

SPONTANEOUS RESOLUTION OF A LARGE NEONATAL ABDOMINAL LYMPHATIC MALFORMATION MANAGED CONSERVATIVELY: A CASE REPORT

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Abstract

Introduction: Abdominal lymphatic malformations are rare benign malformations of the lymphatic system, most commonly diagnosed during childhood, whereas prenatal and neonatal diagnosis are exceedingly rare. These lesions can enlarge and cause significant morbidity due to compression of adjacent organs. Therefore, surgical excision is traditionally considered the treatment of choice.

Objective: To present a case of a neonate with a large abdominal lymphatic malformation that was managed conservatively with a favorable outcome.

Case presentation: We present the case of a male moderate preterm neonate with apparent colonic dilatation on fetal ultrasonography, raising suspicion of intestinal atresia. After birth, the infant developed abdominal distension and respiratory distress. Radiological evaluation revealed a cystic lesion located in the left hemiabdomen and left retroperitoneal space, consistent with a large neonatal abdominal lymphatic malformation, measuring 55 × 65 × 133 mm at its maximum dimensions. A multidisciplinary board evaluated the risks of surgical intervention versus conservative observational management. At 16 months of age, complete spontaneous resolution of the lesion was documented.

Conclusion: This rare outcome suggests that not all abdominal lymphatic malformations in the neonatal period require surgical treatment. In carefully selected, clinically stable neonates, an initial strategy of watchful waiting supported by strict clinical and ultrasonographic surveillance is a safe alternative to immediate surgery or sclerotherapy. Establishing clear multidisciplinary intervention criteria remains essential to ensure patient safety during conservative observation.

Keywords: conservative approach; lymphatic malformation; preterm neonate.

Introduction

Abdominal lymphatic malformations are rare benign malformations of the lymphatic system, most commonly diagnosed during childhood, whereas prenatal and neonatal presentation are exceedingly rare (1). These lesions result from abnormal embryologic development of the lymphatic system, spe-

cifically from failed communication between lymphatic ducts and the venous system (2). Although lymphangiomas can occur throughout the body, approximately 95% are located in the neck and axillary regions, whereas intra-abdominal localization accounts for only 4–5% of cases (3). Mesenteric, omental, and retroperitoneal involvement is particularly uncommon (1, 7).

These lesions can enlarge and cause significant morbidity due to compression of adjacent organs, intestinal obstruction, volvulus, hemorrhage, infection, or rupture. Therefore, surgical excision is traditionally considered the treatment of choice (1). However, emerging evidence suggests that clinically stable neonates without acute abdominal emergencies may undergo spontaneous regression, highlighting the potential role of conservative management.

Objective

To present a case of a neonate with large abdominal lymphatic malformation that was managed conservatively with a favorable outcome.

Case Presentation

We present the case of a moderately preterm male neonate delivered at 32+1 weeks of gestation by cesarean section following a pregnancy complicated by oligohydramnios. Fetal ultrasonography demonstrated apparent colonic dilatation, raising suspicion of intestinal atresia; however, prenatal findings remained inconclusive (Figure 1a). Birth weight was 1915 g, with Apgar scores of 6, 6, and 7 at the 1st, 5th, and 10th minute, respectively.



1a.



1b.

Figure 1a. Transverse sonographic section of the fetal abdomen demonstrating dilated intestinal loops

Figure 1b. Neonatal abdominal radiograph showing soft-tissue opacity suggestive of an intra-abdominal cystic lesion.

Initial resuscitation required positive pressure ventilation via a T-piece resuscitator. Upon transfer to the neonatal intensive care unit, non-invasive respiratory support with continuous positive airway pressure (CPAP) was initiated, and surfactant was administered via the less invasive surfactant administration (LISA) technique due to respiratory distress syndrome. CPAP respiratory support was required until postnatal day 6, followed by high-flow nasal cannula (HFNC) support until postnatal

day 8.

On admission, physical examination revealed abdominal distension and subcostal retractions. The abdomen was soft on palpation, with no palpable localized masses or organomegaly. Meconium was passed within the first 24 hours of life.

Parenteral nutrition was initiated on postnatal day 3 and continued until postnatal day 8. An initial enteral feed trial on postnatal day 4 resulted in transient bilious vomiting, prompting temporary feed cessation and diagnostic workup. Minimal enteral feeding was subsequently and successfully reintroduced on postnatal day 6 using expressed breast milk and preterm formula, with feeds progressively advanced to full oral feedings by postnatal day 12, without recurrence of emesis.

Laboratory findings were unremarkable except for transient hyperbilirubinemia, which was managed with phototherapy. Inflammatory markers remained within normal limits throughout hospitalization.

Given the prenatal suspicion of gastrointestinal pathology and the presence of postnatal abdominal distension with bilious vomiting, further diagnostic evaluation was performed.

Initially, a plain abdominal radiography was performed (Figure 1b). Contrast enema demonstrated a preserved rectosigmoid ratio with no radiographic signs of Hirschsprung disease. Bowel loops were displaced by a large cystic intra-abdominal mass.

Abdominal ultrasound revealed a large multiloculated cystic lesion occupying the left hemiabdomen with displacement of adjacent abdominal structures, highly suggestive of a lymphatic malformation.

Magnetic resonance imaging of the abdomen and pelvis provided precise anatomical delineation, confirming a large multicystic lesion involving the left hemiabdomen and retroperitoneal space, measuring $55 \times 65 \times 133$ mm (Figure 2a-c). The lesion demonstrated low signal intensity on T1-weighted images and high signal intensity on T2-weighted images, with internal septations showing mild post-contrast enhancement. The lesion extended through the left inguinal canal into the left hemiscrotum and caused displacement of adjacent organs, including the left kidney. These characteristic imaging features strongly supported the diagnosis of an extensive abdominal lymphatic malformation.

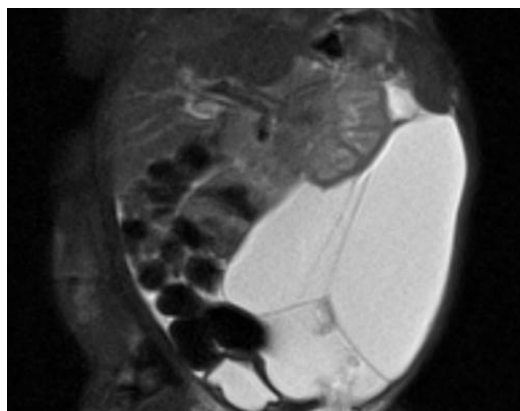


Figure 2a. Sagittal T2-weighted MRI

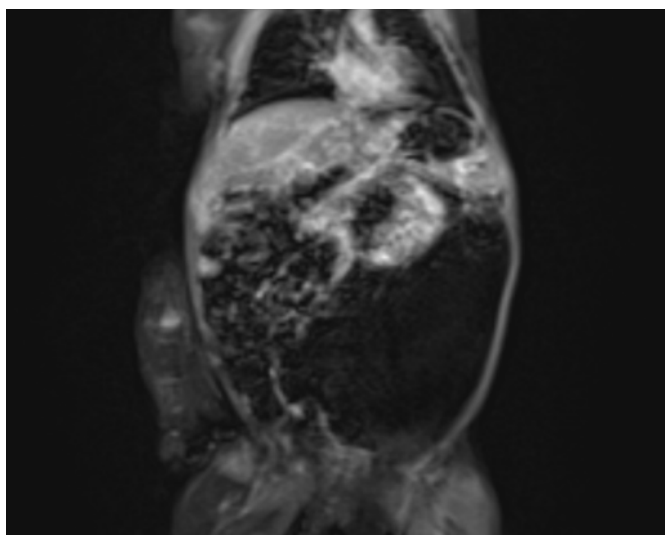


Figure 2b. Axial T2-weighted MRI

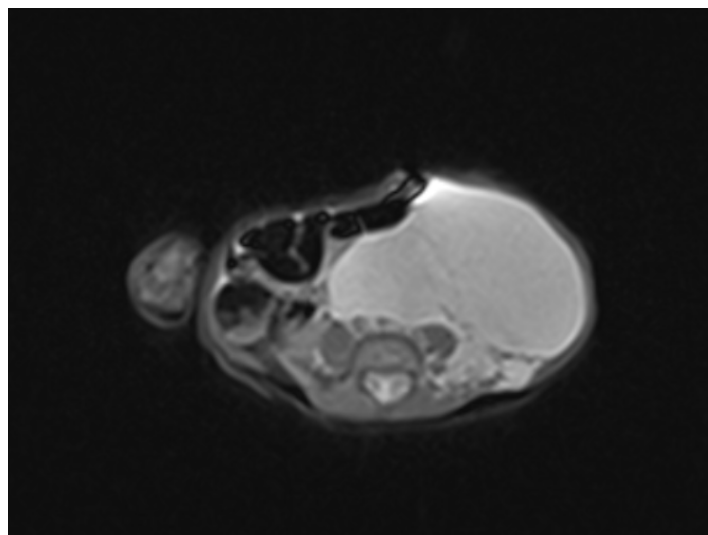


Figure 2c. Coronal T2-weighted MRI

Figure 2. Magnetic resonance imaging of the abdomen and pelvis demonstrating a large multiloculated cystic lesion consistent with abdominal lymphatic malformation. The lesion occupies the left hemiabdomen, displaces adjacent bowel loops and abdominal organs, and extends through the left inguinal canal into the left hemiscrotum.

Echocardiography revealed mild myocardial hypertrophy with preserved cardiac function and persistent fetal shunts. Cranial ultrasonography showed no intracranial abnormalities.

Given that no tissue biopsy, fluid aspiration, or histopathological examination was performed, a working diagnosis of an abdominal lymphatic malformation was established based on multiplanar

MRI criteria.

A multidisciplinary board—comprising neonatologists, pediatric surgeons, and pediatric radiologists—evaluated the risks of surgical intervention (e.g., extensive bowel resection, vascular injury, retroperitoneal trauma) versus conservative observational management. Given that the infant achieved full enteral feeding tolerance, displayed consistent weight gain, maintained normal renal function, and showed no signs of bowel ischemia or acute abdomen, conservative observation was selected. Nonetheless, a strict clinical rescue plan was established with the parents and the surgical team. Immediate surgical intervention was planned if predefined triggers were met (progressive lesion enlargement, recurrent bilious vomiting or clinical signs of intestinal obstruction/volvulus, inability to maintain full enteral nutrition or progressive failure to thrive, acute abdominal distress, renal compromise or inguinoscrotal complications).

Following discharge from the NICU on postnatal day 22, the patient was enrolled in a protocolized outpatient follow-up program consisting of serial pediatric surgical evaluations and standardized abdominal ultrasonography (every three months), with the patient’s clinical course summarized in the timeline presented in Figure 3. At 16 months of age, abdominal ultrasonography confirmed complete resolution of the lymphatic malformation. Ongoing clinical surveillance through 24 months of age confirmed no recurrence.

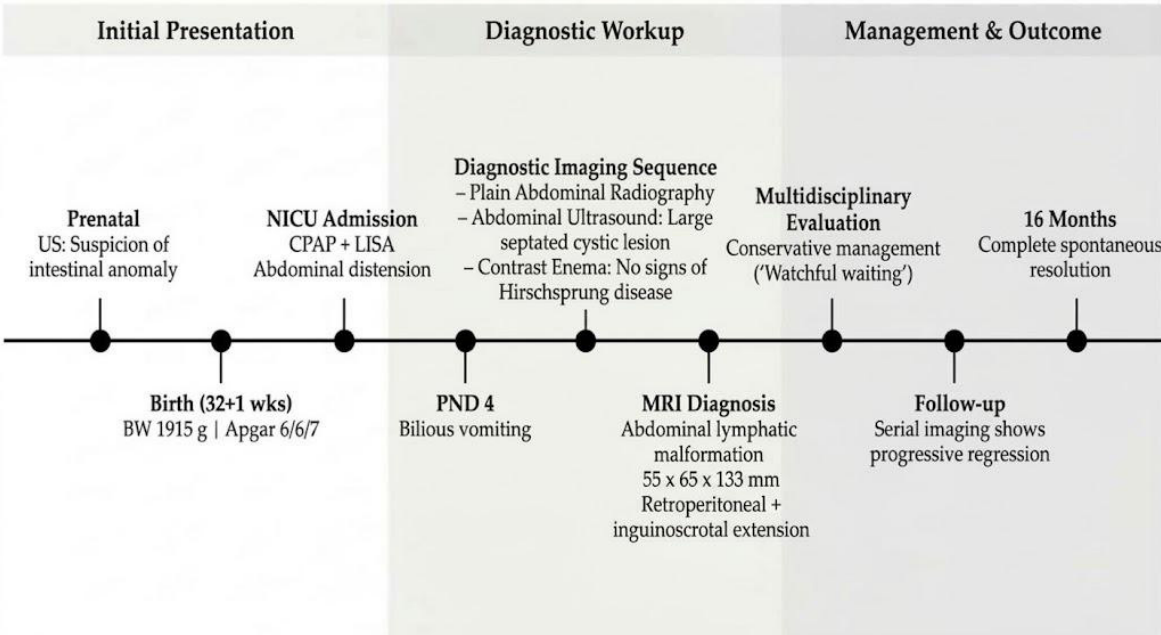


Figure 3. Timeline of the patient’s clinical course

Discussion

Due to the rarity of intra-abdominal lymphangiomas, the uncertainty regarding their natural history and biological behavior, and the difficulty in obtaining a preoperative histological diagnosis, the question of whether and when surgery should be performed remains controversial (4). Given that preoperative tissue diagnosis is rarely available and histopathological confirmation was not performed in our patient, classifying such lesions purely as “mesenteric lymphangiomas” based solely on imaging findings may be imprecise, particularly when retroperitoneal and inguinoscrotal structures are simultaneously involved. Therefore, the broader diagnostic umbrella of abdominal lymphatic malforma-

tion more accurately reflects the clinical reality when managed nonoperatively.

Surgical excision is generally considered the standard treatment because of the potential risk of bowel obstruction, volvulus, hemorrhage, infection, rupture, and compression of adjacent structures (1,5). However, several reports have described spontaneous regression of lymphatic malformations, particularly in clinically stable patients without acute complications. Consequently, conservative management with close radiological follow-up has emerged as a potential alternative in carefully selected cases (5). Recent literature also highlights the growing role of minimally invasive and conservative approaches in certain lymphatic malformations, including sclerotherapy and observational management in clinically stable patients (6).

The clinical course of lymphatic malformations is highly variable, ranging from spontaneous regression to progressive enlargement associated with severe complications (8). Therefore, individualized management based on clinical presentation, lesion extent, and patient stability remains essential.

Ultrasonography is an excellent modality for the detection and follow-up of these lesions and is generally preferred for serial monitoring (5,7). Computed tomography and magnetic resonance imaging are valuable diagnostic tools, while MRI provides the most detailed anatomical characterization of lesion extent and its relationship with surrounding structures (5). Differential diagnosis of neonatal cystic intra-abdominal lesions includes duplication cysts, mesothelial cysts, ovarian cysts, meconium pseudocysts, teratomas, and cystic neuroblastoma, making detailed radiological evaluation essential (7).

Our case highlights that even extensive lesions causing anatomical displacement can safely undergo complete spontaneous resolution without intervention. Despite the large size of the lesion and its extensive retroperitoneal and inguinoscrotal extension, the absence of persistent bowel obstruction, hemodynamic instability, progressive lesion enlargement, or clinical deterioration supported a conservative approach. However, the safety of “watchful waiting” critically depends on defining strict clinical stability—characterized by adequate intestinal transit, absence of systemic toxicity, normal renal function, and growth—alongside a predefined surgical rescue plan.

To the best of our knowledge, reports of complete spontaneous resolution of a large neonatal abdominal lymphatic malformation with retroperitoneal and inguinoscrotal extension remain extremely limited in literature.

Conclusion

Complete spontaneous resolution can occur even in extensive neonatal abdominal lymphatic malformations. In carefully selected, clinically stable neonates, an initial strategy of watchful waiting supported by strict clinical and ultrasonographic surveillance is a safe alternative to immediate surgery or sclerotherapy. Establishing clear multidisciplinary intervention criteria remains essential to maintaining patient safety during conservative observation.

Declarations

Ethics approval and consent to participate: A formal approval from the Ethics Committee was not required for this study.

Informed consent: Written informed consent was obtained from the patient's parent.

Conflict of interest: The authors declare no financial or personal conflicts of interest.

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Author's contributions: All authors contributed to the conception of the case report, the data collection, the manuscript preparation, and approved the final version of the manuscript.

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Use of Artificial Intelligence (AI) tools: The authors declare that no artificial intelligence tools were used in the preparation of this manuscript.

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