Case Report

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Neonatology Section

Urinary Bladder Diverticulum Presenting as a Palpable Abdominal Mass in a Neonate: A Case Report

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ABSTRACT

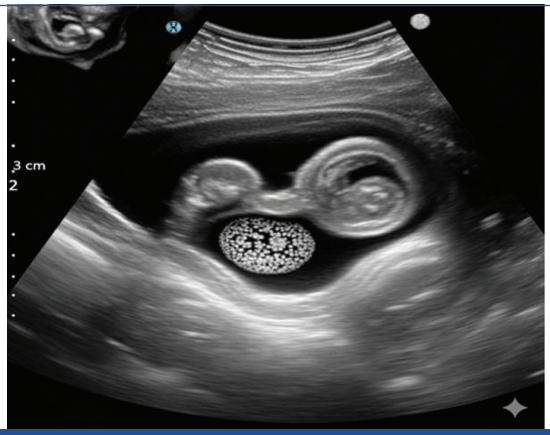
Congenital Bladder Diverticulum (CBD) is a rare neonatal anomaly that typically presents with urinary tract infections, haematuria, or voiding dysfunction. However, it can occasionally present as an abdominal or suprapubic mass, which is an uncommon manifestation in the absence of urinary symptoms. This case report describes a full-term female neonate born at 39 weeks whose antenatal ultrasound revealed an abdominopelvic cyst. Postnatal MRI demonstrated a large, wide-necked diverticulum (3.3×3.9×2.8 cm) arising from the right superolateral wall of the bladder, extending into the right iliac fossa. The infant remained asymptomatic with respect to urinary symptoms, with normal urine output and no infection. Conservative management was undertaken, involving regular ultrasonographic monitoring and a planned Micturating Cystourethrogram (MCU). Over a six-month follow-up period, there was no increase in the size of the diverticulum, no evidence of vesicoureteral reflux, and preserved renal function. This case report underscores that in neonates, bladder diverticulum can present as a cystic abdominal mass even in the absence of classic urinary signs. Early anatomical imaging and longitudinal follow-up are crucial for identifying potential complications and guiding appropriate management. This case highlights the importance of considering congenital bladder anomalies in the differential diagnosis of neonatal abdominal cysts, even when urinary symptoms are absent.

Keywords: Abdominopelvic cyst, Magnetic resonance imaging, Paediatric urology, Suprapubic mass

CASE REPORT

A female neonate was born at 39 weeks' gestation via elective lower segment caesarean section to a mother with a history of one prior caesarean section. Her birth weight was 3.2 kg, APGAR scores were eight at one minute and nine at five minutes. Delayed cord clamping was performed, and 0.5 mL of intramuscular vitamin K was administered; the neonate voided urine and passed meconium within the first 24 hours of life.

At 32 weeks, a routine prenatal ultrasound showed a cystic abdominopelvic structure with echogenic contents, located between foetal bowel loops [Table/Fig-1]. This was interpreted as an "abdominopelvic cyst." No other anomalies were detected. There were no comorbidities in the mother, and the parents were counselled regarding the outcome.



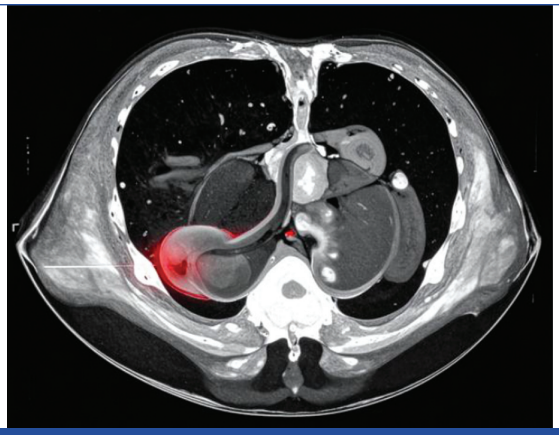
[Table/Fig-1]: Prenatal ultrasound image demonstrating a cystic abdominopelvic structure with internal echogenic contents, located between foetal bowel loops.

On examination, the neonate was clinically stable, with no evidence of respiratory distress. Abdominal assessment revealed a soft, lax abdominal wall and a non-tender, well-defined swelling palpable in the right iliac fossa, extending toward the suprapubic region [Table/Fig-2]. Mild deviation of the umbilicus toward the left side was noted. Other systemic examination was within normal limits. There were no clinical signs suggestive of urinary tract infection.

[Table/Fig-2]: Black arrow mark shows a 4×3 cm swelling in the right iliac fossa extending toward the suprapubic region.

On day one of life, an abdominal ultrasound revealed a cystic structure; however, communication with the bladder could not be clearly established. The urinary bladder was midline in position and demonstrates mild distension. Both kidneys were normal in size with no evidence of hydronephrosis. Subsequent abdominal MRI demonstrated a wide-necked diverticulum measuring 3.3 × 3.9 × 2.8 cm, arising from the right superolateral wall of the bladder and extending into the right iliac fossa. The diverticulum had a thin wall and a clear connection to the bladder lumen [Table/Fig-3]. Urine output was adequate, with documented volumes consistent with normal neonatal requirements. There were no signs of leakage or obstructive voiding.

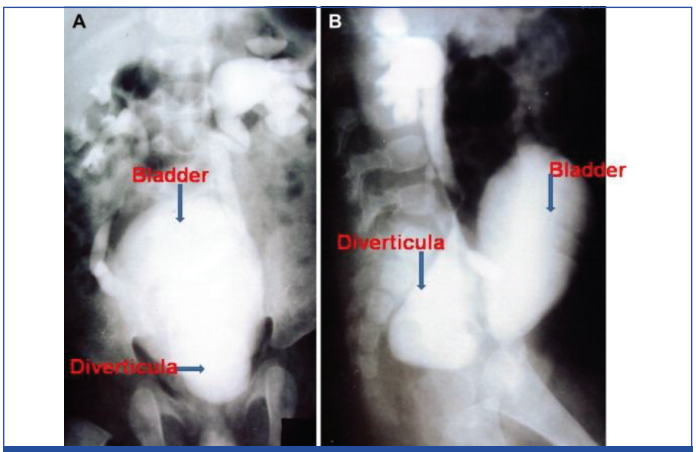
The initial differential diagnoses included a urachal remnant or cyst, mesenteric cyst, ovarian cyst, and other bladder anomalies such as a duplicated bladder. Based on imaging findings, specifically the presence of a wide-necked diverticulum arising from the right superolateral bladder wall with clear communication to the bladder



[Table/Fig-3]: Abdominal MRI demonstrated a wide-necked diverticulum measuring 3.3×3.9×2.8 cm, arising from the right superolateral wall of the bladder and extending into the right iliac fossa.

lumen, a final diagnosis of congenital urinary bladder diverticulum was established. A multidisciplinary consultation involving a paediatric surgeon and paediatric urologist was conducted. As the neonate remained asymptomatic regarding urinary function and showed no signs of infection, a conservative management approach was adopted. The plan included regular clinical follow-up, monitoring for urinary tract infections, periodic ultrasound examinations to assess the kidneys and bladder, and scheduling an MCU at around three months of age to evaluate for vesicoureteral reflux or other potential complications. The parents were counselled on warning signs such as fever, abnormal urinary stream, and haematuria.

At one month of age, follow-up ultrasound demonstrated a stable size of the diverticulum with no evidence of hydronephrosis or new abnormalities. The MCU performed at three months revealed no vesicoureteral reflux, and the diverticulum remained unchanged in size [Table/Fig-4]. By six months of age, the infant continued to be clinically well, with no symptoms of urinary infection, normal renal function tests, and stable imaging findings. A plan for surgical intervention, specifically diverticulectomy, was reserved for the future in the event of developing complications such as urinary tract infection, reflux, renal impairment, or an increase in diverticulum size. Written informed consent was obtained from the parents for the publication of this case report and any accompanying images. The patient was followed up one month back at 10 months of age with no symptoms of urinary infection, normal renal function tests, and no increase in swelling size with the same imaging findings.



[Table/Fig-4]: MCU performed at three months revealed no vesicoureteral reflux, and the diverticulum remained unchanged in size.

DISCUSSION

The most noteworthy aspect of this case is its presentation as an abdominal mass, which is rare and can easily be mistaken for more common paediatric conditions such as ovarian cysts (in females), gastrointestinal duplications, or urachal anomalies. The absence of typical urinary symptoms broadened the differential diagnosis and delayed the recognition of a bladder diverticulum. Garat JM et al., noted that CBD in children is often associated with lower urinary tract symptoms such as dysuria, recurrent infections, or voiding dysfunction [1]. However, atypical presentations, like in this case, may remain asymptomatic or present with vague, non-specific signs, complicating the diagnostic process.

Abou Zahr R et al., highlighted that CBD may occasionally present without urinary symptoms, especially in adults, and may be misdiagnosed when the primary presentation is an abdominal mass [2]. This reinforces the importance of including urinary tract anomalies in the differential diagnosis of neonatal abdominal masses, particularly when the relationship to micturition is not initially apparent. Histologically, congenital diverticula lack the muscular layer typically found in the normal bladder wall and are instead composed of mucosa and submucosa, predisposing them to ineffective emptying and progressive urine accumulation [3]. This pathophysiology helps explain the progressive enlargement of the diverticulum observed in our case.

Ultrasound remains the initial imaging modality of choice and typically reveals a cystic lesion adjacent to the bladder. However, its ability to demonstrate communication with the bladder lumen can be limited [1]. In our case, MRI provided more precise anatomical details, supporting its utility in complex cases. Psutka SP and Cendron M emphasised that cross-sectional imaging, MCU, and cystoscopy are essential for complete evaluation, especially in the presence of suspected complications such as vesicoureteral reflux [4]. Hebert KL and Martin AD further supported the role of detailed imaging not just for diagnosis but also for guiding treatment planning, particularly when surgical intervention is considered [5]. Tao C et al., observed in their recent study of paediatric patients that some presented only with urinary incontinence or haematuria, without overt infection, and that MRI was especially useful in confirming the diverticulum [6].

In our patient, a conservative approach was adopted due to the absence of symptoms or infection. The management plan included regular ultrasonographic monitoring, scheduled MCU to assess for reflux, and initiation of urosepsis prophylaxis only if infection occurred. Surgical intervention was reserved for potential future symptomatic progression or development of complications. Cheng S et al., described a prenatally identified bladder anomaly that remained minimally symptomatic postnatally until imaging confirmed a diverticulum [7]. Similarly, Berrondo C et al., reported a neonate with urinary retention who initially underwent catheter-based management and later surgical excision, suggesting that staged management may be effective in selected patients [8]. Minimally invasive techniques such as endoscopic resection, injection of bulking agents at the diverticular neck, and fulguration are emerging options for selected cases. Open or laparoscopic diverticulectomy remains the treatment of choice for symptomatic or complicated cases. Sevim Y and Ilçe Z successfully used laparoscopic excision in three paediatric cases, demonstrating the safety and feasibility of minimally invasive approaches [9]. Valiev RY et al., also demonstrated favourable outcomes using endovideosurgical techniques in children with bladder diverticulum [10]. Çavis T et al., further highlighted that large diverticula may present with non-specific symptoms such as inguinal pain, reinforcing the importance of thorough imaging and multidisciplinary collaboration [11].

This case contributes to the growing body of literature on atypical presentations of CBD in neonates and reinforces the importance of a multidisciplinary approach involving neonatologists, paediatric urologists, and radiologists to ensure accurate diagnosis and timely intervention.

CONCLUSION(S)

This case highlights the rare but clinically significant scenario in which a congenital urinary bladder diverticulum presents as a palpable abdominal mass. It serves as a reminder that not all abdominal

masses in children originate from the gastrointestinal or reproductive systems. Prompt identification and definitive surgical treatment are critical to prevent long-term complications. Awareness of such atypical presentations can improve diagnostic accuracy and patient outcomes. Ongoing vigilance and long-term follow-up are essential to safeguard renal function and ensure sustained bladder health.

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