

Ectopic Liver Found on Gall Bladder Wall during Laparoscopic Cholecystectomy

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Abstract

Introduction: Ectopic liver tissue is an uncommon finding and may be found in multiple abdominal sites, most commonly on the gall bladder. It is usually asymptomatic and is discovered incidentally during cholecystectomy, but there are potential complications. We present a case of an ectopic liver seen on the gallbladder serosa during laparoscopic cholecystectomy being performed for symptomatic cholelithiasis, and briefly review the literature.

Case Presentation: A 52 year old female with past medical history of hypertension and ovarian cysts presented with abdominal pain postprandial. Abdominal CT and ultrasound demonstrated multiple gallstones in the gallbladder. She subsequently underwent a laparoscopic cholecystectomy after optimization of her blood pressure. During the procedure, a 3cm ectopic liver lobe was noted on the gallbladder serosa. This was removed with the gallbladder without complication.

Discussion: The prevalence of ectopic liver is 0.47% in case series, with 13 seen on cadaveric anatomic studies of 5500 autopsies. It is usually asymptomatic but complications may occur, which include bleeding, torsion, cirrhosis and malignant transformation. There are less than 100 cases reported in the literature. Any general surgeon who may encounter this phenomenon should be aware of the potential complications of this uncommon finding.

Keywords: Gallbladder; Ectopic Liver; Accessory Liver; Cholecystectomy

Introduction

An accessory liver lobe is an incidental finding which is most commonly discovered during surgery or autopsy and is generally asymptomatic [1]. It has an incidence of 0.24–0.48% and a prevalence of 0.47% [2]. It is defined as accessory liver tissue when the hepatic tissue is connected to the native liver and ectopic liver (EL) when the ectopic hepatic tissue is not directly connected to the liver [3–5]. EL has been found both above and below the diaphragm; in the abdominal cavity, the gallbladder is the primary location [5–9]. There is a possibility of malignant transformation into hepatocellular carcinoma (HCC), and with the broad differential diagnoses of gallbladder wall masses, EL can be a challenging but crucial diagnosis for surgeons to make [5]. Here we present a case of an ectopic liver that was incidentally found attached to gallbladder wall during laparoscopic cholecystectomy

Presentation of Case

A 52-year-old woman with past medical history of essential hypertension and ovarian cysts presented for evaluation of intermittent right upper quadrant (RUQ) abdominal pain. Her pain was localized to the RUQ and occurred after meals. It was 8/10 in severity, non-radiating and associated with vomiting and diaphoresis. On physical examination, the abdomen was soft, non tender and had no palpable masses. The laboratory data revealed no leukocytosis and minimal increased liver enzymes, with aspartate transaminase (AST) level of 43 U/L (0–40) and alanine transaminase (ALT) level of 47 U/L (0–41). Abdominal ultrasonography was consistent with multiple calculi in gallbladder and fatty infiltration of the liver (Figure 1). No masses were identified. Abdominal computed tomography (CT) scan showed the presence of 3 partially calcified calculi with no evidence of gallbladder wall thickening or pericholecystic fluid (Figure 2). No masses were identified on the preoperative review of the CT scan. She underwent elective laparoscopic cholecystectomy after optimization of her blood pressure. During diagnostic laparoscopy, a 3cm accessory liver lobe was noted on the serosal surface of the gallbladder. This accessory liver lobe was removed along with the gallbladder without any complications. The histopathological evaluation of the specimen revealed benign hepatic parenchyma. The patient did well with complete resolution of her symptoms, and was discharged home on second postoperative day. The CT was reviewed in light of the intraoperative findings and the ectopic lobe was identified.

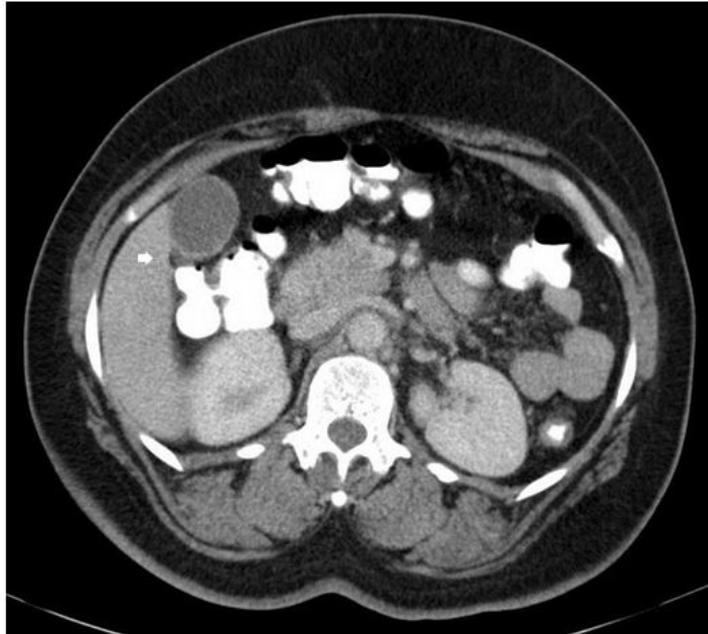


Figure 1: 3 CT demonstrating partially calcified calculi with no evidence of gallbladder wall thickening or pericholecystic fluid. Arrow indicates the ectopic liver lobe.

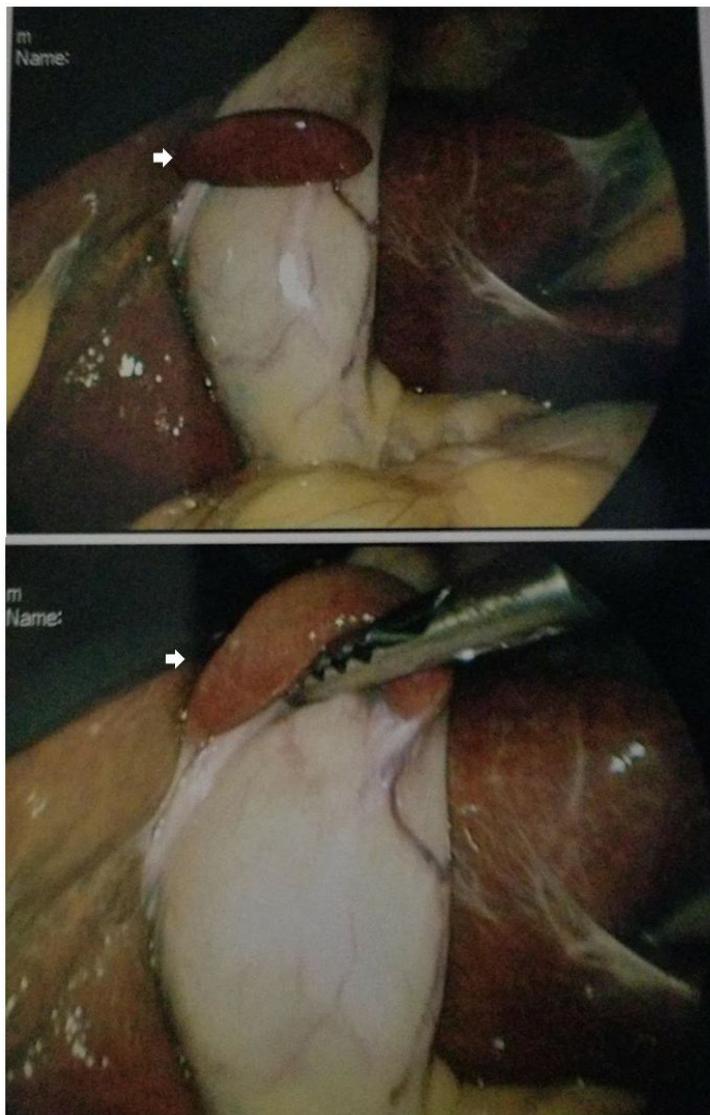


Figure 2: Incidental finding of ectopic liver lobe (arrow), 3 cm in size, was noted on the serosal surface of the gallbladder

Discussion

There are fewer than 100 reported cases of EL in the literature [10]. In a study of 5500 autopsies, 13 cases of EL were found, of which 3 were attached to the gallbladder [11]. The prevalence of EL was found to be 0.47% in a laparoscopic series of 1060 cases [12]. The gallbladder is the most common site for EL but it can be found in intra-, extra-, and retroperitoneal sites including the hepatic ligaments, diaphragm, omentum, stomach, thorax and retroperitoneum. Ectopic livers are thought to arise from anomalous embryological developments with most accepted explanation includes aberrant migration of pars hepatica of the liver bud to distant sites [13,14]. Further explanations involve trapping of the hepatocyte destined mesenchyme and entrapment of cell nests in various locations. These include the region of the foregut following diaphragm or umbilical ring closure, or adherence to the gallbladder as accessory liver with atrophy or regression of the connection to the main liver [15-18]. Dorsal budding of hepatic tissue before pleuroperitoneal canal closure has also been proposed as a cause of ectopic liver [19]. Although the ectopic tissue is usually attached to the serosa of the gallbladder, the close relationship between the cystic portions and the parenchymal cell cords of the primitive liver may explain why ectopic liver can also occur within the gallbladder wall [13,16]. Agenesis of the caudate lobe, bile duct cysts, biliary atresia and omphalocele are some congenital anomalies associated with EL [20].

There are two major classification systems for EL. The first classification is based on the biliary drainage and presence of a common capsule, and the second is based on the anatomic location of the EL [21,22].

As in our case EL usually remains asymptomatic and is mostly an incidental finding during surgery. When symptomatic, it may present with elevated liver enzymes and upper abdominal pain due to complications such as torsion, bleeding, and fatty changes. Evolution to cirrhosis or malignant degeneration to hepatocellular carcinoma is having also been described [23]. Malignancy arising in the ectopic liver tissue should not be considered occult metastasis from a primary hepatocellular carcinoma [24].

Similar to primary liver, EL can show fatty infiltration, cholestasis, hepatitis, hemosiderosis, cirrhosis, or malignant transformation [10,19-23]. In a review of hepatocellular carcinoma cases related to EL reported in Japan the EL was noted to have increased susceptibility to develop HCC [22]. It was proposed that as EL does not have a complete vasculature or ductal system it is prone to chronic inflammation or cirrhosis which leads to the increased rate of malignant transformation. EL on the gallbladder is less susceptible to HCC development as compared to EL found in other regions with 1 out of 42 EL tissues on the gallbladder was deemed malignant [25].

The important concern during gallbladder surgery arises because EL can present with its own blood supply. When present on the gallbladder, the blood supply may arise as vascular structures embedded in the mesentery lying adjacent to the liver parenchyma, vascular pedicle arising with or without its own vein from the liver parenchyma, or an artery arising from the cystic artery [26]. It is therefore important to define the blood supply of EL in order to prevent any hemorrhage during surgery.

As in our case, radiological exam is often not sufficient to detect EL without a high index of suspicion. It is imperative that surgeons be aware of this anomaly in order to prevent any intraoperative complications and rule out above described congenital associations.

Conclusion

Resection of ectopic liver and histologic examination can prevent complications such torsion and malignant transformation. Knowing definitive anatomy and types of ectopic liver is imperative for surgeon as it can present with their own blood supply and can cause uncontrolled hemorrhage.

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