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CASE REPORT

Transabdominal laparoscopic excision of a giant retroperitoneal lymphangioma

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Summary
Retroperitoneal lymphangioma is exceptionally rare. We present a case of a 41-year-old asymptomatic patient with a large abdominal cystic mass detected on contrast-enhanced computed tomography (CT) scan, initially suspected to be pseudomyxoma peritonei. Laparoscopic exploration revealed a 30 x 30 cm multilocular cystic tumour originating from the retroperitoneum. The tumour was successfully resected laparoscopically, and pathological analysis confirmed a lymphangioma. The patient recovered well with no recurrence over five years. For uncertain tumour types, transabdominal laparoscopic exploration should be prioritised. For treating retroperitoneal lymphangiomas with the origin in the retroperitoneum and a main body in the abdominal cavity, the transabdominal laparoscopic approach is a less invasive and effective treatment option.
Keywords: laparoscopic surgery, retroperitoneal lymphangioma, transabdominal approach, cystic tumour, minimally invasive surgery

Case report

A 41-year-old male was admitted for evaluation of a left abdominal mass detected during a CT scan performed due to a routine health checkup from a referral hospital four months prior, during which no treatment was undertaken. Initial assessments suggested a possible mucinous tumour. The patient denied any abdominal pain, distension, nausea, vomiting, fever, or changes in bowel habits, and reported no significant recent weight changes. Upon admission, the physical examination revealed a flat abdomen without distended veins, visible peristalsis, or palpable masses. The abdomen was soft, non-tender, and there were no signs of ascites. Bowel sounds were normal at a frequency of approximately five per minute. The abdominal contrast-enhanced CT scan showed irregular fluid density lesions in the left abdominal pelvic cavity, extending from below the left diaphragm, stomach, spleen, and pancreas, anterior to the left kidney, and medial to the descending colon, extending to the bilateral ureters and bladder. The small intestine was displaced to the right side due to compression. The CT scan also demonstrated intraperitoneal fluid density foci, suggesting a mucinous tumour, but the exact nature and origin of the tumour could not be determined (Figure 1). The low-density foci exhibited no enhancement, consistent with a diagnosis of pseudomyxoma peritonei. Tumour markers, including CA-125, CA19-9, and CEA, were within normal limits. There were no abnormalities on the preoperative evaluations.

The patient underwent a laparoscopic exploration. Intraoperatively, a multilocular cystic tumour approximately 30 x 30 cm in size was identified, with minimal adhesions

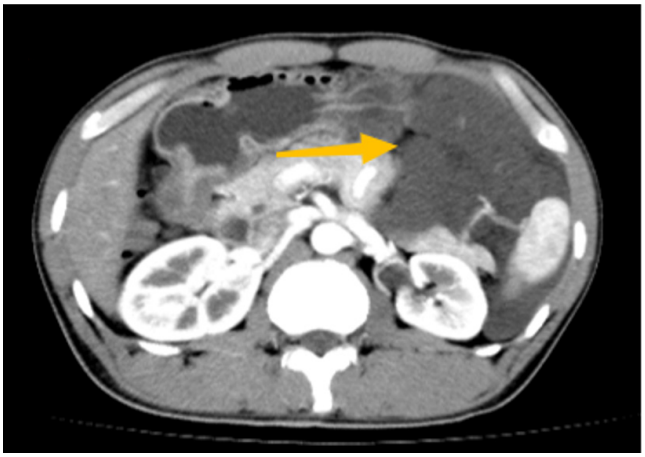

Figure 1: Abdominal contrast-enhanced CT. Superior mesenteric artery level (yellow arrow indicates lesions)

to the surrounding tissues. The tumour was located within the abdominal cavity, presenting as an irregular lobulated cystic mass closely associated with the transverse colon, stomach, greater omentum, spleen, and tail of the pancreas. It was primarily situated posterior to the mesentery, aligning with the retroperitoneum at the same level as the pancreas, suggesting a retroperitoneal origin. To ensure complete resection, the mesenteric root was opened, and dissection was meticulously performed using a combination of blunt and sharp techniques with an ultrasonic scalpel along the tumour's edge. The tumour's base was confirmed near the pancreatic tail and splenic hilum, further supporting its retroperitoneal origin. The tumour, due to its irregular cystic

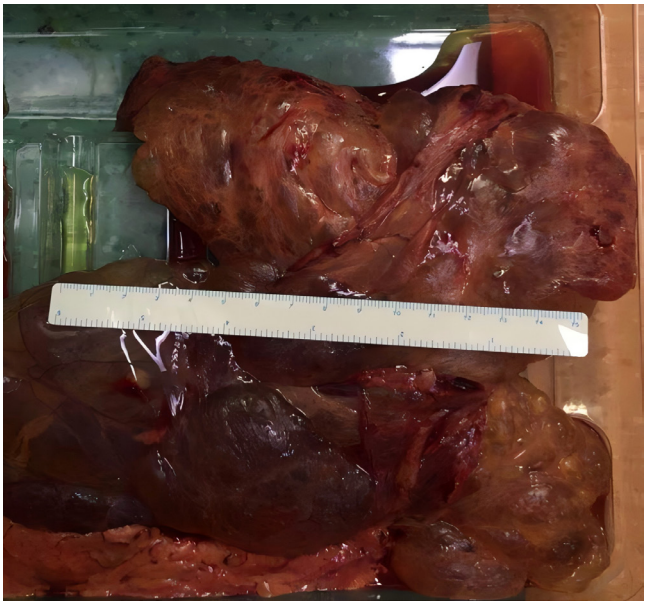

Figure 2: Postoperative photo of the cyst (maximum diameter 30 × 30 cm)

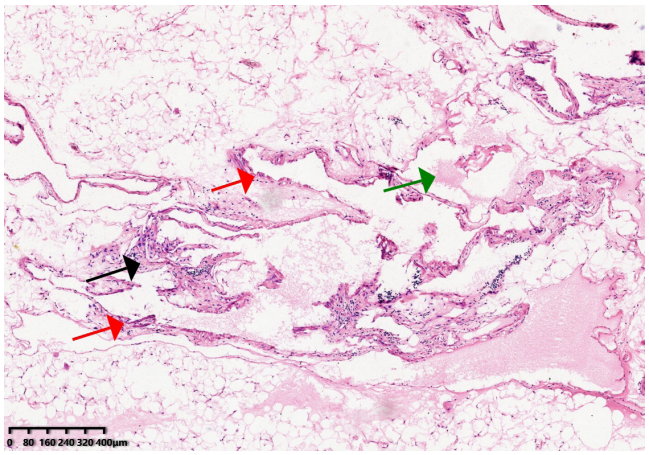

Figure 3: Postoperative haematoxylin and eosin stain slide demonstrating a retroperitoneal lymphangioma. Multilocular cystic lymphoid cavity with inflammatory lymphocyte infiltration (red arrows), cystic intraluminal necrosis (green arrow) and protein exudation, and marked hyperplasia of interstitial fibrous tissue (black arrow) (HE×40)

nature and some degree of deformability, was carefully removed intact through a 10 cm small incision after dissection (Figure 2). To prevent recurrence, an omentectomy was also performed.

Postoperative pathological examination confirmed the diagnosis of a retroperitoneal lymphangioma. Immunohistochemical staining revealed CD34 (-), D2-40 (+), CR (-), and Ki-67 (< 5%) (Figure 3). The patient had an uneventful postoperative recovery and was discharged on the seventh postoperative day. Follow-up over five years showed satisfactory recovery with no signs of recurrence.

Discussion

Lymphangiomas are benign lymphatic malformations characterised by isolated lymphatic tissue disconnected from the normal lymphatic system. The aetiology of lymphangiomas remains largely unclear. Most scholars believe they result from embryonic defects in the lymphatic system, lymphatic hypoplasia, and hamartomatous growth, leading to lymphatic vessel proliferation and dilation under the pressure of accumulated lymphatic fluid.[1,2] Some hypotheses suggest that secondary infections, previous surgeries, trauma, or radiation therapy causing lymphatic obstruction may also contribute to their development.[3] In adults, lymphangiomas can occur in any region containing lymphatic tissue, with approximately 50–75% of cases arising in the head, neck, and axilla. Abdominal lymphangiomas are rare, most commonly affecting the mesentery, omentum, colonic mesentery, and retroperitoneum.[1] This case represents a rare instance of a retroperitoneal lymphangioma in an adult.

The diagnosis of retroperitoneal lymphangioma primarily relies on clinical presentation, imaging studies, surgical exploration, and histopathological examination. Most patients are asymptomatic in the early stages, with non-specific symptoms, such as abdominal discomfort, pain, bloating, diarrhoea, or constipation appearing only when the tumour grows large enough to compress adjacent nerves, blood vessels, or organs.[4,5] Ultrasound is a cost-effective initial screening tool that can identify the cystic nature of the tumour but cannot determine its origin. Currently, CT and magnetic resonance imaging (MRI) are the most valuable imaging modalities for diagnosing retroperitoneal lymphangiomas. These investigations can delineate the tumour's composition, size, relationship with surrounding structures, and enhancement patterns, which assist to differentiate between solid and cystic masses.[6]

Retroperitoneal lymphangiomas need to be differentiated from other cystic retroperitoneal masses, such as mucinous cystadenomas, pancreatic pseudocysts, cystic mesotheliomas, epidermoid cysts, and hematomas.[6,7] On CT scan, retroperitoneal lymphangiomas typically appear as thin-walled, well-defined, multilocular cysts with low-density contents, and the cyst wall may show enhancement after contrast administration, although calcification is rare. MRI usually demonstrates low T1 and high T2 signal intensities, with no significant enhancement on the post-contrast images.

Laparoscopic resection of retroperitoneal lymphangiomas is rarely reported, with only about ten cases documented to date.[7-10] Historically, conventional open surgery has been the standard approach for these tumours. However, laparoscopic surgery, first reported by Targarona et al. in 1994, offers advantages such as minimal invasiveness, faster recovery, and reduced blood loss, though it requires surgical expertise.[8] Complete resection is crucial to avoid cystic fluid leakage and potential peritoneal seeding, especially in mucinous tumours. Târcoveanu et al. demonstrated in a retrospective study that laparoscopy is optimal for both diagnosis and treatment, providing safe and complete resection with reduced recurrence rates.[9] For larger and more complex cases, traditional open surgery is often chosen, though it typically results in longer hospital stays and greater blood loss.[7] Laparoscopic surgery, with its enhanced precision through magnification, is more suitable for the delicate handling of lymphangiomas, especially those near the urinary system.[10] Despite the large size of the tumour in this patient, laparoscopic exploration was chosen to accurately determine the tumour's location and nature, followed by laparoscopic resection, which offered advantages over open surgery.

Retroperitoneal lymphangiomas are typically approached via the retroperitoneal route. However, in this case, the exact nature of the tumour was initially unclear, prompting a transabdominal laparoscopic exploration. Given that the main body of the tumour was located in the abdominal cavity, the transabdominal laparoscopic approach was used to separate the tumour from surrounding tissues along the capsule. The root of the tumour was found to originate from the retroperitoneum, allowing for its complete excision.

For lymphangiomas with the main body located in the abdominal cavity and the origin in the retroperitoneum, transabdominal laparoscopic exploration can provide a definitive diagnosis and facilitate complete tumour excision. This approach reduces recurrence and offers a minimally invasive safe method.

Conflict of interest

The authors declared no conflict of interest.

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Ethical approval and patient consent

Ethical approval for this study was obtained from the Ethics Committee of Central Hospital Affiliated to Shandong First Medical University. Informed consent was obtained and signed by this patient.

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