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General Surgery

COMPLEXITIES IN THE SURGICAL MANAGEMENT OF ABDOMINAL HYDATID CYSTS: A CASE SERIES FROM A TERTIARY CARE CENTER

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ABSTRACT **Background:** Hydatid disease is a zoonotic parasitic infection caused by *Echinococcus granulosus*, commonly involving the liver and lungs. Abdominal hydatid disease often presents with nonspecific symptoms and poses significant diagnostic and therapeutic challenges, particularly in endemic regions. Surgical management remains the mainstay of treatment in complicated or symptomatic cases. **Case Series Summary:** This retrospective case series includes ten adult patients diagnosed with abdominal hydatid disease and managed surgically at a tertiary care centre between January 2022 and March 2024. The study population comprised six females and four males. All patients presented with abdominal symptoms, predominantly abdominal pain. Radiological evaluation using ultrasonography and contrast-enhanced computed tomography confirmed the diagnosis in all cases.The liver was the most commonly involved organ (80%), followed by renal (10%) and intraperitoneal (10%) involvement. All patients received preoperative Albendazole therapy. Surgical management included hepatic sectionectomy (30%), Hepatectomy (20%), cyst excision (20%), and Pericystectomy or minimally invasive procedures (30%), depending on cyst location and complexity. Postoperatively, seven patients (70%) had an uneventful recovery. Complications were observed in three patients, including intraoperative anaphylaxis, biliary leak with biliary fistula and urinary fistula. All complications were managed successfully without morbidity. All patients received postoperative Albendazole therapy, and no recurrence was noted during a follow-up period of 6 months. **Conclusion:** This case series highlights that surgical management, combined with perioperative Albendazole therapy, remains the most effective treatment modality for abdominal hydatid disease. Early diagnosis, appropriate imaging, and individualized surgical planning result in favourable outcomes with minimal morbidity and no recurrence.

KEYWORDS : Hydatid cyst; Complication; Intraperitoneal rupture; Anaphylaxis; secondary peritoneal hydatid cyst; renal hydatid cyst.

INTRODUCTION

Hydatid disease is a zoonotic parasitic infection caused by the larval stage of Echinococcus granulosus and remains a significant public health concern in endemic regions such as India, the Middle East, and parts of Africa. Humans act as accidental intermediate hosts, acquiring infection through ingestion of eggs excreted by definitive hosts, primarily dogs. The liver is the most commonly involved organ due to portal circulation acting as the first filter, followed by pulmonary and other abdominal sites.

Despite advancements in diagnostic imaging and pharmacological therapy, abdominal hydatid disease continues to pose diagnostic and therapeutic challenges owing to its slow progression, varied clinical presentation, and potential for life-threatening complications such as rupture, biliary communication, secondary infection, and anaphylaxis. Extra-hepatic hydatid disease, including spleen, renal and peritoneal involvement, is rare and often results in delayed diagnosis.

Although medical therapy with benzimidazoles and minimally invasive techniques such as PAIR have expanded treatment options, surgical management remains the definitive treatment for large, symptomatic, or complicated cysts. The choice of intervention depends on cyst characteristics, anatomical location, surgeon expertise, and available resources. In this context, the present study evaluates the clinical profile, surgical management, and outcomes of abdominal hydatid cysts treated at a tertiary care center and compares the findings with previously published case series.[12]

METHODS & MATERIALS

A retrospective study was conducted from January 2022 to March 2024 in the department of General Surgery, Surgical Gastroenterology and Urology. Ten patients with surgically managed abdominal hydatid cysts were included. Demographic profile, imaging findings, operative procedures, complications, and follow-up data were reviewed.

CASE SERIES

This retrospective case series comprises 10 adult patients diagnosed with abdominal hydatid disease who underwent surgical management during the study period. Given the heterogeneity in clinical presentation, cyst location, and surgical complexity, patient information was systematically organized and tabulated into two distinct sections to ensure clarity and comprehensive reporting. The preoperative profile, presented in **Table 1**, includes individual patient demographics, clinical presentation, imaging findings, cyst location and characteristics, and preoperative medical management. This table provides a consolidated overview of baseline disease status and factors influencing surgical decision-making.

The postoperative profile, summarized in Table 2, documents operative procedures performed, intraoperative findings, postoperative complications, management strategies, and final outcomes. This structured tabulation enables direct assessment of surgical results and postoperative recovery while preserving case-wise detail for all patients.[]

Table 1. Preoperative (Cases 1–10)

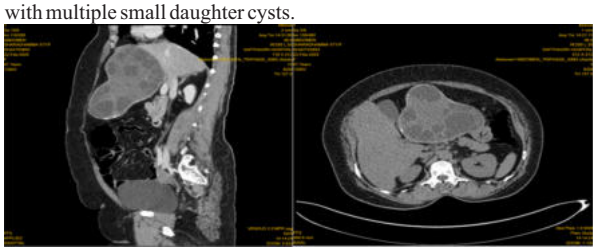
Case	Age / Gender	Region	Occupation	Symptoms / Duration	Radiology Findings	Cyst Location	Labs / Serology	Albendazole	Pre-Surgical Procedure
1	46 / M	Taverkere	Farmer	3 months right hypogastric & epigastric pain along with fever	Hydatid liver cyst + Cholelithiasis	Liver – Segment 6, Right lobe	No eosinophilia / Not done	Started pre-op	—
2	65 / F	Bengaluru	Housewife	Diagnosed 1 year ago & cyst increasing in size	Hydatid liver cyst	Liver – Left lobe (Seg 2 & 3)	No eosinophilia / Not done	3 cycles in 1 year	—
3	43 / F	Ranibennur	Domestic Helper	2 months of upper abdomen pain associated with vomiting	Hydatid liver cyst	Liver – Segment 7, Right lobe	No eosinophilia / Not done	Started pre-op	—

4	45 / M	Tumkur	Coolie	1 month of epigastric pain with jaundice	Ruptured hydatid cyst with biliary obstruction	Liver – Left lobe	Eosinophilia / Deranged LFT	1 month pre-surgery	ERCP + Sphincterotomy + Stenting
5	37 / F	Bengaluru	Tailor	6 months of epigastric pain	Hydatid liver cyst	Liver – Segment 5, Right lobe	No eosinophilia / Not done	Started pre-op	—
6	42 / F	Bengaluru	Housewife	2 weeks of Supra-umbilical mass	Hydatid liver cyst + Incisional hernia	Liver – Left lobe	No eosinophilia / Not done	Started pre-op	—
7	57 / F	Bengaluru	House Helper	1 month epigastric pain and mass	Intraperitoneal hydatid cyst	Epigastric region (Intraperitoneal)	No eosinophilia / Not done	Started pre-op	—
8	55 / M	Bellary	Farmer	10 days of RUQ pain radiating to back	Hydatid liver cyst	Liver – Right lobe	No eosinophilia / Not done	Started pre-op	—
9	72 / M	Lagerre	Factory Worker	Incidental – USG for inguinoscrotal swelling	Hydatid liver cyst	Liver – Right Lobe	No eosinophilia / Not done	Started pre-op	—
10	31 / M	Doddaballapura	Sales Executive	10 days right lumbar pain & nausea	Hydatid renal cyst	Right kidney	No eosinophilia / Not done	Started pre-op	—

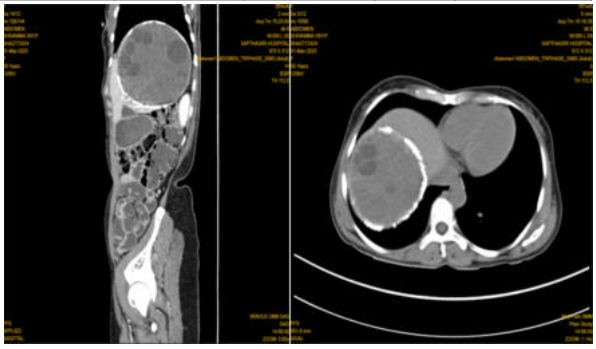
Table 2. Postoperative (Cases 1–10)

Case	Surgery Indication	Surgery Done	Intra Op Findings	Complications	Complication Management	HPE	Post Op Days	Follow Up
1	Liver hydatid cyst with abdominal pain	Right posterior sectionectomy + Cholecystectomy	Right liver cyst with dense adhesions & partial calcification	No	-	Liver Hydatid Disease	6 Days	No recurrence in 6 months
2	Hydatid liver cyst increasing in size	Non-anatomical resection of segments 2 & 3	Large left liver cyst with dense adhesions	No	-	Liver Hydatid Disease	3 Days	No recurrence in 6 months
3	Symptomatic liver hydatid cyst with pain & vomiting	Right Anterior Sectionectomy	Right liver cyst with dense adhesions & partial calcification	No	-	Liver Hydatid Disease	4 Days	No recurrence in 6 months
4	Ruptured hydatid cyst – biliary obstruction	Right Anterior Sectionectomy	Right liver cyst with dense adhesions & partial calcification	No	-	Liver Hydatid Disease	9 Days	No recurrence in 6 months
5	Symptomatic hepatic cyst causing chronic pain	Hepatic Hydatid Cyst Excision	Right liver cyst with partial calcification	No	-	Liver Hydatid Disease	3 Days	No recurrence in 6 months
6	Symptomatic swelling with multiloculated hepatic hydatid cysts & Ventral hernias	Hydatid Cyst Excision + Left Hepatectomy	Dense adhesions to stomach, esophagus; daughter cysts evacuated	Biliary leak	ERCP + stenting of Left Hepatic Duct	Liver Hydatid Disease	7 Days	No recurrence in 6 months
7	Abdominal mass with pain & discomfort	Exploratory Laparotomy & Pericystectomy	Large intraperitoneal cyst with dense adhesions to stomach & liver	No	-	Secondary Intraperitoneal Hydatid Disease	8 Days	No recurrence in 6 months
8	Partial gastric outlet obstruction	Right Hepatectomy	Right liver cyst with partial calcification	No	-	Liver Hydatid Disease	6 Days	No recurrence in 6 months
9	Prevent complications like rupture, infection	Laparoscopic Hydatid Cyst Evacuation	Partially calcified wall, daughter cysts in large cyst	Anaphylaxis & biliary fistula	Conservative management	Liver Hydatid Disease	7 Days	No recurrence in 6 months
10	Right renal hydatid cyst extending to collecting system	Right Kidney Cystectomy	Splaying and compression of calyceal system	Urinary fistula	Cystoscopy + DJ stenting	Renal Hydatid Disease	7 days	No recurrence in 6 months

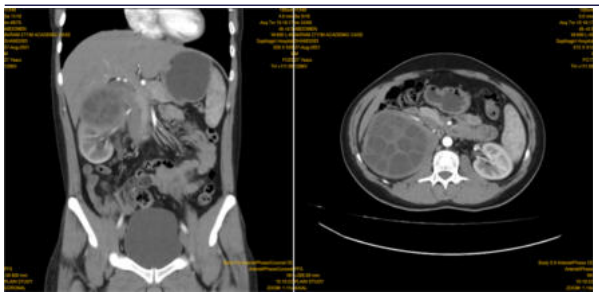
Following are the pictures of CECT Abdomen and pelvis of **case 7 with intraperitoneal hydatid cyst** showing epigastric mass extending to umbilical region, **Case 8 with Right hepatic hydatid cyst** with thick cystic wall calcification and **case 10 of right renal hydatid cyst** with multiple small daughter cysts.



Case 7: Intraperitoneal Hydatid Cyst

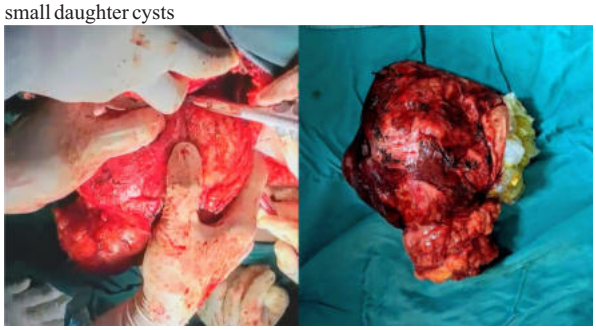


Case 8: Right Hepatic Hydatid Cyst

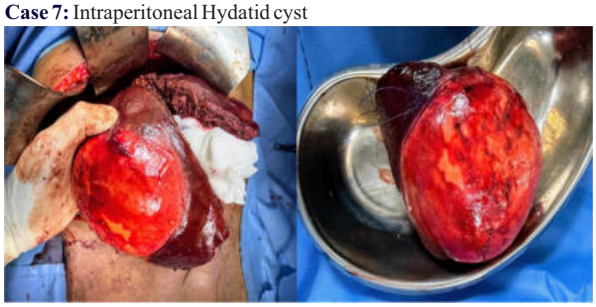


Case 10: Right Renal Hydatid Cyst

Following are the pictures of operative pics & excised Specimen of **case 7 with intraperitoneal hydatid cyst**, **Case 8 with Right hepatic hydatid cyst** and **case 10 of right renal hydatid cyst** with multiple small daughter cysts



Case 7: Intraperitoneal Hydatid cyst



Case 8: Right hepatic hydatid cyst

Case 10: Right Renal Hydatid Cyst

RESULTS

In the study, **10 adult patients** with abdominal hydatid disease underwent surgical management and were included in this retrospective case series. There was a **female predominance**, with females accounting for **60%** of cases. All patients were adults, and no paediatric cases were included.

Preoperative Profile

The **preoperative clinical, radiological, and demographic characteristics** of all patients are summarized in **Table 1**. Abdominal pain was the most common presenting symptom, while a subset of patients presented with abdominal mass or were incidentally diagnosed during imaging performed for unrelated complaints.

The **liver was the most frequently involved organ**, accounting for the majority of cases, followed by **renal and intraperitoneal involvement**. Preoperative evaluation included **ultrasonography and contrast-enhanced computed tomography** in all patients, which aided in defining cyst location, size, complexity, and possible biliary communication. Most cysts were **large and complex**, influencing the choice of surgical intervention.

All patients received preoperative Albendazole therapy as part of standard anti-parasitic management aimed at reducing cyst viability and minimizing the risk of intraoperative spillage and anaphylaxis.[4]

Surgical Management

Surgical procedures were **individualized based on cyst location, anatomical complexity, and intraoperative findings.** The operative spectrum included **hepatic resections, sectionectomy, complete cyst excision, and pericystic procedures**. More extensive resections were performed in cases with complex hepatic involvement, while organ-preserving procedures were preferred where feasible.

The PAIR technique was not utilized in this series due to cyst complexity, suspected biliary communication, and perceived risk of anaphylaxis in these patients.[3]

Postoperative Outcomes

The postoperative course and outcomes are detailed in Table 2. An uneventful postoperative recovery was observed in the majority of patients. Postoperative complications occurred in 30% of cases, including biliary leak, intraoperative anaphylaxis, biliary fistula, and urinary fistula following renal involvement.[3]

All complications were **successfully managed** using appropriate conservative or interventional measures. Importantly, **no postoperative mortality** was recorded in this series.

All patients continued postoperative Albendazole therapy and were followed up for a period of 6 months. During the follow-up period, no recurrence of hydatid disease was observed in any patient[4]

DISCUSSION

Hydatid disease continues to be a significant surgical challenge in endemic regions. In the present study, hepatic involvement was observed in 80% of cases, comparable to reports by Sayek et al. and Bhatia et al., who documented liver involvement in 65–85% of cases. Extra-hepatic involvement, including renal and peritoneal hydatid cysts, constituted 20% of cases and posed diagnostic challenges similar to those described in other regional studies.

All patients received preoperative Albendazole therapy in accordance with WHO recommendations. Albendazole has been shown to reduce cyst viability and intracystic pressure, thereby minimizing intraoperative spillage and anaphylactic reactions. The absence of recurrence in the present study supports the efficacy of combined medical and surgical management.

Surgical intervention was individualized based on cyst morphology and location. Unlike studies that utilized PAIR, this modality was not employed in the present series due to complex cyst architecture, suspected biliary communication, and limited interventional radiology resources. Similar observations have been reported in Indian studies, where surgical management remains the preferred option.

Postoperative complications occurred in 30% of patients, which is comparable to complication rates reported in the literature. Importantly, all complications were managed successfully without significant morbidity, and no recurrence was observed during follow-up.[124568]

CONCLUSION

This study emphasizes the continued relevance of surgical management as the cornerstone of treatment for abdominal hydatid disease. Preoperative Albendazole therapy, meticulous surgical planning, and structured postoperative care contribute significantly to favorable outcomes.

When compared with published case series, the findings of the present study are consistent in terms of disease distribution, management strategies, and outcomes. Despite advances in minimally invasive and percutaneous techniques, surgery remains indispensable, particularly in resource-limited settings and in patients with complex cyst morphology.

Early diagnosis, appropriate imaging, and a multidisciplinary approach are essential to reduce morbidity and prevent recurrence. Further large-scale prospective studies are required to establish

standardized management protocols.[4]

Ethical Clearance

Ethical clearance for this retrospective study was obtained from the Institutional Ethics Committee. Patient confidentiality was strictly maintained and no identifying data have been disclosed.

Strengths And Limitations

The strengths of this study include uniform surgical management, standardized preoperative Albendazole therapy, and complete follow-up of all patients. The study reflects real-world clinical practice in an endemic region.

Limitations include the retrospective design, small sample size, and lack of a comparative non-surgical or PAIR-treated group. Despite these limitations, the study provides valuable insight into the surgical management of complex abdominal hydatid disease.

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