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CASE REPORT

Case Report: A Giant Gallstone Was Found at End of the Duodenum

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Abstract: Gallstone ileus (GI) occurs due to the migration of gallstones into the intestinal tract through a bilioenteric fistula. The surgical approach may vary based on the size and location of the fistula causing obstruction. We present a case of recurrent calculous cholecystitis with acute abdominal pain and vomiting, which was attributed to an uncommon giant gallstone located at the distal end of the duodenum. Our management involved performing a one-stage enterolithotomy, cholecystectomy, and fistula repair. The patient had an uneventful postoperative recovery without any complications such as duodenal leakage.

Keywords: gallstone ileus, surgery, cholecystoduodenal fistula, Bouveret syndrome, case report

Introduction

Gallstone ileus is an uncommon complication linked to biliary stones. It typically manifests as recurrent episodes of incomplete ileus that can be relieved, with symptoms ranging from mild to severe. It is well-recognized that small stones can traverse the intestines through peristalsis, whereas those with a diameter larger than 2.5 cm may result in intestinal obstruction. This condition can induce abdominal pain, bloating, nausea, vomiting, as well as symptoms such as reduced or ceased anal gas and bowel movements. Although gallstone ileus is infrequent in clinical practice, its diagnosis and treatment remain challenging. This is because stones can migrate into the intestinal tract through bilioenteric fistulas, leading to obstruction.[1] The surgical treatment strategies vary according to the size of the fistula and the site of obstruction. In this article, we report a case of recurrent calculous cholecystitis featuring acute abdominal pain and vomiting, which was ultimately found to be caused by an extraordinarily large gallstone at the distal end of the duodenum.

Case Report

The patient, a 65-year-old male, presented with acute upper abdominal pain five days prior to admission. Despite receiving treatment at a community hospital, he experienced no relief and subsequently developed progressive symptoms of nausea and vomiting. Upon admission, there were no signs of jaundice in the skin and sclera, mild tenderness was observed in the upper abdomen, and there was no rebound pain. Murphy's sign yielded negative results, and the patient experienced unresolved stool for a duration of 5 days. Laboratory tests revealed a WBC of 13.21 x 10^9/L, and ALT level of 9 U/L. The upright plain abdominal radiograph (Figure 1A) revealed increased intestinal air within the small intestine without any evidence of air-fluid level. CT and MRI scans (Figure 1B and C) revealed an indistinct visualization of the gallbladder, along with the presence of multiple stones of different sizes within the gastric cavity and duodenum. This finding heightened the suspicion of stones and potential obstruction at both these sites. Notably, the CT images clearly indicated that the stone obstructing the distal end of the duodenum measured over 4 cm in size. After conservative treatment, the patient's gastrointestinal obstruction progressively worsened. To determine the exact location of the stone,

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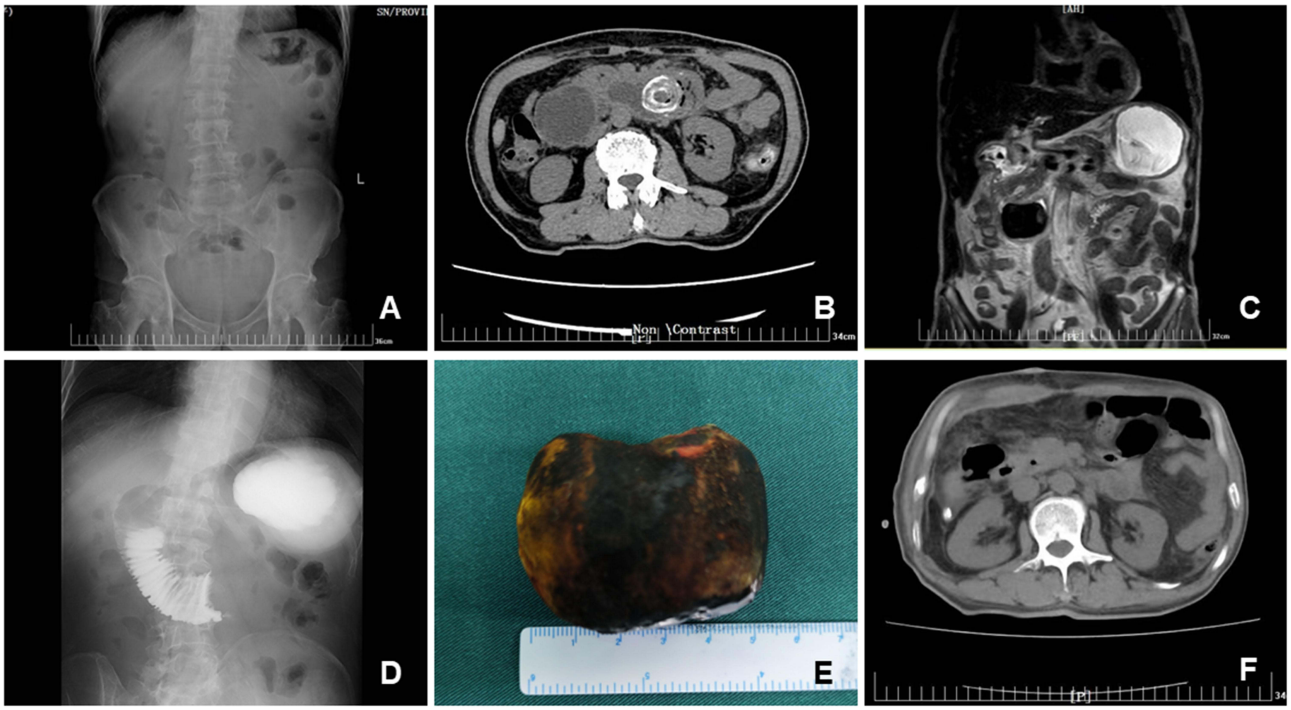

Figure 1 Relevant imaging studies. (**A**) upright abdominal plain radiograph; (**B**) CT scan: a nodular ring at the level of duodenum; (**C**) MRI: communication between gallbladder and the duodenum; (**D**) Upper gastrointestinal radiography: nodular filling defects at duodenum; (**E**) Stones removed during surgery; (**F**) CT at discharge.

gastroduodenoscopy was carried out subsequent to upper gastrointestinal radiography (Figure 1D). Nevertheless, owing to the substantial diameter of the stone, successful extraction was not accomplished. Two weeks after admission, an exploratory laparotomy was performed, revealing a 5cm stone located at the distal end of the horizontal segment of the duodenum, as well as multiple 1cm stones in the fundus of the stomach. Subsequent cholecystectomy revealed a 5cm fistula in the descending part of the duodenum. The stone was extracted through the fistula, which was subsequently sutured using 4–0 PROLENE thread (Figure 1E), and an intraoperative drainage tube was inserted. The patient achieved successful ventilation and bowel movement within 2 days postoperatively, leading to a full recovery and discharge after 2 weeks (Figure 1F).

Discussion

Gallstone ileus is an uncommon complication associated with gallstones, where the stones pass into the intestine through fistulas connecting the gallbladder and neighboring organs. The incarceration of the ileum is the most common, occurring less frequently in the duodenum and colon. Additionally, it rarely leads to gastric outlet obstruction, which is also known as Bouveret syndrome.[2] The symptoms are typically nonspecific and encompass abdominal pain, bloating, nausea, vomiting, and constipation. Currently, imaging examinations play a pivotal role in the early diagnosis of gallstone-induced intestinal obstruction. Rigler's Triad (comprising small bowel obstruction, pneumobilia, and ectopic stones within the intestine) can be confirmed through CT scanning.[3] In this instance, the site of obstruction and size of the stone can be readily identified. While surgery remains the primary treatment for gallstone ileus, there is still debate surrounding which surgical approach to employ.[4] In this case, we opted for a one-stage enterolithotomy, cholecystectomy, and fistula repair procedure. When compared to a two-stage surgery approach, we do not perceive an elevated risk of duodenal leakage. Conversely, it mitigates the risk of retrograde cholecystitis and residual gallbladder fistula. In conclusion, the concurrent occurrence of Bouveret syndrome and calculous duodenal obstruction is relatively rare in clinical practice. In this particular case, the patient presented with symptoms associated with Bouveret syndrome, including abdominal pain, nausea, vomiting, and constipation, which were attributed to the obstruction caused by a stone in the duodenum. For patients with a history of gallbladder stones who suddenly develop intestinal obstruction, healthcare providers should remain highly vigilant to avoid missed diagnoses and

misdiagnoses. Before surgery, a comprehensive evaluation should be carried out. Pre-operative imaging examinations and intraoperative exploratory laparotomy can help prevent overlooking gallstones. This proactive approach is crucial for preventing postoperative secondary intestinal obstruction caused by undetected stones. Regarding the selection of surgical procedures, the preferred method is to suture the fistula, excise the lesion, and appropriately place a drainage tube in the operative field.

Institutional Review Board

Institutional approval was not required to publish the case details.

Informed Consent

Patient informed consent was obtained for publication of the case details.

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Disclosure

All authors declare no conflicts of interest related to this article.

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