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Simultaneous laparoscopic management of coexisting cholecystitis and appendicitis - a case report

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ABSTRACT

Background: Acute cholecystitis and acute appendicitis are among the most common conditions leading to surgical admissions. However, their concurrent presentation is rare and poses significant diagnostic and therapeutic challenges. Compared with traditional open surgery, laparoscopy has revolutionized the management of various abdominal pathologies by providing enhanced visualization, shorter hospital stays, and faster recovery times.

Case Presentation: A 66-year-old woman with severe right upper quadrant and lateral abdominal pain, and nausea was admitted to the general surgical ward. Physical examination showed tenderness and muscle guarding in the right upper quadrant, and a positive Murphy's sign. Laboratory investigations revealed leukocytosis, elevated inflammatory markers, and

abnormal liver function. An inconclusive ultrasound led to a CT scan, diagnosing acute cholecystitis and acute appendicitis. A decision was made to perform simultaneous laparoscopic cholecystectomy and appendectomy. The patient had an uneventful recovery and was discharged after ten days with standard surgical recommendations.

Conclusion: This case report highlights the importance of considering multiple potential causes of abdominal pain, especially with inconclusive initial imaging. Simultaneous laparoscopic cholecystectomy and appendectomy demonstrated in this case proved to be feasible, safe, and effective. Early and accurate diagnosis, facilitated by thorough clinical examination and advanced imaging, is crucial for prompt treatment. Surgeons must be prepared for rare concurrent presentations and capable of performing synchronous laparoscopic surgeries to improve patient outcomes and streamline recovery.

Keywords: cholecystitis; appendicitis; laparoscopy; abdominal pain

INTRODUCTION

Acute cholecystitis and appendicitis rank among the most frequently encountered conditions in surgical admissions. Acute cholecystitis typically manifests as severe unremitting right upper abdominal quadrant pain with tenderness in that area and a positive Murphy's sign. Symptoms also include fever, nausea, and vomiting [1, 2]. On the other hand, acute appendicitis presents as abdominal pain that initially centers around the umbilicus and later migrates to the right lower quadrant of the abdomen. It is often associated with localized tenderness and abdominal rigidity, especially at McBurney's point, as well as fever, nausea, vomiting, and loss of appetite [3].

Although both cholecystitis and appendicitis are leading causes of abdominal pain, their simultaneous occurrence is uncommon. This dual presentation can pose diagnostic challenges, as overlapping symptoms may complicate the clinical picture. Furthermore, the management of such cases requires careful consideration to determine the most appropriate surgical approach. The ability to perform concurrent laparoscopic cholecystectomy and appendectomy

offers a unique solution, potentially reducing the overall surgical burden on the patient and streamlining recovery.

Laparoscopic cholecystectomy and appendectomy have emerged as the gold standard for the treatment of gallbladder and appendiceal pathologies. These techniques have been shown to provide several advantages over traditional open surgery techniques, including shorter hospitalizations and quicker recovery time, reduced pain scores, lower risk of infections, fewer complications, decreased intraoperative blood loss, improved cosmetic results with smaller incisions, and faster return to normal activities [4].

A study from 2019 [5] conducted a review to identify case reports of coexisting appendicitis and cholecystitis. Eleven instances of these dual pathologies have been described in the literature. Six patients received a diagnosis of simultaneous acute appendicitis and cholecystitis based on computed tomography (CT) scans, whereas three cases were initially detected as acute cholecystitis using abdominal ultrasound (US). Six patients underwent laparoscopic cholecystectomy and appendectomy, two underwent open cholecystectomy and open appendectomy, one underwent laparoscopic cholecystectomy followed by open appendectomy, one underwent laparotomy, and one case was managed with ultrasound-guided percutaneous gallbladder drainage (PTGBD) and intra-venous antibiotics.

This paper aims to expand the perspective by highlighting the importance of considering multiple potential causes of abdominal pain. Although it is rare for acute appendicitis and cholecystitis to present simultaneously, being aware of this possibility is crucial for avoiding serious complications. Furthermore, through the analysis of a clinical case, we illustrate the feasibility, safety, and potential advantages of simultaneous laparoscopic cholecystectomy and appendectomy in the management of selected patients presenting with concurrent gallbladder and appendiceal pathologies. By presenting our case study, we contribute to the understanding and advancement of this surgical approach.

CASE REPORT

Due to worsening abdominal pain over the past week, a 66-year old woman was admitted to the general surgical ward on an emergency basis. Symptoms included severe abdominal pain radiating to the back and nausea without fever or any disturbances in bowel movements or passing gas. The woman presented abdominal pain for the past week following the consumption of a fried pork cutlet with pickles. From the medical history, it was known that the patient had cholelithiasis. Physical examination revealed tenderness and increased tension

on palpation in the right upper quadrant and right lateral abdomen, without pathological masses. The liver was not enlarged. There was a positive Murphy's sign.

The patient was admitted to the department in good general condition and was respiratory and circulatory stable, with symptoms of acute cholecystitis. Right upper quadrant pain decreased after the administration of analgesic and antispasmodic medications in the emergency department.

Laboratory investigations revealed predominantly leukocytosis, elevated inflammatory markers, and elevated liver function tests [Tab. 1].

Examination	**Results**	**Deviation**
WBC	17,60 x 10^3/µl [4 - 10]	H
RBC	4,06 x 10^6/µl [4 - 5.2]	N
HGB	11,7 g/dl [12 - 15.9]	L
HCT	34,60 % [35 - 46]	L
PLT	553 x 10^3/µl [145 - 450]	H
CRP	69,52 mg/l [0 - 5]	H
PCT	0,42 % [0,15 - 0,40]	H
NEUT	14,91 x 10^3/µl [1,60 - 7,00]	H
NEUT%	84,90 % [40,00 - 73,00]	H
LYMPH	1,81 x 10^3/µl [1,00 - 3,00]	N
LYMPH%	10,30 % [18,00 - 45,00]	L
ALAT	90,33 U/l [0 - 31]	H
ASPAT	39,59 U/l [0 - 31]	H
GGTP	108,2 U/l [0 - 35]	H
ALP	191,00 U/l [35,00 - 105,00]	H
K^+	3,67 mmol/l [3,5 - 5,1]	N
Na^+	134 mmol/l [135 - 145]	L
AMYLASE	44 U/l [0 - 90]	N
TOTAL BILIRUBIN	0,30 mg/dl [0 - 1,3]	N

Tab. 1. The patient’s laboratory test results.

The ultrasound examination of the abdomen and retroperitoneal space, chest and abdominal X-ray examination, and CT scan of the abdomen and pelvis without and with contrast enhancement were performed. The ultrasound did not reveal any sonographic features of acute inflammation. The liver was described as homogeneous with increased echogenicity and not enlarged. The gallbladder was not enlarged, thin-walled, with a small approximately 5 mm stone attached to the wall in its midsection.

On the CT scan the gallbladder exhibited thickened walls with features of intramural exudate, surrounded by a layer of fluid without calcified deposits - inflammatory changes. Several small pericholecystic lymph nodes up to 5 mm in size were present. In the right iliac fossa, a thickened appendix vermiformis with a tortuous course was visible, showing strong contrast enhancement, surrounded by densities within the adipose tissue, and blending with a reactively thickened peritoneum.

Based on the abdominal and pelvic CT scan, acute cholecystitis with concurrent acute appendicitis was diagnosed.

Following the CT scan, considering the patient's symptoms, elevated inflammatory parameters, and the findings indicating two potential causes of the patient's condition, it was decided to perform concurrent laparoscopic cholecystectomy and appendectomy.

The laparoscopy was performed under general anesthesia and lasted 2 hours. The empyema and cholelithiasis of the gallbladder and purulent appendicitis were diagnosed [Fig. 1, Fig. 2]. The procedure was successfully completed without the need for conversion, and there were no intraoperative complications. Following laparoscopy, the patient experienced a decrease in inflammatory markers and liver parameters, along with a concurrent decrease in potassium levels (K^+ 2,74 mmol/l). During the hospitalization the patient was administered medications that included low-molecular-weight heparin (anticoagulant therapy), ciprofloxacin and metronidazole (antimicrobial therapy), analgesics, intravenous fluids, and potassium chloride (hypokalemia treatment).

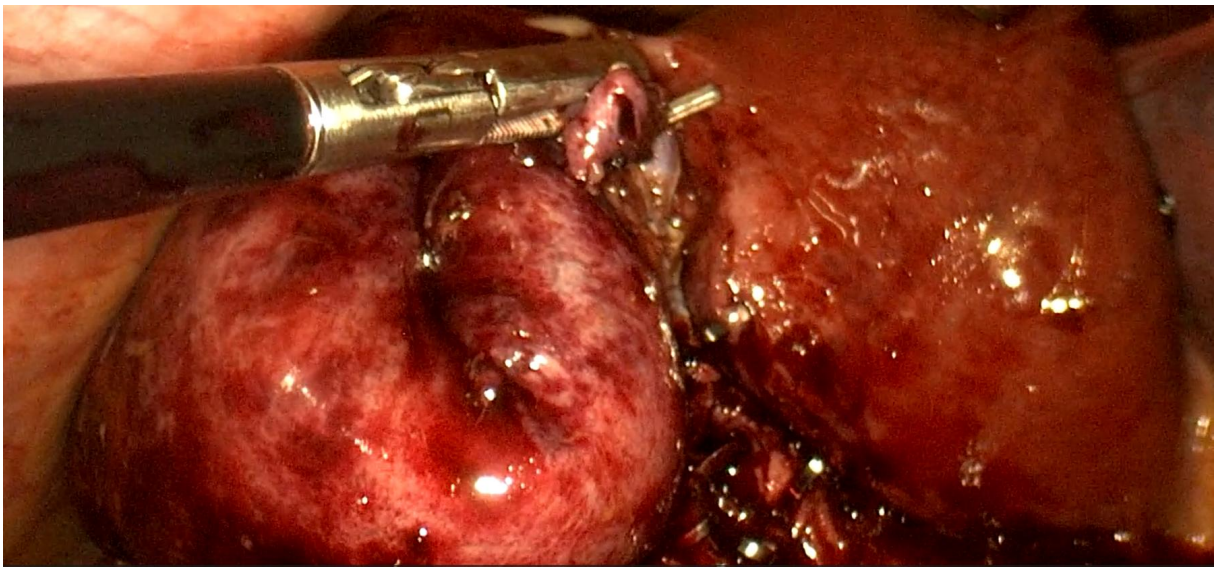

Fig.1. Photograph from laparoscopy – the gallbladder.

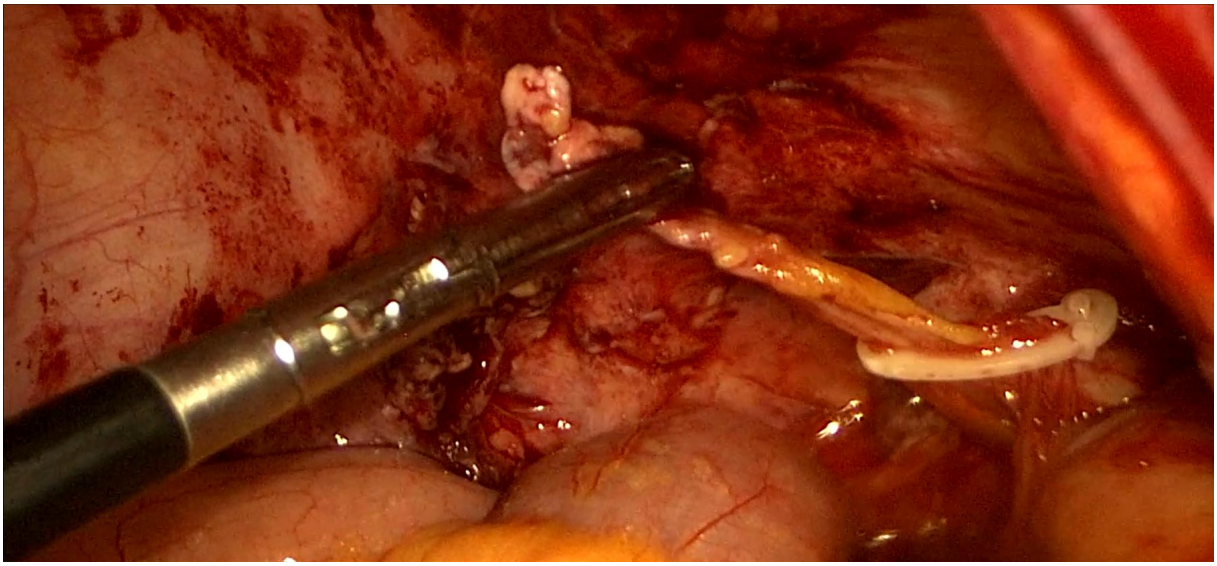

Fig.2. Photograph from laparoscopy – the appendix vermiformis.

After a ten-day hospitalization, the patient was discharged home with standard surgical recommendations. These included daily wound care with Octenisept, dressing changes and removal of skin stitches 12 days after surgery. Additionally, the patient was advised to follow

a light diet, take 2 capsules of potassium chloride twice daily due to previously diagnosed hypokalemia, and seek immediate surgical consultation in case of high fever, chills, or abdominal pain.

DISCUSSION

Abdominal pain is a common presentation in the emergency department and is often attributed to a single underlying pathology. However, clinicians should be aware of the potential for multiple concurrent conditions that may contribute to the patient's symptoms. The simultaneous presentation of acute cholecystitis and acute appendicitis, although rare, poses significant diagnostic and therapeutic challenges. In this case, we present the case of a 66-year-old woman who developed both conditions simultaneously, necessitating a combined surgical approach. The successful management of this patient underscores the importance of considering several abdominal pathologies in patients who present with abdominal pain and supports the feasibility and efficacy of synchronous laparoscopic cholecystectomy and appendectomy.

Diagnostic imaging played a crucial role in this case. The initial ultrasound examination did not reveal significant abnormalities, prompting the decision to proceed with a more precise imaging modality. The CT scan was utilized to better identify the underlying cause of the patient's condition and the presence of elevated inflammatory markers. It confirmed the diagnosis of acute cholecystitis and revealed a secondary pathology – appendicitis, providing a definitive diagnosis. This case underscores the importance of advanced imaging techniques in the accurate diagnosis and management of complex abdominal conditions. The ability of CT scans to detect subtle changes in soft tissue structures makes them an invaluable tool in cases where initial imaging studies are inconclusive.

Moreover, the paper details a single-surgery laparoscopic cholecystectomy and appendectomy. Described successful simultaneous procedure underscores its safety and efficacy, aiming to enhance awareness among surgeons of its feasibility and the advantages it offers over traditional open surgery. This case demonstrates that a combined approach can be effectively implemented, offering patients the benefits of minimally invasive surgery while addressing concurrent abdominal pathologies in a single operative session.

Furthermore, this case report emphasizes the need for heightened clinical vigilance. Although concurrent cholecystitis and appendicitis remain rare, emergency physicians and surgeons

should consider the possibility of multiple simultaneous pathologies when evaluating patients with atypical or severe abdominal pain. Early and accurate diagnosis, facilitated by thorough clinical examination and advanced imaging techniques, is crucial to provide prompt, appropriate and timely treatment and prevent complications.

In conclusion, this case report demonstrates that the concurrent presentation of cholecystitis and appendicitis does occur, and it is important for every physician to be prepared to handle such cases. Moreover, this paper highlights the significance of simultaneous laparoscopic cholecystectomy and appendectomy, emphasizing the numerous advantages of this approach. Described case reinforces the need for awareness and readiness among surgeons to adopt such techniques for optimal patient care.

DISCLOSURE

Author`s contribution:

Conceptualization: KB; methodology: WB, OD, BS, MG; check: DP, KB, WB; formal analysis: OD, BS, JO ; investigation: MG, DP ; resources: BS, KB, DP ; data curation: WB, BS; writing - rough preparation: KB, MG, OD; writing - review and editing: KB, WB, BS; visualization: OD, MG, JO; supervision: JO, DP, OD, WB; project administration: MG, JO, KB

All authors have read and agreed with the published version of the manuscript.

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Institutional Review Board Statement

According to our ethics review board, ethics approval is not necessary for a case report; therefore, ethical approval is not required for this case report in accordance with local guidelines. All procedures performed in this study were in accordance with the ethical standards of the Institutional and/or National Research Committee(s) and with the Helsinki Declaration. Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

Informed Consent Statement

Informed consent was obtained for the patient photos and information used in the paper.

Data Availability Statement

All the data generated or analyzed during this case report are included in this article. Further inquiries can be directed to the corresponding author.

Acknowledgments

Not applicable.

Conflicts of Interest

The authors declare no conflict of interest.

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