

Biloma Post-Cholecystectomy: A Prudent “Wait-and-See” Approach

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Abstract

Bile duct injury (BDI) is a well-known complication of cholecystectomy and can lead to the formation of a variety of complications, including biloma. Once diagnosed, the appropriate treatment depends on the severity of the condition and can range from minimally invasive procedures to more invasive procedures. We report the case of a 31-year-old woman who exhibited postoperative bile leakage after a cholecystectomy and a CT scan revealed a left hepatic subcapsular biloma. The patient was managed conservatively with close monitoring. The biloma resolved on its own without any intervention. Bilomas are rare complication of cholecystectomy that can be managed conservatively with a wait and see approach, especially in asymptomatic patients. Close monitoring with imaging and laboratory parameters is crucial in the management of these patients.

Keywords

Laparoscopic Cholecystectomy, Bile Duct Injury, Biloma, Conservative Treatment

1. Introduction

Cholecystectomy is still associated with a high risk of bile duct injury which can lead to bile leakage and the formation of a variety of complications, including intra-abdominal collection, fistula, and potentially bile peritonitis [1] [2].

In some cases, the leaked bile may form an encapsulated intra-peritoneal collection known as a biloma [3]. The term “biloma” was first introduced by Gould and Patel in 1979 to describe an encapsulated collection of extrahepatic bile resulting from bile leakage into the peritoneal cavity [4] [5]. However, the term has since been expanded to include any well-circumscribed intra-abdominal bile

collection external to the biliary tree, encapsulated or not [6] [7].

As per the research conducted by Vazquez and colleagues, when bile accumulation occurs rapidly within a brief timeframe, it tends to be encapsulated and may lead to peritonitis. Conversely, when the leakage and accumulation happen gradually, it results in only mild inflammation of the biliary tract and peritoneum [6].

To diagnose a biloma, various radiological techniques such as ultrasound, computed tomography (CT), magnetic resonance imaging (MRI), may be utilized [8].

The severity of the condition will determine the appropriate treatment, which can range from minimally invasive procedures such as ultrasound guided drainage, endoscopic retrograde cholangiopancreatography (ERCP) and sphincterotomy to more invasive procedures such as hepaticojejunostomy [8] [9].

2. Case presentation

Chief Complaint: Patient is a 31-year-old woman who came into the emergency room with acute constant pain in the right hypochondrium with a slight fever.

History of Present Illness: Patient had been experiencing recurring abdominal pain for several months, but did not seek treatment, the pain recently became acute and constant, accompanied by a slight fever.

Physical Examination: Revealed a stable patient with no jaundice. Abdominal palpation showed guarding in the upper right quadrant.

Diagnostic Work-up: Lab work revealed an elevated white blood cell count of $16.10 \times 1000/\mu\text{l}$ (4.8 - 10.8), with a C-Reactive Protein level at 200. An ultrasound was performed, which showed a thick-walled gallbladder (11 mm) distended at 9 cm. The ultrasound was consistent with acute cholecystitis.

Treatment and Management: The patient was started on a course of antibiotics administered intravenously.

Follow-up: After 48 hours of treatment, the patient exhibited significant clinical improvement. We considered either a laparoscopic cholecystectomy on day three or continuing with oral treatment followed by a deferred laparoscopic cholecystectomy. However, on day three, the patient's condition deteriorated, prompting a decision to proceed with surgical management. Consequently, the patient was admitted to the operating room for a cholecystectomy via laparotomy.

Despite the inflammatory complications, the cholecystectomy was completed with a subhepatic drain and multitubular blade left in place. On the fourth day after the operation, bile leakage was observed from the blade drainage, which persisted for two more days. Since the patient was recovering well, she was discharged with the subhepatic drain for continued outpatient monitoring.

During the next week, 15 ml of bile discharged daily, however the patient remained stable. On day 10, bile leakage stopped, on the other hand C-RP level increased. Due to MRI unavailability, a CT scan was performed.

CT showed a left hepatic subcapsular collection containing liquid content with

thin walls, not enhanced after contrast. Measuring $117 \times 54 \times 92$ mm. Imaging suggests a biloma of hepatic segment IV (**Figure 1**).

We had to decide between an ultrasound-guided percutaneous drainage, which required a specialized radiologist and proper equipment, or to keep monitoring the patient who was recovering well. Since we lacked the necessary tools, we chose to remove the drain, stop antibiotics, and plan weekly check-ups and a CT scan scheduled after a month. We proceeded with a physical examination every 4 days, with lab work performed every week. Since the follow-up was satisfactory, we continued the same rhythm of surveillance, up until the scheduled CT by the end of the month.

Outcome: Evolution was satisfactory. Patient fully recovered with no clinically evident complication and her blood work remained within normal range. Six weeks after the diagnosis of the biloma, a CT was performed, and the results were favorable (**Figure 2**). The subcapsular collection had completely disappeared.

3. Discussion

While laparoscopic cholecystectomy (LC) is the preferred treatment for symptomatic gallbladder disease, open cholecystectomy (OC) is often performed as a last resort when LC is unsuccessful. However, due to a lack of necessary laparoscopic equipment in government hospitals, OC remains a common procedure in certain parts of the world, such as Morocco [10] [11].

Biliary leakage is a serious complication that can occur after cholecystectomy, with rates ranging from 0.2% to 2.2% [12]. This complication is often associated

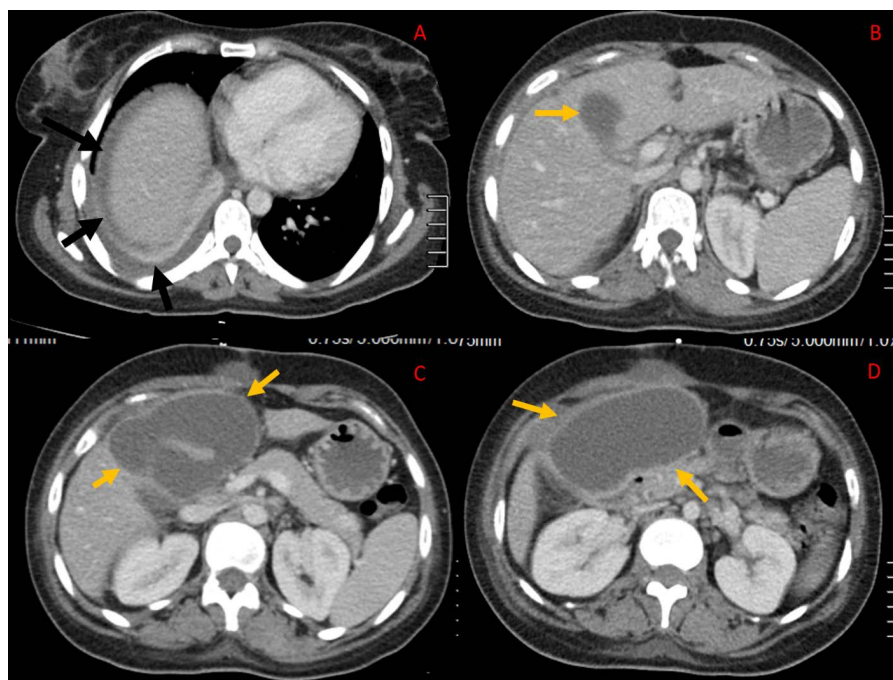


Figure 1. (A) Black arrows point to free fluid around the liver. (B)-(D) Subcapsular collection of liquid content, not enhanced after contrast. Yellow arrows correspond to the biloma.

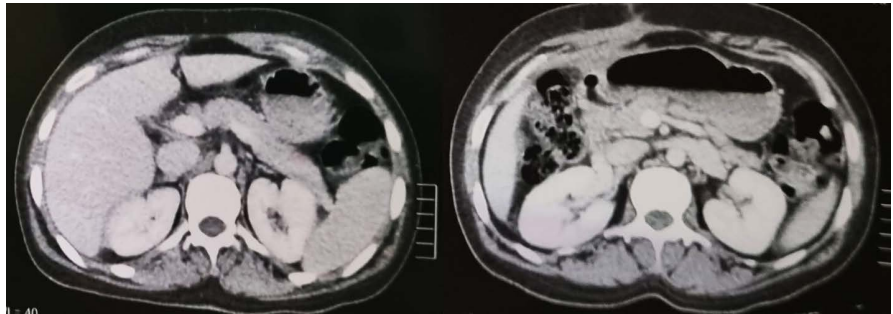


Figure 2. Abdominal CT: Total disappearance of the subcapsular collection along with the free fluid around the liver.

with Bile duct Injury, and is included in many widely used classifications [13]. The exact incidence of biliary leakage during OC is unknown, most large series have reported rates of 0.5% or less [2] [6] [14].

Biloma formation is commonly caused by biliary injuries, which can result in bile leakage and subsequent infections. Bilomas can also cause mass effect on the surrounding tissues [2] [7]. Prompt diagnosis and appropriate management are crucial to prevent significant morbidity and mortality.

Inadvertent injury to the common bile duct or excessive use of cauterization or laser can lead to biliary fistulas, along with other factors such as inexperienced surgeons or unsuccessful clipping of the cystic duct. [9] [15].

Biliary fistulas can often go undetected during surgery regardless of the lesion's nature, with patients experiencing symptoms like abdominal pain, peritonitis, or sepsis postoperatively [15]. In this case, bile in drainage was the only indication.

Ultrasound is effective in identifying bilomas, but the preferred method for diagnosing this complication is through the utilization of Computed Tomography [6]. Early imaging of the biliary tree is crucial to ascertain the location and extent of bile leaks [8].

Mini-invasive procedures, like endoscopic sphincterotomy and stenting, are preferred for minor injuries, while surgical reconstruction is best for major injuries. The initial step in management can be percutaneous drainage of bilomas, with further treatment dependent on the patient's progress [4] [7] [8] [9] [10].

The main objective of endoscopic therapy is to diminish the transpapillary pressure gradient. This leads to an enhancement in transpapillary flow and a reduction in extravasation from the bile duct leakage. Alongside decompressing the biliary system, the implantation of a stent serves to seal the defect, functioning as a bridge at the site of extravasation. Endoscopic therapy encompasses procedures such as biliary sphincterotomy in isolation, the insertion of a biliary stent, or the use of nasobiliary drainage, either individually or in combination [15].

Since we lacked the resources for the above-mentioned procedures, we took a different approach in our primary care setting. While surveillance is seldom mentioned due to the risk of biloma infection, we opted for close outpatient monitoring as an alternative approach, which produced excellent results for our patient who presented no clinical symptoms and declined transfer. Our aim is to

offer a new approach for low-income settings and guide further recommendations for this challenging complication.

4. Conclusion

The management of a biloma following cholecystectomy requires a careful assessment of the patient's condition and the severity of the complication. Various imaging techniques, such as ultrasound and CT, are essential for accurate diagnosis, while treatment options range from minimally invasive procedures to more invasive surgical interventions. In this case, a wait-and-see approach can also be effective in managing the condition see approach with the patient being monitored closely for signs of improvement or deterioration. Overall, this case highlights the importance of careful monitoring and individualized treatment approaches in the management of postoperative complications.

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Declarations

Ethical Approval

Not applicable.

Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

Authors' Contributions

MBI wrote the manuscript, and operated as primary surgeon. YD prepared the figures and was the radiologist on the case. All authors reviewed the manuscript.

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Availability of Data and Materials

The authors confirm that the data supporting the findings of this study are available within the article.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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