

Cystic lymphangioma of the greater omentum coexisting with groin hernia in 2-year-old girl, mimicking intra-abdominal fluid with Nuck's canal hydrocele

Torbiel sieci większej
współistniejąca z przepukliną pachwinową u 2-letniej dziewczynki,
imitujące wolny płyn wewnątrztrzewnowy z wodniakiem kanału Nucka

Michał Pasierbek¹ , Maciej Mikulski², Wojciech Korlacki¹ 

¹Department of Children's Developmental Defects Surgery and Traumatology, Faculty of Medical Sciences in Zabrze,
Medical University of Silesia, Katowice, Poland

²DiaMMed, Nowy Targ, Poland

ABSTRACT

INTRODUCTION: Lymphatic cysts are congenital malformations that predominantly occur in the head and neck region. Intra-abdominal lesions are rare and may be present in the mesentery, retroperitoneal space, and greater omentum. When a cyst in the abdominal cavity is suspected, ultrasonography is the diagnostic procedure of choice. Radical resection, if feasible, is the preferred treatment, as incomplete excision can lead to recurrence. However, for lesions located in the mesentery and retroperitoneal space, aspiration with the administration of obliterating agents may be a better approach than surgical treatment. In recent years, laparoscopy has become a favorable alternative to laparotomy.

CASE REPORT: A 2-year-old girl was referred for surgery due to the presence of fluid in the abdominal cavity along with a coexisting right-sided hydrocele of the canal of Nuck. During the surgical procedure, a large multilocular lesion originating from the greater omentum and extending into the hernia sac of a right inguinal hernia was identified. The cyst was resected laparoscopically, and the inguinal hernia was repaired. Histopathological examination confirmed a lymphatic cyst.

CONCLUSIONS: Laparoscopic resection is a safe method for treating a large lymphatic cyst of the greater omentum.

KEYWORDS

cystic lymphangioma, greater omentum, Nuck's canal hydrocele, children

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Address for correspondence: dr n. med. Michał Pasierbek, Klinika Chirurgii Wad Rozwojowych Dzieci i Traumatologii, Wydział Nauk Medycznych w Zabrzu, Śląski Uniwersytet Medyczny w Katowicach, ul. 3 Maja 13–15, 41-800 Zabrze, tel. +48 32 370 43 54, e-mail: michal.pasierbek@sum.edu.pl



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STRESZCZENIE

WSTĘP: Torbiele chłonne są wrodzonymi malformacjami, występującymi głównie w obrębie szyi i głowy. Zmiany wewnątrzbrzuszne są rzadkie i mogą być obecne w krezce jelit, przestrzeni zaotrzewnowej i sieci większej. W przypadku podejrzenia torbieli w jamie brzusznej ultrasonografia jest procedurą diagnostyczną z wyboru. Preferowanym leczeniem, jeśli to możliwe, jest radykalna resekcja, podczas gdy niecałkowite wycięcie może prowadzić do nawrotu. Jednak w przypadku zmian zlokalizowanych w krezce jelita i przestrzeni zaotrzewnowej aspiracja z podażą środków obliterujących może być lepszą metodą niż leczenie operacyjne. W ostatnich latach laparoscopia stała się korzystną alternatywą dla laparotomii.

OPIS PRZYPADKU: 2-letnia dziewczynka została zakwalifikowana do operacji z powodu obecności płynu w jamie brzusznej oraz współistniejącego prawostronnego wodniaka kanału Nucka. W trakcie zabiegu stwierdzono dużą wielotorbielowatą zmianę, wychodzącą z sieci większej i wnikałą do worka przepuklinowego prawostronnej przepukliny pachwinowej. Torbiel usunięto laparoskopowo, a przepuklinę pachwinową zaopatrzono. Na podstawie badania histopatologicznego stwierdzono torbiel chłonną.

WNIOSEK: Wycięcie laparoskopowe jest bezpieczną metodą leczenia dużej torbieli chłonnej sieci większej.

SŁOWA KLUCZOWE

torbiel chłonna, sieć większa, wodniak kanału Nucka, dzieci

INTRODUCTION

Lymphangiomas are benign congenital malformations, primarily occurring in the neck and head regions [1,2]. Intra-abdominal changes can be found in the mesentery, retroperitoneal area, and the greater omentum, accounting for approximately 1% of all lymphangiomas [3]. Frequently, these changes remain asymptomatic and pose no immediate harm, often being discovered incidentally [4]. However, in certain cases, they can become symptomatic due to factors such as hemorrhage, rupture, infection, or exerting pressure on adjacent anatomical structures, potentially leading to life-threatening situations [4,5]. Diagnosis typically involves the use of ultrasound, computed tomography (CT) scans, and magnetic resonance imaging (MRI) examinations, with over 80% of cases being identified by the age of five [3]. The preferred treatment, if possible, is complete resection, which offers an excellent prognosis [1,4]. In cases of incomplete resection, there is a heightened risk of recurrence [1].

CASE REPORT

A 2-year-old girl was referred from another center to our department after an ultrasound examination at the referring center revealed fluid in the peritoneal cavity and right inguinal canal (diagnosed as a hydrocele of the canal of Nuck). Over a six-month observation period, the fluid volume gradually increased, prompting surgical intervention.

There were no comorbidities, prior hospitalizations, or surgeries in her medical history. She did not experience any pain. On physical examination, only a slight,

painless swelling of the inguinal canal was noted, which decreased upon compression.

In the ultrasound examination repeated upon admission to our hospital, fluid was noted in the mid and lower abdomen, with a separation ranging from 2 to 4.2 cm. A single hyperechogenic septum was observed in the right lower abdomen. A widened right canal of Nuck containing a small amount of fluid was also identified. The ovaries and uterus were unchanged, and no other abnormalities were observed.

The patient was qualified for laparoscopy. Three ports were used in a standard triangular configuration: a 10-mm port below the umbilicus for the laparoscope and two 5-mm trocars in the lower abdomen. The cyst's size necessitated a 10-mm port for its extraction. During the procedure, a large, thin-walled, multicystic formation was found, originating from the greater omentum (Figure 1) and extending from the right epigastrium along the right flank to the lower abdomen (Figure 2).

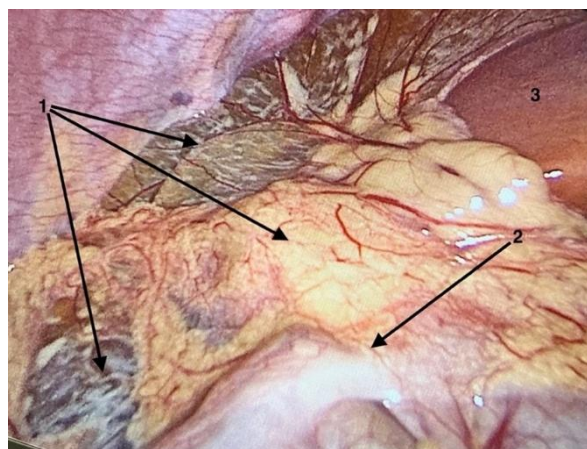


Fig. 1. Greater omentum with cyst. 1 – The arrows indicate greater omentum with large cystic lymphangioma. 2 – The arrow indicates transverse colon with attachment of greater omentum. 3 – The liver.

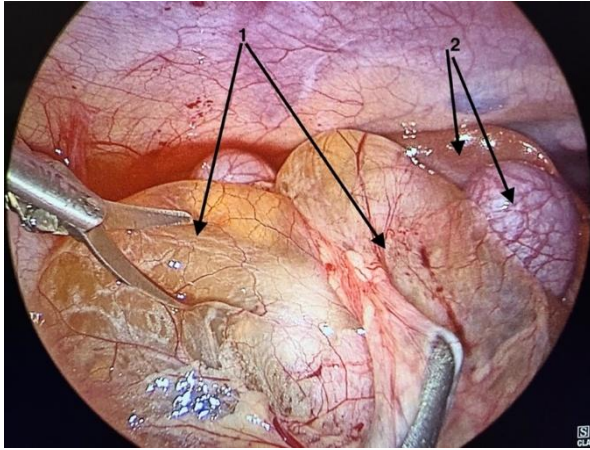


Fig. 2. The multicystic lymphangioma before opening with scissors in order to drain the fluid. 1 – The arrows indicate the cystic lymphangioma. 2 – The arrows indicate the liver with gallbladder.

The cyst extended into the right inguinal canal, mimicking a hydrocele of the canal of Nuck. Once the cyst (hernia content) was pulled from the inguinal canal, the open inguinal ring became visible (Figure 3).

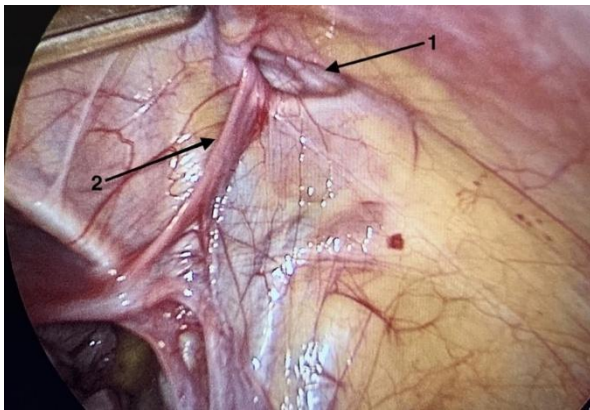


Fig. 3. Open right deep inguinal ring leading into hernial sac. 1 – The arrow indicates right deep inguinal ring. 2 – The arrow indicates teres ligament.

In the pelvis, it pushed the uterus towards the bladder. The ovaries remained unchanged and were located on the iliac vessels at the entrance to the pelvis. The omental multicystic formation was resected along with the greater omentum using the LigaSure device (Figure 4) after the larger cystic parts were opened to reduce its volume (Figure 2).

The material was extracted via a trocar in a medical bag (Figure 5).

An unchanged appendix, located fully retroceally, was removed in the standard manner due to its unfavorable position. The right inguinal hernia was repaired in a standard manner, as laparoscopic insertion of the entire hernia sac retrogradely into the peritoneal cavity and subsequent ligation was not feasible due to the hernia's size.

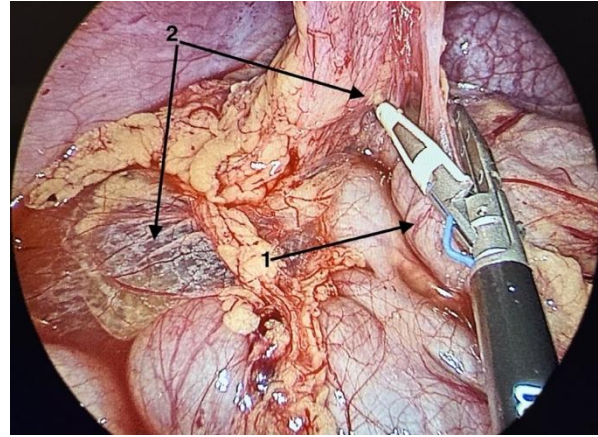


Fig. 4. Resection of multicyst with LigaSure device. 1 – The arrow indicates transverse colon. 2 – The arrows indicate multicystic lymphangioma.

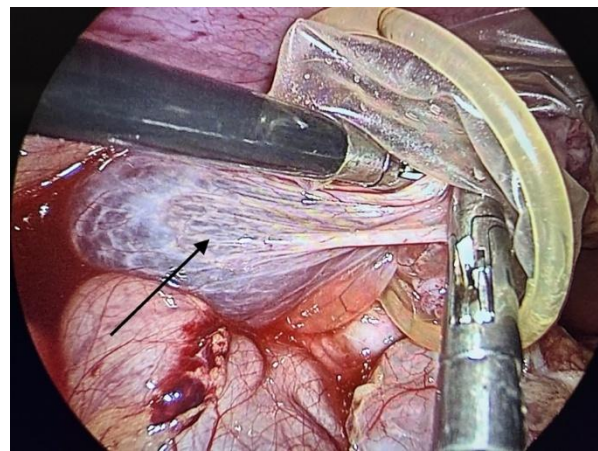


Fig. 5. Resected cyst inserted into endobag. The arrow indicates the cyst inserted to endobag.

The postoperative period was uneventful, and she was discharged on the third postoperative day.

On histopathological examination, a cyst measuring $11 \times 7 \times 0.6$ cm was identified in the greater omentum and diagnosed as a lymphangioma (immunohistochemical stains: CD34 positive, calretinin negative, SMA negative).

The patient was referred back to the surgeon who had originally referred her for surgery, and the follow-up period—which includes both physical examinations and ultrasound evaluations—now exceeds 30 months. No complications or recurrences have been observed during this time.

DISCUSSION

Lymphangiomas are congenital lesions originating from lymphatic channels that make up 5% of all benign lesions in children, primarily found in the neck and axilla [1,3,6]. They can also occur in other locations,

such as the mouth, arm, mediastinum, lung, and, though less commonly, in the abdomen [6]. Intra-abdominal changes may manifest in retroperitoneal locations, the mesentery, and the omentum [3]. Notably, 68% of omental cysts are detected in children under the age of 10 and 40% of those cysts are discovered incidentally [7]. These cysts may grow asymptotically, reaching sizes of up to 3 liters. However, as they enlarge, they can adversely impact neighboring organs, potentially causing disorders in the urinary or respiratory system, along with symptoms resulting from compression of the portal vein [7]. What's more, in 11–19%, bleeding, volvulus, or rupture of the cyst lead to an acute abdomen [7].

In our case, the ultrasound examination established the diagnosis, as ultrasonography is the diagnostic procedure of choice for suspected abdominal cysts, which typically appear as thin-walled, well-circumscribed structures, often exhibiting septa [3,6]. A CT scan might be valuable for assessing the size and origin of the cyst and distinguishing lymphangiomas from other abdominal cysts [3,6]. On the other hand, MRI is better in providing a classification of the content within the cyst [2,4]. The differential diagnosis mainly includes intra-abdominal abscesses, pancreatic tumors, retroperitoneal tumors, lipomas, as well as large ovarian cysts, duplications of the digestive tract and lymphomas [2,4].

In our case, we performed a complete resection of the cyst, as complete surgical excision is the treatment of choice (when feasible) and provides an excellent prognosis, whereas incomplete resection may lead to recurrence [1,4,6]. Some authors advocate resection even in asymptomatic patients, due to the risk of complications (as well as the exceedingly rare transformation of omental cysts into sarcoma or adenocarcinoma) [7,8]. Conversely, others recommend monitoring asymptomatic patients through repeated imaging, while a third group suggests considering the use of sclerosing agents—particularly for retroperitoneal or mesenteric lymphangiomas that pose a high risk of incomplete resection or may lead to short bowel syndrome if a long segment of bowel and its mesentery must be removed [5,9]. Moreover, some experts remain skeptical about these approaches because they often yield poor results, with recurrence rates of up to 100% [2,4,9]. In the review by Tsopozidi et al. [10], it is noteworthy that no recurrence occurred in cases involving omental lymphangiomas, which is consistent with our own observation.

Laparotomy has long been the traditional surgical approach for abdominal interventions. However, with

the advancement of technology, laparoscopy has emerged as an appealing and viable alternative [4]. Laparoscopy offers several advantages over laparotomy, including reduced pain, a more favorable cosmetic outcome, and a quicker postoperative recovery. While laparoscopy generally provides a superior view of the abdominal cavity, it is important to note that in the presence of large cysts, visibility can be compromised, and there is an elevated risk of potential trauma to adjacent organs [4]. As a result, some authors have suggested that for large cysts, an additional incision may be necessary [7,10].

In our case, laparoscopy was initially used as a diagnostic tool, given the preoperative suspicion of intra-abdominal fluid and a hydrocele of the canal of Nuck. During the procedure, an omental cyst was found extending into the open inguinal canal—an observation that underscored the advantage of laparoscopy over laparotomy by providing a precise diagnosis. A complete resection of the cyst was then performed without requiring any additional incision.

Regarding the groin hernia, an open repair was chosen because this approach is considered the gold standard for pediatric inguinal hernias, even though minimally invasive methods are becoming increasingly popular. As previously noted, laparoscopic reduction and ligation of the entire hernia sac retrogradely into the peritoneal cavity was not feasible due to the hernia's size. Moreover, although the percutaneous internal ring suturing (PIRS) technique is recognized worldwide, it has a higher rate of hernia recurrence [11,12] and contradicts the fundamental principles of excising the hernia sac, performing a high ligation, and repairing the inguinal canal. Consequently, a method with a lower risk of recurrence was selected.

Ultimately, the core surgical approach involved abdominal surgery performed laparoscopically—first as a diagnostic measure, then as definitive treatment for the lymphangioma once the diagnosis was confirmed.

CONCLUSIONS

Congenital omental cysts are rare, and their consideration should always be part of the differential diagnosis for abdominal cystic lesions and intraabdominal fluid. Optimal management involves complete resection, offering the most favorable prognosis. Laparoscopy presents a viable alternative to laparotomy. In our case, laparoscopic excision has proven to be a safe and practical method for effectively managing a sizable omental lymphangioma in a young girl.

Authors' contribution

Study design – M. Mikulski, M. Pasierbek, W. Korlacki

Manuscript preparation – M. Pasierbek

Literature research – M. Pasierbek

Final approval of the version to be published – W. Korlacki

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