

## Case Report

## Ectopic Liver Tissue on the Gallbladder: An Incidental Mass in Laparoscopy

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### Abstract

Ectopic liver is a rare developmental abnormality. It is often asymptomatic and could be determined during the surgery. Although it could be detected in different areas of the body either below or above of the diaphragm, ectopic liver is usually found on the wall of the gallbladder. The importance of the ectopic liver came from the elevated risk of development of hepatocellular carcinoma from ectopic tissue. Ectopic liver tissue could also mimic malign masses in radiographic studies. Ultrasound-guided percutaneous biopsies could be helpful for preoperative diagnosis. Recently, widespread usage of laparoscopic techniques caused an increase on the description of ectopic liver tissues located on the gallbladder. Due to the potential risk of developing malignancy the resection of the mass should be the preferred approach for an incidentally or intraoperatively diagnosed ectopic liver tissue.

**Keywords:** Ectopic liver, gallbladder, incidental mass, laparoscopy

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### Introduction

Ectopic liver is a developmental abnormality. Histologically, the ectopic liver tissue has the same properties with the mother liver. But it is not observed in its normal localization and has no connection with mother liver parenchyma. Ectopic liver is usually found on the wall of the gallbladder, however, it is also observed in hepatic ligament, omentum, diaphragm, retroperitoneal area, and intrathoracic area.<sup>1</sup> This abnormality is very rare. Ectopic liver can be observed as a mass in its ectopic localizations mimicking malignant masses; therefore it needs differential diagnosis from malignancies. A definitive diagnosis can be done after the removal of the mass and pathologic examination. Here we present a gallbladder associated ectopic liver, which was resected laparoscopically.

### Case Report

A 43-year-old female presents with complaints of colic right upper quadrant pain. The story was non-specific. Physical examination revealed tenderness in deep palpation on the right upper quadrant. On hepatobiliary ultrasonography (USG), millimetric stone formations were observed in the gallbladder. Laboratory findings were normal. A laparoscopic cholecystectomy (LC) operation was performed. A 1.5 cm diameter mass was observed on the serosal surface of the gallbladder wall intraoperatively (Figure 1). It was clearly lined and slightly raised from the surface. The mass was also in similar color with the normal liver tissue. But there was not any connection with the mother liver. The gallbladder resected with the mass. Pathologic examination revealed

that the mass had similar properties with the liver parenchyma. However, there were not any bile duct within the mass (Figure 2).

### Discussion

Ectopia is often described as the displacement or the malposition of an organ or a body part. Ectopic liver was first described in 1922.<sup>2</sup> In fact, developmental abnormalities of the liver including ectopia are very rare. An aberrant migration during embryologic development of liver is accepted as the reason of ectopic liver by most of the researchers.<sup>3</sup> Ectopic liver tissues were identified on the various sites of the human body independent from the mother liver, such as thorax, the umbilical cord, intra or extra pleural, retroperitoneal, jejunal, pancreas gland, adrenal glands, spleen, falciform ligament, pylorus, esophagus or pericardiac.<sup>4-10</sup> On the other hand, ectopic liver tissue is most often observed on gallbladder.<sup>4</sup> Watanabe, et al. reported 0.47% incidence in their laparoscopic series.<sup>4</sup> They also described the formation and different localizations of ectopic liver as an abnormal embryologic development.<sup>4</sup>

Collan, et al. have classified ectopic liver tissues according to the mother liver and histopathologic appearance: a) the ectopic tissue, which has no connection with mother liver, but typically located on gallbladder or intraabdominal ligaments; b) microscopically observed ectopic liver tissue, most often located on gallbladder; c) a large accessory liver lobe connected to the mother liver (pediculated liver); d) a small accessory liver lobe connected to the mother liver.<sup>10</sup> But this classification was not widely accepted by scientists. Most of the authors classified the ectopic and accessory liver tissues separately, according to whether they have a connection with mother liver or not.<sup>10</sup>

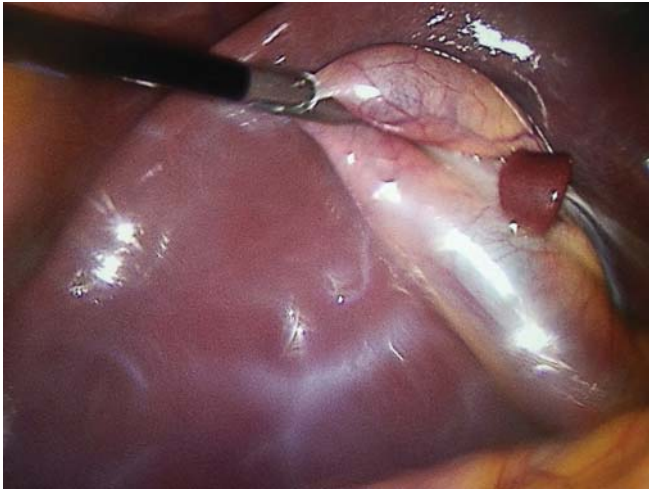
Ectopic liver tissue is most often clinically asymptomatic, however it can cause bleeding, torsion, rupture, infarct, hemorrhagic necrosis or other emergency situations.<sup>2</sup> Therefore, the first clinical sign of ectopic liver could be an acute complication of the above mentioned situations.

Ectopic liver could be associated with other congenital abnor-

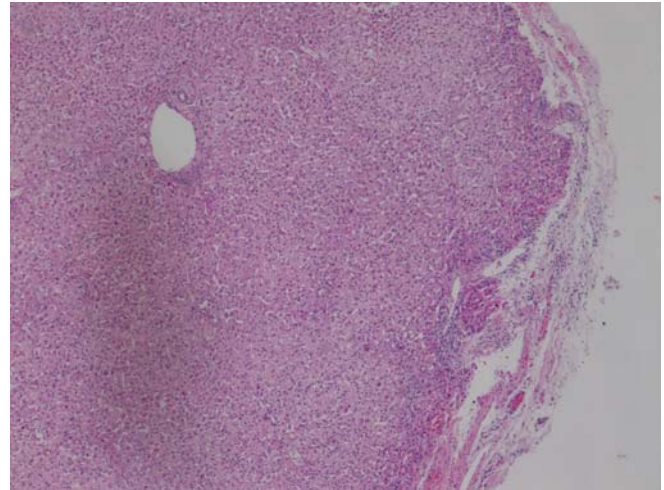
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**Figure 1.** Ectopic liver tissue observed in laparoscopy



**Figure 2.** Pathologic appearance of the ectopic liver tissue

malities such as biliary atresia, caudate lobe agenesis, omphalocele, bile duct cysts, cardiac or conotruncal abnormalities. These abnormalities are not observed if the ectopic liver is located on the gallbladder.<sup>2,11</sup>

The hepatocytes of ectopic liver tissue have the same properties with the mother liver. Therefore, fatty changes, haemosiderosis, cholestasis or cirrhosis could be observed in ectopic liver.<sup>2</sup>

There are some studies in the literature that indicate the development of adenomas, hemangiomas or focal nodular hyperplasia from ectopic liver tissue.<sup>10</sup> However, the risk of developing malignancy is more than the risk of development of a benign lesion.<sup>10</sup> It was also mentioned that, ectopic liver tissue is more prone to development of malignancy than the mother liver parenchyma.<sup>12,13</sup> Malignancy of the ectopic liver tissue is frequent especially in Japan. In most of these cases, there were not any malignant transformation in the mother liver parenchyma.<sup>10</sup> Ectopic liver has normal liver anatomy, however it has some metabolic problems. Ectopic liver is thought to increase the malignancy risk.<sup>10</sup> The absence of vascular feeding and biliary drainage could cause chronic inflammation and cirrhosis, and increases the risk of hepatocellular carcinoma (HCC) development in ectopic liver tissue.<sup>10,12,13</sup>

The risk of malignant potential is the basis for surgical resection for ectopic liver. In fact, ectopic liver tissues are most often described incidentally secondary to the main operation and diagnosed histopathologically. The main problem is the differential diagnosis of the incidental mass from the malignancies and the need for preoperative diagnosis. USG guided percutaneous biopsies could be helpful for preoperative diagnosis.<sup>14</sup> In addition to USG or computed tomography (CT), Hepatobiliary Imino Diastetic Acid (HIDA) scan is also helpful for diagnosis. Colour doppler USG or angiography could show a feeding vessel.<sup>11</sup>

In recent years, widespread usage of laparoscopic techniques caused an increase on the description of ectopic liver tissues located on the gallbladder. Because of the risk of development of malignant transformation on the ectopic liver tissue, surgeons should be careful. In case of detecting HCC in the ectopic liver tissue, a secondary surgical approach to extend the surgical margins and regional lymphadenectomy is necessary.<sup>2</sup>

In conclusion, ectopic liver tissue should be kept in mind if any focal mass is identified on the gallbladder or around the liver parenchyma on imaging modalities. Although, ectopic liver is often asymptomatic, potential risk of malignant transformation makes this tissue necessary to be resected if diagnosed.

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