



## Case reports

## Laparoscopic management of an isolated primary omental hydatid cyst: A case report and literature review

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## ABSTRACT

Primary isolated omental hydatid cysts are extremely rare. Usually, omental hydatid cysts are secondary, either resulting from spontaneous spread of cysts or occurring after operations involving hydatidosis in other regions. Here, we report a case of a primary isolated omental hydatid cyst treated with a laparoscopic approach.

We report a 16-year-old female who admitted to hospital with right upper quadrant pain. Abdominal ultrasonography and computed tomography (CT) revealed a cyst located between the liver and right kidney. The cyst was enucleated from the omentum and removed with a laparoscopic approach. Histopathologic examination revealed a hydatid cyst. There was no recurrence during 3 years of follow-up. Primary isolated omental hydatid disease should be considered in patients in endemic regions with intra-abdominal cysts. Laparoscopic surgery seems to be effective and safe for hydatid cysts in accessible locations.

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## 1. Introduction

Echinococcosis (hydatid cyst disease) is a zoonotic infection caused by the larvae of *Echinococcus granulosus*, *E. multilocularis*, *E. vogeli*, and *E. oligarthrus*.<sup>1</sup> It is endemic in many areas, including Mediterranean countries, the Middle East, South America, Australia, and New Zealand.<sup>2,3</sup> Approximately 50–70% of hydatid cysts are localized in the liver. The second most frequent site is the lungs, accounting for 20–30% of all cysts. Less frequently, the spleen, kidneys, heart, bones, muscle, central nervous system, and other organ systems are affected.<sup>4–6</sup>

Omental hydatid cysts form secondary to iatrogenic or spontaneous rupture of intra-abdominal hydatid cysts. Primary isolated omental hydatid cysts are extremely rare. Since first reported by Volavsek in 1943, only eleven cases of primary isolated omental hydatid cyst have been reported.<sup>7–17</sup> Given the limited efficacy of drug therapy, the surgical approach is still accepted as the standard for managing hydatid disease.<sup>18</sup> Parallel to progress in laparoscopic techniques during the last decade, laparoscopic treatment of hydatid disease has been increasingly popular, especially for hepatic hydatid cysts.<sup>18–22</sup> However, we found no report on laparoscopic enucleation of primary isolated omental hydatid cysts.

Here, we present a patient with a primary isolated omental hydatid cyst who was treated with a laparoscopic approach. This report shows that laparoscopic surgery may be used safely for appropriate intra-abdominal hydatid cysts.

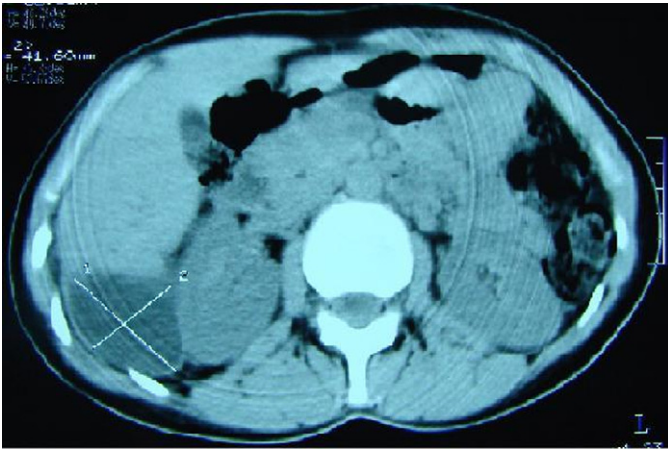
## 2. Presentation of case

A 16-year-old female was admitted to our department with a 6-month history of pain in the right upper abdominal quadrant. She had no history of fever, weight loss, or trauma. A nontender, mobile mass with smooth borders was palpated in the right subcostal region. All laboratory tests, including tumor markers, were within normal limits. Ultrasonography revealed a cyst with a 7 cm × 4 cm diameter in the subhepatic region. The cyst had low internal echo and was homogeneous, unilocular, and circumscribed with a thin capsule. It was located between the liver and right kidney on abdominal CT (Fig. 1).

We decided to use laparoscopy for further diagnosis and treatment. After inducing pneumoperitoneum, four trocars were inserted into the abdomen. A 10-mm trocar was placed at the umbilicus. Using an open technique under direct vision, 10-mm working port was inserted at the xiphoid, a 5-mm port was inserted in the mesogastrium in the midclavicular line, and a 10-mm port was inserted lateral to the left rectus abdominus muscle in the upper left quadrant. During exploration, the cyst was seen in the greater omentum in the upper right abdominal cavity (Fig. 2). The cyst was surrounded by omentum on the right and posteriorly by the hepatic flexure. The lateral and anterior walls of the cyst were

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**Fig. 1.** CT showed the cyst to be circumscribed and unilocular with a thin capsule, located between the liver and right kidney.

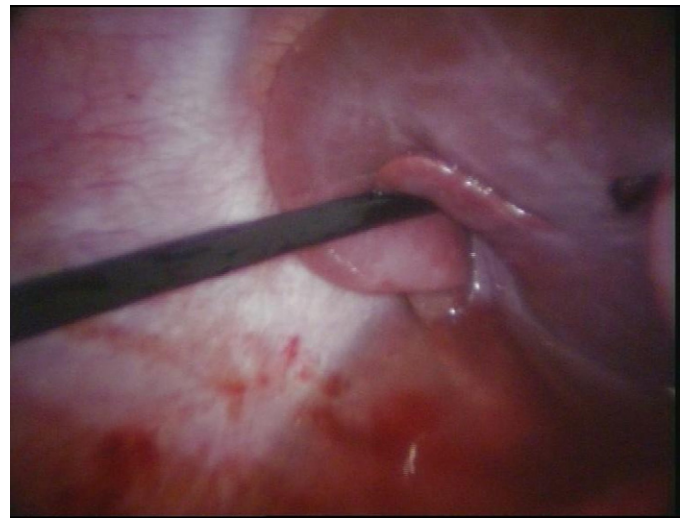
free of attachments. No pathology in the abdominal cavity was seen during laparoscopy. Initially, the cyst was enucleated from the omentum by blunt dissection. After completing the enucleation, the cyst was placed into an endobag. The contents of the cyst were aspirated within the endobag, and the cyst was then removed through the 10-mm trocar site within the endobag. We did not see any residue or evidence of a primary hydatid cyst in the liver or other intra-abdominal tissue during laparoscopy (Fig. 3). The postoperative period was uneventful. The final histopathological diagnosis was hydatid cyst, and albendazole therapy was started postoperatively and continued for 2 months. The patient was free of disease at the 3-year follow-up.

### 3. Discussion

Omental hydatid cysts are generally multiple and are formed secondary to surgery on an intra-abdominal hydatid cyst or spontaneous rupture and scattering of another cyst. The residue of secondary omental hydatid cysts can be seen at the primary site, such as the liver or spleen. An omental hydatid cyst with no other focus is called primary omental hydatid disease. Although secondary omental hydatid cysts are common in the peritoneum, primary isolated omental hydatid cysts are extremely rare, only ten cases have been reported in the literature.<sup>7–17</sup> The unusual location of primary omental hydatid disease can be explained in



**Fig. 2.** During the exploration, the cyst was seen at the greater omentum of right upper region.



**Fig. 3.** The cyst was enucleated from the omentum by blunt dissection.

two ways. The first explanation is that after the oral ingestion of *E. granulosus* eggs, the oncosphere is released by the action of gastric and intestinal enzymes; it penetrates the intestinal wall, joins the portal system, and reaches the liver. If the egg attaches to the liver, a hepatic hydatid cyst develops. Parasite eggs can pass to the systemic circulation and cause disease in other end organs. Larvae must pass through two filters (liver and lung) to form a solitary hydatid cyst, but this is very difficult.<sup>23</sup> The second possible explanation is that a visceral (especially liver) hydatid cyst wall may crack, expelling the main membrane from its bed without rupturing apart from the adventitia, forming a fibroid membrane around itself; the uncovered cyst fixes to the serosa to continue its development. The cyst formed by the latter mechanism is called heterotypic primitive echinococcosis, and it is difficult to find evidence of rupture.<sup>8,24,25</sup> We believe that the second explanation is better in our case, because this cyst was located near the right lobe of the liver.

Since omental hydatid cysts are rare, differentiating them from other cysts of the mesentery, omentum, and intra-abdominal solid organs may be difficult. Nevertheless, the diagnosis must be considered in the clinical and endemic context. Hydatid disease may mimic a soft tissue tumor; delayed diagnosis may lead to cyst rupture with risks of anaphylaxis and dissemination to other organs. Therefore, it is important to establish a correct preoperative diagnosis.<sup>4,26</sup> Ultrasonography, CT, and magnetic resonance imaging are valuable tools for confirming the diagnosis before surgery.<sup>27</sup>

Laparoscopic treatment was first applied to a liver hydatid cyst in 1993, and this was followed by a number of successful reports. A considerable number of authors recommend laparoscopy for uncomplicated hydatid cysts in a suitable location because of the short operating time, early discharge from the hospital, and shorter recovery period.<sup>19–22</sup> Perforation of the cyst may cause anaphylactic reactions and intraperitoneal dissemination to other organs. Therefore, cysts should be removed without rupture. This requires the use of an endobag to remove the hydatid cyst. Albendazole or mebendazole complementary treatment after surgery is necessary to achieve complete healing. Gil-Grande et al.<sup>28</sup> reported that albendazole sterilizes up to 72.3% of cysts by the end of the first month and 94% at the end of 3 months of treatment.

### 4. Conclusions

Primary isolated omental hydatid disease should be considered in patients in endemic regions with intra-abdominal cysts. Laparo-

scopic surgery seems to be effective and safe for hydatid cysts in accessible locations. Postsurgical pharmacological treatment is necessary to ensure complete healing.

#### Conflict of interest statement

The authors declare that there is no conflict of interest.

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#### Ethical approval statement

Written consent was obtained from the patient.

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