

Left-sided Appendicitis in Intestinal Non-rotational Malrotation: A Case Report

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Abstract

Left-sided acute appendicitis is a rare condition, with an incidence ranging from 0.03% to 0.5% in live births. Left-sided appendicitis can be vague and vary due to the variation of location, which can be easily misdiagnosed. Literature reported that laparoscopy was performed less often for such cases. However, planning a laparoscopic approach is considered a safe step that helps for better intraoperative localization of the appendix. Here, we are presenting a case report of an 11-year-old boy found to have left-sided appendicitis intraoperatively.

Keywords: Appendicitis; Left Side; Non-rotational; Malrotation.

Introduction

Left-sided appendicitis (LSAA) is a rare condition with an incidence rate of 1 in 6000 live births.¹ The diagnosis of LSAA can be complicated by two congenital abnormalities: intestinal malrotation and situs inversus, wherein the appendix is usually located on the left side of the abdomen.² Despite over 100 cases of left-sided appendicitis, LSAA in nonrotational malrotation is still considered rare.³

The symptoms and signs of left-sided acute appendicitis can be vague and vary due to the variation of location, which can be easily misdiagnosed.⁴ This can be attributed to the fact that clinicians have limited exposure to such rare cases during their training.¹ Patients with an unusual location of the appendix are treated surgically with open or laparoscopic procedures. Literature reported that laparoscopy was performed less often for such cases. However, planning a laparoscopic approach is considered a safe step that helps for better intraoperative localization of the appendix.^{3,4}

Case Report

An 11-year-old patient with a surgical history of left-sided diaphragmatic hernia repair after birth presented with a 1-day history of Right iliac fossa (RIF) pain associated with nausea and vomiting. He was tender at the RIF with rebound tenderness. His laboratory tests showed leukocytosis and elevated C-reactive protein.

Given the patient clinical and laboratory findings, a presumed diagnosis of acute appendicitis was made, and the patient was taken for a laparoscopic appendectomy. No Preoperative imaging was done for the patient, depending on the typical history of acute appendicitis.

Standard 3-ports (umbilical, LIF, suprapubic ports) were inserted intraoperatively. A diagnostic laparoscopy was carried out. However, the appendix was not visualized at RLQ nor the RUQ.

Accordingly, the bowel was run from Treitz's ligament to the ileocecal valve. The small bowel was noted to be on the right side, and the large bowel was on the left. Hence, a diagnosis of intestinal non-rotation was suspected. The appendix was found in the left upper quadrant near the stomach (Figure 1). Due to the difficulty in dissecting the appendix through the usual port placement, another port was inserted at the RIF, which facilitated performing the appendectomy. Postoperatively, the patient made an uneventful recovery and was discharged home in good condition the following day. Histopathology came as an acutely inflamed appendix.

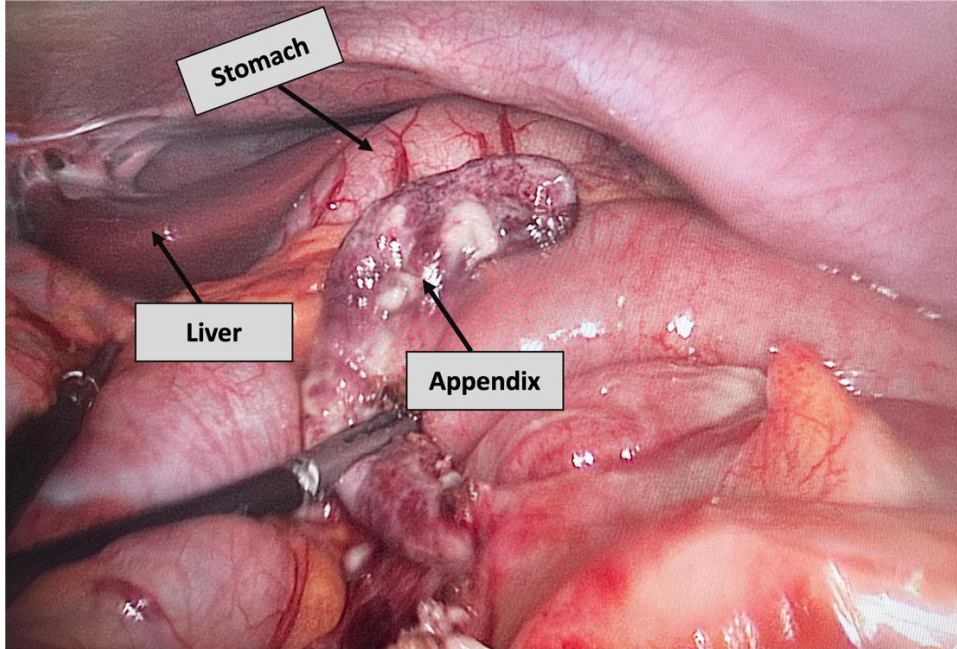


Figure 1: Intraoperative image showing the appendix in the left upper quadrant near the stomach.

Discussion

Acute appendicitis is a prevalent diagnosis among patients presenting with acute abdominal pain. Hence, laparoscopic appendectomy is the most commonly performed surgical procedure worldwide, as per the literature.⁵

Left-sided appendicitis is a rare condition, with an incidence ranging from 0.03% to 0.5% in live births.³ The age at presentation can vary from 8 to 80 years, and it is 1.5 times more frequent in males than in females.⁶

LA can occur in Intestinal malrotation,¹ which results from incomplete rotation or non-rotation of the intestine around the superior mesenteric artery's axis during fetal development. There are three types of malrotations: type one, which involves non-rotation; type two, which involves duodenal malrotation; and type three, which involves duodenal and caecal malrotation.

According to the published data, it has been suggested that the symptoms of left-sided appendicitis are atypical. It was observed that approximately 14.7% of patients had pain localized in the right lower quadrant.³ And this was the presentation in our case as well. Several authors advocate for preoperative imaging to minimize the rate of diagnostic confusion and delay in treatment, which can affect the patient's morbidity and or mortality. Giuseppe Evola et al. suggested that the mortality rate of acute appendicitis is reported to be less than 1% but can be increased to up to 5% in cases where the diagnosis was delayed.⁶

Delayed or untreated inflamed left-sided appendicitis is similar to the right-sided one, which can lead to serious complications, including peri-appendiceal abscess, perforation, peritonitis, and septic shock, which can be potentially life-threatening in some cases.⁴

Laboratory investigations are often required to aid in the diagnosis, including blood cell count and C-reactive protein. Additionally, preoperative imaging is likely to provide detailed information regarding the location and severity of the inflammation, which helps in treatment planning. Ultrasound is the initial imaging modality and is the easiest imaging test to obtain in acute cases. However, it may not clearly and precisely describe the condition.

CT scans offer up to 90%-98% accuracy. However, its utilization is sometimes limited in pediatric cases in order to minimize radiation exposure risk.³ The findings mostly resemble those of right-sided appendicitis, with a tubular, enhancing structure surrounded by reactive changes in the adjacent fat.⁷ Furthermore, CT scans offer additional information that assists in surgical planning, including the degree and complications of intestinal malrotation.⁷

Left-sided appendicitis is primarily treated surgically with open or laparoscopic procedures.³ Although statistics show that open procedures are more commonly performed than laparoscopic,³ studies have proven that the laparoscopic approach,⁶ is useful for confirming the diagnosis, ruling out other differential diagnoses, and performing definitive surgery.³ Moreover, it reduces postoperative complications, including surgical site infection and length of hospital stay,⁴ facilitating a faster postoperative recovery.⁴

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