

An Obstructing Ileal Duplication Cyst Masked by *Campylobacter* Gastroenteritis: a Rare Case Report

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Keywords

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Abstract

Enteric duplication cysts are rare congenital anomalies. We report an 8-month-old girl presenting with symptoms of acute gastroenteritis and a stool PCR positive for *Campylobacter*. Clinical deterioration prompted additional imaging, revealing mechanical small bowel obstruction caused by a thick-walled pelvic structure. Subsequent explorative laparoscopy uncovered an ileal enteric duplication cyst. A segmental ileal resection was performed, and histopathology confirmed the diagnosis. The patient recovered uneventfully and was discharged on day 10. This case highlights the diagnostic challenge posed by the coexistence of infectious gastroenteritis and surgical pathology, emphasizing the need for clinical reassessment and a low threshold for further investigations.

Introduction

Enteric duplication cysts (EDC) are rare congenital anomalies of the gastrointestinal tract, estimated to occur in 1 in 4.500 live births (1). These anomalies are defined by a cystic or tubular structure that shares an epithelial lining, a smooth muscular wall, and a common blood supply with the adjacent segment of intestine (2). Clinical presentation is variable and depends on size, location, and complications, which may include bleeding, perforation, or bowel obstruction (3). Acute infectious gastroenteritis, on the other hand, is a frequent cause of abdominal symptoms in the paediatric population and is often diagnosed clinically or confirmed with stool testing (4). The overlap in symptomatology between infectious and surgical abdominal conditions, including fever, vomiting, diarrhoea, and abdominal tenderness, can complicate early diagnosis. The identification of a causative pathogen may further narrow clinical focus towards a single explanation, introducing the risk of diagnostic anchoring and potentially delaying recognition of a concurrent surgical pathology.

Case report

An 8-month-old full-term girl presented to our clinic with a general malaise, accompanied by vomiting, anorexia, and a fever of 38.3°C. According to her caregiver, she had experienced more than six episodes of mucous stools over the previous 12 hours.

Her past medical history was unremarkable, except for an episode of laryngitis stridulosa 2 months earlier. She had no prior history of abdominal surgery. On clinical examination, the patient appeared alert but irritable. Abdominal assessment revealed a hyperperistaltic, non-distended abdomen with mild abdominal tenderness. Cardiopulmonary examination was normal except for mild tachycardia (170 beats/min). Skin turgor was preserved, with no evidence of dehydration. Neurological examination revealed no signs of meningeal irritation. Laboratory tests were normal except for an elevated C-reactive protein (CRP) of 71.8 mg/L (reference value: <5 mg/L); white blood cell count was within the normal range at $10.8 \times 10^3/\mu\text{L}$ (reference $6.0\text{--}17.5 \times 10^3/\mu\text{L}$). As acute gastroenteritis was initially suspected, the patient was started on intravenous fluid therapy. Within 24 hours after admission, the patient's fever persisted, reaching a

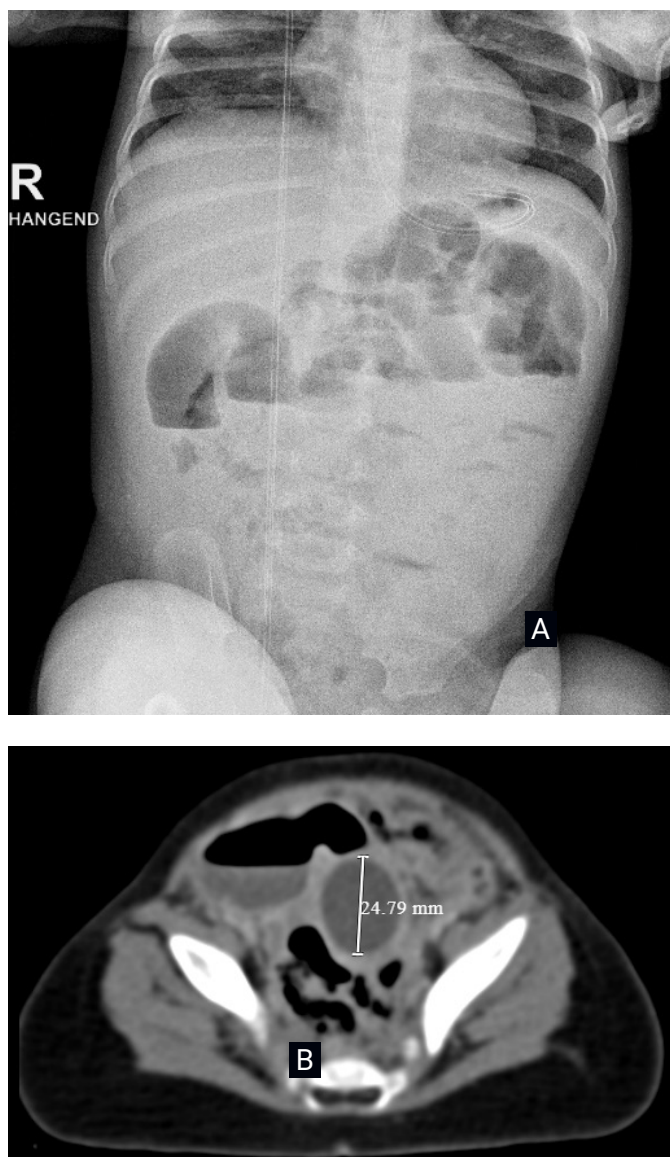


FIGURE 1: Plain abdominal radiograph demonstrating multiple dilated small bowel loops with air-fluid levels (A), and axial abdominal computed tomography showing a 2.4 cm fluid-filled, thick-walled pelvic structure (B).

maximum temperature of 38.9 °C, and her abdomen became increasingly tender with guarding. Given the evolving concern for an acute abdomen, additional imaging was performed and empiric antibiotic therapy was initiated with amoxicillin/clavulanic acid at a dose of 100/10 mg/kg/day divided into three doses. On day one of hospitalization, azithromycin (one 10 mg/kg/day) was subsequently added following a positive stool PCR for *Campylobacter*. Blood and urinary cultures were negative. Abdominal ultrasound was performed as the first-line investigation and demonstrated dilated small bowel loops and free intraperitoneal fluid, but did not reveal a definitive cause. A subsequent plain abdominal radiograph demonstrated multiple dilated small bowel loops with air-fluid levels, supporting the suspicion of mechanical obstruction (Figure 1A). Complementary computed tomography (CT) confirmed preterminal small bowel dilatation. It showed a 2.4 cm fluid-filled, thick-walled pelvic structure,

without signs of ileocolic intussusception (Figure 1B). Given the clinical deterioration and imaging findings suggestive of mechanical obstruction, the paediatric surgical team proceeded with urgent diagnostic laparoscopy under general anaesthesia. Perioperative exploration revealed a cystic lesion within the mesentery of the preterminal ileum, closely adherent to the adjacent bowel wall, consistent with an enteric duplication cyst. This lesion created a clear transition point with proximal small bowel dilatation and distal ileal collapse, identifying it as the cause of the mechanical small bowel obstruction. No evidence of bowel perforation, volvulus, or intussusception was observed. A segmental ileal resection, including the cystic lesion, was performed via a small laparotomic approach (Figure 2). Intestinal continuity was restored with an end-to-end anastomosis. Histopathology confirmed a 27 mm x 27 mm enteric duplication cyst with full-thickness involvement of the bowel wall. The lesion was focally lined by a single-layered columnar mucinous epithelium, and the lamina propria contained glands of antral type (Figure 3). Postoperatively, azithromycin was discontinued after a total of five days of therapy, while amoxicillin/clavulanic acid was continued for a total of two weeks because of the increased risk of bacterial translocation secondary to mechanical small bowel obstruction. CRP increased after surgery, peaking at 167 mg/L on postoperative day 1 before rapidly declining. The patient received total parenteral nutrition for five days and had an uneventful recovery, allowing discharge 10 days after surgery.

Discussion

This case underscores the need for a critical and cautious diagnostic approach when evaluating infants with evolving abdominal symptoms. The coexistence of an infectious and a surgical pathology, *Campylobacter* enteritis and an ileal enteric duplication cyst (EDC), increased the risk of diagnostic anchoring. Similar associations between enteric duplication cysts and concomitant gastrointestinal infections have only rarely been reported, highlighting the diagnostic challenge posed by overlapping clinical presentations (5,6). An important consideration raised by this case is whether the *Campylobacter* infection actively precipitated obstruction in an otherwise quiescent duplication cyst. Several mechanisms are plausible. First, mucosal and submucosal oedema induced by infection could have narrowed the intestinal lumen adjacent to the cyst. Second, increased peristaltic activity during acute enteritis may have promoted kinking at the transition point. At last, reactive mesenteric lymphadenopathy and oedema could have altered bowel positioning, further impairing luminal passage. Imaging played a pivotal role in establishing the diagnosis. Ultrasound, the first-line modality in paediatric abdominal complaints, revealed dilated bowel loops and free fluid but failed to delineate the cyst. This limitation has been reported in emergency settings, where bowel gas and inflammation obscure the “double wall” or



FIGURE 2: Laparotomic image of the ileal duplication cyst, showing a dilated (left) and collapsed (right) small intestine.

“gut signature” sign that is typically pathognomonic for duplication cysts (3). A subsequent plain abdominal radiograph demonstrated multiple dilated bowel loops with air-fluid levels, supporting the suspicion of mechanical obstruction. Complementary CT further characterized the obstruction by identifying a thick-walled, fluid-filled pelvic lesion while excluding intussusception. However, given the patient’s progressive clinical deterioration and signs of an acute abdomen, urgent surgical exploration was indicated irrespective of the precise underlying aetiology. In retrospect, the additional diagnostic value of CT should therefore be carefully weighed against the radiation exposure associated with imaging during infancy. MRI is rarely used as a first-line modality due to the need for sedation in infants, though lesions typically show low T1- and high T2-weighted signal intensity when performed (3). At last, surgical resection remains the treatment of choice for symptomatic EDCs. Because the cyst and native bowel share a wall and blood supply, segmental resection with primary anastomosis is generally required. Endoscopic approaches carry a higher risk of incomplete cyst removal, which leaves residual tissue that increases the likelihood of recurrence or malignant changes (7).

Conclusion

Enteric duplication cysts are rare but important causes of bowel obstruction in infants. Their nonspecific presentation can mimic or be masked by infectious gastroenteritis. Careful clinical reassessment, judicious use of imaging, and timely surgical intervention are essential to ensure accurate diagnosis and optimal patient

outcomes. Clinicians should maintain a high index of suspicion for surgical pathology in infants with atypical or worsening abdominal symptoms, even in the context of confirmed infectious gastroenteritis.

Statements

The authors have no conflicts of interest to declare concerning the topic discussed in this manuscript. Informed consent was obtained from the patient’s legal guardians for publication of this case report and accompanying images.

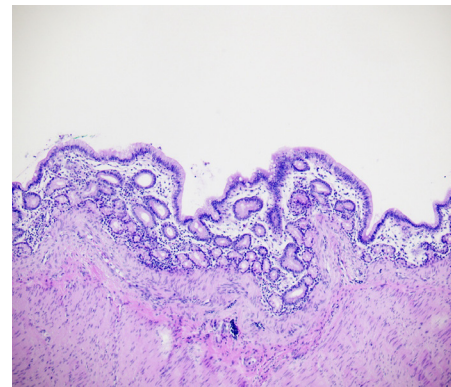


FIGURE 3: Hematoxylin and eosin staining (original magnification 10X) with high-power view; the cyst wall is lined by gastric mucosa and glands, with smooth muscle.

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