



Mesenteric Cyst in Children: 7 Year Experience from Tertiary Pediatric Care Institute in India

Mandal KC¹, Kumar R², Halder P^{3*}, Mukhopadhyay M⁴, Debnath B¹ and Mukhopadhyay B⁵

¹Department of Pediatric Surgery, Dr. BC Roy Post Graduate Institute of Paediatric Sciences (PGIPS), Kolkata, India

²Department of Pediatric Surgery, Calcutta Medical College, Kolkata, India

³Department of Pediatric Surgery, RG Kar Medical College and Hospital, Kolkata, India

⁴Department of Pathology, Institute of Post Graduate Medical Education and Research (IPGMER), Kolkata, India

⁵Department of Pediatric Surgery, Apollo Gleneagles Hospital, Kolkata, India

Article info

Received 07 March 2019

Revised 08 April 2019

Published 15 April 2019

*Corresponding author: Halder P, Department of Paediatric Surgery, RG Kar Medical College and Hospital, Kolkata, India; E-mail: pankaj.cncm@gmail.com

Abstract

Background/Purpose: Mesenteric and omental cysts are rare intraabdominal lesion in pediatric population. They have a diverse clinical presentation, etiology, radiological features and pathological characteristics. However, surgical outcomes improved with invent of intensive care unit, integrated pediatric anesthesia and laparoscopic surgery. Objective of this article is to share our experience with a variety of mesenteric cysts which were managed successfully in our institution.

Material and Methods: 17 children with mesenteric cysts who received treatment in our institution over a period of 7 year (January 2009 to December 2016) were included in this study. Data regarding patient's demographics, clinical behavior, investigations, operative procedures, perioperative complications, operative outcome and follow-up protocol were collected from clinical registry book of our institution. All parameter are tabulated and analysed accordingly in order to detect the factors influencing the outcome.

Results: Seventeen children with a median age of 23 months (range 1 month to 60 months) were included in this study. All patients were assessed preoperatively by clinical sign, routine blood examination and Ultrasonography. Preoperative diagnosis of mesenteric cyst was made by USG in 7 cases. Contrast enhanced computed tomography was needed in 10 cases to clear out the preoperative diagnostic dilemma. Laparotomy followed by complete excision of cyst was done in 14 cases. Three cases underwent laparoscopic intervention out of which complete excision of cyst was done in 1 case; partial excision and marsupialisation were done in two cases. Redo surgery was needed in one case who initially managed by laparoscopic marsupialisation. There was no mortality in our series.

Conclusion: Mesenteric cysts are commonly located in jejuno-ileal mesentery. Preoperative definite diagnosis by imaging is of paramount importance for proper surgical planning. Complete excision of cyst with or without intestinal resection is the optimum treatment.

Keywords: Mesenteric cyst; Complete excision; Marsupialization; Laparoscopy

Introduction

Mesenteric and omental cysts are rare intra-abdominal lesions with an incidence of 1 in 20,000 pediatric admissions and occurring more in male than female [1]. The omental cyst (OC) is rare than mesenteric cyst (MC) contributing only 2.2%. Before the age of 10 years, only 25% of the cysts become symptomatic. It may occur anywhere in the gastrointestinal tract extending from Stomach to rectum, but Jejunio-ileal mesentery is most commonly involved [2]. Sometimes, it extends into the retroperitoneum with or without involvement of gut and present like retroperitoneal cyst. Presenting symptoms/signs of the MC are nonspecific and thus create a diagnostic dilemma. Ultrasonography (USG) and contrast enhanced computed tomography (CECT) are necessary for preoperative definite diagnosis and treatment planning. Complete excision of cyst with or without bowel resection is recommended as best treatment. However, partial excision of the cyst with marsupialisation of residual cyst cavity is a viable option in cases where complete excision of the cyst is not feasible. Other less practiced treatment options for specific cases include sclerotherapy, drainage, enucleation and percutaneous aspiration [3].

Materials and Methods

We conducted a retrospective study of 17 children who received treatment for MC over a period of seven years in the department of pediatric surgery in our institute. The age range of our patients was one month to sixty months (Table 1). We included the patients who had clinico-radiological evidence of MC and undergone surgical management of the cyst. Patients were preoperatively investigated in the form of routine blood examination, abdominal USG. CECT of abdomen and estimation of tumor markers were advocated in selective cases. 15 Patients were operated in elective setting (open surgery 12 cases and laparoscopic surgery 3 cases) while 2 patients underwent emergency exploration. Depending upon the pathology, complete cyst excision with or without resection of the intestine and partial excision of cyst with marsupialisation were practiced in our series. All excised cysts were sent for histopathological examination. There was no mortality in this series. Detailed data of patient's demographical profile, clinical presentations, features of imaging studies, operative finding, details of surgical technique, perioperative complications and postoperative follow-up records were collected and tabulated and analyzed (Table 2).

Table 1: Summary of patient demographics, clinical features and investigations (n=17).

Variables	Results	Percentage
Age		
Median	23 months	
Range	1m – 60 m	
Sex		
Male	14	82.5
Female	3	17.5
Symptoms		
Pain abdomen	12	70.6
Lump abdomen	5	29.5
Abdominal distension	2	11.1
Intestinal obstruction	1	5.9
Asymptomatic	1	5.9
Signs		
Palpable abdominal mass	14	82.4
Abdominal distension	7	41.2
Abdominal tenderness	5	29.5
Investigations		
Ultrasonography	17	100
CECT abdomen	10	59

Table 2: Summary of operative procedures for mesenteric cyst at different locations and outcomes (n=17).

	Location	Total Number	Complete excision	Excision of cyst with intestinal resection	Laparoscopic intervention	Incomplete excision	Recurrence
A	Retroperitoneal	6	5	-	1	1	-
	Between stomach & transverse colon	3	2	-	-	1 (Small tissue was left at celiac trunk region)	-
	Behind transverse mesocolon	1	1	-	1	-	-
	Behind descending colon	2	2	-	-	-	-
B	Jejuno-ileal mesentery	11	4	7	2	1	1
	Jejunal mesentery	5	2	3	1	1 (Partial cyst excision with marsupialization)	1 (complete cyst excision with intestinal resection by open technique)
	Ileal mesentery	6	2	4	1	-	-

Results and Analysis

A total of 17 patients with MC were incorporated into this study. Of them, 14 (82.35%) were male and 3 (17.65%) were female. The mean age of presentation was 23 months with a range of (1 to 60) months. Fourteen patients had abdominal mass and pain abdomen, two had intestinal obstruction and one patient was asymptomatic who was diagnosed incidentally by USG (Table 1). We had 11 (64.70%) cases of jejuno-ileal MC. Out of which, complete cyst excision without bowel resection was possible in 4 cases (two ileal and two jejunal). Whereas, resection of stretched out intestine followed by end to end intestinal anastomosis required in 7 cases (four ileal and three jejunal) (Figure 1).

We encountered 6 cases (35.29) of retroperitoneal cyst. Three (17.64%) had cyst between stomach and transverse colon, two (11.76%) had cyst behind the descending colon and one (5.88%) had behind the transverse colon. Out of these 6 cases, complete excision of the cyst was possible in 5 cases (Figure 2). And one had dense adhesion near celiac trunk region where a small part of the cyst wall was left.

We performed laparotomy in 14 cases and laparoscopy in 3 cases (17.64%). Out of three laparoscopic cases one had jejunal, one had ileal and one had retrocolic cyst behind the descending colon. Laparoscopic excision of cyst without intestinal resection was possible in two cases (ileal and retrocolic cyst). Laparoscopic marsupialisation was done in one case (jejunal MC) as the cyst was not amenable for complete excision.

All patients recovered from anesthesia uneventfully and returned to full oral feeds by 4th postoperative day. There were no major complications related to surgery or anesthesia. Minor wound collection was encountered in one patient (9.09%) which resolved within a week with regular dressing and parenteral antibiotics. No operative or disease related death occurred in this series. Biopsy reports suggested lymphatic cyst in 14 (82.35%) cases, mature teratoma in two cases and immature teratoma in one case. Chemotherapy was not administered in immature teratoma case. And no recurrence was observed at 6 months follow-up. Redo surgery for excision of recurrent cyst was required in one case, who initially underwent laparoscopic marsupialization for jejunal

MC. The period of follow up was 180 months on average (ranged from 12 to 180 months). Among 17 patients, 15 patients followed up regularly whereas 2 patients were lost in follow up.

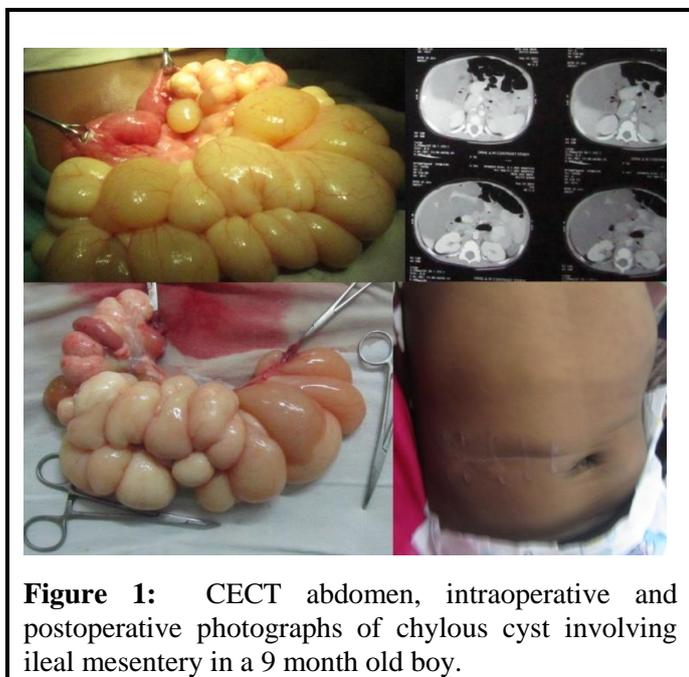


Figure 1: CECT abdomen, intraoperative and postoperative photographs of chylous cyst involving ileal mesentery in a 9 month old boy.

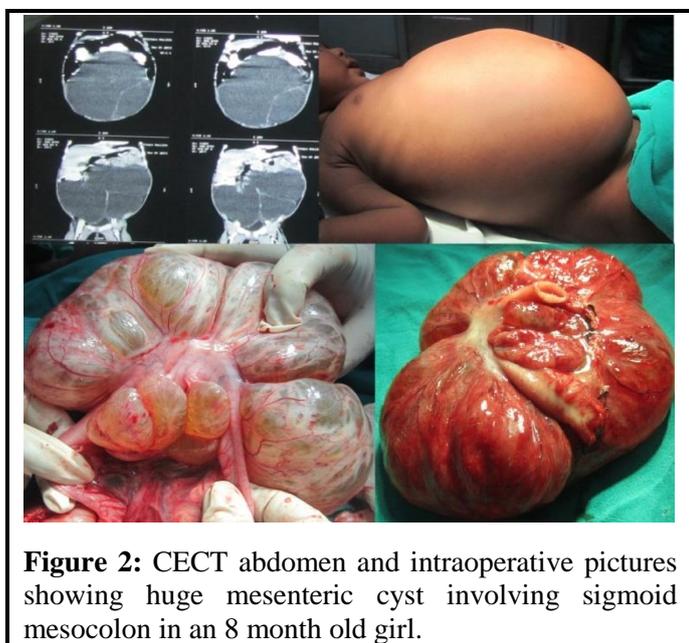


Figure 2: CECT abdomen and intraoperative pictures showing huge mesenteric cyst involving sigmoid mesocolon in an 8 month old girl.

Discussion

MC is defined as any cyst located in the mesentery with a recognisable lining of endothelium or mesothelial cell [4]. In 1842, von Rokitansky described a chylous mesenteric cyst (CMC) while OC was described by Gairdner in 1852 [5]. However,

documentation of MC was done by Benevieni in 1507. Both OC and CMC are rare in pediatric population. The etiology of MC is not clearly mentioned in literature. Most accepted theory is benign proliferation of ectopic lymphatics in the mesentery that lack communication with the remainder of the lymphatic system. In 1950, based on etiology, Bears et al first described four types of MC; embryonic/developmental, traumatic, neoplastic /infective and degenerative [6]. Based on histopathological findings, De Perrot et al proposed six types of MC; lymphatic origin, mesothelial origin, enteric origin, urogenital origin, dermoid cyst and non-pancreatic pseudocyst [7]. Though, MC lesions are present early in life but they may be asymptomatic until adulthood. About 40% of the cysts are asymptomatic before the age of 5 years and 25% of cysts are asymptomatic up to 10 years [8]. MC may occur in any parts of the mesentery from duodenum to rectum. Most frequently, it is localised in small bowel mesentery (60%) followed by mesocolon (40%) [9]. MC is distinctive for its varying clinical presentations. It may present with painless abdominal mass, pain abdomen, vomiting and features of intestinal obstruction [10]. Fifty percent of MC are palpable on physical examination and are typically mobile transversely and not longitudinally [11]. Sometimes, a large MC can appear as ascites [12-14]. In our series, 16 patients had predominantly pain abdomen, 14 cases (82.5%) had associated abdominal mass while, one was asymptomatic which we diagnosed incidentally during USG for other reason. A MC appears as sharply defined cystic mass with or without internal septations in USG [15-17]. Though, definite preoperative diagnosis of MC by USG was possible only in 41.17 % cases in our series. In 10 of our patients (58.82 %), additional CECT abdomen was needed for proper delineation of the cyst and relationship with surrounding structures. In CECT, MC becomes evident as large, thin walled, multiloculated cyst often with fatty contents [18]. Complete excision of cyst with clear margin is the treatment of choice and should be attempted soon after the diagnosis. A delay in surgery may produce complications like; infection, hemorrhage and bowel obstruction [19]. Two (11.76%) of our patients admitted with acute intestinal obstruction who required emergency exploration.

First successful surgical management of MC was performed by French surgeon Tillaux in 1880 [20]. In our series, complete excision of cyst without bowel resection was possible in 41% cases. Complete excision of the cyst with intestinal resection was done

in 53% of cases. And partial excision of the cyst and marsupialisation of the remaining cyst was carried out in 6% cases. Marsupialisation of non-resectable MC was described by Pean in 1883. Though, some surgeons do not prefer marsupialization because of risk of recurrence. Sometimes, resection of intestine or surrounding structures may be required to excise the cyst en bloc [21]. Even after massive resection, complete excision of the cyst may not be possible in about 10% of cases. In this situation, marsupialization of remaining cyst wall is the only viable option. One of our patients had a large MC behind the stomach with stretched out pancreas where a small portion of the cyst wall near celiac trunk was left and there was no recurrence. Leaving only a small portion of a cyst that extends to the retroperitoneum and densely adhere to the vital structures may be the safest option. Recently, laparoscopic resection of cyst has gained much popularity. In 1993, Mackenzie performed first successful laparoscopic resection of MC [22]. We performed laparoscopic surgery in 3 of our patients (Ileal MC, jejunal MC and retroperitoneal cyst).

Conclusion

The rarity of MC/OC lesions and absence of characteristic clinical findings make a big dilemma in preoperative assessment and treatment planning. Sometimes, it extends into the retro peritoneum and involves the vital structures which makes the surgery difficult. Complete excision of cyst with or without intestinal resection preferably by laparoscopic approach is the optimum treatment and must be encouraged whenever feasible.

Acknowledgement

Prof. Mala Bhattacharya [MD], Department of Pediatric Medicine, PGIPS, Kolkata, West Bengal, India.

Conflict of Interest

None declared.

Funding

None Declared.

References

1. Richard RR. Mesenteric and omental cists. In: Grosfeld J, O'Neill JA, Fronkalsrud EW, Coran AG, Pediatric surgery. 6thedn. Philadelphia: Elsevier, 2006, pp: 1399-406.
2. Al-Saied G, Mahfouz M, Al-Samahy O, et al. Variable presentations of mesenteric and omental

3. Gafar AM, Batikheet MY. Surgical management for mesenteric cysts in pediatric patients: A single center experience. *Int Surg J* 2018; 5: 1217-1221.
4. Bliss DP, Coffin CM, Bower RJ, et al. Mesenteric cyst in children. *Surg* 1994; 115; 571-577.
5. Kurtz RJ, Humann TM, Holt J, et al. Mesenteric and retroperitoneal cysts. *Ann Surg* 1986; 203: 109-112.
6. Behrs OM, Judd ES, Dockerty MB. Chylous cyst of the abdomen. *Surg Clin North Am* 1950; 30: 1081-96.
7. De Perrot M, Brundler M, Totsch M, et al. Mesenteric cysts toward less confusion? *Dig Surg* 2000; 17: 323-328.
8. Weeda VB, Booij KA, Aronson DC. Mesenteric cystic lymphangioma: A congenital and an acquired anomaly? Two cases and a review of the literature. *J Pediatr Surg* 2008; 43: 1206-1208.
9. Tan JJ, Tan KK, Chren SP. Mesentery cysts: An Institution experience over 14 years and review of literature. *World Surg* 2009; 33: 1961-1965.
10. Raltan KR, Nair VJ, Pathak M, et al. Pediatric chylolymphatic mesenteric cyst-a separate entity from cystic lymphangioma: A case series. *J Med Case Rep* 2009; 3: 111-114.
11. Miljkovic D, Gmijovic D, Radojkovic M, et al. Mesentery cyst. *Aach Oncol* 2007; 15: 91-93.
12. Egozi EI, Ricketts RR. Mesenteric and omental cysts in children. *Am Surg* 1997; 63: 287-290.
13. Bhandarwar AH, Tayade MB, Borisa AD, et al. Laparoscopic excision of mesenteric cyst of sigmoid mesocolon. *J Min Access Surg* 2013; 9: 37-39.
14. Klin B, Lutan G, Efrati Y, et al. Giant omental cyst in children presenting as pseudoascites. *Surg Laparosc Endosc* 1997; 7: 291-293.
15. Shafi SM, Malla MA, Reshi FA. Giant primary omental cyst mimicking a pseudoascites. *Afr J Padiatric Surg* 2009; 6: 58-60.
16. Menon P, Rao KL. Giant omental cyst masquerading as hemorrhagic ascites. *Ind Paediatr* 2005; 42: 395-396.
17. Gyves-Raj K, Hernandez RJ, Hillenvier AC. Pseudoascites: Unusual presentation of omental cyst. *Pediatr Radiol* 1990; 20: 560-561.
18. Prakash A, Agrawal A, Gupta RK, et al. Early management of mesenteric cyst prevents catastrophes: A single centre analysis of 17 cases. *Afr J Paediatr Surg* 2010; 7: 140-143.

Citation: Mandal KC, Kumar R, Halder P, et al. Mesenteric Cyst in Children: 7 Year Experience from Tertiary Pediatric Care Institute in India. *Int J Gen Med Surg* 2019; 3: 120. doi: [10.31531/2581-8287.1000120](https://doi.org/10.31531/2581-8287.1000120)

19. Konen O, Rathaus V, Olugy E, et al. Childhood abdominal cystic lymphangioma. *PediatrRadiol* 2002; 32: 88-94.

20. Tillaux PJ. Cyste du mesentereun homme: Ablation par la gastromie: Quersion. *Rev Ther Med Chir Paris* 1880; 47: 479.

21. O'Brien MF, Winter DC, Lee G, et al. Mesenteric cysts a series of six cases with a review of the literature. *Ir J Med Sec* 1999; 168: 233-236.

22. Mackenzie DJ, Shapiro SJ, Gordon LA, et al. Laparoscopic excision of a mesenteric cyst. *J Laparoendosc Surg* 1993; 3: 295-299.

This manuscript was peer-reviewed

Mode of Review: Single-blinded

Academic Editor: Dr. Topal U

Copyright: ©2019 Mandal KC, et al. This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

