

## Case Report

# Gallstone ileus, the forgotten one: a rare cause of intestinal perforation and a case report

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### ABSTRACT

Gallstone ileum represents an unusual cause of intestinal obstruction as a result of the presence of stones that cause mechanical obstruction. It has an incidence of less than 4%. Reaching mortality up to 25% of cases. It is a difficult suspicion, with characteristic signs that guide its presence such as pneumobilia, occlusion, and the presence of stone in radiological studies. Management should include surgical extraction as well as revision of the entire intestine with a suitable subsequent repair. Authors present the case of a 70-year-old patient with the presence of surgically resolved biliary ileum.

**Keywords:** Bowel obstruction, Digestive surgery, Gallstone ileum, Intestinal obstruction

### INTRODUCTION

Gallstone ileus is defined as the mechanical obstruction of the digestive tract, most commonly the distal part of small intestine, at the ileo-cecal valve (Bahuin's valve) (60- 75%).<sup>1-6</sup> Rarely occurs in proximal ileum or jejunum (16.1-40%), stomach (14.2%), duodenum (3.5%).<sup>3,5</sup> Secondary to a gallstone (most frequently a big one >2,5 cm), due to their narrow lumen and less peristalsis activity of this anatomic section of the small bowel.<sup>1,5,6</sup> It's a rare complication of cholelithiasis, and a rarer cause of ileus.<sup>1,2</sup> It was first described by Thomas Bartholin in 1654 with 85 cases.<sup>6</sup> 85% of cases, gallstones are eliminated through feces or vomitus, the other 15% become entrapped in the gastrointestinal tract.<sup>4</sup> Colonic obstruction occurs where there is a preexisting pathology, like post-diverticulitis stricture, since the normal colonic diameter usually permits passage of gallstones.<sup>6</sup> Authors describe a case of a 70 year old female with an uncertain

case of abdominal pain and bowel perforation as result of gallstone ileum.

### CASE REPORT

Authors present the case of a 70-year-old woman with the following medical conditions: diabetes mellitus, hypertension and high blood pressure. She presented to the emergency department of our hospital with generalized colic abdominal pain of 2 days of evolution that increased in intensity as well as vomiting in coffee wells. She reported constipation of three days of evolution. Her vital signs on admission were heart rate of 100 beats per minute, 16 breaths per minute, temperature of 38.3 ° C and blood pressure of 130/80. As a surgical antecedent, she had two cystocele repairs 10 years ago and a hysterectomy due to myomatosis 20 years ago. Through directed physical examination, the abdomen found to be slightly tender, without rebound or defense. Digital rectal examination showed empty rectal ampulla.

Initial treatment was provided with fluid resuscitation, antibiotics, and a nasogastric tube. An abdominal radiograph was initially performed, which showed a dilation of the small bowel (Figure 1).



**Figure 1: X- ray showing small bowel dilatation.**



**Figure 2: Computed tomography with air in biliary duct.**

A double-contrast computed tomography was solicited showing bowel dilation as well as ischemia suggested signs, pneumobilia and cholecistoduodenal fistula (Figure 2). With the findings a laparotomy was performed, during the procedure a perforated section was observed 60 cm away from Treitz ligament and a 3 cm gallstone was extracted from the perforation site, a manual inspection of the entire small intestine was carried out without finding another stone. An entire end-to-end anastomosis was performed with absorbable suture, leaving a pen rose drain to the pelvic cavity for 3 days. In the exploration of the peri vesicular area of the gallbladder, a fistula between the duodenum and the vesicle was evidenced, which was not manipulated.

The patient remained in hospital 8 days without complications. After surgery remained under surveillance in the outpatient consult for 3 months without symptoms.

## DISCUSSION

Bowel obstruction has different causes, being the gallstone ileum one of the rarest with incidence of less than 4% of the cases. Clinical presentation is usually non-specific and intermittently. Symptom duration preceding hospital admission is  $\pm 5$  days and includes common signs of digestive tract obstruction; nausea, vomit, abdominal distension, constipation, and crampy abdominal pain.<sup>6</sup> The physical examination may also be non-specific, appreciating jaundice, abdominal distension and tenderness, with high pitched intestine sounds.<sup>1,5</sup> The intermittent nature of symptoms may be presenting in part due to the tumbling phenomenon, secondary to temporary gallstone impaction followed by symptom relief when the stones dislodges, travels distally and impacts again.<sup>5,6</sup> Also it can appear as a rare and more critical presentation, with hematemesis caused by erosion of the celiac or duodenal artery in 15% of patients.<sup>4</sup> Sepsis from either cholecystitis or peritonitis due to impaction of the gallstone, causing pressure to the bowel wall with secondary necrosis and perforation.<sup>5</sup> In some other cases, as a Bouveret syndrome with gastrointestinal, cholecysto-duodenal, cholecysto-gastric or choledoco-duodenal fistula, with consequent distal gastric or proximal duodenum impaction of the stone.<sup>2,3</sup>

Clinically it can be divided in 3 major groups; I - Acute classic gallstone ileus, II - Gallstone ileus with subacute recurrent attacks, III - Chronic gallstone ileus known as Kawaersky syndrome.<sup>2</sup>

Imaging studies can present pathognomonic signs, as x-ray and CT-scan which presents the Rigler's triad; pneumobilia, small bowel obstruction signs (hydro-air levels or air-fluid levels, dilated small bowel loops), ectopic gallstone (usually right iliac fossa).<sup>2,5</sup> CT-Scan, is useful in the diagnosis, with a sensitivity, specificity and accuracy reported as 93%, 100% and 99% respectively.<sup>2,5,6</sup> It may show air or oral contrast in gallbladder or biliary tree secondary to the transfection of the contrast agent from the fistula tract, known as Petren sign and signs of bowel obstruction. So as the Forchet sign (after oral contrast enhancement), which is the snake head like shape of the bowel lumen due to the obstruction, being unable of the contrast agent to pass the stone, and accumulate.<sup>2</sup> Gallstone can't be seen in all cases, so if exist doubt endoscopy can be a useful adjunct to imaging studies for diagnosis and management of this condition, providing supportive evidence, especially if imaging studies are not diagnostic.<sup>6</sup> An added benefit of CT scanning with IV contrast is determining the viability of the affected segment of bowel preoperatively as this can help in decision making and guide the therapeutic approach.<sup>7</sup>

Management should start as an intestinal obstruction, given that due to the size, obstruction is only generated if it presents more than 2.5 cm, so it is highly possible that it will pass with conservative treatment, which includes fasting, use of antibiotics, placement of a nasogastric tube, before deciding surgical management.<sup>8</sup> Surgical treatment should include a laparotomy in which stone removal is performed, manual revision of the small intestine in search of another stone, resection in case of perforation with non-viable edges, as well as the management of the gallbladder and the fistula that should be closed.<sup>9</sup> Recently laparoscopy has been used as first line treatment, the prerequisites when attempting laparoscopic surgery are that the surgeon is experienced with the laparoscopic technique and is capable of intracorporeal stitching.

There are many precautions that must be taken into consideration such as the effect of pneumoperitoneum and the risks associated with high insufflation pressures, bowel edema making stitching of the incision site difficult, and bowel distension precluding safe port entry. Intraoperatively, the bowel must be thoroughly examined, just as with the open technique clamping proximal and distal to the obstruction to avoid spillage.<sup>10</sup> Moberg et al retrospectively compared the outcomes of laparoscopic assisted and open enterolithotomy in their case series of 32 patients. They reported that those treated laparoscopically suffered only minor complications with similar operative times. The patients included in the laparoscopic group had no history of abdominal surgery. High conversion rates were also reported particularly when a one-stage procedure was attempted.<sup>11</sup>

Historically, wound infections and dehiscence have been cited as being the most common complications after surgery in 25% to 50% of GI cases. In contrast to what has been published so far, the most common postoperative complication is acute renal failure followed by urinary tract infection and wound infections. Gastrointestinal complications related to anastomotic leaks and intraabdominal abscesses are highest in patients undergoing enterotomy with fistula closure.<sup>12</sup> If the gallbladder is preserved at the initial procedure, delayed cholecystectomy must be addressed. This is because 5% of patients who have undergone enterolithotomy alone go on to develop biliary symptoms, and the risk of patent fistula reflux and resulting biliary malignancy.<sup>13</sup>

## CONCLUSION

Gallstone ileum represents a rare cause of intestinal obstruction, which despite its rarity must be on the surgeon's mind as a differential diagnosis. Management should be surgical and as soon as it is suspected it is necessary to confirm and give early treatment to reduce comorbidities. The condition of the patient must be fully assessed to prepare him adequately prior to surgery to achieve a better outcome.

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