

Delayed Bile Leak Presenting One Week after Laparoscopic Cholecystectomy due to Biliary Ascariasis: A Case Report with Review of Literature

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Abstract

Background: Bile leak is a recognized but uncommon complication of laparoscopic cholecystectomy, with an incidence ranging between 0.3% and 2%. Most cases occur within a few days post-operatively; however, delayed presentation beyond one week is rare and can be diagnostically challenging.

Case Presentation: We present a case of a 28-year-old female who developed upper abdominal pain and low-grade fever one week following laparoscopic cholecystectomy. Ultrasound revealed a localized subhepatic fluid collection. Patient underwent USG-guided pigtail insertion in the subhepatic space and peri-splenic space. MRCP revealed mild beaking of postoperative fluid towards the cystic duct remnant region, likely a bile leak originating from the cystic duct stump. The patient underwent ERCP for stenting, and incidentally, a worm was seen in the CBD. The patient was managed successfully with ERCP-guided CBD stenting and worm removal from the CBD.

Conclusion: Delayed bile leak, though uncommon, should be suspected in any patient presenting with abdominal pain and distension of the abdomen. Early imaging and a minimally invasive management strategy can prevent serious morbidity.

Keywords: Bile Leak, Delayed Complication, Laparoscopic Cholecystectomy, ERCP, Cystic Duct Stump, Bilioma

1. Introduction

Laparoscopic Cholecystectomy (LC) has become the gold standard for treating symptomatic gallstone disease due to its low morbidity and short recovery time. However, bile duct injuries and leaks remain among the most serious complications, with reported incidences of 0.3–2% [1,2]. Bile leaks may originate from the cystic duct stump, accessory biliary ducts (Ducts of Luschka), or inadvertent injury to the extrahepatic bile ducts [3]. While most leaks occur within the first few postoperative days, delayed bile leaks presenting beyond a week are rare and may be mistaken for abscesses or postoperative seromas [4]. Recognition and management are crucial to prevent peritonitis, abscess formation, and sepsis. This report highlights a case of delayed bile leak presenting one week after laparoscopic cholecystectomy and

discusses the available literature on its management.

2. Case Presentation

We present a case of a 28-year-old female who developed upper abdominal pain and low-grade fever one week following laparoscopic cholecystectomy. Ultrasound revealed a localized subhepatic fluid collection. Patient underwent USG-guided pigtail insertion in the subhepatic space and peri-splenic space. MRCP revealed mild beaking of postoperative fluid towards the cystic duct remnant region, likely a bile leak originating from the cystic duct stump (Figure 1). The patient underwent ERCP for stenting, and incidentally, a worm was seen in the CBD (Figure 2). The patient was managed successfully with ERCP-guided CBD stenting and worm removal from the CBD.



Figure 1: Cystic Duct Stump Leak (MRCP)

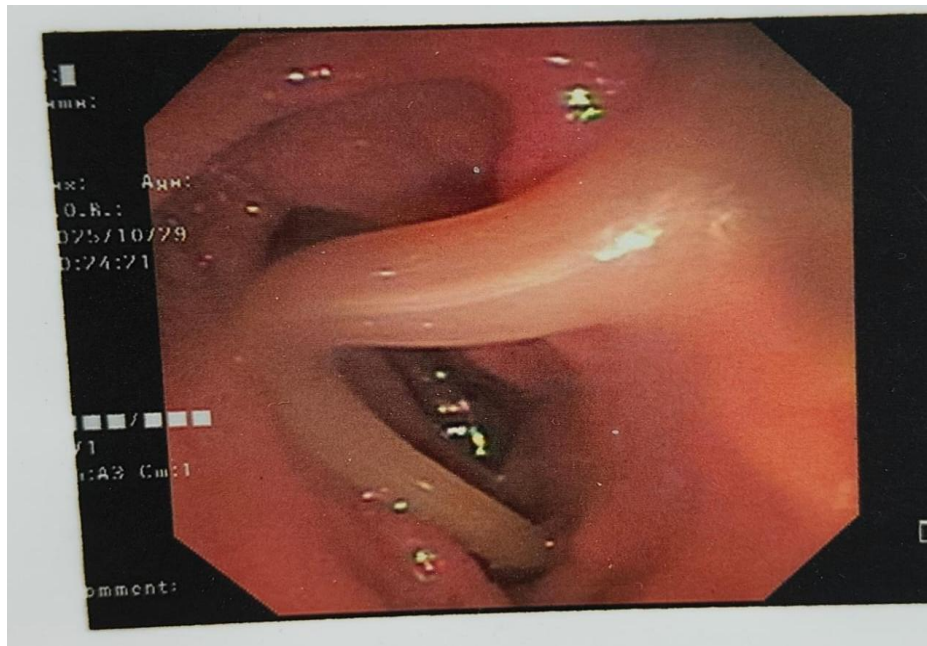


Figure 2: CBD with Worm

2.1. Clinical Findings

The patient was febrile on admission and had mild right hypochondrial tenderness. The laparoscopic port sites were healthy.

• Investigations

- Hemoglobin: 8.6g/dL
- Total Leucocyte Count: 19000/mm³ (Mild Leukocytosis)
- Serum Bilirubin: 2.1 mg/dL
- Alkaline Phosphatase: Mildly elevated
- Ultrasound Abdomen: Revealed a 100 ml subhepatic collection.

- MRCP: localized collection with communication from the cystic duct stump, suggesting a Type A (Strasberg) bile leak.

The patient underwent ERCP, which demonstrated contrast extravasation from the cystic duct stump and a worm in the CBD. A 10 Fr biliary stent was placed after removing the worm, and percutaneous pigtail drainage was inserted to evacuate the bilioma. The patient's condition improved gradually. The drain output reduced to less than 10 mL/day over 5 days and was removed on postoperative day 6 after intervention. The stent was

removed endoscopically after six weeks. The patient remained asymptomatic during three months of follow-up.

3. Discussion

Bile leak remains a challenging postoperative complication after LC. The most common sites include the cystic duct stump (75%), the ducts of Luschka (19%), and the common bile duct (6%) [3,5]. In most cases, bile leaks manifest within the first 3–5 days after surgery. Delayed bile leaks (≥ 7 days postoperatively) are rare and often result from gradual clip slippage, cystic duct necrosis, or infection-related ductal erosion [6].

3.1. Diagnosis

Patients typically present with right upper quadrant pain, fever, or persistent bilious drainage.

Ultrasound can identify fluid collections, but MRCP offers better delineation of the biliary anatomy and site of leakage. Hepatobiliary Scintigraphy (HIDA Scan) is highly sensitive in detecting active bile leaks, particularly when the leak is intermittent or of small volume [7].

3.2. Management

Management depends on the severity and location of the leak:

- Minor leaks (Strasberg type A): Managed with ERCP and sphincterotomy \pm biliary stenting [3].
- Major duct injuries (Strasberg types D or E): Require surgical repair such as Roux-en-Y hepaticojejunostomy [8].
- Associated Biloma: Managed by percutaneous catheter drainage. Early endoscopic intervention reduces intraductal pressure and facilitates closure of the leak [9]. The combination of ERCP with stent placement and percutaneous drainage is now considered the gold standard for most minor bile leaks.

4. Review of Literature

Several studies have reported successful management of post-cholecystectomy bile leaks with minimally invasive approaches.

- Sandha et al., proposed an ERCP-based classification and reported endoscopic therapy success in 93% of patients [3].
- Schmidt et al., reviewed 79 patients with major bile duct injuries and found that early recognition significantly improved long-term outcomes [8].
- Sharma et al., emphasized the role of HIDA scan in detecting bile leaks when MRCP findings were equivocal [7].
- Bhandari et al., reported that delayed leaks (> 7 days) were more likely related to clip displacement or ductal necrosis and had favorable outcomes with ERCP stenting alone [10].

Overall, literature supports a stepwise, minimally invasive approach beginning with imaging, ERCP, and drainage, reserving surgical intervention for refractory or major duct injuries.

5. Conclusion

Delayed bile leak following laparoscopic cholecystectomy is an uncommon but important postoperative complication. It should be suspected in patients presenting with right upper quadrant pain, fever, or bilious discharge beyond the first postoperative week. Early diagnosis through MRCP or HIDA scan, and prompt management with ERCP-guided stenting and drainage, results in excellent outcomes. A multidisciplinary approach involving surgeons, interventional radiologists, and gastroenterologists ensures optimal recovery.

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