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## **Abdominal Distension due to Large Omental Cyst**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. Author AS designed the study, collected all information, wrote the first draft of the manuscript and the end manuscript. Authors AZ, GV and EG managed the literature searches and aided with the final manuscript. Authors NN and VG are the two surgeons that operated on this patient. All authors read and approved the final manuscript.*

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**Case Study**

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### **ABSTRACT**

Omental and mesenteric cysts are both rare entities, mostly found in children. Incidence rate in adults is between 1/100,000-1/250,000. Upon clinical examination they usually display symptoms of abdominal distension, with or without a palpable mass. Reported cases in the literature usually display symptoms of abdominal distension, abdominal pain, and painless mass, or possible ascites [1]. Differentiation from ascites or tuberculosis should be done. Treatment for this condition is complete surgical resection. We describe the clinical presentation of a 58 y.o man with abdominal distension for the last six months. The computer tomograph (CT) scan revealed an intra-abdominal mass 15,0x14,0 cm, with well differentiated borders. Histopathological diagnosis was confirmed as lymphangioma of the omentum.

*Keywords: Omentum cyst; mesenteric cyst; lymphangioma; ascites; case report.*

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## 1. INTRODUCTION

Mesenteric and omental cysts have an incidence of 1 in 20,000 among children. From these two types of cystic mass, only 2.2% are omental cysts. The usual symptoms are abdominal distension, abdominal pain, painless mass, or possible ascites. Most cases occur before the age of five years old (y.o). There are four groups in which Mesenteric and omental cysts are classified into. These are: embryological, traumatic, neoplastic, and infective or degenerative. The most common cause of cysts is Lymphangioma [2-4].

## 2. CASE PRESENTATION

We present a case of a 58 y.o male previously healthy, was being evaluated at the hospital because of an abdominal distension, since the last six months. He complained of feeling weight within his abdominal cavity. On the computer tomography (CT) scan (T1T2), with fat tissue suppression and iv contrast, a large mass 15,0x14,0 cm in the region of the mesogastrium within the abdominal cavity, not involving other organs, with fine borders, fluid within most likely serous was shown (Fig. 1., Fig. 2). The mass was on the left side of the midline pushing the small bowel aside. Histology revealed findings of a mass 30x13x6 cm with well differentiated borders. (Fig. 3, Fig. 4) Within it a 9cm cyst, containing a milk-like fluid and wall thickness of the cyst 0.2-0.5 cm in adjacent with the fatty tissue (Fig. 6., Fig. 7). The diagnosis was confirmed as lymphangioma of the omentum.

No other abnormalities were recognized on the CT. The patient was admitted in our hospital for painless distension of the abdomen for the last six months (Fig. 5), but without any other complaints. His weight-for-age and height-for-age were above the normal percentiles. Physical examination was normal except for mild abdominal distension.

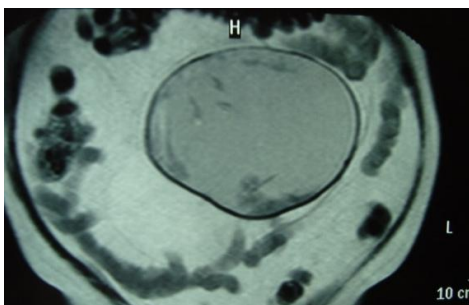


Fig. 1. CT Scan-axial plane

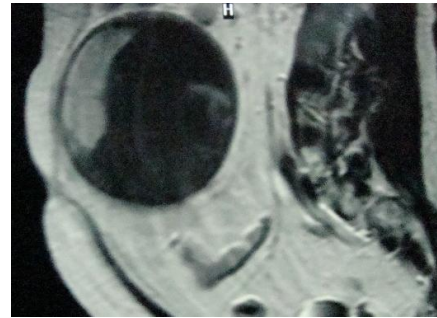


Fig. 2. CT Scan-sagittal plane



Fig. 3. Omental Cyst-removed from abdomen

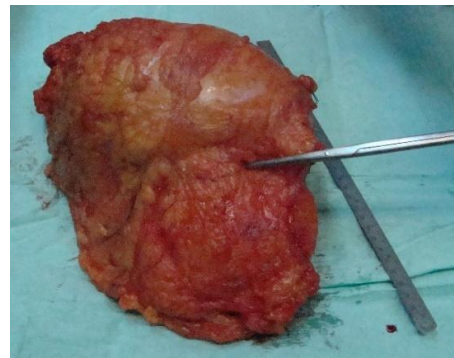


Fig. 4. Omental Cyst- macroscopically



Fig. 5. Image of the patient before surgery



**Fig. 6. Omental cyst-opened**



**Fig. 7. Omental cyst-contents**

### 3. DISCUSSION

In 1842, von Rokitansky described a chylous mesenteric cyst [2]. The first report of an omental cyst was from Gairdner in 1852 [3]. In 1907, the Italian anatomist Benevieni first reported a mesenteric cyst following an autopsy on an 8-year-old girl [4]. The first successful operation for a cystic mass in the mesentery was performed from Tillaux in 1880 [5].

Mesenteric and omental cysts are rare; the incidence is about 1 per 140,000 general hospital admissions and about 1 per 20,000 pediatric hospital admissions [6,7]. Incidence rate in adults is between 1/100,000-1/250,000. Mesenteric cysts are 4.5 times more common than omental cysts [8].

A mesenteric cyst is defined as any cyst in the mesentery and may or may not extend into the retroperitoneum; a mesenteric cyst also has a recognizable lining of endothelial or mesothelial cells. An omental cyst has the same histologic characteristics but is confined to the greater or lesser omentum [7].

Mesenteric cysts occur on the mesenteric side of the small bowel. They are found between the leaves of the mesentery [6]. Bowel resection may be required to ensure that the blood supply to the bowel is not compromised [7]. Omental cysts can be removed without resecting the adjacent transverse colon or the stomach [6,7]. The most common indication for surgical intervention is the presence of an abdominal mass with or without signs of intestinal obstruction. There are unilocular or multilocular mesenteric cysts which contain either hemorrhagic, serous, chylous, or infected fluid [8]. Ileal and colonic cysts have serous fluid within them and the jejunal cysts have chylous [9,10].

There are different sizes of the cysts from a few millimeters to even 40 cm in diameter. The Omental cysts are surrounded from the lesser or the greater omentum [11]. Omental cysts may be benign (dermoid cysts) [12] or malignant (teratomas) [13]. A common etiology is lymphatic obstruction [6]. Gross, referred to mesenteric and omental cysts to be of benign proliferations of ectopic lymphatics that didn't communicate with the normal lymphatic system [14,15,16].

Other etiological theories are:

- Defect in the connection embryonic lymph channels to connect to the venous system
- Failure of the leaves of the mesentery to fuse
- Trauma
- Neoplasia
- Degeneration of lymph nodes

Mesenteric cysts have been reported in association with Costello syndrome, which consists of short stature, redundant skin of the neck, palms, soles, fingers, curly hair, papillomata around the mouth and nares, and mental retardation [17].

Mesenteric cysts can develop anywhere in the mesentery along the the gastrointestinal (GI) tract from the duodenum to the rectum, and may also involve the retroperitoneum [6,18]. In a series of 162 patients, 60% of mesenteric cysts

were found in the mesentery of the small-bowel, in the large-bowel mesentery involvement was 24%, and in the retroperitoneum 14.5% [7]. They most commonly place to occur are the ileal mesentery or the sigmoid mesentery [7]. Overall results in pediatric patients are favorable. The recurrence rate ranges from 0% to 13.6%, [7,14,18,19] averaging about 6.1% in a series of 162 adults and children reported in the English literature [11]. Most recurrences occur in patients with retroperitoneal cysts or those who had only a partial excision [8,20,21].

No mortality is associated with mesenteric or omental cysts in children; only one pediatric death has been reported since 1950 [22].

Sometime a mesenteric or omental cyst can be found incidental during laparotomy for another condition, or it may present as an acute abdomen. They can generally present with abdominal distention and few associated symptoms other than vague abdominal pain with or without a palpable mass [23,24]. The mass may be huge, simulating ascites [25,26]. Acute presentation in children is that of a small-bowel obstruction, which may be associated with intestinal volvulus or infarction [11,21,27]. 10% of patients with mesenteric and omental cysts present with an acute abdominal emergency [11]. Differential diagnosis includes the following:

- Dilated bowel (eg, intestinal atresia)
- Dilated stomach (eg, pyloric atresia)
- Gastrointestinal duplication
- Hydronephrosis
- Ovarian cyst
- Cystic teratoma
- Hydatid cyst
- Ascites

An extra-gastrointestinal stromal tumor presenting as an omental cyst was described in a case report by Monabati et al. [28].

Kokhanovsky et al described a congenital giant omental hemorrhagic cyst which was presented as acute hemorrhagic anemia in an infant [29].

Complications which have been associated with mesenteric and omental cysts, include [11]:

- Intestinal obstruction (which is most common)
- Hemorrhage into the cyst

- Rupture
- Volvulus
- Infection
- Obstruction of the urinary and biliary tract
- Cystic torsion

Malignant transformation of mesenteric cysts has occurred in adults, [7] but malignant mesenteric and omental cysts have not been reported in children [11]. There are no specific exams to help in the diagnosis of mesenteric and omental cysts except from from imaging studies. Plain abdominal x-rays may reveal homogeneous, water-dense mass that displaces bowel loops. Within the cyst wall calcifications can be found [11,30,31]. Ultrasound (US) is also helpful revealing fluid-filled cystic structures, whether they contain thin internal septa and/or creating echoes from hemorrhage, debris, or pus [14,31,32]. Abdominal computed tomography (CT) can differentiate if a cyst is arising from another organ such as the ovary, kidney, pancreas, but minimal additional information is provided, though it [9]. Contrast CT aided by angiography may be useful in cases of large omental cysts [33].

Cystic lymphangiomas are sometimes differentiated from mesenteric and omental cysts [6,14,21]. Lymphangiomas present earlier in life compared to mesenteric or omental cysts and are more diffuse within the mesentery or retroperitoneum [6,21,34].

There is no medical therapy available. Mesenteric or omental cysts in children are an indication for surgical intervention when there is presence of an abdominal mass with or without signs of intestinal obstruction. Surgical therapy for mesenteric and omental cysts aims for the complete excision of the mass [35]. Removing the Omental cysts can be done without any danger to the bowel [14,19,20]. This is done through enucleation [7,9,20,23]. Viability of the small bowel may be of concern, thus requiring resection to ensure that the remaining bowel is viable. Defects in the mesentery must be closed to prevent an internal hernia. If the size of the cyst or because of its location within the root of the mesentery and total excision is not feasible then partial excision with marsupialization and with or without drainage is the option for such conditions [14]. 10% of patients require this form of therapy, though there is a high recurrence rate [7]. If marsupialization is performed, the cyst lining should be sclerosed with 10% glucose solution, [36] electrocautery, or tincture of iodine



to minimize recurrence. Laparoscopy can be helpful localizing the cysts, and resection through a small laparotomy or via an umbilical incision could be performed. Electro cauterization of the mesenteric cysts can be done with care, not to damage the blood vessels to the adjacent intestine. Complications from surgery are uncommon. They can be either early or late.

#### 4. CONCLUSION

Omental cysts are rare. They occur during childhood and can mimic ascites. The preferred treatment of omental cysts is complete excision, whether open surgery or laparoscopic. Rarely, is resection of the bowel required. Cystic lesions rarely have malignant transformation [2,4,10]. When abdominal distension and a cystic mass in the abdomen should arise in a patient, clinicians should be aware of this diagnosis.

#### CONSENT

As per international standard or university standard, patient's consent has been collected and preserved by the authors.

#### ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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