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Placement of lumboperitoneal shunt: Etiology of iatrogenic gastric perforation

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Abstract

Iatrogenic perforation can cause gastric perforation; among the complications of lumboperitoneal shunt placement, intestinal perforation is extremely rare vs. infectious complications; perforation may occur in the ascending colon with projection of the incision site. This case involves a 41-year-old patient, with gastric perforation from pseudotumor cerebri during incision in the abdominal right quadrant to insert a lumboperitoneal shunt.

Keywords: Iatrogenic gastric perforation, Lumboperitoneal shunt complications, Pseudotumor cerebri, Obesity

Introduction

Gastric perforation is a surgical emergency, with high mortality and morbidity. One common cause is peptic ulcer, which can randomly occur, or be due to endoscopic interventions [1, 2].

Pseudotumor cerebri manifests with increased intracranial pressure, although its etiology is not clear; it is known to be more common in women and obese women of childbearing age compared to the general population, with the primary goal of treatment to reduce intracranial pressure. Secondary causes and weight loss in obese patients must be recognized [3]. A lumboperitoneal shunt was applied, while inserting a catheter for cerebrospinal fluid drainage at the appropriate intervertebral distance; it is a surgical procedure in which the distal end of the catheter is advanced under the skin and delivered to the incision from the abdomen; this end is inserted into the peritoneum [4]. Iatrogenic intestinal perforation, though rare, is a possible complication with the incision in the right abdominal quadrant for lumboperitoneal shunt insertion, more likely in the ascending colon. The aim of this report is to discuss the development of gastric perforation, and the approach to lumboperitoneal shunt insertion.

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Case presentation

We present a 41-year-old female patient with no known issues other than 2 lumboperitoneal shunt insertions from pseudotumor cerebri and a history of shunt dysfunction: the neurosurgery team planned to reinsert a lumboperitoneal shunt. The proximal end of the shunt was placed appropriately in the lumbar region, with the distal end advanced through subcutaneous tunneling to the minimal incision area from the right quadrant of the abdomen; the incision in the right quadrant was deepened, so this tip can be placed on the peritoneum. A general surgery team is there for repair of the ascending colon; this resembled a gastric structure vs. the distal intestines, so its contents were clear with minimal bile, and there was no digested intestinal content. Her incision was widened a few cm and the anterior surface of the stomach antrum was observed (Figure 1). The perforated area was repaired with a double layer of primary suture. It was observed that there was no leakage by administering methylene blue with the inserted nasogastric tube, so the operative area was irrigated with saline, and the fascia was closed without the distal end of the shunt placed in the abdomen, given the possibility of infection. The distal end was placed in the subcutaneous region of the peritoneum in a second surgery, with precautions to prevent drainage. In the postoperative period, oral intake was started by removing the nasogastric tube, which was accomplished after control with a fluoroscopic upper gastrointestinal system passage graph. The patient was discharged without any abnormality in the graph. After ~1 month, gastroscopy was performed. There was no abnormality in the repair area with other gastroscopic findings. The distal end in the right quadrant of the abdomen was reoperated after the shunt was active and cerebrospinal fluid drainage was ensured; it was advanced to the abdomen and left on the peritoneum after a controlled, gradual incision (Figure 2). There was no pathological finding at discharge with routine controls.

Figure 1: Supramuscular placement of the distal end of the lumboperitoneal shunt after primary repair and abdominal closure of the gastric perforation site

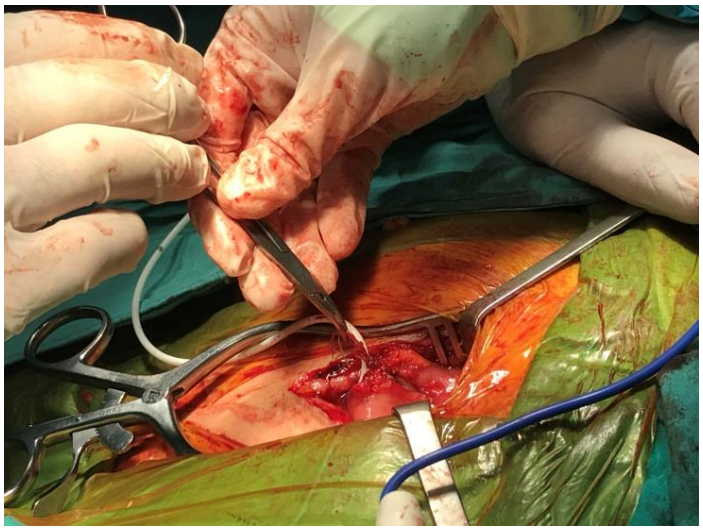

Figure 2: Placement of the distal end of the lumboperitoneal shunt in the peritoneum following surgery

Discussion

The most common complication with lumboperitoneal shunts is obstruction, and the second complication is intracranial hypotension, while infectious complications are among them [5]. In addition, studies report that the mortality rate can reach 2% in patients who have undergone shunt placement in the past [6], as a perioperative complication had developed. The gastric perforation was noticed in time, and brought under control with follow-up and control imaging in the postoperative period.

Rather than an iatrogenic intestinal injury, we had an extremely wide, elongated gastric structure that allows complications, extending to the right quadrant. It is clear that a full stomach can expand by liters, so preoperative fasting precluded pathology after gastric emptying, which occupies a large anatomical space. In addition, perforations are observed more frequently in patients with gastric pathology, which prompted us to question this situation [7]. Obesity, which is occasionally present due to pseudotumor cerebri, emphasizes caution for nutritional problems and gastric pathology, but there was no obvious abnormality in this patient.

Conclusion

Frequent complications with lumboperitoneal shunts are obstruction and intracranial hypotension, with infections also occurring. Intestinal injury is rare in this case. Obesity, which may be present with pseudotumor cerebri saw no obvious abnormality in this patient. The team must be cautious with nutritional problems and gastric pathologies in such patients.

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