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Delayed Presentation of Intestinal Malrotation: A Concealed Threat, Exploring the Diagnostic and Therapeutic Challenges

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Abstract
Intestinal malrotation is a congenital anomaly that may present with acute or chronic symptoms. While most cases are diagnosed in the neonatal period, delayed presentation beyond infancy poses diagnostic challenges due to nonspecific symptoms and low clinical suspicion. We report a case of a 10-year-old male with intermittent abdominal pain, who was found to have intestinal malrotation without volvulus. Laparoscopic Ladd's procedure was performed with uneventful recovery. This case highlights the importance of maintaining a high index of suspicion for malrotation in older children with chronic or recurrent abdominal pain, to prevent potentially catastrophic complications.
Keywords: *Intestinal malrotation, Ladd's procedure, delayed presentation, pediatric surgery, volvulus*

Introduction

Intestinal malrotation is a congenital abnormality occurring in approximately 0.2–1% of the population. The term encompasses all anomalies arising from rotational errors during embryonic development of the midgut. About 60–80% of cases present in the neonatal period as acute surgical emergencies secondary to midgut volvulus. Failure in timely recognition and management may result in severe consequences, including short gut syndrome, intra-abdominal sepsis, and death. Beyond the neonatal period, presentations are variable and often nonspecific. The rarity of the condition in older children, coupled with vague symptoms and lack of awareness, leads to delayed diagnosis and increased morbidity. We present a case of a 10-year-old male with asymptomatic intestinal malrotation and unique intraoperative findings, managed successfully by laparoscopic Ladd's procedure.

Case Report

A previously healthy 10-year-old boy presented with intermittent abdominal pain and constipation. There was no history of vomiting or significant medical, surgical, or family history. Initial evaluation at a peripheral center with computed tomography revealed features of intestinal malrotation. Plain abdominal radiograph showed a loaded colon with no air–fluid levels. A water-soluble contrast study demonstrated the duodenojejunal (DJ) junction to the right of the midline, with small bowel loops and cecum positioned on the right side. However, there was free flow of contrast, indicating the absence of volvulus.

The patient underwent a laparoscopic Ladd's procedure. Intraoperatively, the duodenojejunal loop was found to the right of the midline with no volvulus. The cecum and ascending colon were located in the midline, and the small bowel loops were predominantly on the left. The postoperative course was uneventful, and the patient was discharged in stable condition.

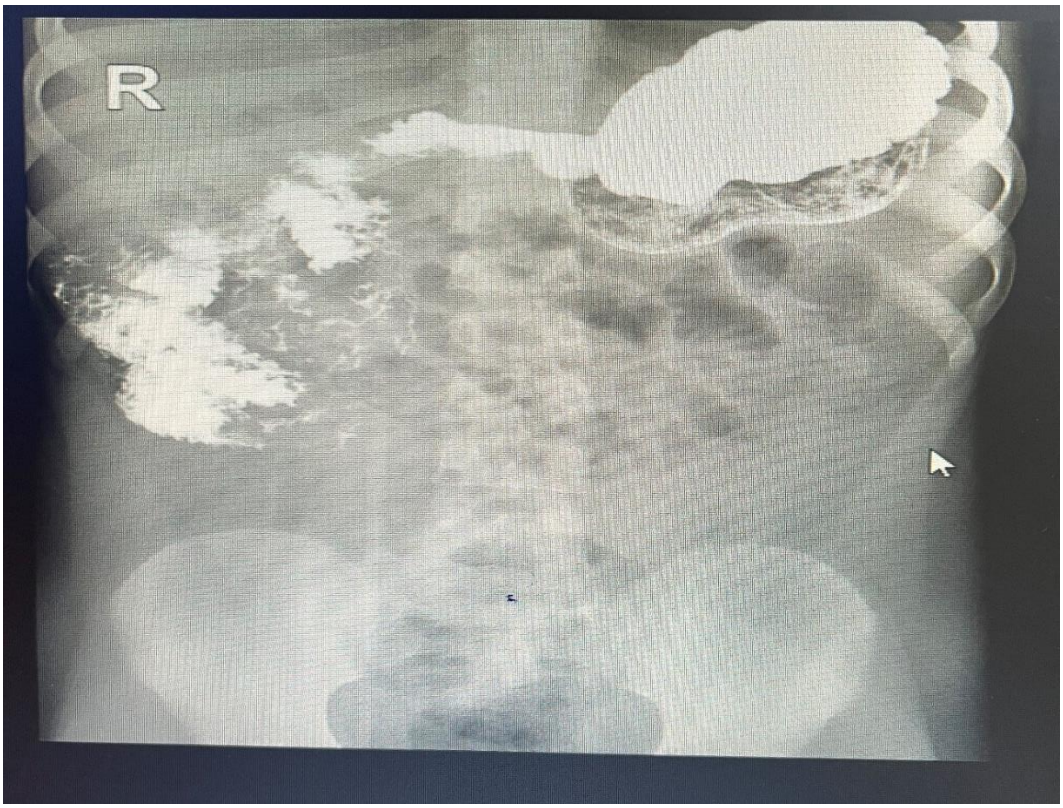

Figure 1: Contrast study showing DJ to right of spine.

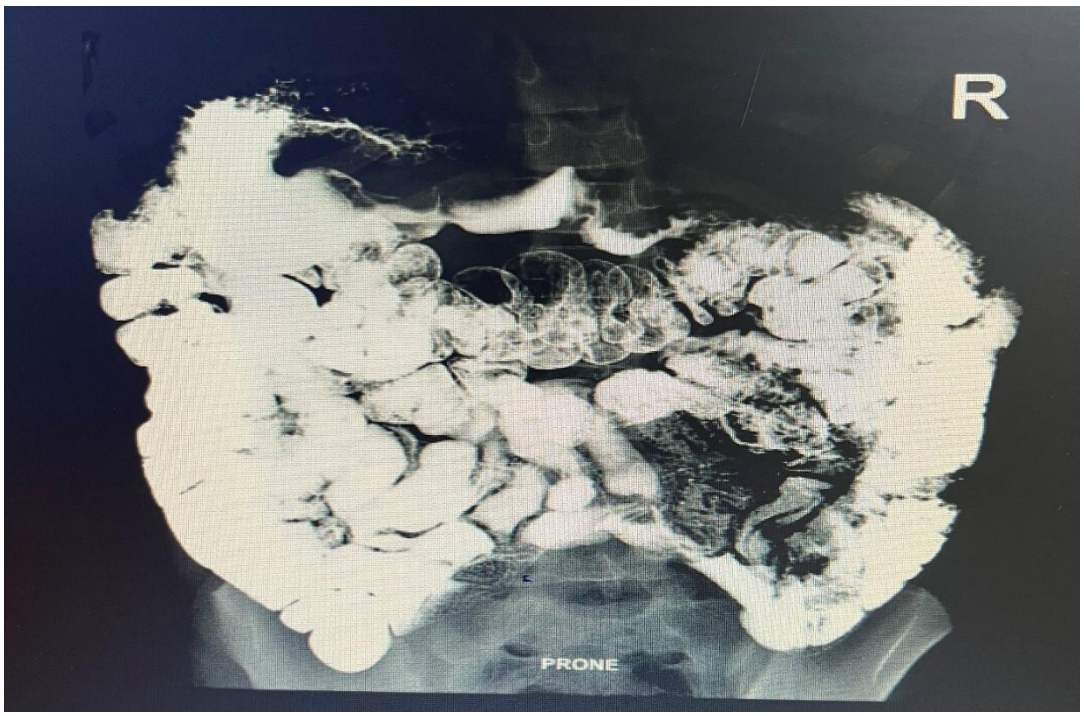

Figure 2: Free flow of contrast indicating no evidence on volvulus

Discussion

Intestinal malrotation beyond infancy is rare and often misdiagnosed, resulting in higher morbidity compared to neonates and infants. Factors contributing to delayed diagnosis include low incidence, atypical presentations, and uncertainty about optimal management. This case underscores the need to consider intestinal malrotation in older children presenting with recurrent or chronic abdominal pain.

Plain radiographs are typically non-diagnostic. Contrast-enhanced computed tomography is the preferred investigation, revealing features such as reversal of the superior mesenteric artery (SMA) and vein (SMV) relationship, a whirlpool sign, and the duodenojejunal flexure to the right of the spine. Ultrasonography may also detect SMA–SMV inversion. Surgical correction remains the definitive treatment, regardless of age, as catastrophic volvulus can occur unpredictably.

Conclusion

A high index of suspicion is essential for diagnosing intestinal malrotation in older children. Recurrent abdominal pain without clear etiology should prompt imaging to exclude malrotation. Early diagnosis and timely surgical correction can prevent potentially fatal complications associated with midgut volvulus.

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