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

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Abstract

Left-sided appendicitis is a rare condition, estimated to occur in 0.03%–0.5% of individuals born with a left-sided appendix. Due to its atypical location, the symptoms of left-sided appendicitis can be vague and easily misdiagnosed. We present a case report of an 11-year-old boy, whose left-sided appendicitis was diagnosed and treated laparoscopically.

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

Introduction

Rare congenital conditions such as intestinal malrotation and situs inversus can cause the human appendix to be located in the left side of the abdomen.[1,2] Left-sided appendicitis (LSAA) is extremely rare with only 100 cases reported so far.[3]

LSAA cases are prone to misdiagnosis because of three main reasons.[4] First, the presentation symptoms and signs tend to be vague. Second, the location of the appendix itself may differ from patient to patient.[4] Third, with only about 100 reported cases worldwide, few clinicians would have been exposed this condition during their training.[1] Historically, LSAA cases have been managed by open surgery. However, in recent times, laparoscopy is considered a safe option as it facilitates intraoperative localization of the appendix.[3,4] We present the case of an 11-year-old boy who presented with left-sided appendicitis, which was diagnosed and treated laparoscopically.

Case Report

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

Given the 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 conducted for the patient, as we presumed this to be a case of typical acute appendicitis.

A diagnostic laparoscopy was conducted via the standard 3-ports technique, with insertions at the umbilical, left iliac fossa (LIF), and suprapubic locations. However, the appendix was not visualized in the right lower quadrant (RLQ) or the right upper quadrant (RUQ).

Therefore, 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 report indicated an acutely inflamed appendix.

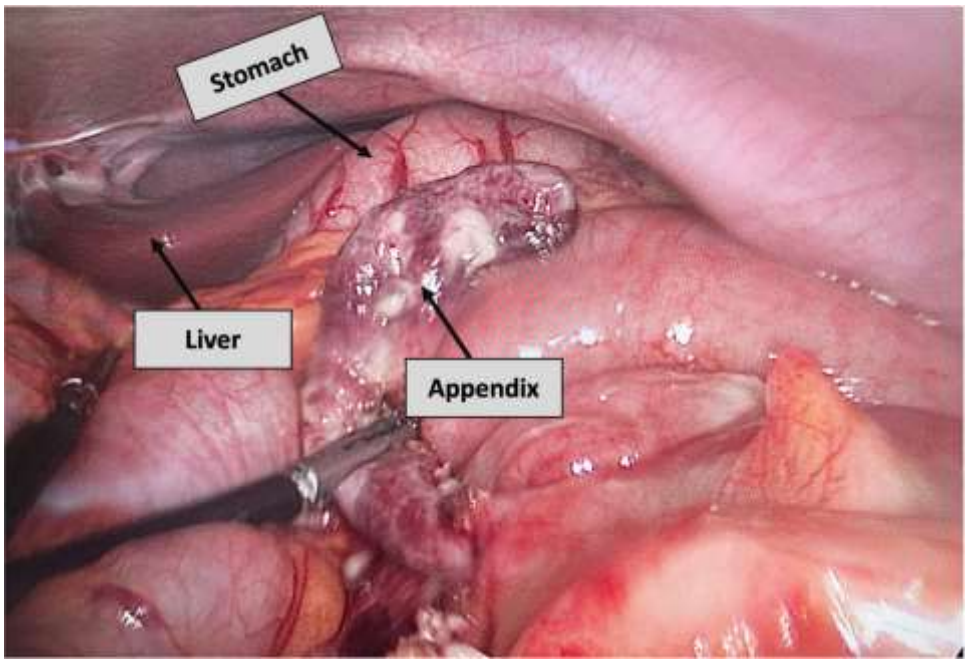

Figure 1: Intraoperative image showing the appendix in the left upper quadrant near the stomach.

Discussion

Acute appendicitis is a prevalent diagnosis among patients presenting with acute abdominal pain. Laparoscopic appendectomy is one of the most performed surgical procedures worldwide.[5] Left-sided appendicitis is a rare condition. The age at presentation of LSAA has varied from 8 to 80 years, and it has been reported 1.5 times more frequently in males than in females.[6]

LA can occur 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 cecal malrotation.

According to the published data, approximately 14.7% of LSAA patients had pain localized in the right lower quadrant.[3] This was the presentation in our case as well. Several authors have advocated preoperative imaging to minimize the rate of diagnostic confusion and delay in treatment, to avoid potential morbidity and mortality. The mortality rate of acute appendicitis is reported to be less than 1% but can be as high as 5% if diagnosis is delayed.[6]

Delayed or untreated inflamed appendicitis, whether left or right sided, can lead to serious complications, including peri-appendiceal abscess, perforation, peritonitis, and septic shock, which can be potentially life-threatening.[4]

Laboratory investigations, especially blood cell count and C-reactive protein, aid the diagnosis. 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 recommended initial imaging modality, especially in acute cases. However, it may not clearly describe the condition. A computed tomography (CT) scan offers up to 90%–98% diagnostic accuracy. Its 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] Despite its advantages, CT scans are generally limited in children, such as our patient, to minimize radiation exposure risk.[3]

Left-sided appendicitis is primarily treated surgically using traditional or laparoscopic method.[3] Although statistics show that open procedures are still being used to treat most LSAA cases,[8] studies have established the advantages of laparoscopy[6] for confirming the diagnosis, ruling out other differential diagnoses, and performing definitive surgery.[3] Moreover, it reduces postoperative complications, such as surgical site infection, and facilitates a shorter hospital stay and an early recovery.[4]

Conclusion

Left-sided appendicitis occurs very rarely and is often missed. Clinicians should consider the possibility of LSAA in patients who present with left-sided abdominal pain. LSAA is primarily treated surgically, and laparoscopy is increasingly recommended.

Disclosure

The authors declare no conflicts of interest. Written consent was taken from the patient's father.

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