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Case Report

Ileocolic Intussusception in a 7-Month-Old Infant: Early Diagnosis through Ultrasonography: A Case Report

Mandava Mahima Swaroopa[1,*], Meghana Regulapati[2], Reshma Gayathri Kassetti[2], Mohammad Karishma[2], Kurra Varun[2]

[1]Department of Pharmacy, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh, INDIA.
[2]Doctor of Pharmacy (Pharm D), KL College of Pharmacy, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur, Andhra Pradesh, INDIA.

ABSTRACT

Ileocolic intussusception is one of the most common causes of intestinal obstruction in infancy and represents a paediatric surgical emergency. Early diagnosis is essential to prevent bowel ischemia, necrosis, and perforation. We report the case of a 7-month-old female infant who presented with non-bilious vomiting and blood-stained stools. Clinical examination revealed a palpable abdominal mass. Ultrasonography demonstrated the characteristic "target sign," confirming ileocolic intussusception. Initial supportive management and pneumatic reduction were attempted but were unsuccessful, necessitating open surgical manual reduction. The postoperative course was uneventful, with gradual reintroduction of feeds and complete recovery. This case highlights the importance of early ultrasonographic diagnosis and a structured stepwise management approach in achieving favourable outcomes in infants with ileocolic intussusception.

Keywords: Case report, Ileocolic intussusception, Infant, Surgical reduction, Ultrasonography.

Correspondence:
Dr. Mandava Mahima Swaroopa
Assistant Professor, Department of Pharmacy, Koneru Lakshmaiah Education Foundation, Vaddeswaram, Guntur-522502, Andhra Pradesh, INDIA.
Email: mandavanmahima12@gmail.com

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INTRODUCTION

Intussusception is a condition in which a segment of the intestine telescopes into an adjacent distal segment, resulting in bowel obstruction and compromised vascular supply. Ileocolic intussusception is the most common type in infants and young children and represents a paediatric surgical emergency, as delayed diagnosis may lead to bowel ischemia, necrosis, and perforation (Marsicovetere *et al.*, 2017; Mandeville *et al.*, 2012).

Although the exact etiology remains unclear in most cases, ileocolic intussusception is often idiopathic and has been associated with lymphoid hyperplasia of the terminal ileum, sometimes triggered by viral infections such as adenovirus (Mandeville *et al.*, 2012). Clinical presentation in infants can be variable, and classical features may not always be present, making early diagnosis challenging (Bhisitkul *et al.*, 1992; Kimia *et al.*, 2018).

Ultrasonography is the imaging modality of choice for suspected intussusception in children due to its high sensitivity, specificity, and non-invasive nature. The presence of the characteristic "target" or "doughnut" sign on ultrasound allows for rapid confirmation and timely management (Meister *et al.*, 2020; Hull *et al.*, 2022). This case is presented to emphasise the importance of maintaining a high index of suspicion in infants presenting with vomiting and blood-stained stools and to highlight the critical role of early ultrasonographic diagnosis and a stepwise management approach in achieving favourable clinical outcomes.

This case report has been prepared in accordance with the CARE Case Report Guidelines (2016). All essential components, including patient information, clinical findings, diagnostic assessment, therapeutic intervention, follow-up, patient perspective, and informed consent, have been included to improve accuracy, transparency, and clinical usefulness.

This case was evaluated and managed at the Department of Paediatrics in collaboration with the Department of Paediatric Surgery at Andhra Hospital, a tertiary care teaching hospital in Vijayawada, Andhra Pradesh, India

CASE PRESENTATION

A 7-month-old female infant was brought to the hospital with blood-stained stools and non-bilious vomiting of one-day duration. There was a palpable abdominal mass on examination, but she was otherwise haemodynamically stable. She was born at term via normal vaginal delivery to non-consanguineous parents, weighing 7.7 kg at presentation and measuring approximately 70

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cm in height. Developmental milestones were age-appropriate, with normal gross motor, fine motor, and social development.

There was no significant past medical or surgical history, and no family history of gastrointestinal or congenital disorders. The child had been healthy before this episode, with no previous hospitalisations or known medical conditions. On presentation, the infant was alert and haemodynamically stable. General physical examination revealed no pallor, icterus, cyanosis, or dehydration. Vital signs were within normal limits for age. Abdominal examination revealed a palpable mass on the left side of the abdomen, accompanied by mild tenderness. There was no abdominal distension, guarding, or rigidity. Bowel sounds were present.

Systemic examination showed clear bilateral air entry on respiratory examination and normal heart sounds without murmurs on cardiovascular assessment. Neurological examination was normal, with age-appropriate tone and power in all limbs. The infant presented with acute gastrointestinal symptoms and was diagnosed with ileocolic intussusception using ultrasonography. A stepwise management approach was followed, beginning with supportive care and an attempted pneumatic reduction, which was unsuccessful and necessitated surgical manual reduction. The postoperative course was uneventful, with gradual reintroduction of feeds and complete recovery.

Diagnostic Assessment

Based on the acute presentation with non-bilious vomiting, blood-stained stools, and a palpable abdominal mass, ileocolic intussusception was clinically suspected. Abdominal ultrasonography was performed as the initial imaging modality due to its non-invasive nature and high diagnostic accuracy in infants. Ultrasonography demonstrated a bowel-within-bowel configuration with a characteristic concentric "target" or "doughnut" sign in the right lower abdomen, which is diagnostic of intussusception. There were no sonographic features suggestive of bowel perforation or free intraperitoneal fluid.

The diagnosis was made promptly without significant diagnostic difficulty, allowing for early initiation of a stepwise management approach. Based on the clinical presentation and ultrasonographic findings, a final diagnosis of ileocolic intussusception was established.

Therapeutic Intervention

The patient was kept nil by mouth and initiated on intravenous maintenance fluids (½ DNS at 4 mL/kg/hr) with close monitoring of hydration and urine output. Empirical broad-spectrum antibiotic therapy was started to prevent infectious complications, including Inj. Cefotaxime 50 mg/kg/dose IV every 8 hr, Inj. Amikacin 15 mg/kg/day IV once daily, and Inj. Metronidazole 7.5 mg/kg/dose IV every 8 hr. Analgesia and antipyretic support were provided with Inj. Paracetamol 10-15 mg/kg/dose IV every 8 hr, along with gastric acid suppression using Inj. Pantoprazole 1 mg/kg/day IV once daily.

A stepwise therapeutic approach was adopted. Pneumatic reduction was attempted as the first-line intervention, but was unsuccessful. Consequently, the patient underwent diagnostic laparoscopy, which was converted to open surgical manual reduction through a right upper transverse incision. The ileocolic intussusception was successfully reduced, with no evidence of bowel necrosis or perforation.

Postoperatively, intravenous fluids, antibiotics, and analgesics were continued, followed by gradual advancement to oral feeds. The patient was later transitioned to oral medications and tolerated feeds well without complications.

Follow-up and Outcomes

The postoperative period was uneventful, with the patient remaining haemodynamically stable throughout recovery. Intravenous fluids and medications were continued initially, followed by gradual reintroduction of oral clear fluids, which were well tolerated. Complementary feeding was subsequently initiated without difficulty.

The patient showed progressive clinical improvement, with resolution of vomiting and no further episodes of blood-stained stools. No postoperative complications such as infection, bowel obstruction, or recurrence were observed. The infant was discharged in stable condition, tolerating feeds well and with normal activity for age, and was advised routine outpatient follow-up.

DISCUSSION

Intussusception is defined as the telescoping of one segment of the intestine into an adjacent distal segment and is the most common cause of intestinal obstruction in infancy and early childhood (Restivo *et al.*, 2017). It predominantly affects infants between 4 and 36 months of age, with ileocolic intussusception being the most frequent type (Mandeville *et al.*, 2012).The present case involves a 7-month-old infant, appropriately falling within this peak incidence age group, thereby representing a typical demographic for ileocolic intussusception.

Neonatal intussusception is distinctly rare and contributes to only a small proportion of intestinal obstruction cases during the neonatal period (Wang *et al.*, 1998). In contrast to neonates-who often present with nonspecific or atypical symptoms-infants more commonly demonstrate recognizable gastrointestinal features. In the present case, the infant presented with bloody stools and vomiting, which are consistent with classical manifestations described for intussusception in this age group (Kimia *et al.*, 2018). This underscores the importance of maintaining a high index of suspicion even when the complete classical triad is not evident at presentation.

Previous literature has reported atypical presentations in older children, including a 2.5-year-old child who primarily exhibited lethargy and neurological symptoms secondary to bowel ischemia (Badour *et al.*, 2021). Such presentations may delay diagnosis due to misleading initial features. In contrast, our patient exhibited predominantly gastrointestinal symptoms, enabling earlier clinical suspicion and timely diagnostic evaluation. This comparison highlights the influence of age on symptomatology and the need for age-specific diagnostic vigilance.

Ultrasonography played a pivotal role in establishing the diagnosis in this case, as well as in previously reported paediatric cases (Badour *et al.*, 2021). Identification of the characteristic "target" or "doughnut" sign allowed prompt confirmation of ileocolic intussusception and directly guided subsequent management decisions (Figure 1). In accordance with paediatric imaging recommendations, ultrasonography remains the investigation of choice due to its high sensitivity, lack of ionising radiation, and bedside feasibility (Figure 2) (Badour *et al.*, 2021).

Management strategies for intussusception vary according to age, clinical stability, and disease progression. While selected neonatal cases may be managed conservatively when clinically stable and without evidence of obstruction or perforation (Raza *et al.*, 2014), infants typically require a stepwise management approach beginning with non-operative reduction (Marsicovetere *et al.*, 2017; Restivo *et al.*, 2017). In the present case, pneumatic reduction was attempted but proved unsuccessful, necessitating surgical manual reduction (Table 1). This escalation of care aligns with established paediatric surgical guidelines, wherein operative intervention is indicated following failed non-surgical reduction to prevent complications such as bowel ischemia and perforation (Figure 3) (Restivo *et al.*, 2017; Badour *et al.*, 2021).

The favourable outcome observed in this infant can be attributed to early diagnosis, timely escalation of treatment, and coordinated multidisciplinary care. Prompt imaging, decisive surgical intervention, and structured postoperative management resulted in an uncomplicated recovery. This case reinforces that although ileocolic intussusception is common in infancy, optimal outcomes depend on early recognition, appropriate imaging, and adherence to stepwise management protocols.

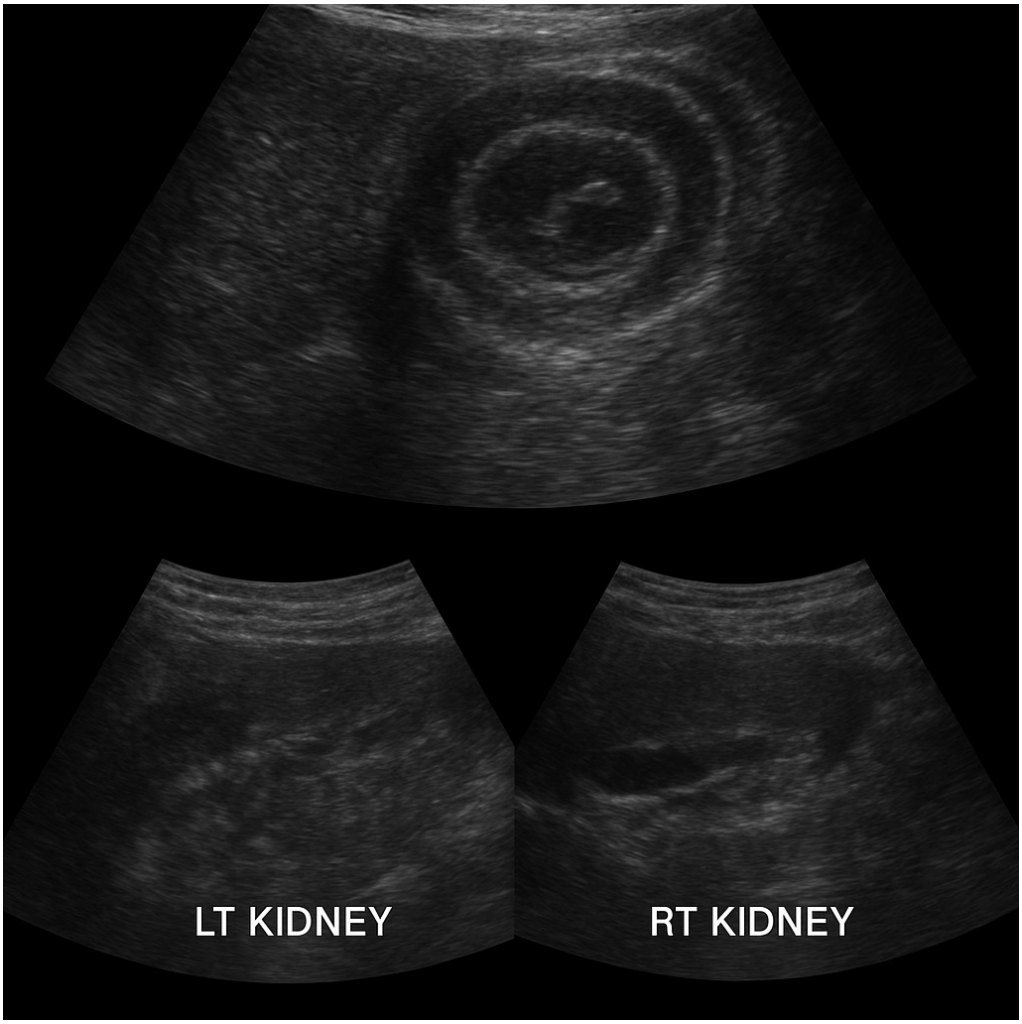

Figure 1: Ultrasound image of left and right kidney.

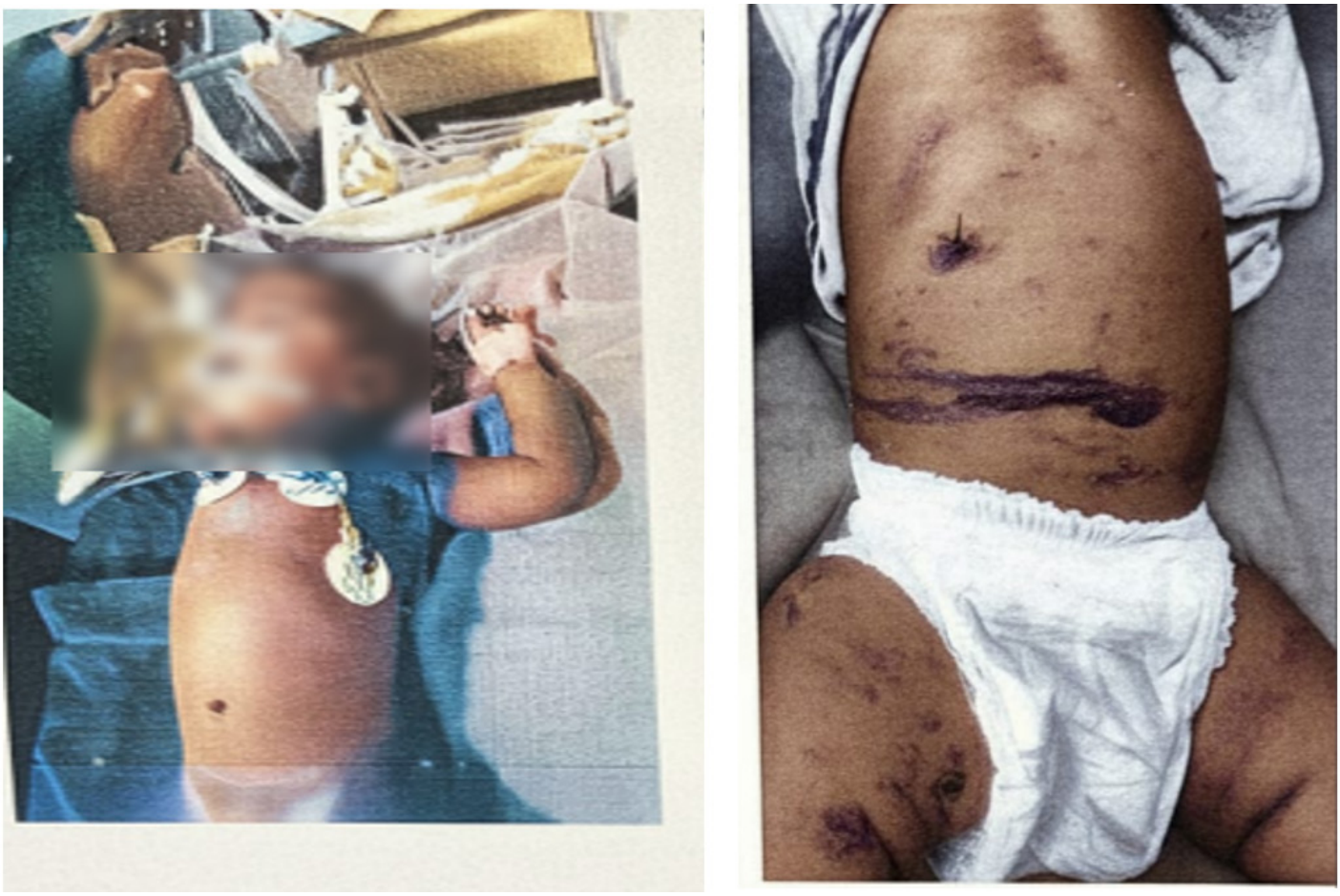

Figure 2: Intraoperative Images Showing Laparoscopic Management of Intussusception.

Table 1: Clinical Timeline of Ileocolic Intussusception.

Day	Event	Summary
Day 0	Presentation	A 7-month-old female infant presented with non-bilious vomiting and blood-stained stools of one-day duration. An abdominal mass was palpable on examination.
Day 0	Diagnostic assessment	Abdominal ultrasonography demonstrated a bowel-within-bowel configuration with a characteristic concentric "target" sign, confirming ileocolic intussusception.
Day 0	Initial management	The patient was kept nil by mouth and started on intravenous fluids, antibiotics, analgesics, and gastric protection as supportive care.
Day 0	Non operative intervention	Pneumatic reduction was attempted as the first-line therapeutic intervention but was unsuccessful.
Day 0	Surgical intervention	Diagnostic laparoscopy was performed and converted to open surgery. Manual reduction of the ileocolic intussusception was successfully achieved through a right upper transverse incision, with no evidence of bowel necrosis or perforation.
Day 1-2	Post operative	The patient was monitored in the paediatric intensive care unit. Intravenous fluids, antibiotics, and analgesia were continued. Clinical condition remained stable.
Day 3	Post operative	0ral clear fluids were initiated and well tolerated.
Day 4	Post operative	Complementary feeding was introduced after dietician consultation, and the patient was transitioned to oral medications.
	Discharge	The infant showed complete clinical recovery and was discharged in stable condition with advice for routine follow-up.

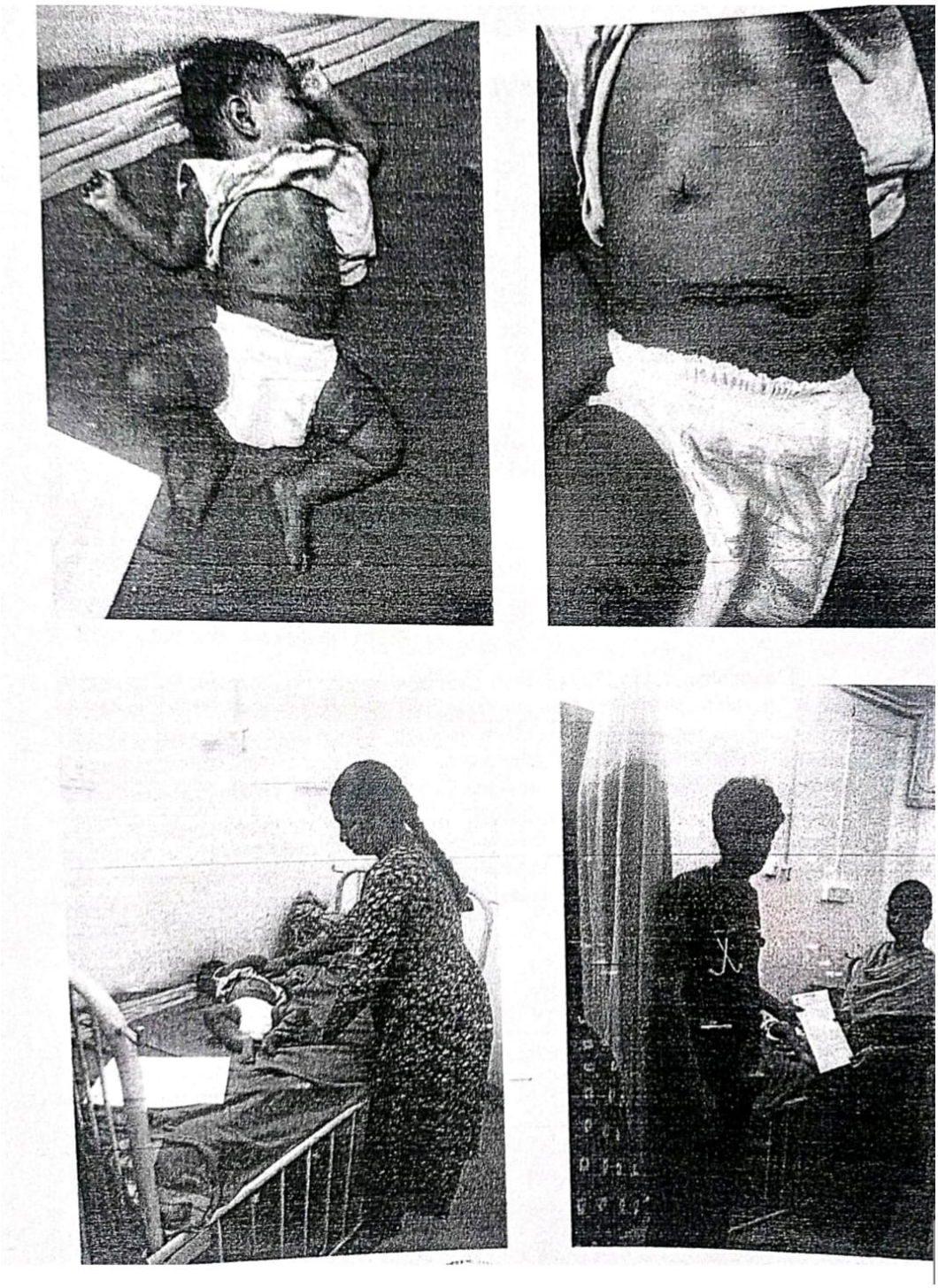

Figure 3: Postoperative image showing the healed transverse incision site following manual reduction of ileocolic intussusception.

CONCLUSION

This case highlights ileocolic intussusception as a critical yet treatable cause of intestinal obstruction in infants, where timely diagnosis and intervention are essential for favourable outcomes. Early ultrasonographic confirmation using the characteristic target sign enabled prompt, stepwise management, beginning with supportive care and pneumatic reduction, followed by successful surgical manual reduction when non-operative measures failed. The uneventful postoperative recovery underscores the value of early imaging, high clinical suspicion, and coordinated multidisciplinary care in preventing serious complications and ensuring complete recovery in affected infants.

PATIENT PERSPECTIVE

The patient's parents reported significant anxiety at symptom onset, particularly after noticing blood in the stools. They expressed relief after early diagnosis and prompt surgical intervention. The parents were satisfied with the multidisciplinary care and reassured by the child's smooth postoperative recovery and improvement in feeding and activity.

INFORMED CONSENT

Written informed consent was obtained from the patient's parents for publication of this case report and accompanying clinical details. Patient identity has been fully anonymised.

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ABBREVIATIONS

kg: Kilogram; **cm:** Centimeter; **mL:** Milliliter; **hr:** Hour; mg: Milligram; **IV:** Intravenous; **DNS:** Dextrose Normal Saline; **Inj.:** Injection; **CARE:** Case Report Guidelines.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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