

Case Report: Comprehensive Management of Hepatolithiasis: Diagnostic Challenges, Therapeutic Approaches, and Postoperative Outcomes

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ABSTRACT

Background: Hepatolithiasis, characterized by the presence of intrahepatic bile duct stones, is a relatively rare but significant condition that can lead to recurrent cholangitis, liver abscesses, biliary cirrhosis, and even cholangiocarcinoma. The condition poses diagnostic and therapeutic challenges due to its complex presentation and the intricate anatomy of the biliary tree.

Case Presentation:

Management and Outcomes: Due to the presence of intrahepatic stones, laparoscopic cholecystectomy was performed, facilitating further stone clearance. Surgical intervention, was necessary to address refractory stone burden and prevent recurrence. Postoperative follow-up demonstrated significant clinical improvement, normalization of liver function tests, and no evidence of recurrent stones over a 12-month period.

Conclusion: This case highlights the importance of a comprehensive, multidisciplinary approach in the management of hepatolithiasis. Advances in endoscopic and radiological techniques, combined with surgical expertise, are crucial in achieving optimal outcomes. Further research is warranted to refine diagnostic criteria and therapeutic strategies for this complex condition.

KEYWORDS: hepatolithiasis, bile, stones, surgery, laparoscopic.

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INTRODUCTION

Hepatolithiasis, the presence of calculi within the intrahepatic bile ducts, is an uncommon but clinically significant condition, particularly prevalent in East Asian countries. It is associated with a spectrum of hepatobiliary complications, including recurrent cholangitis, hepatic abscesses, biliary cirrhosis, and an increased risk of cholangiocarcinoma. The pathogenesis of hepatolithiasis is multifactorial, involving biliary stasis, infection, and genetic predispositions. The clinical presentation varies widely, ranging from asymptomatic cases to severe, life-threatening conditions.^{1,2,3}

Diagnosing hepatolithiasis is challenging due to its nonspecific symptoms and the complex anatomy of the biliary tree. Imaging modalities such as ultrasonography, computed tomography (CT), and magnetic resonance cholangiopancreatography (MRCP) play a pivotal role in identifying intrahepatic stones and associated biliary anomalies. However, definitive diagnosis and therapeutic

planning often require endoscopic and/or percutaneous cholangiographic procedures.^{3,4}

Management of hepatolithiasis necessitates a multifaceted approach. Endoscopic techniques, including endoscopic retrograde cholangiopancreatography (ERCP) and cholangioscopy, are first-line therapies for stone extraction and biliary drainage. In cases where endoscopic methods fail or are incomplete, percutaneous and surgical interventions become essential. Partial hepatectomy may be indicated for extensive intrahepatic stone disease or in the presence of significant biliary strictures.^{5,6,7}

This article presents a case of hepatolithiasis managed through a surgical approaches. The case underscores the complexity of this condition and the necessity for a tailored, patient-specific treatment strategy to achieve favorable outcomes. Through this detailed case report, we aim to contribute to the existing knowledge on hepatolithiasis, emphasizing the importance of interdisciplinary collaboration in managing this challenging biliary disorder.

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CASE REPORT

A 74-year-old male patient began his illness on 02/26/2024 with fevers and chills where he went to his first contact unit where he was referred to the second level of care where an abdominopelvic CT scan was performed, finding a hepatic

abscessed collection in segment 6 with loss of the interface of the hepatic wall of the gallbladder in addition to simple hepatic cysts. (Fig.1) Gallbladder with irruption towards the liver with hyperdense contents.

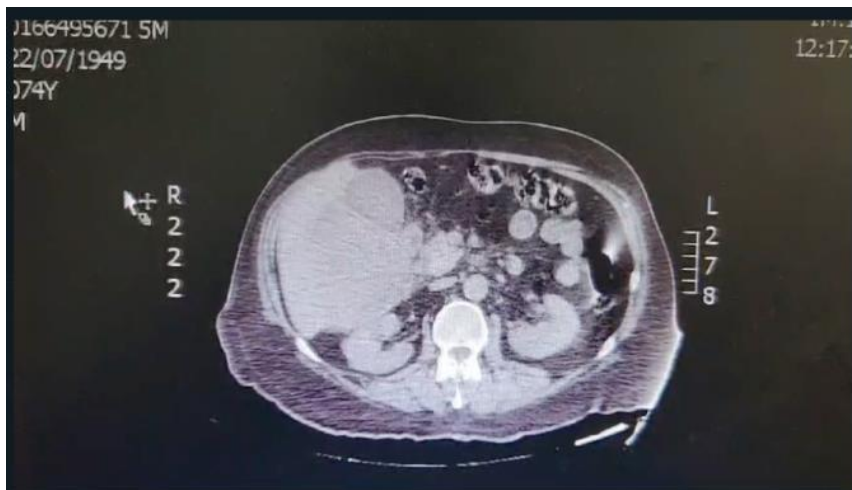


Figure 1. Hepatic abscessed collection in segment 6 with loss of the liver wall interface

Surgical intervention is planned to drain the liver abscess, as well as Hahnemann C reconstititional subtotal cholecystectomy.

With prior informed consent, the patient is admitted to the operating room and under balanced general anesthesia, a trocar is placed in the umbilical scar of 30 for laparoscopy optoc, subsequently the abdomen is insufflated with CO₂ at 8 mmHg, and a second subxiphoid trocar is placed, the third in the right hypochondrium in clavicular midline, and fourth trocar 5 cm below the third trocar, Parkland 5 gallbladder is found (Figure 5), it is located in segment V and I saw abscessed cyst with multiple stones inside, without

communication to the gallbladder, approximately 200 are drained. ml of and solution is instilled until semi-clear liquid is obtained, the posterior wall of the gallbladder is dissected and a subtotal cholecystectomy is performed with vicryl 3-0 usp with stitches to the mucosa, and a second line of suture with the same caliber of vicryl in the thickness of the wall, hemostasis is subsequently verified and a saratoga type drain is placed and the port is closed in 2 planes with vicryl 1-0 usp and b skin with nylon 3-0 usp plus fixation of the drain to the skin with nylon 3-0 usp and it is finished procedure without incident or accident.



Figure 2. Gallbladder parkland 5

Surgical findings: Parkland 5 gallbladder, diaphragmatic side of the liver macroscopically intact, with abscess in segment V and VI, type V biliary cyst was found according to Todani's classification (Figure 3), with the presence of intrahepatic

lithiasis. Finding multiple stones inside the cavitation with pus, detritus, fibrin membranes and bile, approximately 200 ml of the contents of the liver were drained. abscess, subsequently the posterior wall of the gallbladder is dissected

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and a Hahnemann c, subsequently, the abscess was drained and the stones found were removed through laparoscopy reconstructive subtotal cholecystectomy is performed.

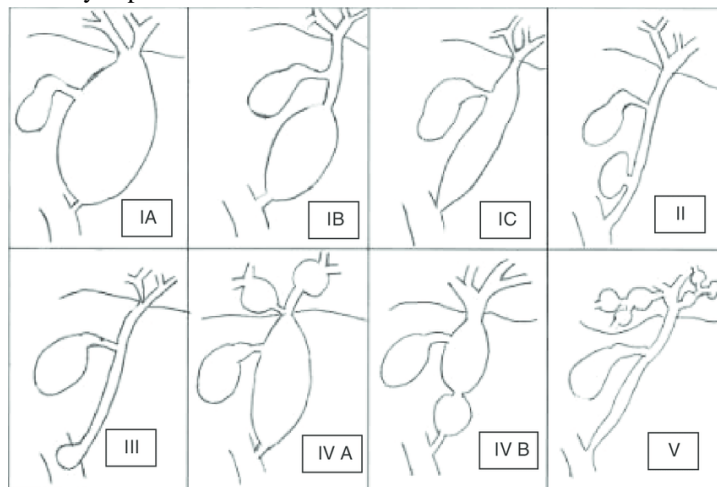


Figure 3. Todani classification.

CONCLUSION

In this clinical case, a patient was diagnosed with a type V biliary cyst according to Todani's classification, presenting with intrahepatic lithiasis. Laparoscopic intervention allowed for effective drainage of the abscess and removal of the identified stones, resulting in the resolution of symptoms and the prevention of further complications.

Rarity and Importance of Diagnosis and Treatment

Type V biliary cysts, are extremely rare. They represent an uncommon variant of choledochal cysts, characterized by segmental dilatation of the intrahepatic bile ducts. The low prevalence of this condition contributes to delayed diagnosis and limited familiarity with its management among healthcare professionals.

Importance of Treatment

Multidisciplinary Management: Effective treatment requires a multidisciplinary approach, involving gastroenterologists, radiologists, and surgeons, underscoring the need for precise and early diagnosis.

Specialized Surgical Procedures: Laparoscopic intervention, as performed in this case, is a minimally invasive technique that allows for efficient drainage of abscesses and removal of biliary stones, reducing the risk of recurrent infections and improving the patient's quality of life.

Prevention of Recurrence: Timely and appropriate management of type V biliary cysts is crucial in preventing recurrent cholangitis, reducing the risk of liver damage, and preventing the development of malignancies.

Laparoscopic intervention, was sufficient for complete stone clearance in our patient, allowing for enhanced visualization and removal of residual intrahepatic stones. This underscores the importance of a stepwise approach, utilizing multiple modalities to achieve optimal stone clearance and prevent recurrence.

Surgical intervention, was ultimately required to address the persistent stone burden and to mitigate the risk of future complications. This case demonstrates that while less invasive methods are preferable and often sufficient, surgical options remain a crucial component of the therapeutic armamentarium for refractory cases of hepatolithiasis. The decision to proceed with surgery should be individualized, based on the extent of the disease, patient's overall health, and response to initial therapies.

The postoperative course of our patient was marked by significant clinical improvement, normalization of liver function tests, and absence of recurrent stones over a follow-up period of 6 months. This favorable outcome attests to the efficacy of a comprehensive, multidisciplinary management strategy. It also highlights the importance of diligent postoperative follow-up to monitor for potential recurrence, given the chronic and recurrent nature of hepatolithiasis.

In conclusion, this case reinforces several key principles in the management of hepatolithiasis. First, a high index of suspicion and the use of advanced diagnostic modalities are essential for timely and accurate diagnosis. Second, a combination of endoscopic, percutaneous, and surgical interventions tailored to the individual patient's needs can achieve effective stone clearance and prevent recurrence. Third, multidisciplinary collaboration among gastroenterologists, radiologists, and surgeons is paramount to optimize outcomes in patients with hepatolithiasis.

Finally, further research is warranted to better understand the pathophysiology of hepatolithiasis, develop less invasive therapeutic techniques, and establish standardized guidelines for its management. Through continued advancements in medical and surgical technology, we can aspire to improve the prognosis and quality of life for patients afflicted with this challenging hepatobiliary disorder.

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