications, few extremely rare complications which usually not mentioned in any articles or text books, one such complication is erosion of VP shunt into peritoneum and causing gangrene.

Very few cases, to be precise less than 10 cases have been mentioned in literature and here we share our experience.

2. Case Summary

A 63 years old female presented with pain abdomen since two days, along with two episodes of vomiting bilious in nature, non-projectile. No history of fever, no history of breathlessness, no other complaints. Pain was sudden in onset gradually progressive, diffuse in nature, no aggravating or relieving factors.

With no known comorbidities, patient underwent VP shunt surgery in 1981 reports are unavailable. on physical examination abdominal tenderness present, guarding present, rigidity present, hernial orifice was free no other findings noted.

Investigation

Patient underwent emergency CECT which showed VP shunt completely intra peritoneum causing obstruction of small bowel

Procedure

Patient was taken for emergency surgery and found to have small bowel gangrene for around 30cms, the VP shunt occluded the entire mesentery and has caused compromised vascularity resulting in small bowel gangrene, for which patient underwent primary resection and anastomosis of gangrene segment, post operatively patient recovered well, and was discharged on pod 7.





The management of small bowel gangrene secondary to a VP shunt involves emergent surgical intervention, as was performed in this case. Primary resection and anastomosis of the gangrenous segment are typically required to remove the necrotic tissue and restore intestinal continuity. Postoperatively, close monitoring for signs of bowel ischemia, infection, and shunt malfunction is essential to ensure optimal recovery and prevent recurrence of complications.

4. Summary

In conclusion, small bowel gangrene secondary to a VP shunt is a rare but serious complication that requires prompt recognition and intervention. Vigilance in monitoring shunt placement and function, as well as awareness of potential complications, is essential for optimizing patient outcomes and minimizing morbidity associated with VP shunt (5).

Conflict of Interest

There is no conflict of interest

References

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- [3] "Schmidek and Sweet Operative Neurosurgical Techniques" by Alfredo Quiñones - Hinojosa. It includes comprehensive sections on neurosurgical procedures and potential complications.
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- [5] Ventriculoperitoneal shunt complications: A review michalle paff et al.

Outcome and Follow Up

On further follow up, patient is doing well and has no complaints. Patient nutritionally improved and able to perform all activities.

3. Discussion

The occurrence of small bowel gangrene secondary to a ventriculoperitoneal (VP) shunt is a rare but serious complication that warrants thorough investigation and management. In the case presented, the VP shunt had migrated intra - peritoneally, causing obstruction of the small bowel and subsequent ischemic necrosis of the affected segment. This highlights the importance of vigilance in monitoring VP shunt placement and function, as well as prompt recognition and intervention in cases of shunt - related complications.

One of the contributing factors to small bowel gangrene in this case is the migration of the VP shunt within the peritoneal cavity. Migration of the shunt can lead to mechanical obstruction of the bowel, compromising blood flow to the affected segment and predisposing it to ischemic injury. This emphasizes the need for regular imaging studies and clinical assessments to ensure proper shunt placement and to detect any signs of migration or malfunction.

Another contributing factor is the compromised vascularity resulting from the VP shunt's occlusion of the mesentery. The mesentery plays a crucial role in supplying blood to the small intestine, and any obstruction or compromise of its blood supply can lead to ischemia and subsequent gangrene (4). In cases where VP shunt migration results in mesenteric occlusion, prompt surgical intervention is essential to restore blood flow and prevent further ischemic damage.