KJS
Kosova Journal of Surgery

KOSOVA JOURNAL OF SURGERY

Volume 8
Issue 1
June 2024
ISSN: 3027-5008 (Online)
ISSN: 3027-5016 (Print)

www.kosovajournalofsurgery.net

Laparoscopic Management of Hydatid Disease of the Liver in 13 year Old Patient – a Case Report

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Abstract:

Introduction: Echinococcosis has a global distribution, with varying prevalence rates depending on geographical regions and livestock practices. It represents a significant public health concern. The surgical management of hydatid disease of the liver requires a nuanced understanding of the disease's pathology, the surgical techniques available, and the patient's individual factors.

Case report: A 13-year-old girl went to our clinic complaining of stomach discomfort, fatigue, and nausea for months. Laboratory and radiologic tests were conducted. A preoperative diagnosis was established. The patient was treated using a laparoscopic approach. The surgical procedure included the removal of the cyst without any inadvertent leakage. The patient was administered albendazole. Subsequent routine examinations revealed no anomalies.

Discussion: Laparoscopic surgery for pediatric hepatic hydatid disease is becoming more popular. It has less postoperative discomfort, shorter hospital stays, and better aesthetic results than open surgery. Hydatid disease care is complicated by cyst rupture, which may cause allergic responses and daughter cyst spread. The laparoscopic method reduces this risk.

Conclusion: With specific precautions, laparoscopic therapy of hydatid cysts of the liver may be done safely and effectively. Surgeons must also be knowledgeable about the surgical treatment of this condition, as well as laparoscopic methods.

Keywords: Hepatic cyst, Hydatid disease, Echinococcocus granulosus, Laparoscopy

Introduction

Echinococcosis has a global distribution, with varying prevalence rates depending on geographical regions and livestock practices. It represents a significant public health concern, particularly in areas where pastoralism and close contact with infected animals are common.

Based on data from the World Health Organization (WHO), the prevalence of individuals affected by hydatid cyst in regions with high endemicity exceeds 50 cases per 100,000 people annually. [1]

The life cycle of Echinococcus granulosus involves definitive hosts, usually canids such as dogs and wolves, and intermediate hosts, including humans, livestock, and other mammals. The adult tapeworm resides in the small intestine of the definitive host, producing eggs that are excreted in feces. When these eggs come into contact with intermediate hosts, the larvae hatch and migrate to various organs, most commonly the liver. Over time, cysts form in the liver, gradually enlarging and potentially causing a range of clinical symptoms and complications. [2]

This zoonotic infection can lead to the formation of large, cystic lesions within the liver, presenting a complex clinical challenge. Surgical intervention plays a pivotal role in the management of hydatid disease, offering the promise of complete cyst removal and preventing complications. However, this treatment approach is not without its intricacies and potential pitfalls. [3]

Hydatid disease of the liver can remain asymptomatic for many years, making it a challenging condition to diagnose and manage. However, when symptoms do arise, they can include abdominal pain, hepatomegaly (enlarged liver), signs and symptoms of obstructive jaundice and in severe cases, rupture of the cysts, leading to anaphylactic shock, and the dissemination of daughter cysts to other organs. [4, 8]

The surgical management of hydatid disease of the liver requires a nuanced understanding of the disease's pathology, the surgical techniques available, and the patient's individual factors. While the ultimate goal is cyst removal without spillage of cyst contents, achieving this outcome demands careful planning, perioperative management, and specialized expertise in managing both the cystic lesions and potential complications. [5, 6]

We report a case of laparoscopic management hepatal hydatid cyst in 13-yr-old girl.

A Case Report

A 13-year-old girl who had no known medical history went to our clinic complaining of stomach discomfort, fatigue, and nausea for months. At the time of admission, the blood pressure was 120/70 mmHg, pulse 65 beats/min, respiration 19 beats/min, and body temperature 36.7°C, with no specific findings. Laboratory examinations, Ultrasonography and non-contrast CT scans of the abdomen were performed. The CT Scan (Fig 1) of the abdomen revealed a large cyst measuring 120x100mm located in the 5th and 8th segments of the liver. Serological test to Echinococcus granulosus antibodies IgG was positive. The patient has no family history of this disease. Albendazole was administered 2 weeks prior to the planned term for surgery.

The patient was placed in a supine position and induction anaesthesia was performed. An orogastric tube for gastric decompression and a Foley catheter were placed, and it was removed at the end of the procedure.

After preparing the patient, a laparoscopic operation was performed and Hasson technique was be used to access the abdomen. The abdominal cavity was insufflated with carbon dioxide (CO2) at 10 mmHg pressure and 13L/min flow. After introducing the camera access and creating pneumoperitoneum, the hydatid lesion on the surface of the liver is identified (Fig. 2) and then additional two paraumbilical 5mm trocars were inserted. The contents of the cyst were removed by suction, and the cyst was ablated. Lavage with a 20% sodium chloride solution was applied to the remaining pericyst and the surrounding region, and the resulting effluent was sucked away. The cyst was packed in a make-do endobag. The second look pericyst exploration (Fig 3) was performed and included checking for bile leakage, followed by a partial pericystectomy was done (consisting of fenestration, omentoplication, and the insertion of a single drain into the pericyst). The endobag was removed through the 10mm port. The operation was performed in under an hour.

The drainage for the first three days was 250, 150 and 80 ml appropriately. On the 11th postoperative day, the production stopped and the abdominal drain was removed, so the patient was discharged.

Treatment with Albendazole continued for four weeks after surgery.

Regular checkups thereafter showed no abnormalities

Discussion

Hydatid disease of the liver, caused by the Echinococcus granulosus parasite, poses unique challenges when it occurs in pediatric patients. This case report highlights the successful laparoscopic management of hydatid cysts in the liver of a 13-year-old patient, shedding light on the feasibility and benefits of minimally invasive surgical techniques in this age group.

Figure 1 Abdominal computed tomography scan. It shows a cystic mass with septation

The use of laparoscopic surgery in pediatric patients with hydatid disease of the liver is gaining recognition for its advantages. It offers reduced postoperative pain, shorter hospital stays, and improved cosmetic outcomes compared to traditional open surgery. Additionally, the laparoscopic approach minimizes the risk of spillage of cyst contents, a critical concern in hydatid disease management, as rupture can lead to anaphylactic reactions and dissemination of daughter cysts. [7]

While laparoscopy provides clear benefits, it demands a high level of surgical expertise and experience. The surgeon's familiarity with pediatric laparoscopic techniques and their ability to adapt to the unique anatomical considerations in children are essential. Furthermore, the preoperative assessment should include a thorough evaluation of the cyst's size, location, and proximity to vital structures to ensure the suitability of a laparoscopic approach.

Additionally, long-term follow-up is necessary to monitor for cyst recurrence, as children may have a longer life expectancy and a higher risk of disease relapse.

Conclusion

With specific precautions, laparoscopic therapy of hydatid cysts of the liver may be done safely and effectively. Surgeons must also be knowledgeable about the surgical treatment of this condition, as well as laparoscopic methods. While laparoscopy offers several advantages, it should be undertaken by experienced surgeons who are well-versed in the intricacies of pediatric surgery. Further research and the accumulation of more case reports are

Figure 2 Intraoperative view on hydatid cyst

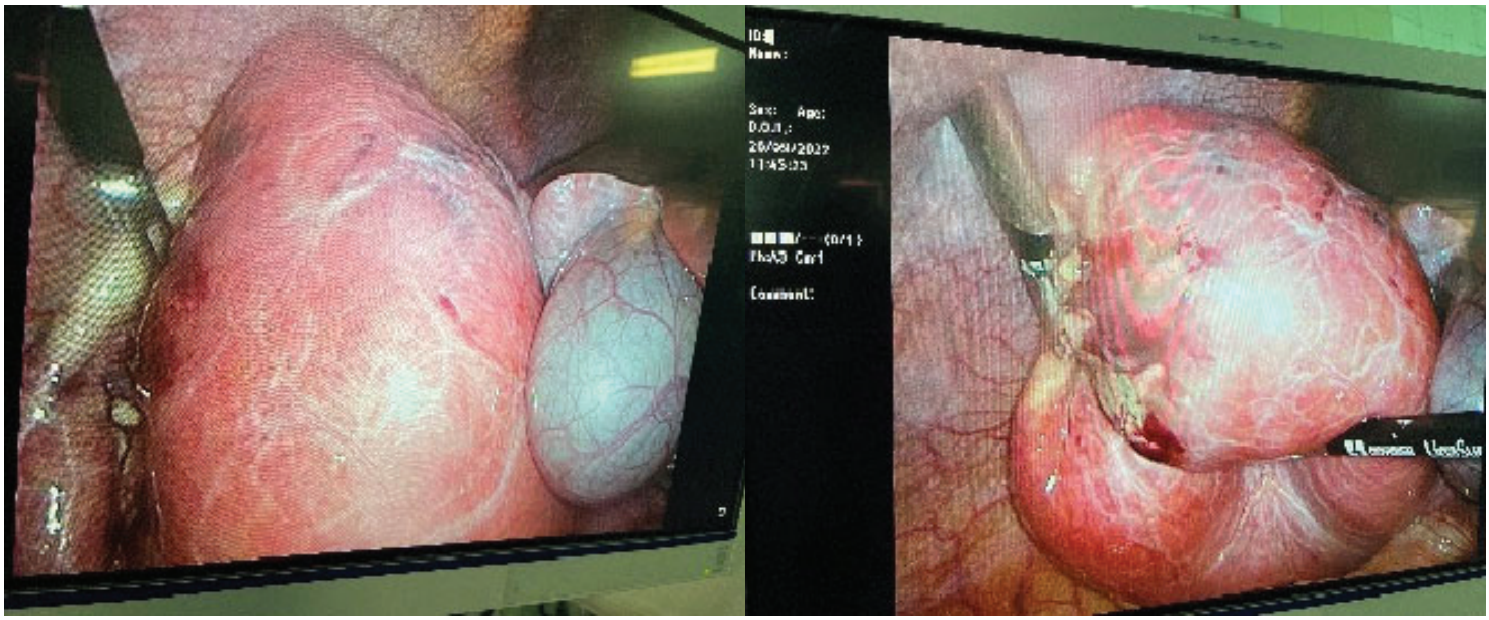
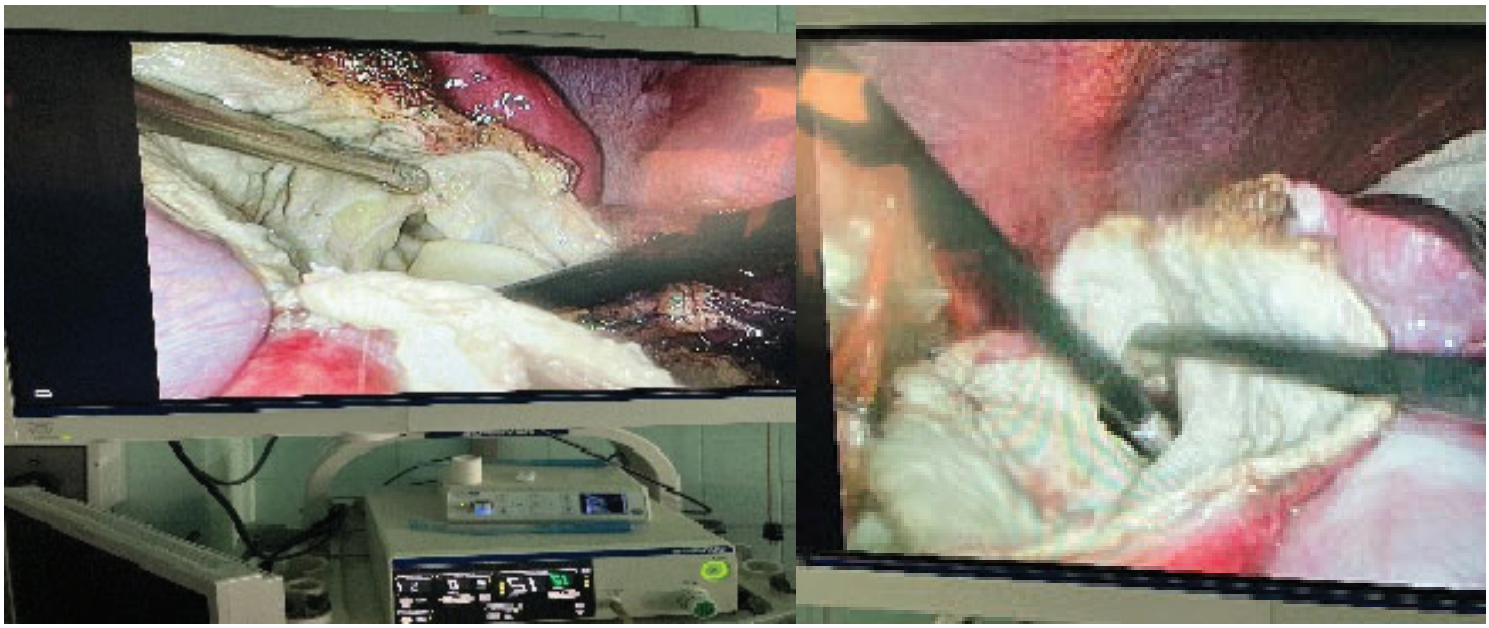


Figure 3 The remaining of pericyst



needed to establish the long-term efficacy and safety of laparoscopic approaches in pediatric hydatid disease.

Author Contributions:

[TS] and [AMar] contributed equally to this work, serving as co-first authors. They were responsible for the conception and design of the study, literature review, data collection, and analysis. They also drafted and critically revised the manuscript for important intellectual content.

[TS] provided valuable clinical insights and was the attending physician responsible for the patient's care. They contributed to the interpretation of clinical data, revised the manuscript, and provided important intellectual contributions to the discussion.

[MP] and [MA] contributed to the literature review, data analysis, and interpretation of laboratory findings. They played a significant role in drafting and revising the manuscript, especially in the discussion section.

[BM] and [PM] assisted in data collection, analysis, and interpretation, focusing on radiological imaging and diagnostic imaging modalities. They contributed to the manuscript's radiology-related sections.

[TS] and [JF] was involved in the clinical management of the patient and contributed to the discussion section by providing insights into the treatment approach and its rationale.

[TS] and [AM] supervised the overall project, including study design, data collection, and manuscript preparation. They also provided critical input during the entire research process.

All authors reviewed and approved the final version of the manuscript before submission, ensuring its accuracy and scientific integrity.

Conflict of Interest:

The authors declare no conflicts of interest related to this study.

Funding:

This research did not receive any specific grant from funding agencies in the public, commercial, or nonprofit sectors.

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