

# Laparoscopic Deroofing with Segmental Liver Resection for Hepatic Cyst. A Case Report

Eman Tahir<sup>1</sup>, Hira Saleem<sup>2</sup>, Ahmed Raza<sup>3</sup>

<sup>1</sup>Islamabad Medical and Dental College, Islamabad; <sup>2,3</sup>Department of Surgery, Akbar Niazi Teaching Hospital

## ABSTRACT

**Background:** Non-parasitic hepatic cysts are commonly benign lesions that are usually asymptomatic and discovered incidentally. However, large cysts or those causing symptoms may require surgical intervention. While laparoscopic deroofing is the standard minimally invasive approach, combining it with segmental liver resection offers a more definitive treatment in selected cases to reduce recurrence risk.

**Case Presentation:** A 21 years-old female who presented with right upper quadrant discomfort and abdominal distension. Imaging revealed a large simple hepatic cyst occupying segments of the liver, without evidence of infection or malignancy. The patient underwent laparoscopic deroofing with segmental liver resection, performed under general anesthesia. The postoperative course was uneventful, and the patient was discharged on postoperative day 3 with complete symptom resolution. Histopathological analysis confirmed hydatid cyst

**Discussion:** Laparoscopic management of hepatic cysts has become the preferred method due to reduced postoperative pain, shorter hospital stay and faster recovery. However, in cases where cysts occupy a significant portion of hepatic parenchyma or have a high recurrence potential, segmental resection along with deroofing provides a curative outcome. This approach ensures removal of the cyst wall adjoining hepatic tissue and prevents recurrence, while maintaining the benefits of minimally invasive surgery.

**Conclusion:** Laparoscopic deroofing combined with segmental liver resection is a safe and effective treatment for large or recurrent hepatic cysts. It offers excellent postoperative outcomes, minimal complications, and a significantly reduced recurrence rate compared to deroofing alone.

**Keywords:** Hepatic cyst, Laparoscopic deroofing, Minimally invasive surgery, Segmental liver resection.

### Authors' Contribution:

All authors contributed equally to the conception, literature search, manuscript drafting, editing and review

### Correspondence:

Hira Saleem  
Email [hira\\_patyal086@hotmail.com](mailto:hira_patyal086@hotmail.com) :

### Article info:

Received: October 17, 2025  
Accepted: October 20, 2025

**Cite this article.** Tahir E, Saleem H, Raza A. Laparoscopic Deroofing with Segmental Liver Resection for Hepatic Cyst. A Case Report. J Islamabad Med Dental Coll. 2025; 14(3): 325-328. DOI: <https://doi.org/10.35787/jimdc.v14i3.1477>

**Funding Source:** Nil

**Conflict of interest:** Nil

## Case Presentation

A 21-year-old female from Murree, Pakistan, presented to the surgical OPD on 15th June 2023 with almost three months history of abdominal swelling and discomfort, accompanied by pruritus. There was no associated history of fever, constipation, or vomiting. On examination, the abdomen was soft with mild tenderness in the right hypochondrium (RHC), while chest auscultation

revealed bilateral equal air entry with no added sounds. No other systemic abnormalities were noted. Initial workup on presentation to OPD showed raised ALP of 1158 U/L and total bilirubin 1.42 mg/dL. Alpha-fetoprotein (AFP) was 1.5 ng/mL, and Echinococcus antibodies were negative. Abdominal ultrasound showed a large, thin-walled anechoic cyst located in the right upper quadrant measuring 202 × 145.8 × 181.3 mm, with a volume of approximately 2794 mL and posterior acoustic

enhancement. There were no signs of intrahepatic cholestasis, but possible biliary communication was noted.

A contrast-enhanced computed tomography of the abdomen revealed gross hepatomegaly with a well circumscribed cyst in the right hepatic lobe (figure1), exerting a mass effect on the biliary channels and major vasculature including the portal vein and inferior vena cava (IVC), along with the presence of multiple abdominal venous collaterals.

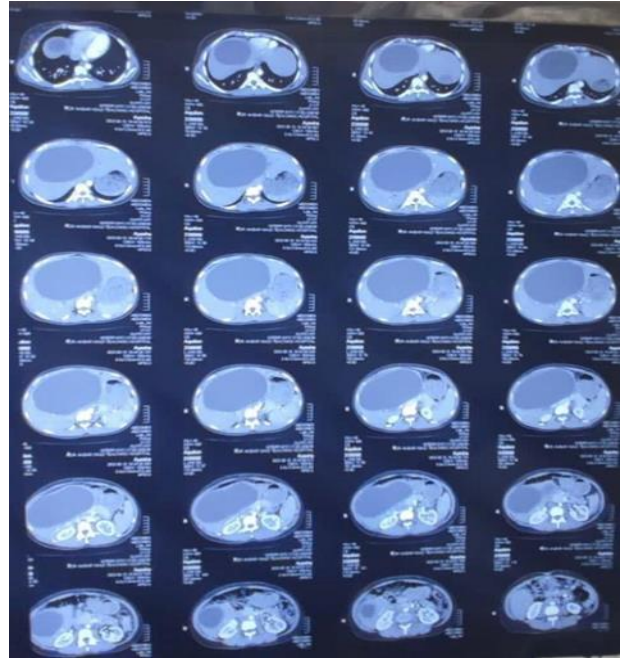
To rule out biliary communication, Magnetic resonance cholangiopancreatography (MRCP) was planned which demonstrated a large T2 hyperintense cystic lesion with significant mass effect, and the gallbladder was not separately visualized. The overall imaging findings were suggestive of large hepatic hydatid cyst.

The patient was admitted on 3rd July 2023 for surgical management. Preoperative workup included anesthesia clearance and preparation of blood products and hypertonic saline. Laparoscopic deroofing of hydatid cyst was planned under G/A. She underwent laparoscopic deroofing of hydatid cyst along with segmental liver resection. Intraoperatively, a huge hydatid cyst was noted involving segments 5, 7, and 8 of the liver, with the left lobe spared (Figure 2). The anatomy of the gallbladder appeared distorted, and the spleen was enlarged with prominent engorged abdominal veins (Figure 3). Cysts were sent for histopathology analysis (figure 4)

Date	Total Bilirubin (mg/dl)	ALP (I.U/L)	ALT (I.U/L)
15/06/23	1.42	1158	139
03/07/23	1.55	1136	118
07/07/23	0.84	419	33
17/07/23	0.81	384	60

Postoperatively, the patient was started on oral albendazole. Her recovery was uneventful, and serial liver function tests showed an improving trend

(table 1). Histopathology analysis confirmed hydatid cyst.



**Figure 1: Contrast-enhanced CT scan of the upper abdomen showing a large, well-defined cystic lesion in the right lobe of the liver. The lesion contains internal septations and daughter cysts, consistent with an active or transitional-stage hydatid cyst (Echinococcosis). No calcification is seen.**



**Figure 2: Laparoscopic view showing initial evacuation of hydatid cyst contents.**



**Figure 3: Laparoscopic view showing relation with the liver parenchyma**



**Figure 4: gross specimen of excised hydatid cyst, H/P of cyst wall confirmed it as hydatid cyst**

## Discussion

Hydatid disease due to *Echinococcus granulosus* predominantly involves the liver and remains a diagnostic and therapeutic challenge in endemic areas. Laparoscopic treatment has become more widely used because it reduces hospital stay and accelerates recovery: there are reports of both pediatric and complex adult cases treated laparoscopically without complications or recurrence (Bairwa et al. and Sugawara et al.),<sup>1</sup> which supports the expanding role and safety of minimally invasive approaches even for large or biliary-communicating cysts. When extended

medical therapy fails, partial excision or definitive operative management is often required, as seen in our case and other published series<sup>3</sup>. A prospective cohort from Pakistan comparing open versus laparoscopic techniques found a marginally higher but not statistically significant—recurrence after minimally invasive surgery, a finding that still favors laparoscopy where appropriate expertise is available<sup>4</sup>; additional Pakistani case reports demonstrate successful laparoscopic handling of complicated cysts (e.g., calcified walls, multiple daughter cysts) in experienced centers.<sup>5</sup>

Albendazole continues to be a key adjunct: perioperative administration, used in our patient and recommended by guidelines, reduces viable protoscoleces and appears to lower recurrence when paired with surgery.<sup>6</sup> From a public-health viewpoint, Pakistan remains endemic: hospital-based reports and national reviews record hundreds to over 1,700 reported human CE cases between 2000–2020, and a 16-year surgical series from Khyber Pakhtunkhwa documented 251 operated cases (2006–2021), highlighting persistent, regionally variable burden and the shortcomings of passive surveillance.<sup>7,8</sup> Slaughterhouse and livestock surveys—useful indicators of transmission pressure—show variable prevalences by region and species (often low-to-mid single digits but higher in some studies, with many recent reports around 5–15%), confirming ongoing zoonotic risk.<sup>9,10</sup> The main complications that drive morbidity and emergency interventions include cyst rupture (biliary, peritoneal, pleural or bronchial), secondary infection/abscess, biliary fistula/cholangitis, pulmonary sequelae and anaphylaxis after spillage.<sup>11</sup> Reported perioperative mortality varies with case complexity and technique (historical open series report rates up to ~6.5%, while contemporary cohorts and minimally invasive methods report far fewer deaths), and a recent Pakistani cohort noted a postoperative mortality of 1.67% surgically complex patients.<sup>9-11</sup> Recurrence depends on cyst stage and treatment choice—older surgical reports cite 0–25%

recurrence whereas systematic reviews and pooled cohorts more commonly report mid-single-digit to low-teens relapse rates (roughly 6–12% in many analyses)—so it is advisable to present ranges, state the evidence type (hospital versus population data), and note that complicated presentations predict higher morbidity, mortality and risk of relapse.<sup>10,11</sup>

## References

1. Bairwa BL, Singh AK, Gupta S. Laparoscopic management of giant hepatic hydatid cyst in a 12-year-old boy: a case report. *J Minim Invasive Surg.* 2021 Sep 15;24(3):165-8. <https://doi.org/10.7602/jmis.2021.24.3.165>
2. Ikeda T, Okazaki T, Manabe Y, Nakanishi R, Kagiya H, Owada Y, et al. Laparoscopic deroofing for a giant hepatic cyst with biliary communication: a case report. *J Surg Case Rep.* 2024 Mar 26;2024(3):rjae176. <https://doi.org/10.1093/jscr/rjae176>
3. Kumar P, Bajwa JS, S. A. Laparoscopic management of hydatid cysts of liver in two different presentations: case reports. *Int Surg J.* 2024;11(9):1529-33. <https://doi.org/10.18203/2349-2902.isj20242455>
4. Khan A, Ahmed H, Khan H, Saleem S, Simsek S, Brunetti E, et al. Cystic echinococcosis in Pakistan: a review of reported cases, diagnosis, and management. *Acta Trop.* 2020; 212:105709. <https://doi.org/10.1016/j.actatropica.2020.105709>
5. Khan H, Casulli A, Harandi MF, Afzal MS, Saqib MAN, Ahmed H. A retrospective cohort study on human cystic echinococcosis in Khyber Pakhtunkhwa province (Pakistan) based on 16 years of hospital discharge records. *Pathogens.* 2022;11(2):194. <https://doi.org/10.3390/pathogens11020194>
6. Saleem S, Ahmed H, Imdad K, Zhang J, Cao J. An epidemiological survey to investigate the prevalence of cystic echinococcosis in slaughtered bovine hosts in Punjab, Pakistan. *Vet Sci.* 2023;10(1):40. <https://doi.org/10.3390/vetsci10010040>
7. Imran M, Khan MA, Janas I, Ullah M, Ullah H, Baseer A, et al. Efficacy and safety of surgical techniques in the management of pulmonary hydatid disease: a retrospective cohort study. *Cureus.* 2025;17(4):e82575. <https://doi.org/10.7759/cureus.82575>
8. Sokouti M, Sadeghi R, Pashazadeh S, Eslami Hasan Abadi S, Sokuti M, Ghojazadeh M, et al. A systematic review and meta-analysis on the treatment of liver hydatid cyst using meta-MUMS tool: comparing PAIR and laparoscopic procedures. *Arch Med Sci.* 2019;15(2):284-308. <https://doi.org/10.5114/aoms.2018.73344>
9. Velasco-Tirado V, Romero-Alegria Á, Belhassen-García M, Alonso-Sardón M, Esteban-Velasco C, López-Bernús A, et al. Recurrence of cystic echinococcosis in an endemic area: a retrospective study. *BMC Infect Dis.* 2017; 17:455. <https://doi.org/10.1186/s12879-017-2556-9>
10. Khan J, Basharat N, Khan S, Jamal SM, Rahman SU, Shah AA, et al. Prevalence and molecular characterization of cystic echinococcosis in livestock population of the Malakand Division, Khyber Pakhtunkhwa, Pakistan. *Front Vet Sci.* 2021; 8:757800. <https://doi.org/10.3389/fvets.2021.757800>
11. World Health Organization. Echinococcosis (fact sheet N°377) [Internet]. Geneva: World Health Organization; 2021 May 17 [cited 2025 Oct 19]. Available from: <https://www.who.int/news-room/fact-sheets/detail/echinococcosis>