Accepted Manuscript

Title: Out of Place: Gallstone Ileus

Author: Filippo Mearelli, Chiara Casarsa, Alberto Peretti, Francesca Spagnol, Antonio Giulio Gennari, Niccolò De Manzini, Gianni Biolo

PII: S0002-9343(17)30919-1
DOI: http://dx.doi.org/doi: 10.1016/j.amjmed.2017.09.001
Reference: AJM 14271

To appear in: The American Journal of Medicine


This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.
Out of Place: Gallstone Ileus

Robert G. Stern, MD, Images in Radiology Editor

Filippo Mearelli, MD, Chiara Casarsa, MD, Alberto Peretti, MD, Francesca Spagnol, MD, Antonio Giulio Gennari, MD, Niccolò De Manzini, MD, Gianni Biolo, MD

Clinical Medicine, General Surgery, and Radiology Wards, Azienda Ospedaliero-Universitaria Ospedali Riuniti Trieste, Trieste, Italy.

Requests for reprints should be addressed to Filippo Mearelli, MD, Clinica Medica, Azienda Ospedaliero-Universitaria Ospedali Riuniti Trieste, Strada di Fiume, 447, 34149, Trieste, Italy. Phone: +39 040 3994314. Fax: +39 040 3994593 Email: filippome@libero.it

There is no funding resource for this manuscript.
All authors have no conflict of interest on this manuscript.
All authors have access to the data and a role in writing the manuscript.
Keywords: Gallstone ileus, ectopic gallstone, cholecystectomy, enterolithotomy

PRESENTATION
Infrequently, a gallstone can travel into the small intestine and lodge there, causing bowel blockage. This was the case for a 70-year-old man who was referred to us with abdominal pain, persistent nausea, and vomiting. He also reported dyspepsia of 3 months duration. His medical history included hypertension, chronic ischemic heart disease, and type 2 diabetes mellitus.

ASSESSMENT
On admission, the patient was mildly tachycardic and tachypneic. Physical examination revealed abdominal distension and hypoactive bowel sounds. A digital rectal examination identified soft stool, indicating that the patient was not constipated. He had no electrocardiographic abnormalities. Laboratory tests, including a normal lactate level, were unrevealing. After adequate resuscitation
with crystalloid solutions, a nasogastric tube was placed, and 1 liter of digested food was drained from the patient’s stomach.

Abdominal distention and hypoactive bowel signs pointed to possible bowel blockage. Plain radiographs were unrevealing, and gas obscured ultrasound images of the biliary system. As a result, contrast-enhanced abdominal computed tomography (CT) was performed to characterize the site and etiology of obstruction. Imaging demonstrated a calculus in the duodenum, a fistula between a diminished gall bladder and dilated duodenum, and decompression of the jejunum (Figure 1).

DIAGNOSIS
Our patient had gallstone ileus, a diagnosis supported by imaging results. Only 2 findings corresponded with components of Rigler’s triad: presence of an ectopic gallstone and small bowel obstruction.1 The third, pneumobilia, or air in the biliary tree, was not documented on the images. Usually, identification of gallstone ileus is delayed, since at least half of patients do not have indicative laboratory abnormalities or a history that suggests biliary disease.2-3 In addition, the obstructing stone is frequently radiolucent on plain films, thus complicating the differential diagnosis.1

MANAGEMENT
Surgery is the mainstay of treatment for gallstone ileus when patients have no risk factors for surgical complications. Enterotomy with stone removal—enterolithotomy—is necessary to relieve intestinal obstruction. Patients at average risk of operative complications have been managed with extracorporeal lithotripsy or endoscopic removal of a gallstone.4-5 Our patient’s medical history put him at moderate to high risk for surgical complications, but endoscopic retrieval of the impacted stone could not be attempted due to its size (3.5 cm) and its position near the duodenal-jejunal junction. Instead, he underwent enterolithotomy with a longitudinal antimesenteric incision of the duodenum and extraction of a nonfriable gallstone (Figures 2 and 3).

Further management of gallstone ileus includes biliary tract inspection and cholecystectomy. Patients who are deemed at low risk per the American Society of Anesthesiologists Physical Status Classification (ASA I, normal and healthy or ASA II, mild systemic disease) can undergo the definitive biliary intervention, removal of the gall bladder and closure of the fistula, at the same time as enterolithotomy. Those in ASA III (patients with severe systemic disease) and ASA IV (patients with severe systemic disease that poses a constant threat to life) should be managed
expectantly. Our patient was discharged 7 days after surgery with a plan for future laparoscopic cholecystectomy.

References


Figure 1. Contrast-enhanced computed tomography was performed. **A**, An oblique-coronal multi-planar reconstruction showed a fistula (white arrow) between the gallbladder (g) and a markedly dilated duodenum (open arrow). **B**, A narrower window-level setting in this oblique-coronal multi-planar reconstruction facilitated visualization of the calculus (c) in the duodenum. The calculus was responsible for dilation of the entire proximal duodenal lumen with decompression (white arrowheads) of the distal part of the jejunum. **C**, An axial multi-planar reconstruction allowed easy identification of the fistula (white arrow) between the gallbladder (g) and duodenum (open arrow). **D**, In this oblique-coronal multi-planar reconstruction, the gallbladder (g) was shrunken with thickened walls and partially filled with air. The white arrow points to the fistula.

Figure 2. The patient underwent enterolithotomy with longitudinal antimesenteric incision of the duodenum and extraction of a large stone.

Figure 3. A solitary and marbled gallstone, measuring 3.5 cm, was removed. It was composed of calcium salts, cholesterol, and pigment.
Pellay modificato in DPI ed inches (5).jpg