

World Journal of *Gastrointestinal Surgery*

World J Gastrointest Surg 2024 February 27; 16(2): 260-634



EDITORIAL

- 260 Actuality and underlying mechanisms of systemic immune-inflammation index and geriatric nutritional risk index prognostic value in hepatocellular carcinoma
Tchilikidi KY
- 266 Prognostic impact of preoperative nutritional and immune inflammatory parameters on liver cancer
Bae SU
- 270 Don't forget emergency surgery! Lessons to learn from elective indocyanine green-guided gastrointestinal interventions
Perini D, Martellucci J
- 276 Mutational landscape of TP53 and CDH1 in gastric cancer
Cai HQ, Zhang LY, Fu LM, Xu B, Jiao Y
- 284 Overview of ectopic pancreas
Li CF, Li QR, Bai M, Lv YS, Jiao Y

ORIGINAL ARTICLE

Clinical and Translational Research

- 289 Phospholipase A2 enzymes PLA2G2A and PLA2G12B as potential diagnostic and prognostic biomarkers in cholangiocarcinoma
Qiu C, Xiang YK, Da XB, Zhang HL, Kong XY, Hou NZ, Zhang C, Tian FZ, Yang YL

Case Control Study

- 307 Classification of anatomical morphology of cystic duct and its association with gallstone
Zhu JH, Zhao SL, Kang Q, Zhu Y, Liu LX, Zou H

Retrospective Cohort Study

- 318 Will partial splenic embolization followed by splenectomy increase intraoperative bleeding?
Huang L, Li QL, Yu QS, Peng H, Zhen Z, Shen Y, Zhang Q
- 331 Influence of donor age on liver transplantation outcomes: A multivariate analysis and comparative study
Bezjak M, Stresec I, Kocman B, Jadrijević S, Filipec Kanizaj T, Antonijević M, Dalbelo Bašić B, Mikulić D
- 345 Machine learning-based radiomics score improves prognostic prediction accuracy of stage II/III gastric cancer: A multi-cohort study
Xiang YH, Mou H, Qu B, Sun HR

- 357 Risk stratification in gastric cancer lung metastasis: Utilizing an overall survival nomogram and comparing it with previous staging
Chen ZR, Yang MF, Xie ZY, Wang PA, Zhang L, Huang ZH, Luo Y
- 382 Systemic inflammatory response index is a predictor of prognosis in gastric cancer patients: Retrospective cohort and meta-analysis
Ren JY, Xu M, Niu XD, Ma SX, Jiao YJ, Wang D, Yu M, Cai H
- Retrospective Study**
- 396 Development of a clinical nomogram for prediction of response to neoadjuvant chemotherapy in patients with advanced gastric cancer
Liu B, Xu YJ, Chu FR, Sun G, Zhao GD, Wang SZ
- 409 Laparoscopic left hemihepatectomy guided by indocyanine green fluorescence: A cranial-dorsal approach
Wang XR, Li XJ, Wan DD, Zhang Q, Liu TX, Shen ZW, Tong HX, Li Y, Li JW
- 419 Hemoglobin loss method calculates blood loss during pancreaticoduodenectomy and predicts bleeding-related risk factors
Yu C, Lin YM, Xian GZ
- 429 Short- and long-term outcomes of surgical treatment in patients with intestinal Behcet's disease
Park MY, Yoon YS, Park JH, Lee JL, Yu CS
- 438 Preoperative neutrophil-to-lymphocyte ratio predicts symptomatic anastomotic leakage in elderly colon cancer patients: Multicenter propensity score-matched analysis
Wang CY, Li XL, Ma XL, Yang XF, Liu YY, Yu YJ
- 451 Preoperative blood markers and intra-abdominal infection after colorectal cancer resection
Liu CQ, Yu ZB, Gan JX, Mei TM
- 463 Immune function status of postoperative patients with colon cancer for predicting liver metastasis
Xiong L, Liu FC
- 471 Efficacy of transjugular intrahepatic portosystemic shunts in treating cirrhotic esophageal-gastric variceal bleeding
Hu XG, Dai JJ, Lu J, Li G, Wang JM, Deng Y, Feng R, Lu KP
- 481 Correlation between serum markers and transjugular intrahepatic portosystemic shunt prognosis in patients with cirrhotic ascites
Hu XG, Yang XX, Lu J, Li G, Dai JJ, Wang JM, Deng Y, Feng R
- 491 Development of a new Cox model for predicting long-term survival in hepatitis cirrhosis patients underwent transjugular intrahepatic portosystemic shunts
Lv YF, Zhu B, Meng MM, Wu YF, Dong CB, Zhang Y, Liu BW, You SL, Lv S, Yang YP, Liu FQ
- 503 "Five steps four quadrants" modularized *en bloc* dissection technique for accessing hepatic hilum lymph nodes in laparoscopic pancreaticoduodenectomy
Hu XS, Wang Y, Pan HT, Zhu C, Chen SL, Liu HC, Pang Q, Jin H

- 511** Efficacy and safety of endoscopic submucosal dissection for early gastric cancer and precancerous lesions in elderly patients

Xu WS, Zhang HY, Jin S, Zhang Q, Liu HD, Wang MT, Zhang B

- 518** Nomogram model including *LATS2* expression was constructed to predict the prognosis of advanced gastric cancer after surgery

Sun N, Tan BB, Li Y

Observational Study

- 529** To explore the pathogenesis of anterior resection syndrome by magnetic resonance imaging rectal defecography

Meng LH, Mo XW, Yang BY, Qin HQ, Song QZ, He XX, Li Q, Wang Z, Mo CL, Yang GH

- 539** Biopsy forceps are useful for measuring esophageal varices *in vitro*

Duan ZH, Zhou SY

SYSTEMATIC REVIEWS

- 546** First experience in laparoscopic surgery in low and middle income countries: A systematic review

Troller R, Bawa J, Baker O, Ashcroft J

- 554** Comparative effectiveness of several adjuvant therapies after hepatectomy for hepatocellular carcinoma patients with microvascular invasion

Pei YX, Su CG, Liao Z, Li WW, Wang ZX, Liu JL

META-ANALYSIS

- 571** Is tumor necrosis factor- α monoclonal therapy with proactive therapeutic drug monitoring optimized for inflammatory bowel disease? Network meta-analysis

Zheng FY, Yang KS, Min WC, Li XZ, Xing Y, Wang S, Zhang YS, Zhao QC

- 585** Poor oral health was associated with higher risk of gastric cancer: Evidence from 1431677 participants

Liu F, Tang SJ, Li ZW, Liu XR, Lv Q, Zhang W, Peng D

CASE REPORT

- 596** Treatment of hemolymphangioma by robotic surgery: A case report

Li TN, Liu YH, Zhao J, Mu H, Cao L

- 601** Postoperative encapsulated hemoperitoneum in a patient with gastric stromal tumor treated by exposed endoscopic full-thickness resection: A case report

Lu HF, Li JJ, Zhu DB, Mao LQ, Xu LF, Yu J, Yao LH

- 609** Early endoscopic management of an infected acute necrotic collection misdiagnosed as a pancreatic pseudocyst: A case report

Zhang HY, He CC

- 616** Percutaneous ultrasound-guided coaxial core needle biopsy for the diagnosis of multiple splenic lesions: A case report
Pu SH, Bao WYG, Jiang ZP, Yang R, Lu Q
- 622** Spilled gallstone mimicking intra-abdominal seeding of gallbladder adenocarcinoma: A case report
Huang CK, Lu RH, Chen CC, Chen PC, Hsu WC, Tsai MJ, Ting CT
- 628** Ileal collision tumor associated with gastrointestinal bleeding: A case report and review of literature
Wu YQ, Wang HY, Shao MM, Xu L, Jiang XY, Guo SJ

ABOUT COVER

Editorial Board Member of *World Journal of Gastrointestinal Surgery*, Nikolaos Chatzizacharias, FACS, FRCS, MD, PhD, Consultant Surgeon, Department of HPB and liver transplantation, Queen Elizabeth Hospital, University Hospitals Birmingham, Birmingham B15 2TH, United Kingdom. nikolaos.chatzizacharias@uhb.nhs.uk

AIMS AND SCOPE

The primary aim of *World Journal of Gastrointestinal Surgery* (WJGS, *World J Gastrointest Surg*) is to provide scholars and readers from various fields of gastrointestinal surgery with a platform to publish high-quality basic and clinical research articles and communicate their research findings online.

WJGS mainly publishes articles reporting research results and findings obtained in the field of gastrointestinal surgery and covering a wide range of topics including biliary tract surgical procedures, biliopancreatic diversion, colectomy, esophagectomy, esophagostomy, pancreas transplantation, and pancreatectomy, *etc.*

INDEXING/ABSTRACTING

The WJGS is now abstracted and indexed in Science Citation Index Expanded (SCIE, also known as SciSearch®), Current Contents/Clinical Medicine, Journal Citation Reports/Science Edition, PubMed, PubMed Central, Reference Citation Analysis, China Science and Technology Journal Database, and Superstar Journals Database. The 2023 Edition of Journal Citation Reports® cites the 2022 impact factor (IF) for WJGS as 2.0; IF without journal self cites: 1.9; 5-year IF: 2.2; Journal Citation Indicator: 0.52; Ranking: 113 among 212 journals in surgery; Quartile category: Q3; Ranking: 81 among 93 journals in gastroenterology and hepatology; and Quartile category: Q4.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: Zi-Hang Xu, Production Department Director: Xiang Li, Editorial Office Director: Jia-Ru Fan.

NAME OF JOURNAL

World Journal of Gastrointestinal Surgery

ISSN

ISSN 1948-9366 (online)

LAUNCH DATE

November 30, 2009

FREQUENCY

Monthly

EDITORS-IN-CHIEF

Peter Schemmer

EDITORIAL BOARD MEMBERS

<https://www.wjgnet.com/1948-9366/editorialboard.htm>

PUBLICATION DATE

February 27, 2024

COPYRIGHT

© 2024 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

<https://www.wjgnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjgnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjgnet.com/bpg/gerinfo/240>

PUBLICATION ETHICS

<https://www.wjgnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjgnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjgnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjgnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>



Spilled gallstone mimicking intra-abdominal seeding of gallbladder adenocarcinoma: A case report

Cheng-Ken Huang, Ruey-Hwa Lu, Chien-Cheng Chen, Po-Chun Chen, Wen-Chang Hsu, Meng-Jui Tsai, Chin-Tsung Ting

Specialty type: Gastroenterology and hepatology

Provenance and peer review:

Unsolicited article; Externally peer reviewed.

Peer-review model: Single blind

Peer-review report's scientific quality classification

Grade A (Excellent): 0
Grade B (Very good): 0
Grade C (Good): C
Grade D (Fair): 0
Grade E (Poor): 0

P-Reviewer: Kim BS, South Korea

Received: November 14, 2023

Peer-review started: November 14, 2023

First decision: December 6, 2023

Revised: December 8, 2023

Accepted: January 8, 2024

Article in press: January 8, 2024

Published online: February 27, 2024



Cheng-Ken Huang, Chien-Cheng Chen, Po-Chun Chen, Wen-Chang Hsu, Meng-Jui Tsai, Chin-Tsung Ting, Division of Gastrointestinal Surgery, Department of Surgery, Ren-Ai Branch, Taipei City Hospital, Taipei 106, Taiwan

Ruey-Hwa Lu, Division of General Surgery, Department of Surgery, Zhongxing Branch, Taipei City Hospital, Taipei 103, Taiwan

Chin-Tsung Ting, School of Medicine, Institute of Traditional Medicine, National Yang-Ming University, Taipei 112, Taiwan

Chin-Tsung Ting, Department of Health and Welfare, University of Taipei, Taipei 104, Taiwan

Corresponding author: Cheng-Ken Huang, MD, Doctor, Surgeon, Division of Gastrointestinal Surgery, Department of Surgery, Ren-Ai Branch, Taipei City Hospital, No. 10, Section 4, Ren'ai Road, Da'an District, Taipei 106, Taiwan. dbb35@tpech.gov.tw

Abstract

BACKGROUND

Gallbladder rupture is common in laparoscopic cholecystectomy because the gallbladder is usually in acute or chronic inflammation status. The gallstones may sometime be spilled into the peritoneal cavity, resulting in intra-abdominal abscess if the gallstones were not retrieved. The diagnosis of intra-abdominal abscess caused by unretrieved gallstone can usually be correctly identified in the routine imaging studies, such as abdominal ultrasonography or computed tomography (CT). Here we present a case of abscess formation from unretrieved gallstone following laparoscopic cholecystectomy, which mimics the imaging findings of metastatic gallbladder adenocarcinoma.

CASE SUMMARY

This case described a 78-year-old man who received laparoscopic cholecystectomy and gallbladder adenocarcinoma was diagnosed after surgery. After adjuvant chemotherapy, the following up abdominal CT showed several small nodules at right upper abdomen and peritoneal carcinomatosis is considered. Repeated laparoscopic surgery for the excision of seeding tumor was conducted and the pathological diagnosis of the nodules and mass was inflammatory tissues and gallbladder stone.

CONCLUSION

Spilled gallstones are a common complication during laparoscopic cholecystectomy and some gallstones fail to be retrieved due to the size or the restricted view of laparoscopic surgery. For spilled gall bladder stones, surgeons may consider regular computerized tomography follow-up, and if necessary, laparoscopic examination can be used as a means of confirming the diagnosis and treatment.

Key Words: Laparoscopic cholecystectomy; Gallstone spillage; Gallbladder cancer; Mimicked cancerous; Case report

©The Author(s) 2024. Published by Baishideng Publishing Group Inc. All rights reserved.

Core Tip: Gallstones spillage frequently occurs during laparoscopic cholecystectomy. Surgeons should consider complete removal of spilled gallbladder stones, and follow-up with computed tomography (CT) imaging to detect abnormal nodule or abscess formation early after operation. However, CT cannot make a good differential diagnosis of abscess or malignant tumor metastasis. Laparoscopy can effectively obtain cell and tissue for the pathological diagnosis and treatment, and is a good tool for diagnosis and treatment.

Citation: Huang CK, Lu RH, Chen CC, Chen PC, Hsu WC, Tsai MJ, Ting CT. Spilled gallstone mimicking intra-abdominal seeding of gallbladder adenocarcinoma: A case report. *World J Gastrointest Surg* 2024; 16(2): 622-627

URL: <https://www.wjgnet.com/1948-9366/full/v16/i2/622.htm>

DOI: <https://dx.doi.org/10.4240/wjgs.v16.i2.622>

INTRODUCTION

Laparoscopic cholecystectomy is now the main approach for the treatment of benign or malignant gallstone diseases. During surgery, gallbladder rupture is common because the gallbladder is usually affected by acute or chronic inflammation. Evidence suggests that iatrogenic gallbladder perforation does not increase the incidence of complications during laparoscopic cholecystectomy[1,2]. However, gallstones may sometimes spill into the peritoneal cavity, resulting in intra-abdominal abscess if the gallstones are not retrieved[3]. The diagnosis of intra-abdominal abscess caused by unretrieved gallstones can usually be correctly achieved *via* routine imaging methods, such as abdominal ultrasonography or computed tomography (CT)[4]. Here, we present a case in which abscess formation occurred from an unretrieved gallstone following laparoscopic cholecystectomy, which mimics the imaging findings of metastatic gallbladder adenocarcinoma.

CASE PRESENTATION

Chief complaints

Suspect peritoneal carcinomatosis detected *via* abdominal CT.

History of present illness

This case involved a 78-year-old man who was diagnosed with gallbladder adenocarcinoma in 2022. The patient had a history of gallbladder stones for more than ten years and experienced postprandial abdominal pain for one month before seeking medical assistance at another hospital. Abdominal CT was performed. The original abdominal CT images were not obtainable. The patient was told that he had gallbladder stones and a gallbladder tumor with 1.8 cm in diameter. The patient then went to another hospital for surgical advice. Physical examination and imaging studies were also conducted to assess his condition. Laboratory findings, including alpha-fetoprotein, liver function, the tumor marker carcinoembryonic antigen (CEA), carbohydrate antigen 125 (CA125) and CA199, were unremarkable. The creatinine concentration was slightly elevated at 1.3 mg/dL (normal < 1.2 mg/dL). Abdominal echo revealed multiple gallbladder stones and a polypoid lesion 1.8 cm in length located at the gallbladder fundus. The extrahepatic bile duct was normal. Laparoscopic cholecystectomy was suggested, but the risk of malignancy and possible further surgery were considered. The patient understood the risk and decided to undergo laparoscopic cholecystectomy only first. The surgery was performed in July 2022. Pathology of the gallbladder revealed the presence of a biliary type, moderately differentiated adenocarcinoma invading the perimuscular connective tissues on the peritoneal side. The pathological stage was pT2aN1MX. Extended resection was suggested, but the patient refused. The patient came to our hospital for a second opinion. The patient still declined further surgical intervention and was willing to receive adjuvant chemotherapy only. Six cycles of standard chemotherapy, including capecitabine and gemcitabine, were administered from August 2022 to March 2023.

The patient's chemotherapy regimen was changed to oral tegafur, gimeracil and oteracil. Repeat laparoscopic surgery for the excision of the seeding tumor was conducted in June 2023. During the surgery, several small nodules were found on the pelvic wall and omentum and were excised. One larger nodule was noted on the surface of the S7 segment of the liver. During excision, the liver nodule ruptured, and the content was a cholelith-like mass with abscess (Figure 1).

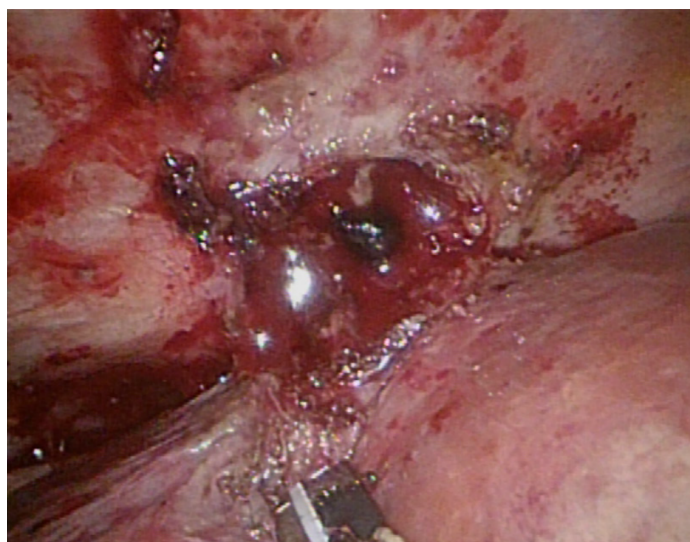


Figure 1 Cholelith-like mass with abscess on the surface of the S7 segment of the liver.

History of past illness

The patient had a history of benign prostatic hyperplasia.

Personal and family history

He denied smoking or alcohol consumption, and did not report any family history of malignant tumors.

Physical examination

The patient's vital signs were as follows: Body temperature, 36.3 °C; blood pressure, 108/56 mmHg; heart rate, 70 beats per min; respiratory rate, 17 breaths per min. The patient had clear consciousness and no skin jaundice. There was no abdominal tenderness.

Laboratory examinations

From August 2022 to March 2023, the tumor marker levels, including the CEA, CA125 and CA199 levels, were within the normal ranges.

Imaging examinations

Follow-up abdominal CT was performed in August 2022 and showed several small nodules in the right upper abdomen. The largest nodule measured 1.0 cm in diameter. Peritoneal carcinomatosis was considered. Another two follow-up abdominal CT scans were performed in December 2022 and March 2023. The presence of several small nodules located near the liver was still noted. In addition, the largest nodule was 1.3 cm in diameter and had increased in size (Figure 2). Local recurrence, lymph node metastasis or peritoneal metastasis was considered. Whole-body positron emission tomography revealed several small nodules in the right subphrenic and subhepatic spaces (Figure 3). Peritoneal seeding was first considered.

FINAL DIAGNOSIS

Pathology revealed that the nodules and mass were inflammatory tissues and gallbladder stones, without any evidence of tumor seeding or metastasis (Figure 4).

TREATMENT

The patient was discharged four days after surgery in stable condition.

OUTCOME AND FOLLOW-UP

At 6 months after surgery, the patient was still alive.

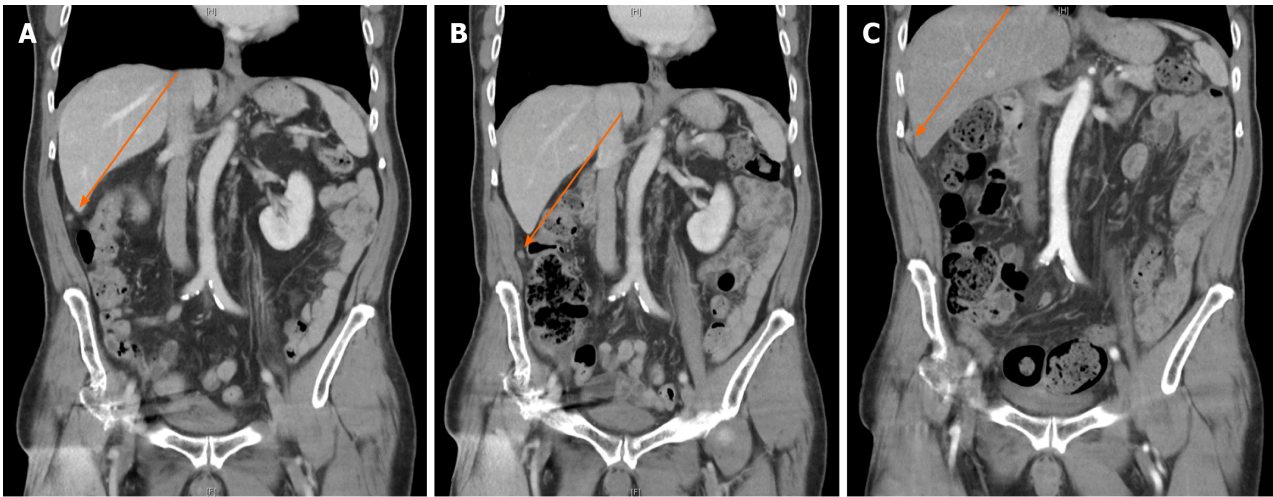


Figure 2 Suspected local recurrence or metastasis on abdominal computed tomography scan. A: August 2022; B: December 2022; C: March 2023.

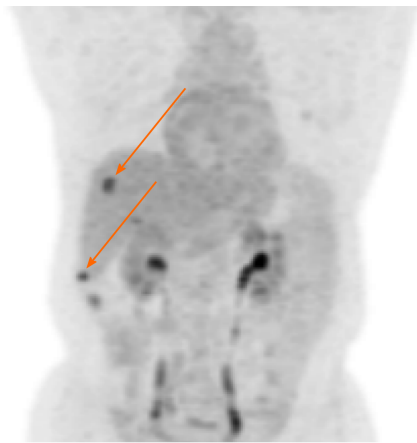


Figure 3 Suspected tumor seeding via whole-body positron emission tomography.

DISCUSSION

Gallstone spillage frequently occurs during laparoscopic cholecystectomy. Most of the time, spilled gallstones do not need medical treatment as long as no discomfort occurs. However, spilled gallstones can potentially lead to the formation of abscesses, and in some cases, surgical intervention may be required if the abscess persists and causes symptoms despite conservative treatment. Furthermore, spilled gallstones may also increase the risk of recurrence or metastasis of gallbladder cancer by 39%-54%[5]. The accurate diagnosis of spilled gallstones can be challenging, particularly when dealing with small abscesses. There are also instances where the presence of residual gallstones can be misinterpreted as cancerous growth or metastasis, as demonstrated in our case.

Alongside our case, we conducted a literature review of seven cases of spilled gallstones that mimicked cancerous presentations following laparoscopic cholecystectomy (Table 1). All patients initially underwent laparoscopic cholecystectomy for the treatment of nonmalignant gallbladder diseases. The interval between laparoscopic cholecystectomy and the discovery of abnormal findings suggestive of malignancy ranged from 3 months to 4 years. Among these patients, 5 had incidental abnormal nodules, while in 2 patients, the discovery of abnormal nodules was prompted by the presence of additional clinical symptoms, such as abdominal pain. In 2 patients, the nodules were incidentally discovered and subsequently removed during cesarean section, while the remaining patients underwent additional surgical interventions, such as exploratory laparotomy, before the correct diagnosis of spilled gallstones could be established. All patients had a nonmalignant pathological diagnosis after the second surgery.

In contrast to previous cases, our case involved gallbladder adenocarcinoma, stage IIIb, which necessitated surgical reintervention due to the potential risk of local recurrence or peritoneal metastases, which could not be ruled out following the initial surgery. When considering the choice of surgical method, laparoscopy may be given priority due to its advantages, including reduced postoperative pain, lower morbidity, and a shorter hospital stay than laparotomy. Furthermore, laparoscopy is particularly suitable when spilled gallstones are included among the differential diagnoses.

Table 1 Case reviews: Study characteristics of spilled stones mimicking cancer

Ref.	Patient's age and sex	Time after laparoscopic cholecystectomy	Symptoms	Imaging	Treatment	Tumor marker (CEA and CA199)
Dasari <i>et al</i> [7], 2009	67 yr/female	2 yr	Repeat attack of lower abdominal pain	CT	Diagnostic laparoscopy	Normal range
Arai <i>et al</i> [8], 2012	65 yr/male	4 yr	No	Ultrasound CT, MRI	Partial resection of the liver and right diaphragm	Normal range
McVeigh <i>et al</i> [9], 2012	37 yr/female	3 yr	No	No	Removed during C/S	Not mentioned
Kim <i>et al</i> [10], 2016	59 yr/male	5 months	Constant abdominal pain	CT, MRI	Exploratory laparotomy	Normal range
Suarez-Zamora <i>et al</i> [11], 2017	29 yr/female	2 yr	No	No	Removed during C/S	Not mentioned
Jeong <i>et al</i> [12], 2018	59 yr/male	3 months	No	CT, PET CT	Exploratory laparotomy	Normal range
Capolupo <i>et al</i> [13], 2018	73 yr/male	6 months	No	CT	Explorative laparoscopy	Not mentioned

MRI: Magnetic resonance imaging; CT: Computed tomography; PET-CT: Positron emission tomography/computed tomography; CEA: Carcinoembryonic antigen; CA199: Carbohydrate antigen 19-9.

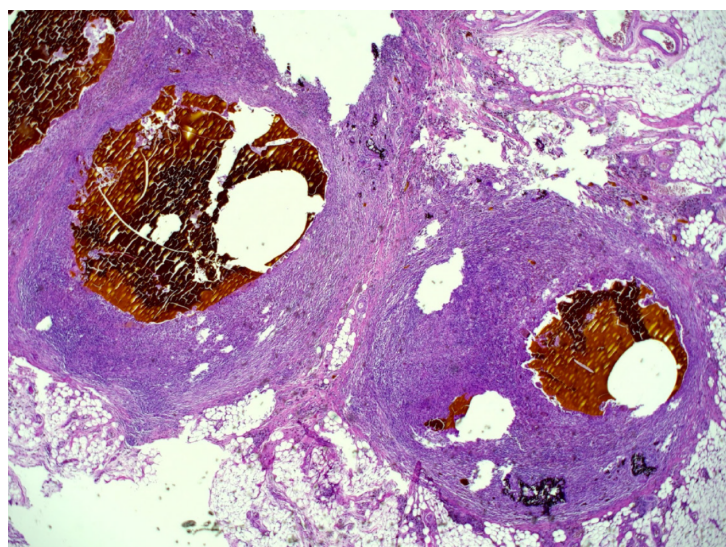


Figure 4 Histological examination of the partial resection resection omentum. Brownish foreign body substances were present and surrounded by purulent inflammatory cells and foreign body giant cells. Brownish the brownish foreign material was stone.

Currently, there is no definite consensus on whether surgeons should strive to completely remove spilled gallstones during laparoscopic surgery or switch to open surgery[6]. Given the common occurrence of gallstone spillage, physicians should consider spilled gallstones as a potential etiology of abnormal nodules or abscess formation after laparoscopic surgery.

This case report can provide physicians with valuable information. Surgeons should consider complete removal of spilled gallbladder stones and follow up with CT scans to detect abnormal nodules or abscess formation early after surgery. However, CT cannot aid in the accurate differential diagnosis of abscess or malignant tumor metastasis. Laparoscopy can be used to obtain cells and tissue effectively and is a good tool for diagnosis and treatment.

CONCLUSION

Spilled gallstones are a common complication during laparoscopic cholecystectomy, and some gallstones cannot be retrieved due to their size or a restricted view during laparoscopic surgery. In addition to trying to retrieve spilled gallstones, surgeons should obtain detailed surgical records about iatrogenic gallbladder perforation for other physicians

or surgeons to have a better way to make correct differential diagnoses and provide medical treatment. For spilled gallbladder stones, surgeons may consider regular CT scan follow-up, and if necessary, laparoscopic examination can be used as a means of confirming the diagnosis and treatment.

FOOTNOTES

Author contributions: Huang CK, Lu RH, and Ting CT contributed to manuscript writing and editing; Chen CC, Chen PC, Hsu WC and Tsai MJ contributed to conceptualization and supervision; and all authors have read and approved the final manuscript.

Informed consent statement: Informed consent was obtained from the patient for publication of this report and any accompanying images.

Conflict-of-interest statement: All the authors report no relevant conflicts of interest for this article.

CARE Checklist (2016) statement: The authors have read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE Checklist (2016).

Open-Access: This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <https://creativecommons.org/licenses/by-nc/4.0/>

Country/Territory of origin: Taiwan

ORCID number: Cheng-Ken Huang [0009-0005-1662-6870](https://orcid.org/0009-0005-1662-6870).

S-Editor: Wang JJ

L-Editor: A

P-Editor: Zheng XM

REFERENCES

- Hui TT, Giurgiu DI, Margulies DR, Takagi S, Iida A, Phillips EH. Iatrogenic gallbladder perforation during laparoscopic cholecystectomy: etiology and sequelae. *Am Surg* 1999; **65**: 944-948 [PMID: [10515540](https://pubmed.ncbi.nlm.nih.gov/10515540/)]
- Evans L, Sams E, Naguib A, Hajibandeh S. Iatrogenic gallbladder perforation during laparoscopic cholecystectomy and outcomes: a systematic review and meta-analysis. *Langenbecks Arch Surg* 2022; **407**: 937-946 [PMID: [35039923](https://pubmed.ncbi.nlm.nih.gov/35039923/) DOI: [10.1007/s00423-022-02439-2](https://doi.org/10.1007/s00423-022-02439-2)]
- Zulfikaroglu B, Ozalp N, Mahir Ozmen M, Koc M. What happens to the lost gallstone during laparoscopic cholecystectomy? *Surg Endosc* 2003; **17**: 158 [PMID: [12399867](https://pubmed.ncbi.nlm.nih.gov/12399867/) DOI: [10.1007/s00464-002-4242-1](https://doi.org/10.1007/s00464-002-4242-1)]
- Bennett AA, Gilkeson RC, Haaga JR, Makkar VK, Onders RP. Complications of "dropped" gallstones after laparoscopic cholecystectomy: technical considerations and imaging findings. *Abdom Imaging* 2000; **25**: 190-193 [PMID: [10675465](https://pubmed.ncbi.nlm.nih.gov/10675465/) DOI: [10.1007/s002619910043](https://doi.org/10.1007/s002619910043)]
- Horkoff MJ, Ahmed Z, Xu Y, Sutherland FR, Dixon E, Ball CG, Bathe OF. Adverse Outcomes After Bile Spillage in Incidental Gallbladder Cancers: A Population-based Study. *Ann Surg* 2021; **273**: 139-144 [PMID: [30998534](https://pubmed.ncbi.nlm.nih.gov/30998534/) DOI: [10.1097/SLA.0000000000003325](https://doi.org/10.1097/SLA.0000000000003325)]
- Demirbas BT, Gulluoglu BM, Aktan AO. Retained abdominal gallstones after laparoscopic cholecystectomy: a systematic review. *Surg Laparosc Endosc Percutan Tech* 2015; **25**: 97-99 [PMID: [25304733](https://pubmed.ncbi.nlm.nih.gov/25304733/) DOI: [10.1097/SLE.0000000000000105](https://doi.org/10.1097/SLE.0000000000000105)]
- Dasari BV, Loan W, Carey DP. Spilled gallstones mimicking peritoneal metastases. *JSLs* 2009; **13**: 73-76 [PMID: [19366546](https://pubmed.ncbi.nlm.nih.gov/19366546/)]
- Arai T, Ikeno T, Miyamoto H. Spilled gallstones mimicking a liver tumor. *Clin Gastroenterol Hepatol* 2012; **10**: A32 [PMID: [22801058](https://pubmed.ncbi.nlm.nih.gov/22801058/) DOI: [10.1016/j.cgh.2012.06.026](https://doi.org/10.1016/j.cgh.2012.06.026)]
- McVeigh G, McComiskey M, McCluggage WG. Peritoneal bile granulomas identified at Cesarean section and mimicking disseminated malignancy. *Int J Surg Pathol* 2012; **20**: 89-91 [PMID: [21632640](https://pubmed.ncbi.nlm.nih.gov/21632640/) DOI: [10.1177/1066896911409930](https://doi.org/10.1177/1066896911409930)]
- Kim BS, Joo SH, Kim HC. Spilled gallstones mimicking a retroperitoneal sarcoma following laparoscopic cholecystectomy. *World J Gastroenterol* 2016; **22**: 4421-4426 [PMID: [27158213](https://pubmed.ncbi.nlm.nih.gov/27158213/) DOI: [10.3748/wjg.v22.i17.4421](https://doi.org/10.3748/wjg.v22.i17.4421)]
- Suarez-Zamora DA, Barrera-Herrera LE, Caceres-Mileo R, Palau-Lazaro MA. Intraperitoneal Granulomas Unexpectedly Found during a Cesarean Delivery: A Late Complication of Dropped Gallstones. *Case Rep Pathol* 2017; **2017**: 4873273 [PMID: [29333309](https://pubmed.ncbi.nlm.nih.gov/29333309/) DOI: [10.1155/2017/4873273](https://doi.org/10.1155/2017/4873273)]
- Jeong H, Lee HW, Jung HR, Hwang I, Kwon SY, Kang YN, Kim SP, Choe M. Bile Granuloma Mimicking Peritoneal Seeding: A Case Report. *J Pathol Transl Med* 2018; **52**: 339-343 [PMID: [30008197](https://pubmed.ncbi.nlm.nih.gov/30008197/) DOI: [10.4132/jptm.2018.06.02](https://doi.org/10.4132/jptm.2018.06.02)]
- Capolupo GT, Mascianà G, Carannante F, Caricato M. Spilled gallstones simulating peritoneal carcinomatosis: A case report and literature review. *Int J Surg Case Rep* 2018; **48**: 113-121 [PMID: [29885915](https://pubmed.ncbi.nlm.nih.gov/29885915/) DOI: [10.1016/j.ijscr.2018.04.016](https://doi.org/10.1016/j.ijscr.2018.04.016)]



Published by **Baishideng Publishing Group Inc**
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA

Telephone: +1-925-3991568

E-mail: office@baishideng.com

Help Desk: <https://www.f6publishing.com/helpdesk>

<https://www.wjgnet.com>

