

Case Report

Acute free gallbladder perforation with atypical presentation: a case report

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ABSTRACT

Gallbladder perforation (GBP) is a rare but potentially fatal complication of biliary tract disease if left untreated. We report the case of a 90-year-old female who presented with generalized abdominal pain associated with diarrhea and chills for three days. Upon examination, the patient was vitally stable, the abdomen was distended with epigastric and right hypochondriac tenderness, and she was positive for Murphy's sign. Laboratory findings showed high levels of liver enzymes, but normal bilirubin levels. Abdominal computed tomography revealed a gangrenous and perforated GB with marked inflammation and free fluid in the pelvis, right para-colic gutter, and GB bed. The patient was managed with intravenous antibiotics and laparoscopic cholecystectomy was successfully performed. The patient had an uneventful postoperative course. The diagnosis of GBP can be easily missed until it is detected intraoperatively because no clinical signs or pathognomonic features suggest the condition. Therefore, a high level of intuition is necessary to promptly establish a diagnosis, particularly in elderly patients. The approach to GBP remains an area of debate, considering many factors, including patient's stability, facility, and surgeon's expertise. Laparoscopic cholecystectomy should be considered as the first line of management in GBP cases, depending on the patient's stability and the surgeon's skills.

Keywords: Gallbladder, Gallbladder perforation, Acute cholecystitis, Cholelithiasis

INTRODUCTION

Gallbladder (GB) diseases are common and associated with a wide range of complications. Gallbladder perforation (GBP) is a rare but fatal complication that requires rapid diagnosis as well as timely and appropriate management to prevent morbidity and mortality. Elderly patients, in particular, may present with a vague history and an unclear clinical picture, making diagnosis more challenging.

What makes our case remarkable is that the patient presented with a stable clinical picture, despite her condition. The patient was transferred to the operating room (OR) for laparoscopic cholecystectomy based on our clinical judgment, and the outcome was satisfactory.

CASE REPORT

Here, we present the case of a 90-year-old female brought to our emergency room (ER) complaining of suddenly worsening generalized abdominal pain over the past three days, associated with diarrhea and chills. The patient had no history of trauma or dark urine and no chronic illnesses; however, her surgical history included a left mastectomy 20 years prior, followed by adjuvant chemotherapy of unclear duration, as no reports were available.

On physical examination in the ER, the patient appeared sick with no yellowish discoloration of the sclera or mucus membranes. Her vital signs were as follows: heart rate, 75 beats/min; blood pressure, 105/75 mmHg;

oxygen saturation, 90%; temperature, 36.5° C. The abdomen was mildly distended, with epigastric tenderness, right hypochondrial tenderness, and a positive Murphy's sign.

Laboratory tests were as follows: white blood cell count, $7.81 \times 10^3/\mu\text{l}$; neutrophils, $3.16 \times 10^3/\mu\text{l}$; platelet count $300 \times 10^3/\mu\text{l}$; direct bilirubin, 2.54 $\mu\text{mol/l}$; total bilirubin, 10 $\mu\text{mol/l}$; serum amylase, 101.59 U/l; alkaline phosphatase, 40 U/l; alanine transaminase, 72 IU/l; aspartate transaminase, 100 IU/l; potassium, 4.77 mmol/l; serum chloride, 102.95 mmol/l; serum sodium, 135.83 mmol/l; and lactate, 3.47 mmol/l; Troponin was negative and the coagulation profile was within normal range. The chest radiography revealed no abnormalities. Abdominal and pelvic computed tomography (CT) scans with intravenous contrast showed the following: GB with a thin, irregular enhanced wall with multiple defects, marked soft tissue stranding with GB fossa and hepatic space, and free perihepatic, right paracolic gutter, and pelvis intraperitoneal fluid collection indicating perforated gangrenous cholecystitis with collection and no radiological signs of bowel ischemia, bowel obstruction, or pneumoperitoneum (Figure 1 A and B).

A decision was made to transfer the patient to the OR with high-risk consent for laparoscopic cholecystectomy. The intraoperative findings were as follows: approximately 1 liter of bile was present in the abdominal wall, right paracolic gutter, and pelvis. The GB was gangrenous and had perforated at the fundus and the body (Figure 2). The common bile duct and the cystic duct were intact. No stones were observed in the peritoneal cavity.

A critical view of safety was achieved, and cholecystectomy was performed. Bile suction and abdominal irrigation with normal saline were thoroughly performed. Two drains were placed, one in the subhepatic area and the other in the pelvis. The patient tolerated the surgery and was transferred to the ward in a stable condition.

Postoperatively, the patient was maintained nil per OS on intravenous fluids and piperacillin/tazobactam. On the first day after surgery, the subhepatic drain output was 50 mL green bile, the pelvic drain output was 250 ml green bile. The output declined until it cleared and became serous (50 ml from the pelvic drain and nil from the subhepatic drain on postoperative day 5). The patient was started on a clear liquid diet and gradually advanced to a regular diet as normal bowel function resumed.

The patient's total and direct bilirubin levels remained within normal ranges, liver function test results improved, WBC decreased from 15 to 13 $10^3/\mu\text{l}$, drains were removed, and she was discharged on postoperative day 5 in good condition. The patient was reviewed in the outpatient clinic at one-week post-discharge. Clinical evaluation showed good recovery, with well-healed

surgical wounds, and no signs of infection or other postoperative complications.

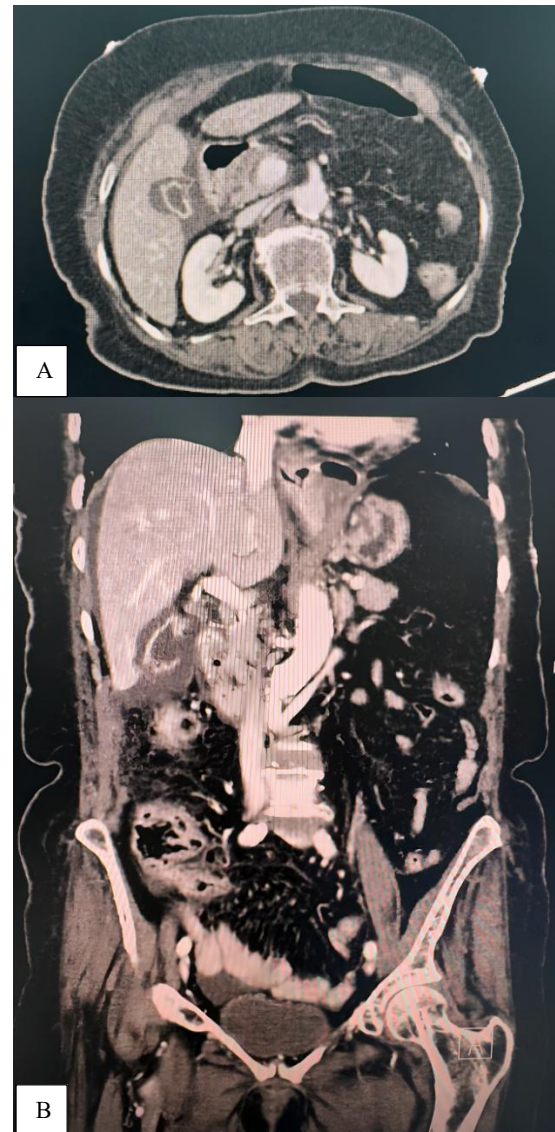


Figure 1: (A) CT scan showed a perforated GB and (B) a CT scan showed perforated GB; coronal view.

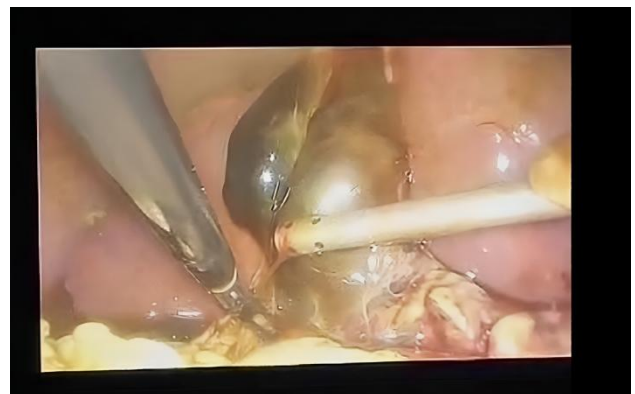


Figure 2: Gangrenous GB with free bile in the right paracolic gutter.

Histopathological examination revealed acute on top of chronic cholecystitis with no evidence of dysplasia or malignancy.

DISCUSSION

GBP is a rare and potentially fatal condition if not managed promptly, as it is associated with high morbidity and mortality rates. The accurate incidence rate is unclear, but based on the latest data, it ranges between 2% and 11%.^{2,3} The etiology behind GBP has been linked mainly to acute cholecystitis, either calculous or acalculous. Other conditions include trauma, malignancy, infections, biliary tract obstruction, anticoagulant use, and a number of cases that remain idiopathic. The pathophysiology of GBP was explained mainly by compromised blood supply and ischemia. The fundus is the most susceptible part to the perforation. Another possible mechanism is the increased intraluminal pressure due to an obstructing biliary tree pathology.⁴⁻⁶

There is no pathognomonic sign for GBP, however, the severity of the clinical status depends on the type of GBP. A milder form in the contained GBP could mimic the classical presentation of acute cholecystitis and manifest as abdominal pain, fever, and vomiting. A more severe status is associated with free perforation and peritonitis.⁷ Asymptomatic GBP was reported in the literature in association with diabetic neuropathy and/or immunosuppressive status.⁸ CT scan is the most accurate imaging modality to reach the diagnosis; however, in some places, ultrasonography (US) remains the first-line diagnostic tool.^{8,10}

Several classification systems for GBP have been suggested over the years, however, the most widely used system is the one developed by Anderson et al which is a modification of the Neimeier classification system, that was described earlier in 1934: Type 1-acute free perforation into the peritoneal cavity; type 2-subacute perforation with pericholecystic abscess; and type 3-chronic perforation with cholecystoenteric fistula and type 4-chronic perforation, where there is fistulous communication between the GB and the biliary tree.¹¹

Based on the above classification, our case is determined as type 1. However, our patient did not present with generalized peritonitis or septic shock, regardless of her advanced age. Zhang et al reported another atypical presentation of male patient with history of nasopharyngeal carcinoma who has been receiving chemotherapy and radiation and presented with free GBP. Similarly to our patient, she had no chronic illnesses. The patient was thought to have gastrointestinal tract perforation and was taken for diagnostic laparoscopy, then he was found to have GBP and managed with laparoscopic cholecystectomy. That raised the likelihood of chemotherapy and radiation being risk factors for free GBP.¹²

Laparoscopic cholecystectomy in the case of GBP is an acceptable approach for the management in settings where the equipment is available with good surgical expertise. It carries the advantage of better visualization of Calot's triangle and the chance to examine abdominal organs, suction any potential collections that are more difficult to access in the area of the open approach, and perform good peritoneal lavage.¹³

CONCLUSION

GBP should be considered in elderly patients presenting with acute abdominal pain, given their propensity for atypical presentations. CT scan is a crucial investigation for diagnosis, and laparoscopic cholecystectomy remains the optimal management approach in specific cases based on the surgeon's judgment and clinical context.

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