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Surgical Approaches to Mesenteric Cysts in Children: Insights from a Single-Center Study

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ABSTRACT

Background: Mesenteric cysts are rare intra-abdominal lesions in children, presenting with variable symptoms ranging from an asymptomatic abdominal mass to an acute abdomen. Diagnosis can be challenging due to their uncommon occurrence and diverse clinical presentation. Surgical excision remains the definitive treatment to prevent complications such as obstruction, volvulus, or infection. This study aims to describe our single-center experience with pediatric mesenteric cysts, focusing on clinical presentation, surgical approaches, and postoperative outcomes.

Methods: This retrospective study reviewed 20 pediatric patients (0–18 years) who underwent surgical treatment for mesenteric cysts at our tertiary-care center. Clinical presentation, imaging findings, operative details, and postoperative outcomes were collected from medical records. Ultrasonography was the primary diagnostic tool, with CT or MRI used selectively. Surgical approaches, need for bowel resection, and completeness of cyst excision were documented, and patients were followed up for complications and recurrence. Data were analyzed descriptively.

Results: Most patients presented with an abdominal mass or distension, and ultrasound was the primary diagnostic modality. Jejunal mesentery was the most common site, and complete excision with or without bowel resection was the predominant surgical approach, yielding favorable recovery and no recurrence on follow-up.

Conclusion: Pediatric mesenteric cysts, though rare and variably presenting, can be effectively managed with complete surgical excision. Bowel resection is required only when cysts involve the mesenteric vessels or bowel wall. Early diagnosis, thorough imaging, and individualized surgical planning are key to favorable outcomes.

Key-words: Mesenteric cyst, Pediatric surgery, Cyst excision, Abdominal mass, Intra-abdominal lesions

INTRODUCTION

Mesenteric cysts are rare intra-abdominal lesions in the pediatric population, arising from aberrant lymphatic development and presenting with a broad clinical spectrum [1]. The overall incidence is low, accounting for less than 1% of abdominal cystic masses in children, which often contributes to delayed diagnosis and variability in clinical suspicion [2].

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These cysts may develop anywhere along the mesentery, although the small-bowel mesentery is the most frequently involved site, influencing both symptoms and surgical complexity [3].

Clinical presentation ranges from asymptomatic abdominal distension to acute abdomen, with symptoms such as abdominal pain, palpable mass, vomiting, or features of bowel obstruction depending on cyst size and complications [4]. Large or multiloculated cysts may cause volvulus, intestinal obstruction, hemorrhage, or infection, leading to emergency surgical intervention in some children [5]. Because of this diverse presentation, imaging—particularly ultrasonography and computed tomography—plays a critical role, though preoperative diagnosis may still be challenging [6].

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Surgical excision remains the definitive treatment due to the risk of recurrence or life-threatening complications if left untreated [7]. Complete en-bloc excision with or without bowel resection is the standard approach, and advancements in minimally invasive techniques, including laparoscopy and robotic-assisted surgery, have broadened management options in recent years [8]. These approaches have been associated with reduced postoperative pain, shorter hospital stay, and comparable recurrence rates when performed by experienced teams [9].

Despite these improvements, mesenteric cysts continue to pose diagnostic and operative challenges due to their rarity, anatomical variability, and proximity to major mesenteric vessels. Single-center studies contribute significantly to understanding management outcomes, complications, and best-practice approaches in this uncommon condition [10]. The present study aims to describe our institutional experience with pediatric mesenteric cysts, focusing on presentation, surgical management, and postoperative outcomes.

MATERIALS AND METHODS

Study Design and Setting- This retrospective observational study was conducted in the Department of Pediatric Surgery at our tertiary-care center over a defined study period.

Study Population- A total of 20 pediatric patients diagnosed with mesenteric cysts were included. Medical records of children aged 0–18 years who underwent surgical intervention for mesenteric cysts were reviewed. Patients with incomplete clinical data, those managed conservatively, and those with cystic lesions not confirmed as mesenteric cysts on histopathology were excluded.

Data Collection- For each child, demographic details, presenting symptoms, duration of complaints, physical findings, imaging characteristics, and preoperative laboratory results were recorded. Ultrasonography was used as the initial diagnostic modality in all cases, while computed tomography or magnetic resonance imaging was performed when required to further define anatomical location, cyst morphology, or its relationship to adjacent bowel loops and mesenteric vessels.

Surgical Details- Operative details, including surgical approach (open, laparoscopic, or laparoscopic-assisted), need for bowel resection, intraoperative complications, and completeness of cyst excision, were meticulously documented.

Postoperative Outcomes and Follow-up- Postoperative outcomes such as duration of hospital stay, time to return of bowel function, postoperative complications, requirement for reintervention, and histopathological diagnosis were assessed. Follow-up information was obtained through clinical visits and telephonic consultations to evaluate recurrence, late complications, and overall recovery.

Statistical Analysis- All data were entered into a structured proforma and analyzed descriptively, given the small sample size of 20 patients. Continuous variables were presented as means and ranges, while categorical variables were summarized using frequencies and percentages.

Ethical Approval- The study was conducted after obtaining approval from the Institutional Ethics Committee of GMERS Medical College, Himmatnagar. All procedures were performed in accordance with the principles of the Declaration of Helsinki. As this was a retrospective review of medical records, informed consent was waived by the ethics committee.

RESULTS

A total of 20 pediatric patients were included in the present study, and their baseline clinical characteristics are summarized in Table 1. Most of the children were male, and most patients presented beyond infancy. An abdominal mass was the most frequent presenting complaint, followed by abdominal distension and pain, while a small number of lesions were detected incidentally during imaging for unrelated reasons. Ultrasonography was the primary diagnostic modality and was performed in all cases, whereas additional computed tomography evaluation was requested selectively based on clinical need. Prenatal detection of mesenteric cysts was uncommon. Most patients had a chronic presentation, and surgery was predominantly elective, although a subset required urgent intervention due to acute symptoms.

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Table 1: Patients' characteristics and baseline data (n = 20)

Data	Number	Percentage (%)
Sex		
Male	12	60
Female	8	40
Age at operation		
Neonate	4	20
Infant	6	30
Child	10	50
Clinical finding		
Abdominal mass	12	60
Distension	10	50
Pain	7	35
Incidentally detected	2	10
Imaging		
Ultrasound	20	100
CT*	14	70
Prenatal diagnosis	3	15
Presentation		
Acute	3	15
Chronic	17	85
Surgery		
Urgent	3	15
Elective	17	85
Total	20	100

The characteristics of the mesenteric cysts are detailed in Table 2. Most patients had a single cystic lesion, with the jejunal mesentery being the most common site of origin. Cyst size varied widely, with the majority measuring between 10 and 15 cm, and a considerable number exceeding 15 cm, often contributing to symptomatic presentation. Both unilocular and multilocular patterns were observed with comparable frequency. Serous fluid was the most common cyst content, followed by chylous and serosanguinous types. Complete cyst excision with resection–anastomosis was the most frequently performed surgical procedure. In contrast, simple cyst excision was suitable only in selected cases where the cyst could be separated without compromising bowel viability.

Table 2: Cyst characteristics (n = 20)

Cyst Character	Number	Percentage (%)
Number of cysts		
Single	20	100
> One	0	0
Site		
Jejunal	11	55
Ileal	6	30
Mesocolon	3	15
Size		
<10 cm	5	25
10–15 cm	9	45
>15 cm	6	30
Loculation		
Unilocular	11	55
Multilocular	9	45
Fluid contents		
Serous	11	55
Chylous	6	30
Serosanguinous	3	15
Treatment		
Excision with R-A*	17	85
Cyst excision only	3	15
Total	20	100

DISCUSSION

The findings of the present study reinforce the heterogeneous clinical nature of mesenteric cysts in children and highlight the importance of early identification to prevent complications. Although mesenteric cysts remain uncommon, recent reports indicate an increasing recognition of these lesions due to wider use of imaging modalities and heightened clinical awareness [11]. Similar to our observations, recent pediatric cohorts have shown that abdominal mass and distension remain the dominant clinical manifestations, while incidental diagnosis is also becoming more common as ultrasonography is frequently utilized in evaluating nonspecific abdominal complaints [12]. The predominance of chronic presentation in our series reflects the slow-growing nature of these cysts; however, it is noteworthy that acute presentations, though less common, may occur due to volvulus, intracystic hemorrhage, or infection, underscoring the variable clinical course and the need for careful assessment [13].

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Cyst size and site continue to be major determinants of symptomatology and surgical complexity. Consistent with our data, jejunal mesentery remains the most frequently involved site, a finding echoed by multicenter analyses that attribute this pattern to embryological development and lymphatic distribution [14]. The presence of multiloculated cysts in a significant proportion of patients also aligns with previous studies, which have described multilocularity as an important predictor for more extensive surgical dissection and potential need for bowel resection. Recent literature further suggests that minimally invasive surgery can be safely performed for both unilocular and multilocular cysts, although its feasibility depends on cyst size, vascular proximity, and surgeon experience [15].

In our study, complete excision with resection–anastomosis was required in most patients, which reflects the intimate adherence of cysts to the mesentery or bowel wall. This trend is consistent with the evidence that incomplete excision or simple drainage may predispose to recurrence, advocating for total cyst removal whenever possible. Contemporary studies also highlight the favorable long-term outcomes associated with definitive surgical management, demonstrating low recurrence rates, reduced hospital stay, and minimal postoperative morbidity when meticulous operative technique is applied [11,15]. Collectively, these findings support the conclusion that early diagnosis, individualized surgical planning, and complete excision remain central to optimizing outcomes in pediatric patients with mesenteric cysts.

CONCLUSIONS

Mesenteric cysts in children continue to pose diagnostic and therapeutic challenges due to their rarity, variable presentation, and anatomical diversity. This study adds to existing literature by demonstrating that most patients can be effectively managed with complete surgical excision, with bowel resection required in cases where cysts intimately involve the mesenteric vessels or bowel wall. Early imaging evaluation, timely surgical intervention, and individualized operative strategy are essential for achieving favorable outcomes. Continued reporting of institutional experiences will help refine management strategies and improve prognostic understanding of this uncommon pediatric condition.

CONTRIBUTION OF AUTHORS

Research concept- Darshak Charpot
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