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Case Report

Gallstone ileus due to cholecystoduodenal fistula: a case report

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Abstract: In this case study, a patient had gallstone ileus due to a cholecystoduodenal fistula. The patient had a large gallstone, 4 cm in diameter. The most common surgery to tread this condition involves incising into the intestines to remove the gallstone. Cholecystectomy and fistula repair are performed in a one-stage operation or in multiple-stage operations. However, we decompressed the intestines by inserting an indwelling catheter and improved gastrointestinal motility using traditional Chinese medicine simultaneously to remove the gallstone, and then the gallbladder was removed through laparoscopic cholecystectomy, and the fistula was repaired. The patient suffered little discomfort and recovered quickly using this approach.

Keywords: Cholecystoduodenal fistula, ileus, minimally invasive surgery

Introduction

Cholecystoduodenal fistula is a rare disease, and it is a complication of chronic gallbladder disease. It is less common that cholecystoduodenal fistula which causes gallstone ileus. Surgery is the preferred treatment, and the specific approach to surgery should be individualized [1]. According to previous studies, if a gallstone is less than 2.5 cm in diameter, it can be easily excreted [2]. However, this patient had a gallstone 4 cm in diameter, so the gallstone was extracted through active treatments with laparoscopic minimally invasive surgery that was performed in one stage.

Case description

A 59 years-old female presented to our emergency department with severe abdominal pain, nausea, and vomiting on January 23, 2018. The patient had presented with periumbilical abdominal pain that had no obvious cause for three days before the onset of the illness. The pain was characterized by persistent dullness, with episodes of more severe pain, and the pain was accompanied by nausea, vomiting, bowel obstruction, and defecation. According to the emergency department CT scans, air can be seen in the gallbladder, ileus, and the gallstone in the proximal ileocecal region of the intestines (**Figures 1**, **2**). Physical examination: abdominal distention, obvious tenderness in the middle, upper abdomen, slight muscle tension, hyperactive bowel sounds. Considering the patient had a history of gallstone disease, the diagnosis was confirmed as a cholecystoduodenal fistula combined with gallstone ileus. Through in-depth case discussion, the patient had obvious intestinal dilatation, so laparoscopic minimally invasive surgery was difficult to perform. If only a one-stage operation is performed, we will incise the intestines in the lower abdomen to remove the gallstone and incise the abdomen to remove the gallbladder and repair the duodenal fistula. If a multi-stage operation is performed, the patient will have greater trauma and a slower recovery. Therefore, an indwelling catheter was inserted under endoscope on January 24, and the catheter was placed in the descending part of the duodenum for decompression of the intestines (**Figure 3**) and we closely observed the changes in the patient's condition. In the course of the disease, the intestinal obstruction catheter moved down slowly. After we used traditional Chinese medicine to promote gastrointestinal motility, the intestinal obstruction catheter moved smoo-

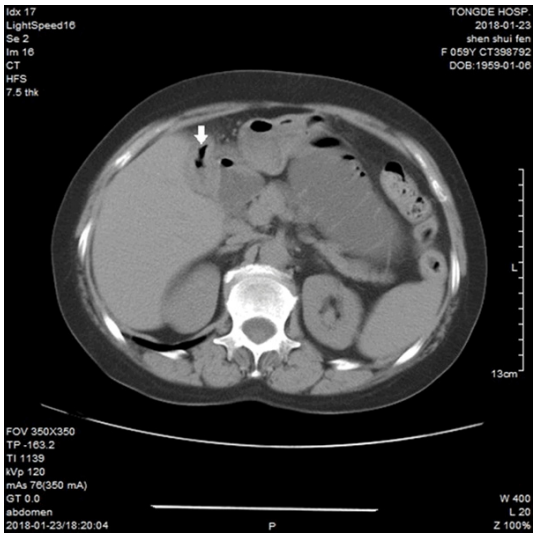

Figure 1. Air in the gallbladder.

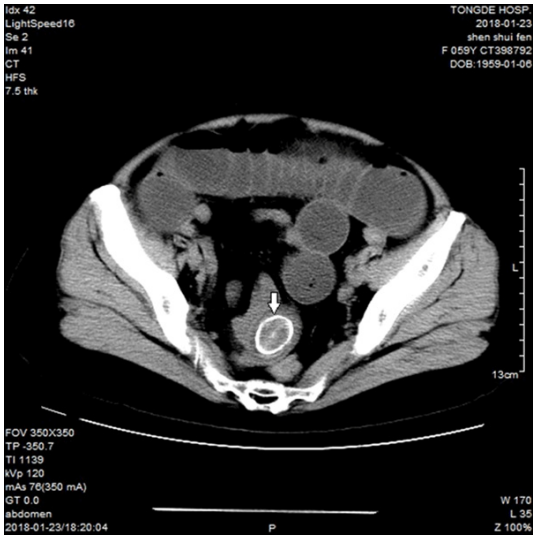

Figure 2. A gallstone at the end of the ileum, Intestinal dilatation fluid.

thly. Finally, the gallstone was excreted from the anus on January 31 (**Figure 4**). After doing another CT, it was apparent that the gallstone had disappeared, and the intestinal obstruction catheter moved smoothly, and the intestinal decompression was satisfactory (**Figure 5**). On February 2nd, a cholecystectomy and a repair of the duodenal fistula were performed through a laparoscope. In the early stages after the operation, intestinal nutrition was given by the intestinal obstruction catheter. After the duodenal fistula was repaired, the patient was successfully discharged.

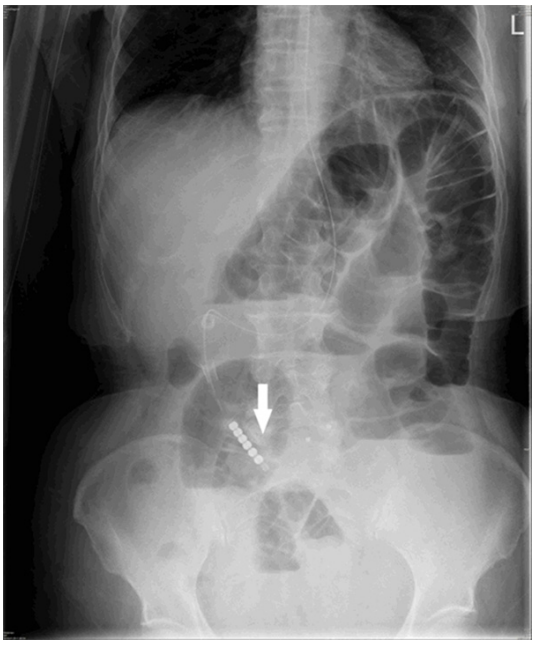

Figure 3. Abdominal X-ray taken in a standing position after the insertion of an intestinal obstruction catheter.

Figure 4. Gallstone excreted through the anus.

Discussion

Cholecystoduodenal fistula combined with gallstone ileus is a relatively rare clinical disease. It

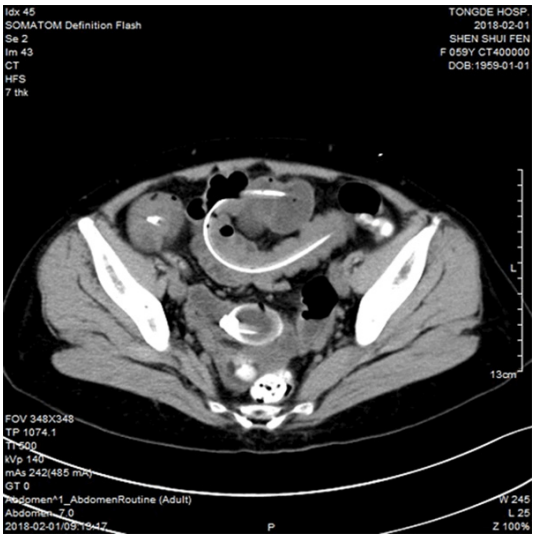

Figure 5. Abdomen CT after stone extraction, and the dilated intestines were relieved.

is often caused by gallstones and chronic cholecystitis that haven't been effectively controlled for a long time. The impact of gallstone ileus can be in any part of the gastrointestinal tract, and the most common place of intestinal obstructions are the terminal ileum and the ileocecal valve [3]. Gallstones are passed into the intestines through internal hemorrhoids, and the smaller stones can be excreted with the feces, but the larger stones are obstructed in the stenosis. The diameter of stones that cause obstructions are 2.5-3.0 cm [4]. The clinical manifestations of gallstone ileus includes abdominal pain, bloating, vomiting, and active bowel sounds. The classic imaging diagnostic criteria is Rigler's triad: biliary tract, intestinal obstruction, and ectopic stones. More than 50% of patients have two or more of the triads [5]. This patient was admitted to the hospital with an intestinal obstruction. A CT examination found cholestasis and ectopic stones, and the diagnosis was confirmed after a comprehensive analysis of the patient's previous gallstone history.

In terms of treatment, surgery is preferred, and the surgical approach should be individualized for each case [1]. The principle of the treatment is to remove the gallstone, remove the gallbladder, cut the fistula, and repair the fistula. The main surgical procedures are: ① Simple surgical incision into the intestine and extraction of the stone; ② Incision into the intestines to remove the stone during emergency treatment, the removal of gallbladder, and the repair of fistula are done in multiple-stage operations; ③ Incision into the intestines to remove the stone, the removal of gallbladder, and the repair of the fistula in a one-stage operation. Simple intestine incision and stone removal is the most widely reported surgical procedure. The advantage of this procedure that it is a simple operation, and it has a short operation time and has low overall mortality. The disadvantage is that it cannot deal with biliary tract disease, which poses a risk for biliary tract infection and gallbladder cancer after the surgery [6]. The procedure that includes an incision into the intestines to remove the stone, the removal of gallbladder, and the repair of fistula in a one-stage operation is comprehensive for the treatment of the disease, but patients need to be able to tolerate the surgery. However, the disease often occurs in the elderly patients [7] and it is difficult for them to tolerate a long and complicated surgery. The multiple-state surgery is relatively safe, but it requires two operations, so patients have a long recovery time and have higher psychological stress.

In this case, the diameter of the gallstone was 4 cm, and the symptoms of intestinal obstruction were obvious, so we put in an intestinal obstruction catheter to decompress the intestines, and the occurrence of a strangulated intestinal obstruction was avoided, ensuring the patient's safety as doctors observed the process. After the decompression of the intestines, the space required for a laparoscopic operation is restored, and minimally invasive surgery can be performed. If the gallstone can be excreted through the gastrointestinal tract, it is sufficient to perform a cholecystectomy and a fistula repair; if it is still difficult for the gallstone to be expelled, surgery should be performed by laparoscopy. The surgical trauma is small, the recovery is fast, the surgical risk is low, and it conforms to the principle of injury control successfully. The operation decomposes the complex surgery and changes the emergency surgery to a limited-time surgery. What's more, it is very important to closely observe the treatment process and adjust the treatment plan according to the patient's specific situation.

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Disclosure of conflict of interest

None.

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