



# Co-existent appendicitis and cholecystitis

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**Abstract:** Acute appendicitis and acute cholecystitis are common entities, but rarely do they present concurrently. We present the case of a 40-year-old male who arrived at the emergency department with an 18-hour history of non-bilious, non-bloody vomiting, and abdominal pain located to the right upper and right lower quadrants. The patient was taken for a synchronous laparoscopic appendectomy and cholecystectomy. We used a total of five laparoscopic ports to successfully complete both procedures. When faced with a rare presentation of seemingly two separate acute processes, a combined laparoscopic approach is both safe and effective. The use of five laparoscopic ports provides optimal exposure for both procedures.

**Keywords:** Appendicitis; cholecystitis; laparoscopic

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## Introduction

Appendicitis and cholecystitis are two of the most common causes of abdominal pain, but rarely do the two disease processes present concurrently. We present a case of a healthy male, treated at our institution who presented in septic shock with the complaint of upper and lower abdominal pain on the right.

## Case presentation

A 40-year-old, Hispanic male presented to the Emergency Department at our facility with the chief complaint of abdominal pain. During examination, he admitted to multiple episodes of nausea and non-bilious vomiting over the past 18 hours. His pain was described as painful along the right side of his abdomen, and most severe in the right upper and lower quadrants. The discomfort began in the mid-epigastric region, and then migrated to the lower right abdomen. He denied any past medical history, as well as any previous surgeries. He did not smoke, and he only drank alcohol occasionally.

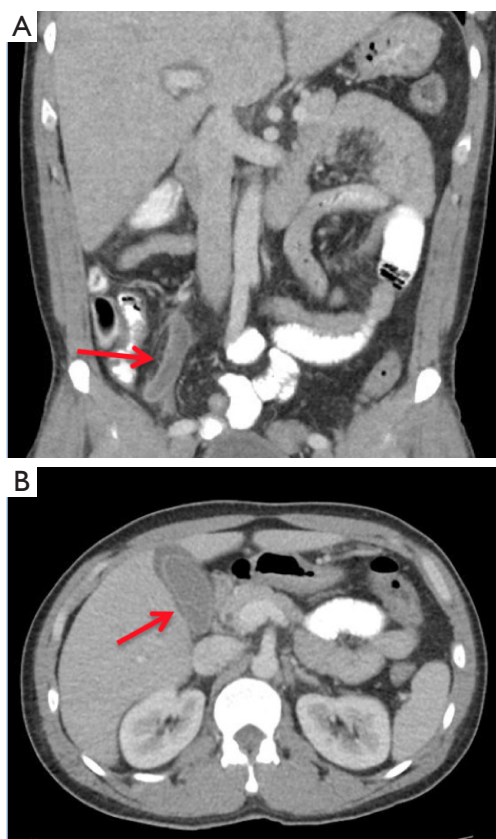
Initial vital signs showed a temperature of 102.5 F. The patient was hypotensive and tachycardic with a BP of 92/50 mmHg. The heart rate was 115 bpm. On physical exam, he was lethargic, and had yellowed sclera. Lungs were clear

to auscultation. The abdominal exam was significant for diffuse tenderness to palpation with rebound and guarding. There was exquisite tenderness to the right upper and lower quadrants, including a positive Murphy's and Rovsing's signs. There was mild abdominal distention noted, no previous surgical scars appreciated.

Laboratory evaluation found a WBC count that was normal at 5.1 k/ $\mu$ L with Hgb 16.7 g/dL, HCT 47.2% and platelets of 182 k/ $\mu$ L. Chemistry values were consistent with multiple episodes of vomiting and dehydration. The was potassium on 2.9 mmol/L. Liver function tests showed hyperbilirubinemia with total bilirubin of 2.7 mg/dL and direct bilirubin of 1.2 mg/dL. The transaminases were normal, however the alkaline phosphatase and GGT were elevated with levels of 178 and 67 IU/L respectively. Lactic acid was 6.9 mmol/L.

Initially, a computed tomography (CT) of the abdomen and pelvis with IV contrast was obtained. This imaging study revealed acute appendicitis with surrounding inflammatory changes (*Figure 1*), however, the CT also revealed diffuse gallbladder wall thickening. Biliary sonogram findings showed a diffusely thickened gallbladder wall, and moderate pericholecystic fluid, consistent with acalculous cholecystitis (*Figure 1*).

Based on these findings the patient was taken to the operating room for a laparoscopic appendectomy and possible cholecystectomy. During the procedure, a non-

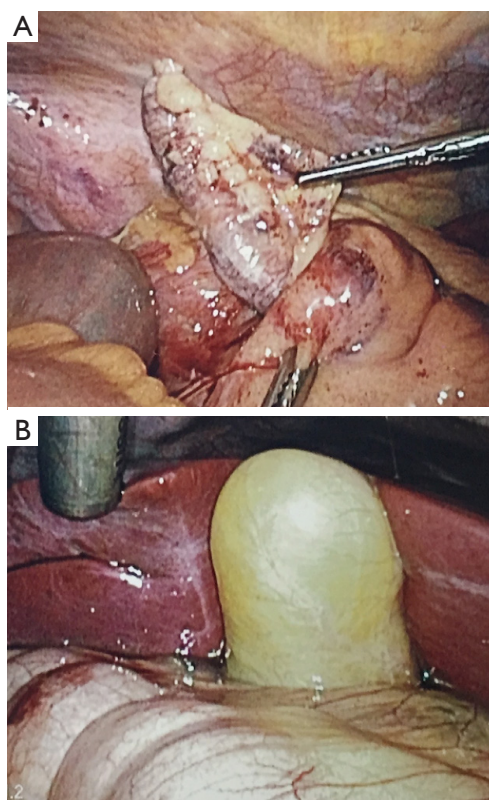


**Figure 1** Intra-operative findings. (A) CT showing an enlarged, fluid filled appendix consistent with acute appendicitis; (B) CT showing an enlarged gallbladder with associated pericholecystic fluid. CT, computed tomography.

perforated, hyperemic and distended appendix was found, consistent with acute appendicitis (*Figure 2*). A laparoscopic appendectomy was subsequently performed. After removal of the appendix, attention was turned to the gallbladder. The wall of the gallbladder was edematous and distended (*Figure 2*). With some difficulty due to the inflamed wall, the gallbladder was successfully removed after identification of the critical view of safety.

The patient was taken to the SICU post-operatively for continued hypotension. Over the next 12 hours, the vital signs improved and the patient was downgraded from the SICU. The remaining post-operative course was uncomplicated, and the patient was discharged home on post op day 2. On follow up visit, he was found to be doing well, and had returned to normal activity.

The pathology report showed severe acute appendicitis and acute on chronic cholecystitis with mucosal congestion.



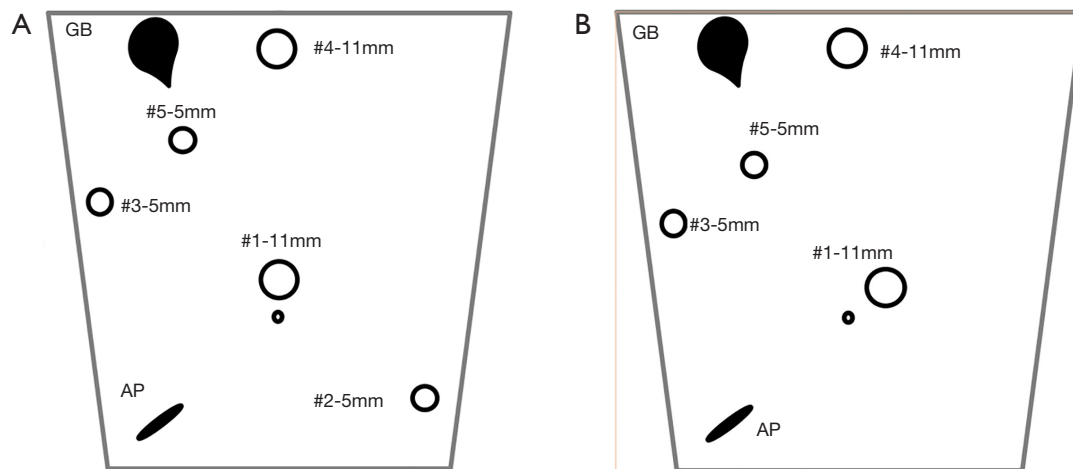
**Figure 2** CT findings. (A) Intra-operative finding of an acutely inflamed and dilated appendix consistent with acute appendicitis; (B) intra-operative finding of an edematous and inflamed gallbladder consistent with acute cholecystitis.

## Discussion

Cholecystectomy for acute cholecystitis is the most common surgery performed in America with numbers eclipsing 500,000 annually (1). It is estimated that more than 20 million Americans have gallstones and 1–2% will become symptomatic every year (2,3). A subset of acute cholecystitis is acalculous cholecystitis, which represents 5–10% of all cases (4,5).

Appendicitis is another very common surgical malady with an estimated incidence of 233/100,000 population and is highest in the 10- to 19-year-old age group (6). Simultaneous presentation of appendicitis and cholecystitis is a very rare entity. The true incidence has not been described in the literature, and only a few case reports have been published to date (5). Our patient presented with these two separate, but common acute disease processes' concurrently.

In treating these simultaneous problems, the laparoscopic



**Figure 3** Actual and proposed port placement. (A) Diagram of the initial port placement as performed in our case; (B) diagram of suggested port placement to perform this procedure utilizing a total of 4 ports. GB, gallbladder; AP, appendix.

approach was found to be ideal. Some surgeons are proponents of an interval cholecystectomy to reduce the risk of open conversion (5), while others performed a combined operation (7). We were able to successfully complete the combined procedure using a total of 5 ports, as detailed in *Figure 3*. From these ports, we were able to access both the right lower and upper quadrants efficiently and effectively. In retrospect, minor adjustments to port placement could have improved the triangulation in accessing the gallbladder. Our recommendations for altered four port placement are seen in *Figure 3*, and are felt to provide improved access and ease in reaching both the appendix and the gallbladder.

In conclusion, appendicitis presenting with cholecystitis is a rare phenomenon that can be safely and efficiently managed via the laparoscopic approach saving the patient a potentially more morbid procedure.

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## Footnote

*Conflicts of Interest:* All authors have completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/ales.2017.02.30>). The authors have no conflicts of interest to declare.

*Ethical Statement:* The authors are accountable for all aspects of the work in ensuring that questions related

to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this manuscript and any accompanying images.

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