Laparoscopic Excision of a Huge Omental Cyst: A Case Report and Review of the Literature

Mohammad Al-Mohaidly, Ibrahim Al-Hasan, Mohammed Al Onazi, Abdullah Al Otaibi, Assia Al Rawaf
Paediatric General Surgery Department, Riyadh Military Hospital, Riyadh, Saudi Arabia

Background/ Purpose: Omental cysts are rare intra-abdominal pathology. The clinical presentation is variable. Physical examination commonly reveal a smooth, round, and mobile abdominal mass. Hematological and biochemical tests are usually unhelpful. Ultrasound and CT scan are the best diagnostic tools. The treatment of choice is the resection of the cyst, which is regularly performed by laparotomy. This paper reports a case of omental cyst successfully resected by laparoscopy with excellent outcome.

Materials & Methods: We report a case of 10-year-old Saudi boy who presented with history of abdominal distention, in which laparoscopy aided in making a correct final diagnosis and the surgical management.

Results: Pre-operative diagnostic work-up had revealed huge intra-abdominal cystic lesion of unknown origin. Aspiration of the cystic lesion improves his condition partially and temporarily. Extensive diagnostic workup did not reveal the etiology of his problem. Aspiration improved his condition partially but for a short period. Diagnostic laparoscopy led to the correct diagnosis and appropriate surgical treatment with complete relief of his complaint.

Conclusion: This paper reports a case of omental cyst successfully resected by laparoscopy with excellent outcome.

Index Word: Cyst, Laparoscopic excision.

INTRODUCTION

Omental and mesenteric cysts are benign proliferations of lymphatic tissue, with no communication with the lymphatic system. They are rare lesions and elicit interest because of their unclear pathogenesis and confusing terminology. In fact, the terms mesenteric and omental cysts are descriptive of topographic site and gross appearance and are not a histologic diagnosis. While omental cysts are confined to the lesser or greater omentum, mesenteric cyst can occur anywhere along the gastrointestinal tract mesentery from the duodenum to the rectum. In the past, laparotomy with complete excision of the cyst was the treatment of choice. With the advent of laparoscopic surgery, Mackenzie performed the first laparoscopic excision of a large mesenteric cyst in 1993, demonstrating the feasibility and safety of the laparoscopic technique. Until mid 2007, only a few cases (13 cases) have been treated with laparoscopic approach with excellent long term results after complete resection, five of them were omental cysts.

CASE REPORT

A 10-year-old boy was first admitted to Riyadh Military Hospital in August 2004 for evaluation of gradually increasing abdominal distention started six weeks after
blunt abdominal injury where he was hit by a car at his right flank region. It was not associated with pain, nausea, vomiting, changes in bowel habit, jaundice, dyspnea, swelling of extremities or fever. Physical examination was unremarkable, except for non-tender distended abdomen mainly around the umbilicus and shifting dullness. His developmental and nutritional status were within normal limits. Laboratory tests were normal, ruling out tuberculosis and hydatid disease. A plain chest radiograph showed compression of the thoracic cavity, caused by the abdominal distention. Abdominal ultrasound (Figure 1) and CT (Figure 2) had demonstrated the huge cystic mass but failed to identify its origin.

Aspiration under ultrasonographic (US) guidance was performed revealing exudative fluid without microbial growth or neoplastic cells. There were few histiocytic cells and numerous lymphocytes. Aspiration yielded 2 liters of fluid and the abdominal distention disappeared.

Few weeks later, abdominal distention recurred, US was repeated and showed that the septated cystic mass appeared more or less unchanged as compared with the previous US. This time, the patient was scheduled for a diagnostic laparoscopy and eventual surgery. Through 5-mm umbilical port, the abdomen was inspected. A huge cyst was arising from the greater omentum just below the transverse colon extending bilaterally to the flanks down into the pelvis covering all the abdominal structure (Figure 3). Then, two 3-mm trocars were inserted in the lower left quadrant, and epigastric regions, controlled aspiration of the fluid was carried out, finally the complex resection of the collapsed and intact cyst was done. A smooth drainage was positioned for one day.

Pathological examination showed mesothelial lining. No signs of relapse were present after two years of follow-up.
DISCUSSION & REVIEW

A mesenteric cyst was first observed by an Italian anatomist, Benevieni in 1507 while he was performing an autopsy on an 8-year-old girl. In 1842, von Rokitansky described a chylous mesenteric cyst. Grairdner recorded the first report of an omental cyst, which is one third as common as mesenteric cyst in 1852. In 1880, Tallaux performed the first successful surgery for a cystic tumor of the mesentery, followed by Pearn, who performed the first successful marsupialization of a mesenteric cyst in 1883. As of today, there are only about 100 cases reported in the literature. Mesenteric and omental cysts are rare, with an incidence of 1 of 140,000 general hospital admission and about 1 out of 20,000 pediatric hospital admission. Nearly one third of the cases occurred in children younger than 15 years, with M/F ratio of 1/1. Mesenteric cysts are 4.5 times more common than omental cysts. An evaluation of actual incidence is very difficult, as the cysts are asymptomatic in most cases.

Because of the rarity of these cysts, confusion about the classification of abdominal cyst and causes exist. The most widely accepted classification divides abdominal cysts into congenital, traumatic, infectious or neoplastic cysts as shown in table (1).

The exact etiology of omental and mesenteric cysts remains unknown. One theory proposed a benign proliferations of ectopic lymphatics that lack communication with the normal lymphatic system. Another proposed that the etiology is lymphatic obstruction, however, as no one has been able to demonstrate lymphatic obstruction on lymphangiography, and experimental occlusion of lymphatic channels in animals does not produce cyst because of the rich collaterals in lymphatic system, the theory of ectopic lymphatic tissue seem most likely. Other etiologic theories include: failure of the embryonic lymph nodes to join the venous system, trauma, neoplasia and degeneration of lymph node.

Mesenteric and omental cysts can be simple or multiple, unilocular or multilocular, and they contain serous or chylous fluid, but can be bloody if there has been hemorrhage into the cyst. They range in sizes from few millimeters to a mass that encompasses the entire abdomen. Five pathologic pattern account for most mesenteric and omental cyst: lymphangioma, enteric duplication cyst, enteric mesothelial and nonpancreatic pseudocyst (Table 2).

Lymphangioma is more common in children. The other types are more common in adult. Malignancy is always a concern, about 3% of the cases may change to a malignant neoplasm.

Depending on size and location, such cysts present in one of three ways: Asymptomatic, Chronic or acute Abdominal pain. Up to 40% are found inadvertently in the course of physical examination, radiologic evaluation, or during abdominal surgery for other reasons. Children generally present with long standing abdominal distention and few associated symptoms like pain or gastrointestinal & genitourinary compressive symptoms when the cyst is large in size. The mass may be huge, simulating ascites. Intra-hepatic cholestasis has been reported as part of the compression or associated entity. Mesenteric cysts causing acute symptoms occur in approximately two third of pediatric patient, while omental cysts present with acute symptoms only in ten percent of cases. The most common mode of acute presentation in children is that of a small-bowel obstruction or acute symptoms, secondary to complications like torsion of the pedicle, intracystic hemorrhage, infection or rupture into the abdominal cavity. The most common finding during physical examination is a palpable abdominal mass that is smooth, round, and compressible. While mesenteric and retroperitoneal cysts are mobile transversely but have limited movement longitudinally, omental cysts are usually freely movable in all direction.

There is no definitive diagnostic test. Radiographic studies are usually unrevealing except for the presence of pseudoascites or intraabdominal fluid. Ultrasonography and/or CT scans are very useful in the evaluation of the abdominal cystic mass. The benign radiologic characteristics include liquid content, regular margins, and capsule integrity with no vascular abnormalities. An accurate diagnosis is seldom made preoperatively and the differential diagnosis is wide.

Complete surgical resection represents the definite treatment for these cysts. Because, by definition, these cysts are not connected with any normal structure except for loose tissue, there should be no difficulty in enucleating and completely excising the cyst. If the cyst is too close to the bowel, or dissection of the cyst may compromise the blood supply of the bowel, then the resection of the cyst and adjacent bowel may be more feasible. Approximately 50-60% of mesenteric cysts require an accompanying bowel resection for complete excision, in contrast, omental cysts virtually never require this procedure.

In 1993, Mackenzie described the first complete laparoscopic excision of a mesenteric cyst. After an
adequate mobilization, a complete resection proceeds by a controlled decompression, allowing for a cytologic examination and correct extraction into a bag. A complete resection of intact cyst is mandatory. The elevated incident of relapse and infection after aspiration, marsupialization or unroofing of the surface contraindicate these procedures. Relapse after laparoscopic unroofing has been reported. The mortality rate of the open procedure range from 0% to 8%, with a maximum mortality of 15% in those cases involving intestinal resection which is virtually never required in omental cyst. The morbidity & mortality rate of laparoscopic surgery cannot be evaluated as only 13 cases have been reported so far with no death or complications.

**Table 1.** Classification of abdominal Cysts

<table>
<thead>
<tr>
<th>Embryonic cysts</th>
<th>Traumatic cysts</th>
<th>Neoplastic cyst</th>
<th>Infectious cysts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enteric</td>
<td>Sanguineous cyst secondary to hemorrhage</td>
<td>Benign (lymphangioma)</td>
<td>Myotic</td>
</tr>
<tr>
<td>Urogenital</td>
<td>Ruptured lacteal</td>
<td>Benign (lymphangioma)</td>
<td>Parasitic</td>
</tr>
<tr>
<td>Dermoid</td>
<td>Extravasation of chyle</td>
<td>Malignant (lymphangioendothelioma)</td>
<td>Tuberculous</td>
</tr>
<tr>
<td>Embryonic defects of lymphatics (retroperitoneal, mesenteric and omental cysts)</td>
<td></td>
<td></td>
<td>Hydatid</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Histologic Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lymphangioma</td>
<td>Endothelial lining</td>
</tr>
<tr>
<td>Enteric duplication cyst</td>
<td>Enteric lining, double muscle elements</td>
</tr>
<tr>
<td>Enteric cyst</td>
<td>Enteric lining, no muscle layer</td>
</tr>
<tr>
<td>Mesothelial cyst</td>
<td>Mesothelial lining</td>
</tr>
<tr>
<td>Pseudocyst (non-pancreatic)</td>
<td>No lining, fibrous wall</td>
</tr>
</tbody>
</table>

**CONCLUSION**

Omental cyst is a rare condition in pediatric age group. Any case with an unusually distended abdomen should raise the suspicion of this rare entity. Diagnostic laparoscopy is strongly suggested for the diagnosis, and laparoscopic surgery for omental cyst excision seem to be a good option.

**REFERENCES**


