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Choledocholithiasis Without a Gallbladder: A Case of Agenesis in an Elderly Woman: A Case Report and Review of Literature

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Abstract: ***Gallbladder agenesis is a rare congenital condition marked by the absence of the gallbladder and cystic duct due to embryonic developmental failure. It is often diagnosed incidentally. We present a case of a 69-year-old woman with cholangitis from choledocholithiasis, where imaging revealed gallbladder agenesis, confirmed during laparoscopic common bile duct exploration.***

Keywords: gallbladder agenesis, biliary symptoms, diagnostic challenge, common bile duct stones, intraoperative diagnosis

1.Introduction

Gallbladder agenesis (GA) is a rare congenital anomaly of the biliary system, with a reported incidence ranging from 0.007% to 0.027% in surgical series[1]. It is estimated that up to 50% of patients with GA will develop common bile duct (CBD) stones, and 23% may present with symptoms mimicking biliary colic or cholelithiasis[2]. The diagnosis of GA is often challenging, as routine investigations frequently fail to identify the condition, and it is commonly established incidentally during laparotomy or laparoscopy. We present a case of gallbladder agenesis in an elderly female patient who presented with biliary symptoms and was ultimately diagnosed intraoperatively after preoperative imaging suggested the absence of the gallbladder.

Abbreviations:

GA: Gallbladder agenesis
CBD: Common bile duct
LSCS: Lower segment Cesarean section
ERCP: Endoscopic retrograde cholangiopancreatography
MRCP: Magnetic resonance cholangiopancreatography
ERC: Endoscopic retrograde cholangiography
WES triad: Wall–Echo–Shadow triad (Wall visualization, Echo of a stone, Acoustic shadow)

2.Case Presentation

A 79-year-old female presented with a 2-month history of intermittent, localized, and colicky pain in the epigastric region. The pain was aggravated by food intake and relieved by medication. She reported no history of vomiting, fever. Her past medical history was significant for a lower segment Cesarean section (LSCS) 50 years prior. She had history of cholangitis one day prior to admission, she had undergone endoscopic retrograde cholangiopancreatography (ERCP) and stenting at another hospital, during which a single stone was not amenable to endoscopic retrieval. There was no previous history of laparoscopic cholecystectomy.

Pre-operative imaging, including an ultrasound of the abdomen performed on February 13, 2025, suggested the absence of the gallbladder. The ultrasound report noted that the gallbladder was not visualized, the common bile duct (CBD) view was suboptimal, and the proximal CBD was dilated (10 mm), with the distal CBD obscured by bowel gas. The impression was dilated intrahepatic bile ducts and common bile duct. Subsequent magnetic resonance cholangiopancreatography (MRCP) performed on February 15, 2025, showed dilated right and left hepatic ducts, common hepatic duct (11 mm), and CBD (12.2 mm) due to a distal CBD calculus obstruction (15x18 mm) and an absent Gallbladder. MRCP is considered the gold standard for suspected GA and for demonstrating an ectopic gallbladder or other biliary tract anomalies[4].

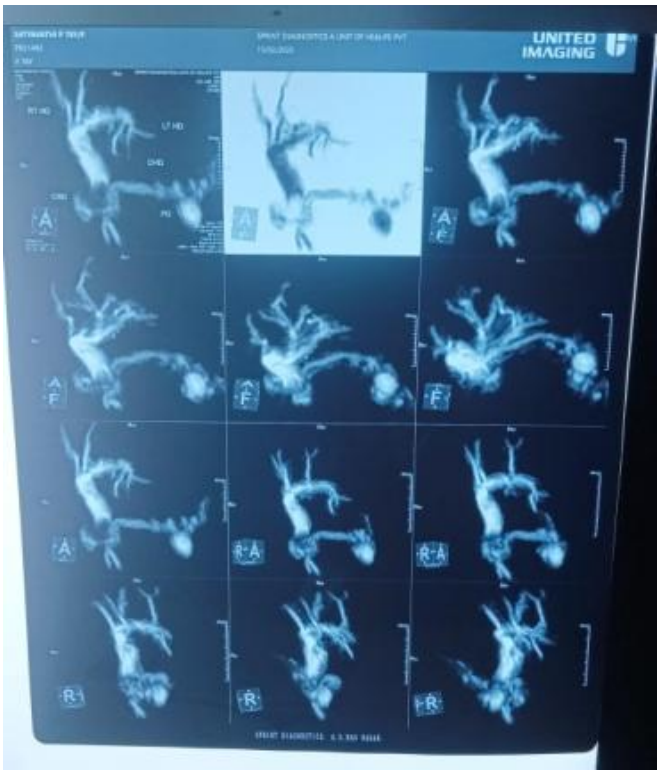

Figure 1: MRCP (Pre-stenting) showing dilated bile ducts and absent gallbladder.

Based on the history and persistent symptoms and the imaging findings patient was planned for the laparoscopic CBD exploration.

Intraoperative Findings

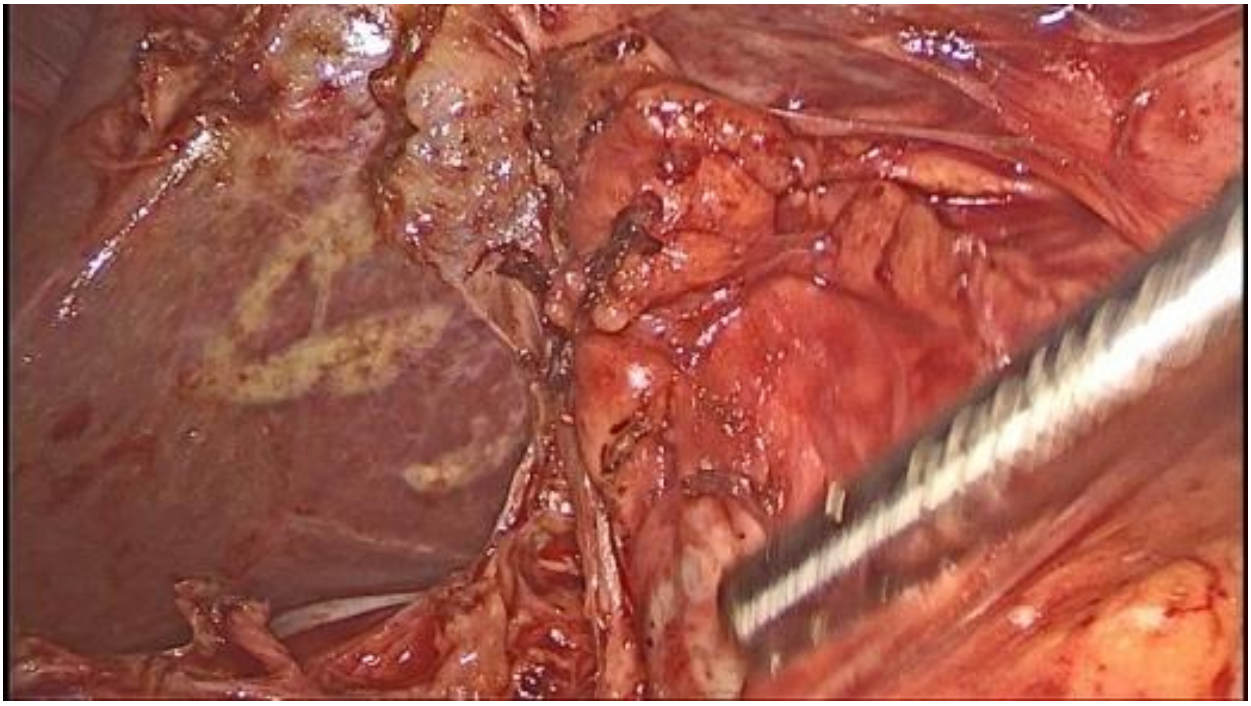

Figure 2: Intraoperative view showing surrounding dense omental adhesions and no gallbladder or gallbladder bed

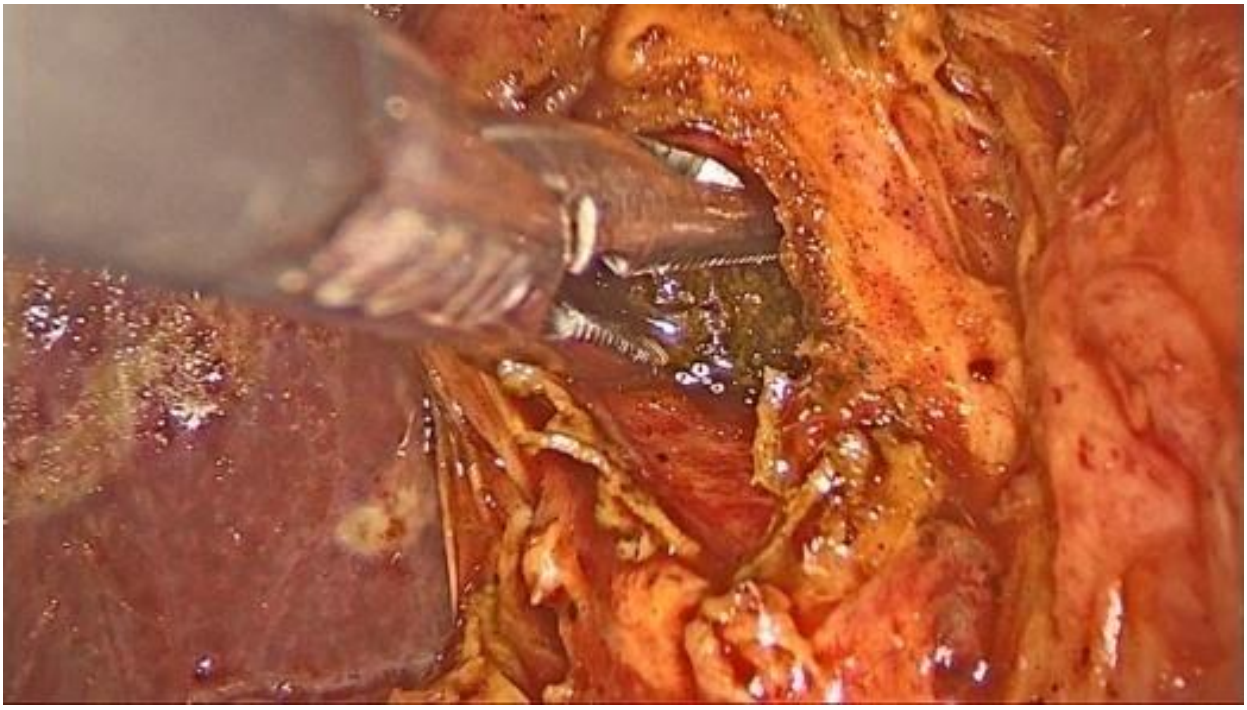

Figure 3: Close-up view stone being removed after choledochotomy

The CBD exploration revealed a single stone in the CBD. The procedure was uneventful. The post-operative period was uneventful, and the sub-hepatic drain placed intraoperatively was removed on post-operative day 2, followed by discharge.

3.Discussion

Gallbladder agenesis is a rare congenital condition resulting from an anomaly during the development of the cystic bud from the foregut in the fourth week of in utero life. While often asymptomatic, approximately 55.6% of patients with GA are symptomatic (Reference). The commonly complaints are right upper quadrant pain (90%), nausea and/or vomiting

(66%), fatty food intolerance (37.5%), dyspepsia, bloating, or occasional jaundice. These symptoms frequently mimic other common biliary tract conditions, such as cholelithiasis.

The diagnostic challenge in GA is highlighted by this case. Despite the use of MRCP, which is considered the gold standard for diagnosing GA, its confirmation was made intraoperatively. This aligns with literature stating that routine investigations often fail to diagnose GA, and the diagnosis is usually established incidentally during surgery. Preoperative abdominal ultrasound frequently fails to diagnose GA due to factors like gas artifact or periportal tissue, leading to misdiagnosis of a shrunken or contracted gallbladder. The WES triad (Wall visualization, Echo of a stone and acoustic Shadow) should raise suspicion for GA when abnormalities are noted[12].

In our patient, the absence of the gallbladder on both ultrasound and MRCP was highly suggestive of agenesis, but the confirmation was made during laparoscopic exploration. The persistence of symptoms and the confirmed CBD stone (with ERC and failed CBD clearance) necessitated surgical intervention, leading to the intraoperative diagnosis of GA. This case underscores the importance of considering GA in the differential diagnosis for patients presenting with biliary colic symptoms, especially when imaging studies fail to visualize the gallbladder clearly.

While some experts recommend conversion to laparotomy or intraoperative cholangiography during surgery when the gallbladder is absent[17], other investigators discourage these approaches due to potential complications and recommend laparoscopic approach to confirm the diagnosis. In our case, the laparoscopic approach was maintained, and the absence of the gallbladder was confirmed, leading to successful CBD exploration and stone removal without further complications. The management of GA is often conservative with smooth muscle relaxants and sphincterotomy, but in cases of symptomatic choledocholithiasis, intervention is necessary.

4.Conclusion

Although rare, gallbladder agenesis should be considered as a differential diagnosis in patients presenting with biliary symptoms, even in the elderly [18] (Reference). Preoperative imaging, particularly MRCP is considered the gold standard, but intraoperative confirmation remains common. Awareness of this rare condition is crucial to avoid unnecessary interventions and to guide appropriate management strategies.

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