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Minimally Invasive Management of a Giant Simple Hepatic Cyst: A Case Report and Narrative Review of the Literature

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Abstract

Simple hepatic cysts are benign lesions that usually do not require treatment unless they grow large enough to cause symptoms. Giant simple hepatic cysts may become clinically significant due to their size and the resulting compression of adjacent structures. A case study of a 56-year-old woman with abdominal pain and shortness of breath accompanied by anorexia, nausea, and vomiting revealed a 17 × 12 cm cyst in the right hepatic lobe, consistent with a giant simple hepatic cyst, necessitating laparoscopic deroofing for symptomatic relief. The procedure included laparoscopic cyst deroofing and fluid aspiration through a minimally invasive laparoscopic approach. Histopathology confirmed it as a benign simple hepatic cyst with a fibrotic hyalinized stroma lined by a single layer of cuboidal epithelium and no evidence of malignancy. Postoperative recovery was uncomplicated, and the patient was discharged on the fifth postoperative day with no recurrence noted at the 30-day follow-up. However, this short-term assessment does not establish long-term freedom from recurrence. This case underscores that giant hepatic cysts can cause significant symptoms despite being benign, and laparoscopic deroofing is an effective treatment method. Laparoscopic deroofing may provide effective relief in appropriately selected patients with a giant simple hepatic cyst while avoiding more extensive hepatic surgery. Ongoing research is needed to understand the mechanisms behind cyst development and enhance management strategies for symptomatic cases.

Categories: General Surgery
Keywords: benign liver cyst, giant hepatic cyst, hepatic cyst, laparoscopic management, liver cyst, minimally invasive laparoscopy

Introduction

According to the scientific literature, simple hepatic cysts are identified as the most prevalent non-threatening tissues found within the liver area among affected individuals globally. This condition, deemed to be rather rare, impacts approximately 2.5% to 18% of the worldwide adult population, emphasizing its uncommon nature in the broader context of liver-related ailments [1]. Based on published literature, cysts are predominantly found in adults over 50 years old, with a higher incidence observed in women compared to men. A significant majority of these cysts are asymptomatic, and most do not require treatment [2]. Typically, these cysts have a diameter of less than 5 cm. However, when they exceed 10 cm and lead to symptoms such as abdominal pain, nausea, vomiting, and weight loss, they are classified as giant cysts [3,4]. Liver cysts are classified as simple or complex. Simple cysts contain a homogeneous liquid component, appearing anechoic on ultrasound, with low density on computed tomography (CT) and specific intensities on MRI. In contrast, complex cysts lack these uniform characteristics [5]. The exact molecular process of development remains unclear. Simple hepatic cysts are thought to arise from developmental abnormalities in the intrahepatic biliary system, originating from aberrant biliary ducts during embryogenesis [6]. These abnormal ducts detach from the biliary tree and undergo cystic dilatation, with the cyst epithelium potentially continuing fluid secretion and contributing to progressive cyst enlargement [7]. A variety of cystic liver lesions, including hydatid cysts, mucinous cystic neoplasms, hepatic abscesses, polycystic liver disease, biliary hamartomas, and cystic hepatic malignancies, must be considered in the differential diagnosis of simple hepatic cysts [8]. Treatment is generally reserved for symptomatic simple hepatic cysts. Current procedures include laparoscopic cyst deroofing and percutaneous aspiration with sclerotherapy,

both aimed at reducing cyst volume and alleviating symptoms [9]. Simple aspiration is not considered complete treatment due to high reaccumulation rates [10]. This report details a case of a 56-year-old patient suffering from acute abdominal pain, anorexia, nausea, vomiting, and shortness of breath. Following clinical examination and laboratory tests, a CT scan confirmed the diagnosis of a giant hepatic cyst. The patient received treatment through a minimally invasive procedure, specifically laparoscopic deroofing. The study emphasizes the clinical and diagnostic strategies as well as the minimally invasive approach for managing this non-infected liver cyst.

Case Presentation

This case concerns a 56-year-old postmenopausal woman who presented urgently to the general surgery emergency department with abdominal pain accompanied by anorexia, nausea, vomiting, and shortness of breath. The patient reported a history of similar symptoms approximately two months before presentation. Her vital signs revealed a blood pressure of 140/82 mmHg, a temperature of 37 °C, and an oxygen saturation of 95% on room air. Her body mass index (BMI) was 31.25 kg/m². Her family history was unremarkable. Her medical history included dyslipidemia. She took pitavastatin 2 mg once daily for dyslipidemia. She had no documented drug allergies. Her obstetric history included two vaginal deliveries with episiotomy. Her surgical history included two dilation and curettage procedures for endometrial polyps, total abdominal hysterectomy with bilateral salpingo-oophorectomy (TAH-BSO) for uterine fibroids and menorrhagia, and open appendectomy. She reported no smoking or alcohol consumption. Clinical examination revealed abdominal distension and right upper quadrant pain localized to the right hypochondrium. On palpation of the right hypochondrium, a large, firm, tender, palpable mass that was mobile with respiration was identified. Laboratory results on admission revealed mildly elevated hepatic enzyme levels, neutrophilia, and an increased C-reactive protein (CRP) level, while the white blood cell (WBC) count remained within the reference range (Table *1*).

Parameter	Admission day	Day 0 (Operation day)	Day 1	Day 3	Day 4	Day 5 (Discharge day)	Follow-up (30 days)	Reference values
WBC	8.61 k/μL	15.20 k/μL	12.20 k/μL	8.24 k/μL	7.52 k/μL	7.52 k/μL	10.4 k/μL	4-11 k/μL
Neutrophils	82.3%	92.2%	95%	72.2%	73%	75%	68.2 %	40-75%
LYMPH	13%	4.4%	4%	5.8%	14.8%	14.8%	17%	20-45%
HGB	13.4 g/dL	12.6 g/dL	11.9 g/dL	12 g/dL	12.2 g/dL	12.9 g/dL	13.1 g/dL	11.8-17.8 g/dL
HCT	41.6%	38.5%	36.8%	37%	37.1%	41.2%	40%	36-52%
INR	1.10	N/A	1.08	N/A	N/A	N/A	N/A	0.8-1.2
aPTT	33 sec	N/A	34.7 sec	N/A	N/A	N/A	N/A	26-36 sec
PLT	320 k/μL	258 k/μL	263 k/μL	265 k/μL	268 k/μL	330 k/μL	225 k/μL	140-450 k/μL
GLC	100 mg/dL	93 mg/dL	85 mg/dL	80 mg/dL	103 mg/dL	101 mg/dL	111 mg/dL	70-115 mg/dL
URE	23 mg/dL	20 mg/dL	21 mg/dL	18 mg/dL	15 mg/dL	50 mg/dL	21 mg/dL	10-50 mg/dL
CRE	0.93 mg/dL	0.85 mg/dL	0.80 mg/dL	0.82 mg/dL	0.68 mg/dL	0.82 mg/dL	0.82 mg/dL	0.5-1.1 mg/dL
K+	3.9 mmol/L	4.1 mmol/L	4.4 mmol/L	4.3 mmol/L	4 mmol/L	4.5 mmol/L	3.5 mmol/L	3.5-5.1 mmol/L
Na+	141 mmol/L	142 mmol/L	140 mmol/L	142 mmol/L	139 mmol/L	143 mmol/L	138 mmol/L	136-146 mmol/L
TPR	6.8 g/dL	6.4 g/dL	6.5 g/dL	6.0 g/dL	6.4 g/dL	6.7 g/dL	7 g/dL	6.2-8.4 g/dL
TBL	0.72 mg/dL	0.63 mg/dL	0.54 mg/dL	0.37 mg/dL	0.38 mg/dL	0.35 mg/dL	N/A	0.1-1.3 mg/dL
DBL	0.25 mg/dL	0.22 mg/dL	0.22 mg/dL	0.16 mg/dL	0.17 mg/dL	0.16 mg/dL	N/A	0-0.5 mg/dL
LDH	277 IU/L	255 IU/L	217 IU/L	196 IU/L	184 IU/L	180 IU/L	N/A	120-230 IU/L
ALB	4.2 g/dL	3.9 g/dL	4 g/dL	3.7 g/dL	3.8 g/dL	4.1 g/dL	4.9 g/dL	3.5-5.1 g/dL
AST	40 U/L	39 U/L	38 U/L	34 U/L	25 U/L	24 U/L	18 U/L	5-33 U/L
ALT	39 IU/L	35 IU/L	30 IU/L	29 IU/L	24 IU/L	19 IU/L	16 IU/L	5-32 IU/L
GGT	51 IU/L	48 IU/L	45 IU/L	38 IU/L	26 IU/L	22 IU/L	16 IU/L	5-31 IU/L
AMY	57 IU/L	47 IU/L	85 IU/L	125 IU/L	115 IU/L	95 IU/L	N/A	28-100 IU/L
CRP	10.58 mg/dL	N/A	7.85 mg/dL	5.25 mg/dL	3.25 mg/dL	1.90 mg/dL	0.35 mg/dL	0-0.80 mg/dL

TABLE 1: Laboratory findings at admission, during hospitalization, and at the 30-day follow-up, with reference values.

WBC, white blood cell; LYMPH, lymphocyte; HBG, hemoglobin; HCT, hematocrit; INR, international normalized ratio; aPTT, activated partial thromboplastin time; PLT, platelet; GLC, glucose; URE, urea; CRE, creatinine; K+, potassium; Na+, sodium; TPR, total protein; TBL, total bilirubin level; DBL, direct bilirubin; LDH, lactate dehydrogenase; ALB, albumin; AST, aspartate aminotransferase; ALT, alanine aminotransferase; GGT, gamma-glutamyl transferase; AMY, amylase; CRP, C-reactive protein; N/A, not available

The patient underwent a CT scan, which revealed a large, thin-walled, well-defined cystic lesion with homogeneous contents but increased attenuation, measuring 17 × 12 cm within the right hepatic lobe. The cyst was located in segment VIII of the liver. The increased attenuation may reflect hemorrhagic or

proteinaceous cyst contents, consistent with the subsequent finding of recent hemorrhage in the cyst wall, although intracystic hemorrhage could not be definitively confirmed. No enlarged intrahepatic or retroperitoneal lymph nodes were identified (Figure *1*).

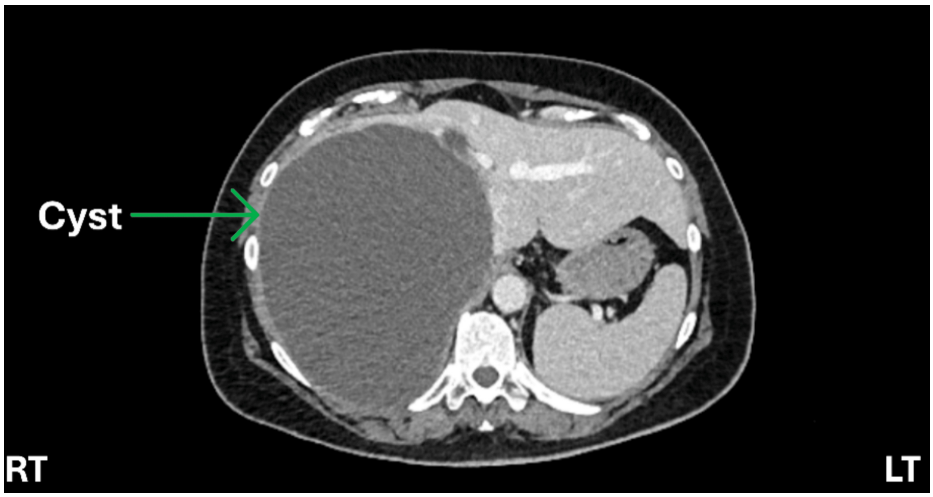


FIGURE 1: Axial contrast CT scan of the abdomen demonstrating a cystic formation on the right side of the liver (green arrow).

RT, right; LT, left

Based on the clinical examination and CT imaging, a diagnosis of a giant hepatic cyst was established. The patient was subsequently admitted to the Department of General Surgery and scheduled for laparoscopic surgical management. Given the patient's persistent symptoms, large cyst size, and atypical CT attenuation, laparoscopic deroofing was selected to allow cyst decompression, direct inspection of the cyst cavity, and histopathological examination of the cyst wall. Although percutaneous aspiration with sclerotherapy was an alternative, it was not available at the treating hospital. The laparoscopic approach provided the opportunity for direct assessment and tissue sampling despite the cyst's location in segment VIII. In the operating room, under general anesthesia, the patient was positioned in reverse Trendelenburg. Pneumoperitoneum was established using the open (Hasson) technique, followed by port placement. A 10-mm infraumbilical camera port, a 10-mm subxiphoid working port, a 5-mm working port in the right subcostal region along the midclavicular line, and a 5-mm assistant port in the right subcostal region near the anterior axillary line were placed. Laparoscopic exploration revealed a giant hepatic cyst originating from the right hepatic lobe. The cyst was initially decompressed by aspiration of approximately 3 L of turbid fluid containing debris. Laparoscopic deroofing was subsequently performed using grasping forceps and a Harmonic Scalpel. The excised cyst wall was retrieved in an endoscopic specimen bag and submitted for histopathological examination. The aspirated fluid was submitted for microbiological analysis and was sterile. The residual cyst cavity was thoroughly inspected, and hemostasis was secured. Two 27-Fr surgical drains were placed in the residual cyst cavity. The operative procedure is demonstrated in Video *1*.

VIDEO 1: Laparoscopic deroofing of a giant symptomatic hepatic cyst.

View video here: https://vimeo.com/1234850501?share=copy&fl=sv&fe=ci

Histopathological examination (HPE) of the excised cyst wall using hematoxylin and eosin (H&E) staining demonstrated evidence of recent hemorrhage in the cyst wall. The cyst lesion had a smooth surface. The cystic lesion had a fibrotic hyalinized stroma lined by a single layer of cuboidal epithelium (Figure *2*).

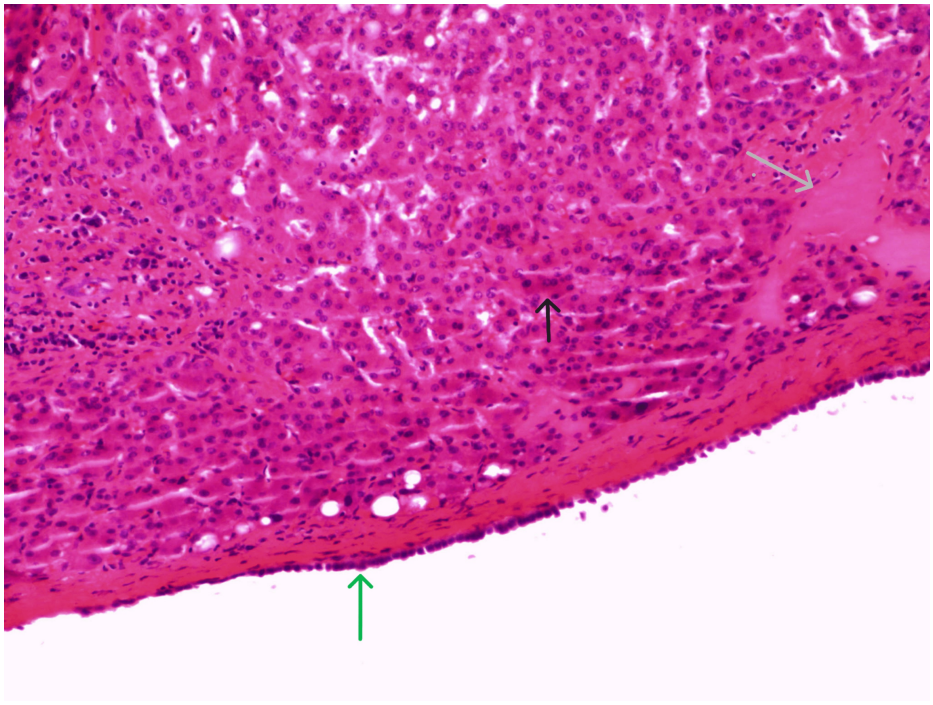


FIGURE 2: Histological section of the hepatic cyst. H&E staining (H&E, hematoxylin and eosin), magnification, 100×.

This section shows a single layer of cuboidal epithelium (green arrow), fibrotic hyalinized stroma (gray arrow), and areas of recent hemorrhage (black arrow).

No evidence of malignant cells or other neoplastic features was found. The postoperative course was uneventful. Her daily medications included intravenous fluids, tinzaparin sodium 4500 IU, Meronem trihydrate, and metronidazole twice daily. Elevated inflammatory markers and turbid cyst fluid raised the possibility of an infectious process; however, microbiological analysis was negative, and cyst infection was not confirmed. The broad-spectrum postoperative antibiotic regimen used in this case should not be considered standard prophylaxis following uncomplicated laparoscopic cyst deroofing. The drains were removed on Day 4. The patient was discharged from the surgery unit on Day 5, with postoperative laboratory results within the normal range. At the 30-day follow-up examination, there was no evidence of recurrence or development of new hepatic cysts. Nevertheless, this short follow-up period was insufficient to assess late recurrence or sustained treatment efficacy. Written informed consent was obtained from the patient for publication of this case report, including the accompanying intraoperative video. Patient anonymity and confidentiality were maintained, and no personally identifiable information is disclosed in the manuscript or video.

Discussion

Guidelines from the American College of Gastroenterology (ACG) [3], the European Association for the Study of the Liver (EASL) [9], the Korean Association of Hepato-Biliary-Pancreatic Surgery [6], and several Italian scientific societies [10] recommend that asymptomatic simple hepatic cysts do not require intervention or routine follow-up, regardless of size. However, the development of symptoms or suspicious imaging features, such as mural nodularity or enhancing septations, warrants further evaluation [9,10]. Symptomatic hepatic cysts may require intervention, which may include percutaneous aspiration with sclerotherapy, laparoscopic or open surgical cyst fenestration (deroofing or marsupialization), or complete resection [6,9]. Aspiration alone may provide temporary decompression but is not recommended as definitive treatment because of its high recurrence rate [3,6]. Sclerotherapy can be performed with various agents, including ethanol, minocycline, and polidocanol, although no agent has demonstrated clear superiority [6,9]. Percutaneous aspiration with sclerotherapy and both laparoscopic and open deroofing have been shown to effectively reduce hepatic cyst volume and alleviate symptoms [6,9]. Laparoscopic and open cyst deroofing or fenestration are associated with variable recurrence rates and permit histological examination of the excised cyst wall [9,10]. Laparoscopy is generally preferred over laparotomy because it is associated with shorter postoperative hospital stays and less postoperative pain while offering effective symptom relief [6,10]. More extensive procedures, such as partial hepatectomy combined with cyst fenestration in polycystic liver disease (PLD), carry greater perioperative risks and should be reserved for selected patients with extensive disease [9]. However, comparative evidence remains limited, and current guidelines do not establish a universally superior treatment approach for all patients. Therefore, the choice of intervention

should be individualized according to cyst characteristics, patient-related factors, clinical expertise, and available resources [3,10].

A systematic review including 736 patients from 34 studies found that persistent symptoms were more frequent after percutaneous aspiration with sclerotherapy than after laparoscopic fenestration (3.5% vs. 2.1%). However, major complications (1.7% vs. 0.8%) and cyst recurrence (5.6% vs. 0%) were higher following laparoscopic fenestration. The weighted mean follow-up period was shorter (26.1 months vs. 38.2 months) in the percutaneous aspiration with sclerotherapy group compared with the laparoscopic group. These findings suggest that both approaches are effective, although differences in follow-up duration and study populations should be considered when interpreting their outcomes [11]. Importantly, these reported differences are descriptive and should not be interpreted as evidence of statistically significant differences or superiority of either treatment approach. A retrospective observational cohort study by Ardito et al. reported that approximately 95% of patients with simple liver cysts experienced complete symptom relief following laparoscopic fenestration, with an overall recurrence rate of 14.9%. Only 4.3% of patients required additional treatment for symptomatic recurrence. These findings indicate that laparoscopic fenestration is a safe procedure with satisfactory long-term outcomes for symptomatic liver cysts [12]. Kisiel et al. studied 98 patients who underwent laparoscopic liver cyst fenestration and found that this approach was associated with low morbidity and sustained symptom relief after a median follow-up of 62 months. Long-term follow-up data were available for 48 patients, of whom four developed radiologically confirmed recurrence and three underwent further surgery [13]. Additionally, Badgurjar et al. reported successful laparoscopic deroofing in a symptomatic 51-year-old woman with a giant simple hepatic cyst measuring 25 × 20 × 17 cm, emphasizing that effective management depends on individualized decision-making based on cyst characteristics and surgeon expertise [14].

Feng et al. described a case involving a 47-year-old woman with a 10-cm giant simple hepatic cyst complicated by rupture and hemorrhage following external electrical muscle stimulation. The patient underwent emergency laparoscopic deroofing with povidone-iodine sclerotherapy, suggesting that chemical sclerotherapy may be considered as an adjunct to laparoscopic management in selected cases of cyst rupture [15]. Caution is also advised during laparoscopy for giant hepatic cysts, particularly regarding potential biliary communication and the need for careful inspection of the cyst wall after deroofing. This concern is illustrated by a case reported by Ikeda et al. involving a 76-year-old woman with abdominal distension and a giant hepatic cyst (13 × 17 × 24 cm) on CT and MRI. The patient underwent laparoscopic deroofing with intraoperative suturing of the biliary communication [16]. Additionally, Bag et al. described an 88-year-old man presenting with dyspnea and orthopnea caused by a recurrent giant simple hepatic cyst compressing the right atrium and elevating the right hemidiaphragm. The patient had previously undergone percutaneous aspiration, with subsequent cyst recurrence. This case highlights the potential for large hepatic cysts to produce cardiopulmonary symptoms through compression of adjacent structures and the limitations of aspiration alone as definitive treatment [17]. Laparoscopic fenestration has demonstrated effectiveness in treating symptomatic hepatic cysts, with Bernts et al. reporting a 90.2% rate of symptomatic relief in a systematic review and meta-analysis of 62 studies involving 1,314 patients. The study reported a median follow-up of 30 months, a symptomatic recurrence rate of 9.6%, a reintervention rate of 7.1%, postoperative complications in 10.8% of cases, major complications in 3.3%, and procedure-related mortality of 1.0%. These findings support the effectiveness of laparoscopic fenestration, although symptomatic recurrence was considerably higher among patients with polycystic liver disease [18]. Additionally, a case study described a giant simple hepatic cyst presenting as a large abdominal mass measuring approximately 24 × 20 cm on clinical examination, emphasizing the importance of including hepatic cysts in the differential diagnosis of intra-abdominal masses because of their potential for significant growth [19].

Lee et al. evaluated 34 patients undergoing laparoscopic treatment of hepatic cysts (mean age, 64.5 years): 29 underwent laparoscopic unroofing, three underwent laparoscopic left lateral sectionectomy, one underwent right hemihepatectomy, and one underwent left hemihepatectomy. Only one relapse was observed 17 months after unroofing, with no significant differences in morbidity ($P = 0.488$) or relapse rates ($P = 0.448$) between patients with cysts in anterolateral and posterosuperior segments. Laparoscopy effectively managed hepatic cysts in posterosuperior segments (I, IVa, VII, and VIII), with a median follow-up of 62 months [20].

Choi et al. analyzed 37 patients with giant hepatic cystic lesions (mean diameter, 11.41 ± 6.22 cm), most of whom presented with abdominal pain or gastrointestinal symptoms, while some were diagnosed incidentally. Minimally invasive surgical management predominated, with laparoscopic deroofing in 24 patients and cyst excision in four, while more extensive procedures were reserved for selected cases. Histopathological analysis identified predominantly simple hepatic cysts, along with polycystic liver disease, cystadenoma, and cystadenocarcinoma. Radiographic recurrence occurred in six patients (16.2%), and two required reoperations. These findings underscore the importance of accurate preoperative assessment, as underlying pathology can influence surgical management and recurrence risk. The study supports laparoscopic treatment for suitable giant hepatic cysts, reserving extensive surgery for complex cases [21].

Andriani et al. analyzed 17 patients with symptomatic, nonparasitic liver cysts who underwent laparoscopic wide deroofing. The most common symptoms were abdominal pain and discomfort, with some patients

reporting a palpable mass. Laparoscopic wide deroofing was shown to be a feasible and effective treatment for large symptomatic hepatic cysts, including massive right-lobe cysts. During a mean follow-up of 23 months, one patient developed recurrence and underwent further treatment. The authors emphasized the importance of tailoring the surgical approach to the cyst's anatomy and location [22]. Relevant published evidence on the management of symptomatic and giant hepatic cysts, including case reports, observational studies, and a systematic review and meta-analysis, is summarized in Table *2* [14-22].

First author /publication year/ reference number	Type of study	Number of patients	Age and sex of patients	Symptoms	Imaging methods	Mean size of hepatic cyst (cm)	Surgical operation	Pathology report	Results
Badgurjar et al. /2026/ [14]	Case report	1	51 years, female	Right upper abdominal pain and fever	CT scan	25 × 20 × 17	Laparoscopic deroofing following cyst drainage	N/R	Successful laparoscopic management of a giant hepatic cyst with an uncomplicated postoperative recovery
Feng et al. /2026/ [15]	Case report	1	47 years, female	Acute right upper quadrant pain following hemorrhagic cyst rupture	CT scan	10	Emergency laparoscopic deroofing with povidone-iodine sclerotherapy	Simple hepatic cyst	Successful emergency management with no recurrence on MRI at 6 months
Ikeda et al. /2024/ [16]	Case report	1	76 years, female	Abdominal distention	CT scan and MRI	13 × 17 × 24	Laparoscopic deroofing and suturing of biliary communication	Simple hepatic cyst	Successful management of biliary communication without postoperative bile leakage or recurrence at 18 months
Bag et al./ 2021/ [17]	Case report	1	88 years, male	Dyspnea and orthopnea	CT scan, U/S, echocardiography	25 × 20 × 16	Ultrasound-guided percutaneous aspiration (4.2 L)	Not performed	Symptomatic improvement following drainage; giant hepatic cysts may cause cardiopulmonary compression and recur after aspiration
Bernts et al. /2019/ [18]	Systematic review and meta-analysis	1,314	Median age: 58.7 years; female: 74%	Symptomatic hepatic cysts	N/R	11.9	Laparoscopic fenestration	N/R	Symptomatic relief: 90.2%, symptomatic recurrence: 9.6%, reintervention: 7.1%, major complications: 3.3%
Asuquo et al. /2015/ [19]	Case report	1	58 years, female	Abdominal pain and palpable abdominal mass	Abdominal U/S	24 × 20 (clinical abdominal mass)	Open cyst deroofing	Simple hepatic cyst	Giant hepatic cysts should be considered in the differential diagnosis of large intra-abdominal masses
Lee et al. /2014/ [20]	Retrospective study	34	64.5 ± 12.4 years; female: 26, male: 8	N/R	N/R	N/R	Laparoscopic unroofing (*n* = 29), left lateral sectionectomy (*n* = 3), right hemihepatectomy (*n* = 1), left hemihepatectomy (*n* = 1)	Benign hepatic cysts	One recurrence at 17 months; laparoscopic treatment was feasible and effective for cysts located in posterosuperior hepatic segments
Choi et al. /2013/ [21]	Retrospective study	37	63.62 ± 12.93 years; female: 33, male: 4	Abdominal pain (*n* = 10), gastrointestinal symptoms (*n* = 19), dyspnea (*n* = 2), incidental diagnosis (*n* = 7)	U/S and CT scan	11.41 ± 6.22 (range: 6-32)	Open liver resection (*n* = 3), laparoscopic deroofing (*n* = 24), laparoscopic cyst excision (*n* = 4), laparoscopic left lateral sectionectomy (*n* = 2), HALS (*n* = 2), SPL (*n* = 2)	Simple hepatic cyst (*n* = 27), polycystic liver disease (*n* = 2), cystadenoma (*n* = 5), cystadenocarcinoma (*n* = 1), unavailable (*n* = 2)	Radiographic recurrence: 16.2% (6/37); two patients required reoperation. Laparoscopic management was effective in appropriately selected patients
Andriani et al. /2000/ [22]	Observational study	17	58 years (range: 38-74); female: 11, male: 6	Abdominal pain (*n* = 12), discomfort (*n* = 7), palpable mass (*n* = 3)	CT scan	9.8	Laparoscopic wide deroofing of 24 cysts	N/R	Recurrence: 5.9% (1/17); successful repeat laparoscopic treatment; mean follow-up of 23 months

TABLE 2: Overview of published evidence on the management of symptomatic and giant hepatic cysts.

Table created by the authors based on data extracted from references [14-22].

N/R, not reported; CT, computed tomography; U/S, ultrasonography; MRI, magnetic resonance imaging; GI, gastrointestinal; HALS, hand-assisted laparoscopic surgery; SPL, single-port laparoscopy

The surgical technique of laparoscopic deroofing and the anatomical characteristics of hepatic cysts are important considerations in achieving sustained symptom relief and minimizing recurrence. Wide fenestration involves drainage of the cyst contents, resection of the accessible extrahepatic cyst wall, and careful inspection for bleeding or biliary leakage. Kersik et al. discussed the potential role of ultrasonic dissection, surgical staplers, and indocyanine green fluorescence imaging in improving intraoperative visualization and technical precision, although evidence regarding their long-term benefits remains limited [23]. In a prospective multicenter study involving 26 patients, Gigot et al. identified incomplete deroofing, deeply located cysts, previous surgical treatment, cysts in the right posterior hepatic segments, and diffuse polycystic liver disease as factors associated with treatment failure. During a mean follow-up of nine months, symptomatic recurrence occurred in 23% of patients, while radiographic recurrence was observed in 38% [24]. More recently, Bizzoca et al. evaluated 19 patients undergoing laparoscopic fenestration combined with ethanol injection into the residual cyst cavity. Symptomatic relief was achieved in 89.5% of patients, while radiological recurrence occurred in 21% during a median follow-up of 57 months. However, only one patient, who had autosomal dominant polycystic kidney disease, experienced symptomatic recurrence, and no reinterventions were required, suggesting that radiological recurrence does not necessarily correspond to clinical failure. Nevertheless, the absence of a comparative control group limits conclusions regarding the additional benefit of ethanol injection [25]. Furthermore, a systematic review by Antonacci et al. demonstrated that laparoscopic treatment was associated with shorter operative times and hospital stays than open surgery, with acceptable recurrence rates and broadly comparable long-term outcomes. The authors also emphasized the need for further high-quality comparative studies and extended follow-up [26]. Overall, successful management depends on appropriate patient selection, adequate cyst wall fenestration, recognition of potential biliary communication, and consideration of cyst location. Long-term clinical assessment remains important for evaluating recurrence and sustained symptom relief.

Conclusions

Giant simple hepatic cysts are uncommon benign lesions that are typically asymptomatic when small but may cause significant symptoms upon enlargement. This case study presents the successful laparoscopic deroofing of a giant hepatic cyst in a 56-year-old woman, with no postoperative complications or recurrence observed during the short-term, 30-day follow-up period. Histopathological analysis confirmed the cyst's benign nature; however, the mechanisms underlying its development remain unclear. In symptomatic cases, minimally invasive procedures such as laparoscopic deroofing represent an effective treatment option, as they provide symptom relief without necessitating extensive surgery. Longer-term follow-up is important to assess cyst recurrence, while further studies may help refine patient selection and optimize treatment outcomes.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

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Disclosures

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