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Less is more: an outcome assessment of patients operated for gallstone ileus without fistula treatment

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ABSTRACT

BACKGROUND: The treatment of gallstone ileus (GI) consists of surgical removal of the impacted bilestone with or without cholecystectomy and repair of the biliodigestive fistula. The objective of this study was to assess whether sparing patients a definitive biliary procedure adversely influenced the outcome.
MATERIALS AND METHODS: Patients with a diagnosis of GI were reviewed. Two groups were identified: patients who underwent a definitive biliary procedure with relieving the intestinal obstruction (group 1/G1) and those who did not have a definitive biliary procedure (group 2/G2). In G2, patients were evaluated on long-term follow-up for the risk of recurrent GI disease, cholecystitis, cholangitis and gallbladder cancer.
RESULTS: Among 1075 patients admitted for small bowel obstruction, 20 (1.9%) were diagnosed with gallstone ileus. 3 (15%) of these belong to G1, 17 (85%) to G2. The overall postoperative morbidity rate was 35% (7/20) with one complication exceeding grade II in each group. No deaths were reported. Mean follow-up was 50 months. During follow-up, one of G2 patients had recurrent disease. No biliary tract infections or gallbladder cancer were identified.
CONCLUSION: Enterolithotomy without fistula closure is confirmed to be safe and effective for the management of gallstone ileus both on a short- and long-term basis.

1. Introduction

Gallstone ileus (GI) is defined as mechanical obstruction of the gastrointestinal tract caused by gallstones that enter the alimentary tract via a biliodigestive fistula. This rare clinical entity complicates less than 0.5% of cases of cholelithiasis and typically follows an attack of acute cholecystitis [1]. Most stones have an uneventful passage through the gastrointestinal tract. However, stones measuring 2.5 cm or greater in size could become lodged at various locations along the tract [2]. Contrast-enhanced CT is considered by far the most useful diagnostic modality as it can clearly pick up Rigler's triad (pneumobilia, intestinal obstruction, and an ectopic gallstone), demonstrate the condition of the gallbladder, and sometimes show the biliodigestive fistula [3–6]. Surgery remains the principal therapeutic modality for this condition. However, the most appropriate surgical approach remains controversial. Some advocate a definitive biliary procedure in the form of an enterolithotomy combined with cholecystectomy and fistula closure as a single- or two-stage procedure [2,7–9]. Others support a more conservative surgical approach; simple enterolithotomy and preserving any additional surgery for patients with persistent and/or recurrent biliary symptoms [10–15]. At the authors' center, both surgical strategies were used between the years 2005 and 2010. The choice of surgery mainly depended on the surgeon's preference. Since 2010, the policy has changed to adopting a conservative surgical approach in all cases. The aim of the study was to assess the short and long-term outcomes in a series of patients who underwent enterolithotomy without cholecystectomy and fistula closure for GI. This work has been reported in line with the SCARE criteria [16].

2. Materials and methods

All patients with a diagnosis of bowel obstruction treated between January 2005 and November 2016 at the Department of General and Emergency Surgery (Cisanello University Hospital, Pisa, Italy) were identified from the administrative database using the keywords "Intestinal Obstruction"; "Bowel Occlusion" and "Acute Abdominal Pain". All retrieved patients' charts were

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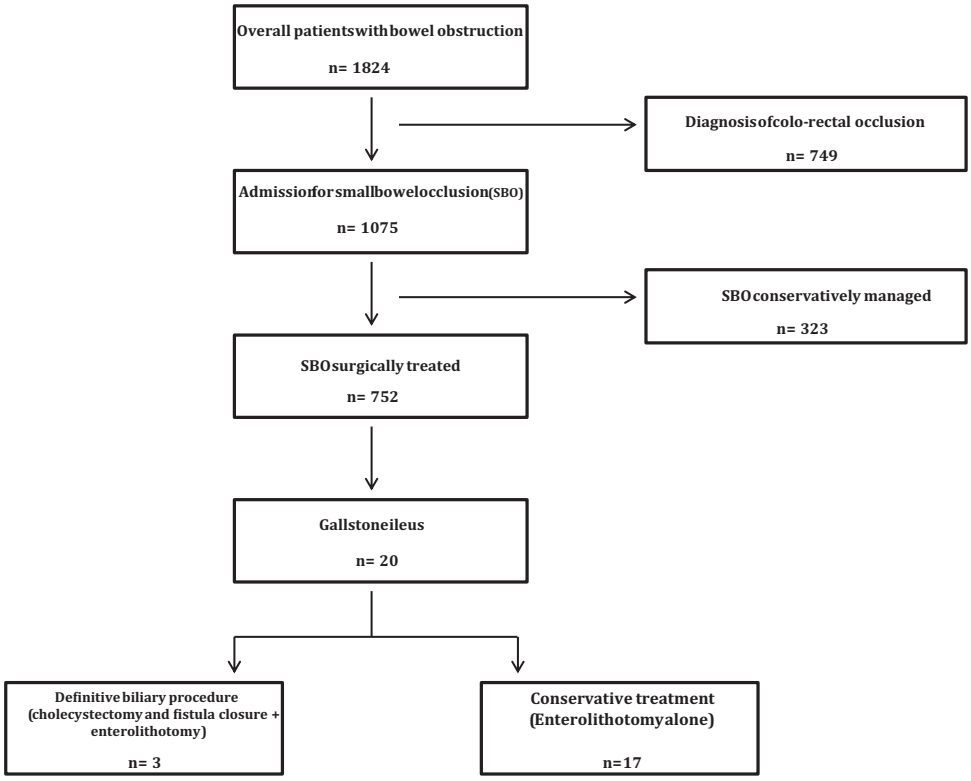

Fig. 1. Patient's flow chart.

reviewed for the final diagnosis and treatment strategy in order to properly identify those with a diagnosis of GI (Fig. 1). The charts of patients with a diagnosis of GI were reviewed for patient demographics and comorbidities; American Society of Anesthesiologists (ASA) physical status score; clinical presentation; diagnostic workup; the surgical strategy undertaken and its rationale; mean operative time; postoperative morbidity and mortality; and length of postoperative hospital stay. Postoperative morbidity was graded according to the Clavien and Dindo classification [17]. Based on the surgical strategy; patients were divided into two groups. Group 1 (G1) underwent a definitive biliary procedure in the form of a cholecystectomy and fistula closure in addition to enterolithotomy. Group 2(G2) underwent a more conservative surgical approach by simply removing the stone obstructing the small bowel. The long-term outcome in G2 was evaluated focusing on the risk of developing unfavorable sequelae; and the need to undergo a repeat surgery. Potential adverse sequelae considered included: cholecystitis; cholangitis; recurrent gallstone ileus; and gallbladder carcinoma. Follow-up evaluation included irregular interval outpatient clinic visits and/or phone interviews. In some instances; the length of the follow-up exceeded ten years. This study has been worded in line with the PROCESS criteria [18] and with the SCARE guidelines [19]. Data collection and analysis were performed according to the institutional guidelines; and ethical standards of the Helsinki Declaration.

3. Results

During the study period, 1824 patients were admitted with a diagnosis of intestinal obstruction, 1075 of whom (58.9%) with a small bowel obstruction. Of these, 752 (69.9%) were surgically treated. Twenty patients (2.6%) were operated for GI (Fig. 1). Among these, 13 were females, with a female to male ratio of about 2:1. The average age at diagnosis of GI was 83.6 years (range: 73–104 years). The mean ASA score was 3 (range 2–4) and the mean BMI was 27.7 kg/m^2 (range 22.6–33 kg/m^2). Associated overall comorbidities are reported in Table 1. Five patients (25%) had a history of previous abdominal surgery and six patients had a known history of gallstone disease. Most patients (18/20, 90%) presented with clinical signs of complete intestinal obstruction (abdominal distension, vomiting, closure to feces and air) whereas two patients presented with abdominal pain and inability to pass only feces (Table 2). Plain abdominal x-rays, ultrasounds (US), and contrast-enhanced computed tomography (CT) scans were performed in all patients. Abdominal-US was mainly used to assess the condition of the gallbladder: it revealed an empty gallbladder in all cases. Based on the history, physical exam and imaging studies, a preoperative diagnosis of gallstone ileus was obtained in 17/20 (85%) of cases (Table 2). Rigler's triad was detected in 55% (11/20) of patients.

Surgery was warranted within 12 h from the admission and it was always performed via a laparotomy incision. A definitive biliary procedure was performed in 3 out of the 20 patients (15%), 2 of whom had the entrapped bilestone removed by enterolithotomy and one by segmental bowel resection (G1). In this group the cholecysto-duodenal fistula (3/3; 100%) was closed by cholecystectomy and suture repair of the duodenal wall defect; in one case (1/3), a cholecysto-colonic fistula was also present and was repaired by stapling. A more conservative surgery was offered to patients of G2 although a cholecysto-duodenal fistula was identified at laparotomy. This consisted of an enterolithotomy in 14 patients and a segmental resection in 3 patients. The need for a segmental resection was related to the presence of ischemic areas of the bowel wall at the site of stone impaction (two cases) and to GI complicating a case of Crohn's disease of the ileum in one case. In this series, the mean size of the lodged stones was 4 cm (range 2–5 cm). A single large stone was found in 80% (16/20) patients, and two large stones in the remaining four patients (20%) (Table 2). The level of obstruction was the terminal ileum in 65% (13/20) of patients, the jejunum in 15% (3/20) and was multiple in 20% (4/20).The mean operative