



When the Gallbladder is Not the Culprit: Perforated Duodenal Ulcer Presenting as Cholecystitis with Thoracoabdominal Sepsis: A Case Report

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Abstract:

Acute cholecystitis is a common surgical emergency and may be complicated by abscess formation, as described in the Tokyo Guidelines. However, inflammatory changes in the gallbladder region can occasionally be secondary to adjacent pathology. This is a case of a 63-year-old woman who presented with right upper quadrant pain. Explorations showed an acute cholecystitis with adjacent abscess, a large hepato-phrenic abscess, and massive right pleural empyema. She underwent cholecystectomy and drainage. The postoperative course was marked by air and enteric fluid in the drain. Re-exploration revealed a perforated duodenal ulcer, which was sutured and protected with a jejunostomy. This highlights the importance of searching for a secondary aetiology if the abscess is far from the peri vesicular bed, and the importance of early re-intervention in persistent abnormal postoperative drain output.

Keywords: Acute Cholecystitis, Perforated Duodenal Ulcer, Hepato-phrenic Abscess, Pleural Empyema, Surgical Re-exploration.

Case Report

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INTRODUCTION

Acute cholecystitis is a frequent cause of right upper quadrant abdominal pain and represents one of the most common indications for emergency abdominal surgery. According to the Tokyo Guidelines, complicated forms may be associated with pericholecystic abscess, perforation, or systemic sepsis. However, inflammatory changes in the gallbladder region may occasionally be secondary to adjacent pathology rather than primary biliary disease.

A perforated duodenal ulcer usually presents with acute peritonitis, but may have atypical presentations when the perforation is contained. Transdiaphragmatic spread of infection is rare and may obscure the primary source. Although it is typically presented with

generalized peritonitis, atypical forms with localized abscess and thoracic extension may delay diagnosis.

Case Presentation

A 50-year-old female patient, with no notable history, was admitted to the emergency department of the hospital for right abdominal pain, evolving 15 days before admission, associated with fever, chills, vomiting, and shortness of breath. As a result of these symptoms, the patient consulted a general practitioner 10 days ago, and NSAIDs were prescribed.

Examination showed a painful hepatomegaly and a right pleural effusion. The biological assessment mentioned a CRP level of 425, a WBC level of 18,200, cytolysis with

GGT at 6 times the normal, alkaline phosphatase at 5 times the normal, aspartate aminotransferase at 3 times the normal, and alanine aminotransferase at 2 times the normal.

A CT scan was performed, showing a large subcapsular hepatic collection organized in the interhepato-phrenic region, presenting a hydroaeric level, a thin wall measuring 130 x 110 x 80 mm, associated with gallbladder lithiasis and infiltration of the paravesicular space, suggesting cholecystitis with a perivesicular abscess. A massive right pleural effusion with hypodense and homogeneous liquid was found.

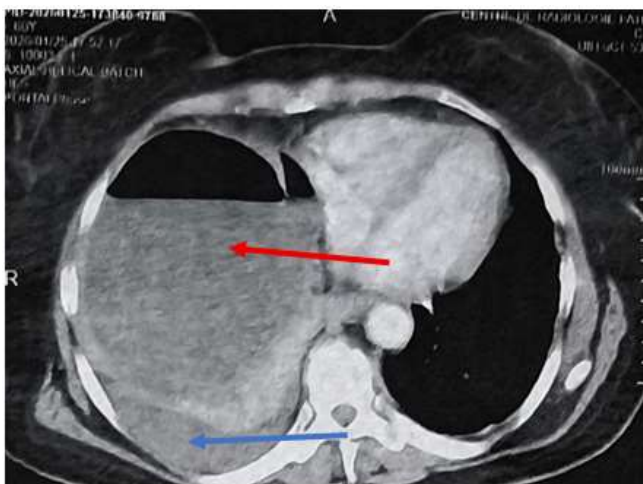


Figure 1: A CT scan showing the pleural effusion (blue arrow) associated with the interhepato-splenic abscess (Red Arrow)

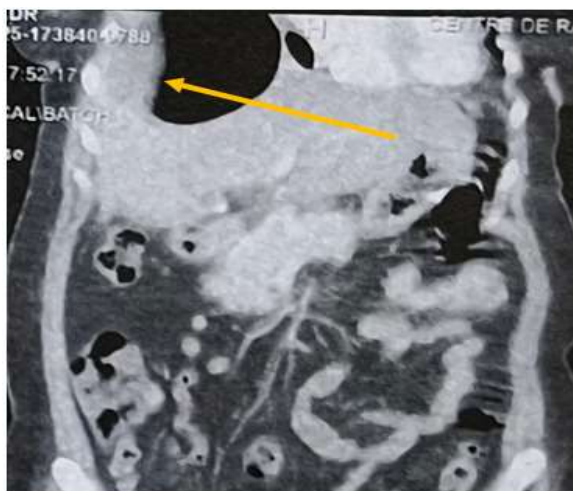


Figure 2: Liver abscess with hydro-aeric level (Yellow Arrow)

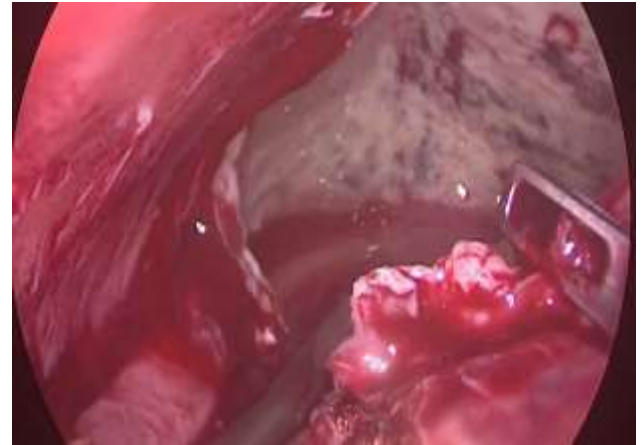


Figure 3: Peroperative view of the subphrenic abscess



Figure 4: Peroperative image of the perivesicular abscess

The diagnosis of hepatic abscess complicating grade 2 cholecystitis, according to the Tokyo classification, is associated with a large interhepatodiaphragmatic abscess and a right pleural effusion.

Initial management included antibiotics, surgical exploration, cholecystectomy, thoracic abscess drainage, and pleural drainage to prepare the patient for abdominal surgery. The thoracic drainage removed 1.8 L of abscess.

Surgical management was performed by a laparoscopic approach, showing a cholecystitis with a peri-vesicular abscess and a giant interhepato-diaphragmatic abscess associated with no other operative constatactions. A cholecystectomy with

aspiration of the perivesicular abscess was performed, and the abscess was drained.

A large drainage by a Redon drain was placed under the liver, in contact with the cholecystectomy bed, and in the Douglas pouch.

The postoperative course was uneventful until the 3rd day, when air and bilious/enteric output were found in the drain next to the cholecystectomy site, leading to suspicion of an organ perforation and therefore indicating a surgical reintervention.

A laparoscopic approach showed a perforated duodenal ulcer that wasn't present in the previous surgery, and no other abnormalities. A simple primary suture was performed on the anterior face of the duodenum using Vicryl 2/0 after reviving its extremities, and a feeding jejunostomy was placed to prevent further complications.

The postoperative course was uneventful, and the patient was discharged 5 days postoperatively.

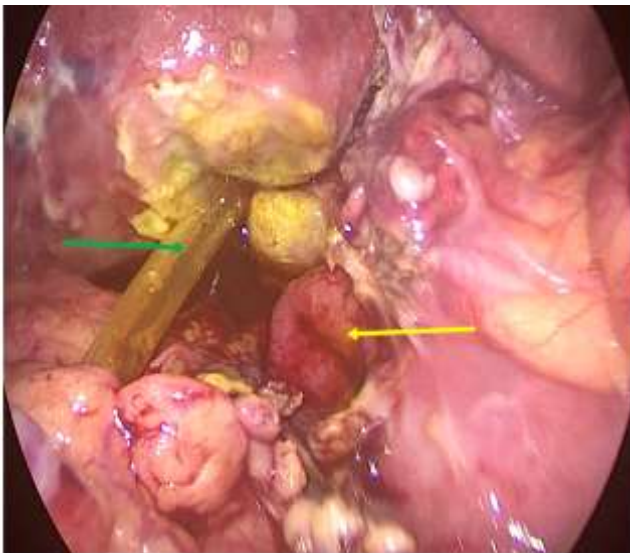


Figure 5: A per operative image showing the perforated duodenal ulcer after preparing its extremities. (Yellow Arrow = the perforated duodenal ulcer, Green Arrow = Redon drain that was put in the cholecystectomy bed)



Figure 6: Operative image showing the fixation of the jejunostomy feeding tube

DISCUSSION

Perforated duodenal ulcer is a well-known surgical emergency and historically one of the most common causes of gastrointestinal perforation. In classic presentations, it causes sudden, severe epigastric pain with signs of generalized peritonitis requiring urgent surgical repair. However, in some patients, atypically present due to contained perforations or because the perforation is surrounded by adjacent structures, leading to localized abscess formation instead of the typical presentation of the peritonitis. Such atypical presentations delay diagnosis and complicate management [1].

As reflected in the available literature, many reports note that subdiaphragmatic or perihepatic abscesses can develop from perforated peptic ulcers if the omentum or adjacent organs harbor perforation. Contained perforations of the duodenum have also been reported to result in subdiaphragmatic collections without classic generalized peritonitis, again highlighting that a high level of clinical suspicion must be maintained in the setting of lack of detection of free air on imaging [1].

More recent case reports underline the diversity of presentations of perforated ulcers, such as duodenal perforations, which may present predominantly with abdominal abscesses or retroperitoneal collections rather than diffuse

intra-abdominal contamination. Retroperitoneal abscess is another documented manifestation of perforated duodenal ulcers, and CT imaging was critical for the diagnosis [2]. A 2023 report also described a patient with an anterior abdominal abscess as the initial manifestation of duodenal perforation, illustrating how localized collections can dominate the clinical picture [3].

In addition to abdominal abscess formation, thoracic extension of intra-abdominal infection is a rare but recognized consequence when a diaphragmatic defect or transdiaphragmatic inflammatory tract forms. A duodeno-pleural fistula has been reported as a dramatic complication of peptic ulcer perforation progressing through a subdiaphragmatic abscess into the pleural space, resulting in empyema [4].

Such transdiaphragmatic spread may occur via direct erosion or through lymphatic routes and often produces pleural effusion or empyema that mimics thoracic and abdominal symptoms [5]. This is similar to our case, where right pleural empyema contributed greatly to intra-abdominal sepsis.

Delayed recognition of duodenal perforation, such as that seen in our patient, highlights several common difficulties. First, imaging findings might be misinterpreted or nonspecific in atypical cases, leading to the misdiagnosis of primary hepatobiliary disease instead of gastrointestinal perforation. Although it may not pick up small perforation sites without contrast extravasation, computed tomography, particularly with oral contrast, remains the most sensitive modality for identifying subtle perforations and contained collections [1]. Second, the development of multicompartiment sepsis with both intra-abdominal and pleural involvement can divert clinical focus toward the most apparent septic source, as in the case of our patient, when initial management targeted the cholecystitis and adjacent abscess.

Finally, this case highlights the need for careful postoperative monitoring. Abnormal drain output can be a huge concern as it may signal an ongoing leak, which warrants

immediate evaluation and possibly exploration. Early identification and prompt operative management of the actual perforation are important in decreasing morbidity.

CONCLUSION

This case illustrates an unusual and misleading presentation of a perforated duodenal ulcer presenting as complicated acute cholecystitis with hepato-phrenic abscess and massive pleural empyema. It highlights the potential for contained gastroduodenal perforations to generate localized intra-abdominal collections and transdiaphragmatic septic spread, obscuring the primary pathology.

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