Case Report

When A Cradle Conceals Danger: Neonatal Appendiceal Perforation – A Case Report

Asuwani Maran[1], Angerica Praveeta Santhosam[1], Sakti Thillai[2], Siti Farah Sophia MN[3], Nur Zani AH[4], Syahmi A[2], Shovena Kumar[2], M. Munirah Ain[4]

Author's Affiliation:
1- Department of Paediatrics, Hospital Tuanku Jaafar, Jalan Rasah, 70300 Seremban, Negeri Sembilan, Malaysia
2- Department of Paediatric Surgery, Hospital Tuanku Jaafar, Jalan Rasah, 70300 Seremban, Negeri Sembilan, Malaysia
3- Department of Pathology, Hospital Tuanku Jaafar, Jalan Rasah, 70300 Seremban, Negeri Sembilan, Malaysia
4- Department of Radiology, Hospital Tuanku Jaafar, Jalan Rasah, 70300 Seremban, Negeri Sembilan, Malaysia

Correspondence:
Asuwani Maran Email: asuwani84@gmail.com

Received on: 15-Jun-2026 Accepted for Publication: 12-Sep-2026

ABSTRACT

Bilious vomiting in the neonatal period mandates urgent evaluation, classically raising concern for intestinal obstruction. Inflammatory intra-abdominal pathology may masquerade as obstructive disease, creating significant diagnostic ambiguity. We report a term neonate born via caesarean section to a mother with chorioamnionitis and Group B Streptococcus colonization. The neonate was admitted for presumed early-onset sepsis and started on empirical intravenous antibiotics. Initial examination was normal, and the infant tolerated feeds well. On Day 4 of life, the baby developed bilious vomiting without abdominal distension. Blood investigations revealed thrombocytopenia and raised inflammatory markers. Abdominal radiography revealed multiple dilated bowel loops with absent distal gas, suggestive of distal obstruction. Surgical consultation was obtained, with small bowel atresia as the initial working diagnosis. Abdominal ultrasound was inconclusive due to bowel gas, limiting visualization of the mesenteric vessels. Exploratory laparotomy revealed a sealed perforated appendix confirmed on histopathology. Postoperatively the neonate made a good recovery. Neonatal appendicitis often presents with nonspecific symptoms such as lethargy, poor feeding, bilious vomiting, or sepsis-like signs, rather than classical appendicitis symptoms. This atypical presentation contributes to delayed diagnosis and a high risk of early perforation. Perforation occurs rapidly due to the thin appendiceal wall, underdeveloped omentum, and limited ability to localize infection. Imaging may mimic intestinal obstruction, further complicating recognition. Clinicians should maintain a high index of suspicion in neonates with persistent abdominal symptoms or sepsis unresponsive to antibiotics. Early surgical intervention is essential to reduce morbidity and improve outcomes. Neonatal appendicitis demands early recognition and urgent surgical management.

Keywords: neonatal appendicitis; bilious vomiting; intestinal obstruction; sepsis like presentation; perforated appendix

INTRODUCTION

Neonatal appendicitis is an exceptionally rare surgical condition, with an estimated incidence of 0.04–0.2% of neonatal admissions.[1] The condition is more common in males, with a male to female ratio approximately 3:1.[1] Its rarity has been attributed to several proposed protective anatomical and physiological factors, which includes funnel shape with a wide opening into the cecum, neonate's recumbent position, a liquid diet comprised of breast milk or formula (resulting in an absence of fecaliths), and low incidence of lymphatic hyperplasia due to gastrointestinal and respiratory infections.[3,4,5]The clinical presentation is often nonspecific and closely mimics neonatal sepsis. Reported features include poor feeding, vomiting, abdominal distension, lethargy, and temperature instability, with few or no localized abdominal signs. This overlap frequently contributes to delayed

recognition and diagnosis. Bilious vomiting in neonates is a key warning sign requiring urgent evaluation, as it is commonly associated with intestinal obstruction distal to the ampulla of Vater. The differential diagnoses include malrotation with midgut volvulus, intestinal atresia, meconium ileus, Hirschsprung disease, and necrotizing enterocolitis. Appendicitis remains a rare but important differential diagnosis in this context. Radiological evaluation is often limited in neonatal abdominal pathology due to nonspecific findings. Ultrasonography may be inconclusive because of technical constraints and the small size of neonatal structures, and imaging features may overlap with other causes of intestinal obstruction. Neonatal appendicitis carries a high risk of perforation due to anatomical and physiological immaturity, including a thin appendiceal wall, poorly developed omentum, and limited ability to contain intra-abdominal infection.[3,4,6] These factors contribute to its atypical presentation and increased morbidity.

Aim

To demonstrate the diagnostic challenge of neonatal appendicitis when it mimics intestinal obstruction and to emphasize the importance of early operative management.

Case Description

The infant was born at 38 weeks' gestation via cesarean section to a mother with chorioamnionitis and Group B Streptococcus colonization. The neonate was admitted shortly after birth for presumed early-onset sepsis and commenced on empirical intravenous antibiotics (benzylpenicillin and gentamicin). Initial clinical examination was unremarkable, with stable vital signs and good feeding tolerance. The infant passed meconium within the first 24hours of life, with further bowel opening on Day 2 and Day 3 of life.

Figure 1. Prominent dilated bowel loops with absent distal bowel gas)



Following the onset of symptoms on day 4, which were light bilious vomiting without abdominal distension, blood investigations revealed thrombocytopenia, with a nadir platelet count of 95 × 10^9/L, and a markedly elevated C-reactive protein (CRP) of 156 mg/L, indicating a significant inflammatory response.

Abdominal radiography demonstrated multiple dilated bowel loops with absence of distal bowel gas (Figure 1). Differential diagnosis was septic ileus and possible distal intestinal obstruction. Abdominal ultrasonography was limited by excessive bowel gas and was non-diagnostic. The neonate was observed closely for the next 24hours, during which the ryle's tube aspiration was dark bilious and increasing in volume without any further bowel opening.

Figure 2a: Strictured bowel segment



Figure 2b. Body of appendix perforated and covered with slough



Given the persistent concern for mechanical obstruction, an exploratory laparotomy was performed 48 hours after the onset of symptoms. Intraoperatively, a sealed perforated appendix was identified, with surrounding inflammatory slough adherent to the terminal ileum, resulting in mechanical obstruction (Figures 2a and 2b). No evidence of intestinal atresia or other congenital obstructive lesions was found. Histopathological examination confirmed acute suppurative appendicitis with transmural neutrophilic infiltration, areas of necrosis, and muscular wall disruption (Figures 3a and 3b), consistent with perforated appendicitis. Postoperatively, the infant recovered well, tolerated feeds, and was discharged in stable condition without complications.

Figure 3a. Ulcerated surface replaced by neutrophilic exudate and necrosis

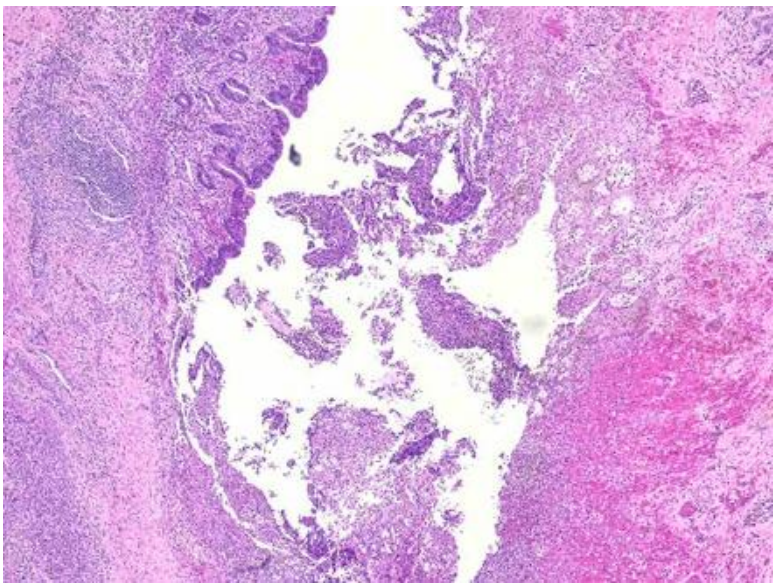
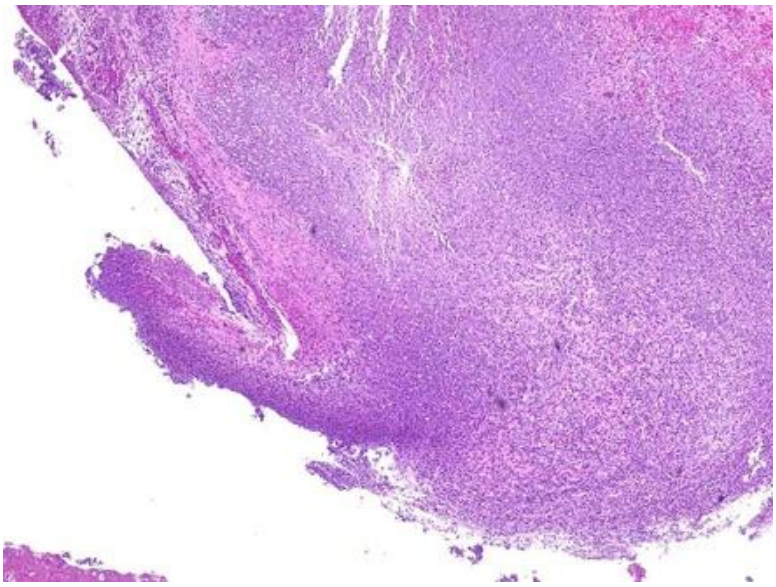


Figure 3b. Area of perforation and muscular disruption



DISCUSSION

This case illustrates the diagnostic difficulty of distinguishing neonatal sepsis from an acute surgical abdomen, as both may present with nonspecific systemic and gastrointestinal features. The pathogenesis of neonatal appendicitis and perforation remains poorly understood and is likely multifactorial. In this patient, maternal chorioamnionitis and Group B Streptococcus colonisation may have contributed to an inflammatory or infectious milieu, although a direct causal relationship cannot be established. Local appendiceal obstruction may have further promoted bacterial overgrowth, increased intraluminal pressure, ischaemia, and perforation. The perforated appendix with inflammatory slough adherent to the terminal ileum and associated bowel obstruction at laparotomy is consistent with a possible local inflammatory mechanism, although the exact sequence of events remains uncertain.

The initial diagnosis of sepsis was reasonable given the perinatal risk factors. However, the subsequent development of bilious vomiting was an important indication to reconsider a surgical cause. Bilious vomiting in a neonate warrants urgent assessment for intestinal obstruction, including malrotation with midgut volvulus, intestinal atresia, Hirschsprung disease, meconium ileus, and necrotising enterocolitis. The absence of marked abdominal distension or overt peritoneal signs does not exclude significant intra-abdominal pathology, as clinical signs of peritonitis may be subtle in neonates.

Persistent thrombocytopenia and markedly elevated C-reactive protein indicated significant systemic inflammation but were not specific for sepsis. Their persistence alongside gastrointestinal symptoms and failure to improve with medical treatment increased concern for an underlying intra-abdominal process. In this setting, inconclusive ultrasonography did not exclude surgical pathology. The combination of bilious vomiting, radiographic evidence of distal obstruction, and persistent inflammation therefore justified exploratory laparotomy.

The operative findings provided an explanation for the obstructive presentation. Perforated appendicitis with surrounding inflammatory slough involving the terminal ileum likely caused extrinsic compression and distortion of adjacent bowel loops, producing distal obstruction and bowel dilatation. This inflammatory process may therefore have masked the primary appendiceal pathology by mimicking mechanical small bowel obstruction.

This case emphasizes that neonatal appendicitis, although rare, should be considered in neonates with persistent gastrointestinal symptoms and systemic inflammation, particularly when bilious vomiting develops or there is inadequate response to treatment for presumed sepsis. When clinical suspicion for a surgical abdomen remains high despite nondiagnostic imaging, timely surgical evaluation is essential.

Learning Points

Neonatal appendicitis may present with nonspecific sepsis-like features and bilious vomiting rather than classic signs of appendicitis, making early diagnosis challenging. The presence of bilious vomiting together with markedly elevated inflammatory markers should prompt consideration of an underlying surgical abdomen, even in the absence of obvious abdominal signs. Inconclusive radiologic findings should not delay surgical evaluation when clinical suspicion for intestinal obstruction or significant intra-abdominal pathology remains high.

Conclusion

Neonatal appendicitis remains a rare but important cause of acute abdomen and may closely mimic neonatal sepsis at presentation. This case highlights the importance of early surgical consultation when gastrointestinal symptoms, particularly bilious vomiting, occur alongside persistent or worsening inflammatory markers despite treatment for presumed sepsis. Clinicians should recognize discordance between an initial diagnosis of sepsis and evolving gastrointestinal or radiologic findings suggestive of obstruction. In such situations,

timely escalation to surgical evaluation and consideration of operative intervention are essential to avoid delays in definitive diagnosis and management.

REFERENCES

1. Cui M, Liu W, Liu Q, Wang Y, Guo Z. Analysis of cases of neonatal appendicitis from a tertiary care unit. *Indian J Pediatr*. 2022;89(10):996–1002.
2. Raveenthiran V. Neonatal appendicitis (Part 1): a review of 52 cases with abdominal manifestation. *J Neonatal Surg*. 2015; 4:4.
3. Eze A, Chime C, Eze O, Kwon G, Moris D, Tracy E. Perforated appendicitis without peritonitis in a premature newborn: a case report. *J Pediatr Surg Case Rep*. 2023; 99:102743. doi: 10.1016/j.epsc.2023.102743.
4. Ivanova E, Garunkštienė R, Liubšys A. Appendicitis in a newborn: case report and review of the literature. *Acta Med Litu*. 2022;29(1):131–135. doi:10.15388/Amed.2021.29.1.3.
5. Alsereihi R, Alzahrani L, Haroun W. Neonatal perforated appendicitis: a rare presentation mimicking localized necrotizing enterocolitis. *J Pediatr Surg Case Rep*. 2022; 85:102432. doi: 10.1016/j.epsc.2022.102432.
6. Schwartz KL, Gilad E, Sigalet D, Yu W, Wong AL. Neonatal acute appendicitis: a proposed algorithm for timely diagnosis. *J Pediatr Surg*. 2011;46(11):2060–2064. doi: 10.1016/j.jpedsurg.2011.07.018.