Laparoscopic resection of an intra-abdominal cystic mass: a cystic mesothelioma

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The clinical features of a patient with an intra-abdominal cystic mass do not lead to a specific diagnosis. Aspiration is usually ineffective because the mass recurs and cytologic investigation is often non-diagnostic. Conservative management is unsuccessful because symptoms often persist. Surgical management of cystic masses is required for definitive management and pathologic diagnosis. A laparoscopic approach to the diagnosis and treatment can provide essential anatomic information and a complete resection with minimal morbidity. A laparoscopic technique using 3 trocars and maintaining the integrity of the mass allows complete excision and removal of large intra-abdominal cystic masses as reported in a 43-year-old patient with a large intra-abdominal cystic mass identified as a benign cystic mesothelioma.

Les caractéristiques cliniques d'un patient qui a une masse kystique à l'abdomen n'entraînent pas un diagnostic particulier. L'aspiration est habituellement inefficace parce que la masse réapparaît et, souvent, l'investigation cytologique ne permet pas de poser de diagnostic. Un traitement conservateur ne réussit pas parce que les symptômes persistent souvent. Le traitement chirurgical des masses kystiques s'impose pour régler le problème définitivement et permet de poser un diagnostic pathologique. Une laparoscopie de diagnostic et de traitement peut fournir des renseignements anatomiques essentiels et permettre de pratiquer une résection complète qui entraînera une morbidité minimale. Une technique laparascopique fondée sur l'utilisation de trois trocarts et le maintient de l'intégrité de la masse permet l'excision complète et l'ablation des grosses masses kystiques intra-abdominales, comme on l'a signalé dans le cas d'un patient de 43 ans qui avait une grosse masse kystique intra-abdominale identifiée comme un mésothéliome kystique bénin.

When a patient presents with an intra-abdominal cystic mass, a diagnosis is unlikely to be made from the clinical features alone. Aspiration of the mass is ineffective because the recurrence rate of cysts is high and cytologic investigation often gives negative results.[1] Symptoms usually persist with conservative management, and a specific diagnosis cannot be established. For definitive management and pathologic diagnosis, surgery is required. For benign lesions, complete surgical resection results in a low recurrence rate.

We report on a patient who underwent laparoscopic resection of a large intra-abdominal cystic mass that persisted after 2 percutaneous aspirations. The lesion was identified as a benign cystic mesothelioma.

Case report

A 43-year-old woman, who was previously well, presented with the complaint of abdominal bloating. Her medical history was remarkable only for a previous laparoscopic tubal ligation. On abdominal ultrasonography, a cystic mass was seen extending from the hilum of the left kidney to the cervix. On computed tomography (CT), the cystic mass was found to be approximately 23 cm long and occupied the retroperitoneum, extending into the left paracolic gutter (Fig. 1).

Over 17 months, the cyst was aspirated percutaneously with ultrasonic guidance on 2 occasions, yielding 1.5 L and 0.25 L, respectively, of serous fluid. Cytologic investigation gave negative results, and the aspirate was sterile on bacterial culture. The aspirations provided temporary relief of

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her symptoms. The size of the mass did not change on ultrasonography or CT. Barium enema examination with small-bowel follow-through and intravenous pyelography showed no abnormality. Complete blood count and measurement of liver enzymes and electrolytes were within normal limits.

Her symptoms recurred after the second aspiration, and she complained of night sweats, fatigue and a 4.5 kg weight loss. We decided to attempt a laparoscopic resection of the mass.

A 30° laparoscope was inserted through a 10-mm subumbilical port. The mass was found to extend from the splenic flexure to a point distal to the pelvic brim. The mass filled the left paracolic gutter, abutting the left colon and extending up the lateral abdominal wall (Fig. 2). Since the mass appeared to be amenable to laparoscopic resection, an additional 10-mm port was placed in the epigastrium in the midline and a 5-mm port was placed suprapubically in the midline. The peritoneum was incised over the cyst. With the use of meticulous dissection close to the cyst, it was mobilized proximally on the lateral and then the medial borders (Fig. 3). Distally the cyst was freed from the iliac vessels and separated from the posterior abdominal wall. The cyst was placed into an Endosac (Ethicon, Peterborough, Ont.), with a minimum spillage of cyst fluid. The cyst fluid was drained, within the sac. This facilitated extraction of the sac and cyst through the 10-mm port. The area was checked for evidence of residual cyst before instruments and trocars were removed; there was no such evidence.

The patient had a smooth recovery and was discharged home on postoperative day 2. There was no evidence of recurrence at 18 months' follow-up.

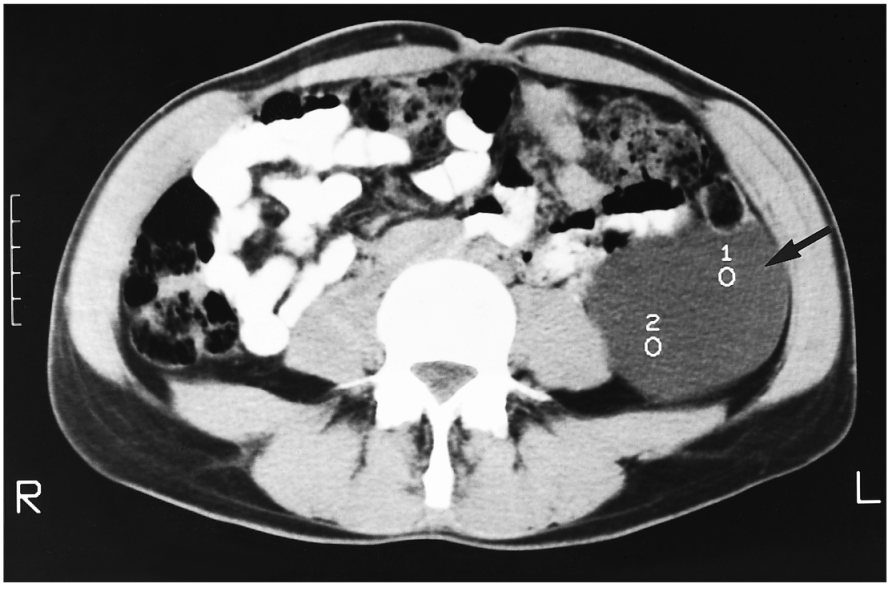

FIG. 1. Computed tomogram demonstrating the cystic mass (arrow) in the left paracolic gutter.

Pathological findings

The cystic mass measured 10.5 × 12.5 cm and contained a small quantity of red serous fluid. A small cystic nodule was palpable in one aspect of the cyst wall. On microscopy, the cyst wall was composed of loose and dense connective tissue (Fig. 4). The cyst lining consisted of a single layer of benign mesothelial cells (Fig. 5). The histologic features were compatible with a benign mesothelial cyst.

FIG. 2. Laparoscopic view of the cystic mass, reflecting peritoneum from the abdominal wall (thick arrow) and abutting the descending colon (thin arrow).

FIG. 3. The wall of the cystic mass (arrows) is mobilized from the abdominal wall.

Discussion

The clinical presentation of a patient with an intra-abdominal cystic mass does not provide sufficient information for a definitive diagnosis. Most patients present with nonspecific abdominal symptoms and the physical examination is noncontributory. A large cystic mass is usually discovered on abdominal or pelvic ultrasonography. Alternatively, the cystic mass may be found incidentally during the course of investigation for other conditions.[1]

The differential diagnosis of an intra-abdominal cystic mass includes reactive lesions (cystic mesothelioma), benign neoplasms (lymphatic cysts or lymphangioma) and malignant neoplasms (serous carcinomas of the ovaries and peritoneum, pseudomyxoma peritoneii, tumours of the seminal vesicles and malignant cystic mesotheliomas).[2,3] Cystic mesotheliomas have been classified as both mesothelial reactive lesions and benign neoplasms of the peritoneum.[1,2] There is no documentation to support the progression of cystic mesothelioma to a mesothelial neoplasm. However, a case report does exist of a "benign mesothelial cyst" progressing to metastatic adenocarcinoma.[4] A preoperative diagnosis cannot effectively exclude malignant cystic lesions.

Cystic mesothelioma has been referred to as multicystic peritoneal mesothelioma, multilocular peritoneal inclusion cyst and infiltrating adenomatoid tumour. It is a relatively rare lesion that usually involves pelvic and abdominal peritoneum and retroperitoneum. In a review of 25 cases of cystic mesothelioma, Ross, Welch and Scully[1] concluded that cystic mesothelioma is a non-neoplastic reactive mesothelial proliferation. This conclusion is supported by a later review of the pathology of the peritoneum.[2] Twenty-one of the 25 patients in the series of Ross, Welch and Scully had a history of endometriosis, pelvic inflammatory disease or previous abdominal surgery. Our patient had undergone a laparoscopic tubal ligation.

Conservative management of cystic lesions has not been effective.[1,5] Aspiration is not successful for either treatment or diagnosis. Approximately 50% of cysts recur after aspiration. Cytologic investigation often gives indeterminate findings. In our case the aspirations were non-diagnostic but provided temporary relief of symptoms.

When planning operative resection it is often difficult to delineate the cyst based on the findings of ultrasonography and CT. Uncomplicated cysts have been found to be intimately associated with pancreas and colon intraoperatively, necessitating extensive resections to achieve complete excision.[6]

The completeness of resection appears to influence recurrence.[1] The information necessary to determine the extent of cystic masses can be obtained under direct vision with laparoscopy. Complete resection is facilitated by preserving the structure of the mass, thereby maintaining planes of dissection.

Laparoscopy is an ideal choice as a diagnostic and therapeutic technique. The advantages of laparoscopic surgery include decreased postoperative pain, a short recovery period and improved cosmesis. Intraoperatively, a magnified view of the regional anatomy aids dissection.

Three recent reports have presented different approaches for laparoscopic management of cystic abdominal masses. Saw and Ramachandra[7] resected a large retroperitoneal "mesenteric cyst" (later identified as a lymphatic cyst) by a 4-trocar technique of enucleation and piecemeal resection. Ricci and colleagues[8] used 5 trocars and advocated decompression of large cystic masses for dissection. Navarra and colleagues[9] used a 3-trocar technique to resect a small cystic

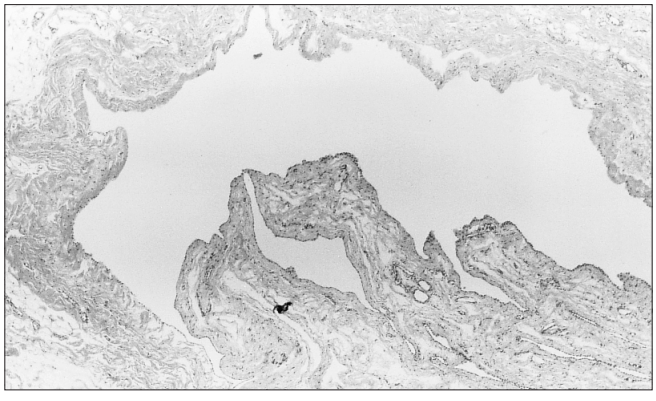

FIG. 4. Low-power view, showing the multiloculated mesothelial cyst with intervening loose connective tissue stroma (hematoxylin–eosin stain; original magnification × 40).

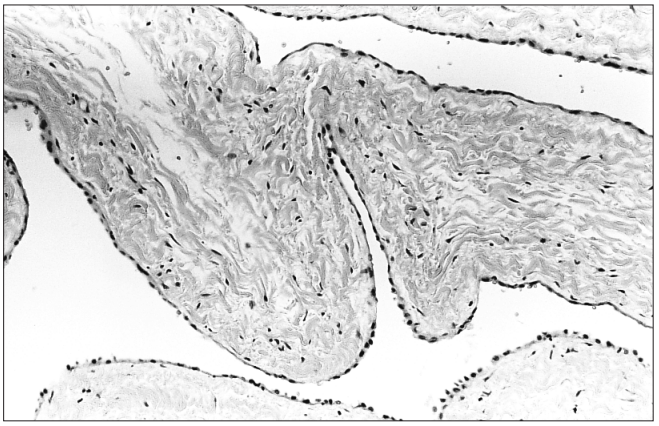

FIG. 5. High-power view revealing the benign mesothelial lining of the cystic spaces (hematoxylin–eosin stain; original magnification × 100).

mesothelioma without disruption or decompression.

We have demonstrated that a laparoscopic technique using 3 trocars and maintaining the integrity of the mass allows complete excision and removal of large intra-abdominal cystic masses. We believe these principles will reduce the chances of an incomplete resection and recurrence of the mass.

Complete resection of cystic abdominal masses facilitates the establishment of a diagnosis and assures a low incidence of recurrence. A laparoscopic approach to diagnosis and treatment provides essential anatomic information and enables a complete resection with minimal morbidity.

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