

Retroperitoneal Subhepatic Appendicitis Associated with Intestinal Malrotation

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Case Report

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Abstract

Background

Acute appendicitis is one of the most common surgical emergencies in children. However, atypical anatomical positions of the appendix can lead to unusual clinical presentations and diagnostic challenges. Subhepatic appendicitis is a rare entity that may mimic hepatobiliary or gastric pathology.

Case Presentation:

We report the case of a 10-year-old male who presented with right upper quadrant abdominal pain, anorexia, and a single episode of vomiting. Physical examination revealed right upper quadrant tenderness. Ultrasound examination confirmed retroperitoneal subhepatic acute appendicitis. A midline abdominal incision was performed, and intraoperatively the appendix was found inflamed in the subhepatic region. Appendectomy was successfully carried out.

Discussion

Subhepatic appendicitis is an uncommon anatomical variation that can delay diagnosis due to its atypical presentation. Imaging studies, particularly ultrasound, play a crucial role in identifying such cases. Surgical exploration remains definitive for diagnosis and treatment.

Conclusion

This case highlights the importance of considering anatomical variations of the appendix in pediatric patients presenting with right upper quadrant pain. Early recognition and prompt surgical intervention are essential to avoid complications.

Introduction

Acute appendicitis is the most frequent cause of acute abdominal pain requiring surgical intervention in children [1–3]. The classical presentation involves periumbilical pain migrating to the right lower quadrant, accompanied by anorexia, nausea, or vomiting. However, the clinical picture can vary significantly depending on the anatomical position of the appendix [1–6].

Anatomical variations of the appendix are not uncommon, but subhepatic appendicitis is a rare entity. In this location, the appendix lies beneath the liver, which can lead to atypical symptoms such as right upper quadrant pain, often mimicking hepatobiliary, gastric, or retroperitoneal pathology. This unusual presentation may delay diagnosis and increase the risk of complications such as perforation or abscess formation [1–3].

Imaging modalities, particularly ultrasonography and computed tomography, play a crucial role in identifying atypical appendicitis. Nevertheless, definitive diagnosis is often established intra-operatively. Early recognition of such variations is essential for timely surgical management and favorable outcomes [6–12].

We present a rare case of subhepatic acute appendicitis in a 10-year-old male, highlighting the diagnostic challenges and the importance of considering anatomical variations in pediatric patients with atypical abdominal pain.

Clinical Presentation

A 10-year-old male presented to the emergency department with complaints of right upper quadrant abdominal pain of 6 hour durations. The pain was localized, persistent, and associated with loss of appetite-anorexia. The patient reported one episode of non-bilious vomiting prior to admission. There was no history of diarrhea, jaundice, or urinary symptoms.

On physical examination, the child appeared mildly distressed due to pain. Vital signs were within normal limits, with no evidence of fever or tachycardia. Abdominal examination revealed localized tenderness in the right upper quadrant, without rebound tenderness or guarding. No hepatomegaly or splenomegaly was noted, and bowel sounds were present and normal.

Given the atypical location of pain, differential diagnoses considered at presentation included hepatobiliary pathology (such as acute cholecystitis or hepatitis), gastritis, or peptic ulcer disease. However, the absence of jaundice, normal liver function tests, and the acute nature of symptoms prompted further imaging.

Ultrasound examination using sonoscape p15 machine with linear transducer of the abdomen revealed an inflamed appendix located in the retroperitoneal subhepatic region, confirming the diagnosis of subhepatic acute appendicitis.

Following the diagnosis of subhepatic acute appendicitis on ultrasound, the patient was prepared for surgical intervention. Standard preoperative measures were undertaken, including intravenous fluid resuscitation, administration of prophylactic antibiotics, and routine laboratory investigations.

A midline abdominal incision was chosen to provide adequate exposure, given the atypical location of the appendix. Upon entering the peritoneal cavity, careful exploration was performed to identify the appendix.

The appendix was found to be inflamed and located in the retroperitoneal subhepatic region, just beneath the liver. Surrounding tissues showed localized inflammatory changes, but no evidence of perforation, abscess formation, or generalized peritonitis was noted. The cecum was identified in its normal position, confirming that the unusual location was due to an anatomical variation of the appendix rather than malrotation.

An appendectomy was performed using standard surgical technique. Hemostasis was secured, and the operative field was irrigated. The abdominal incision was closed in layers.

The patient tolerated the procedure well and was transferred to the recovery unit in stable condition. Postoperatively, intravenous antibiotics and analgesics were continued. Oral intake was gradually resumed once bowel sounds returned.

The patient's recovery was uneventful, with no postoperative complications such as wound infection or intra-abdominal abscess. He was discharged on the third postoperative day in good condition, with advise for follow-up in the outpatient clinic.

Transverse and longitudinal view of ultrasound using linear probe demonstrates visualized appendix in the subhepatic region. It is dilated with an anteroposterior diameter of 9mm. Hyperemia is noted on color Doppler imaging with surrounding fat stranding and periappendiceal fluid indicating inflamed appendix. Red arrow shows the tip of liver and the green arrow shows the inflamed appendix.

Figure B:

Shows intraoperative findings of inflamed appendix which is subhepatic and retroperitoneal in location.

Discussion

Acute appendicitis is the most common cause of acute abdominal pain requiring surgical intervention in children. The classical presentation involves periumbilical pain migrating to the right lower quadrant, but variations in the anatomical position of the appendix can lead to atypical clinical features. Among these, subhepatic appendicitis is particularly rare and poses a diagnostic challenge [13–18].

The subhepatic position of the appendix is usually attributed to developmental anomalies, such as incomplete descent of the cecum during embryogenesis. In this location, the appendix lies beneath the liver, which can mimic hepatobiliary conditions such as acute cholecystitis, hepatitis, or even peptic ulcer disease. Consequently, patients often present with right upper quadrant pain rather than the typical right lower quadrant tenderness [19–21].

In pediatric patients, this atypical presentation can be misleading, as clinicians may initially suspect hepatobiliary or gastric pathology. In our case, the child presented with right upper quadrant pain, anorexia, and vomiting, which are nonspecific symptoms. Physical examination revealed localized tenderness in the right upper quadrant, further complicating the clinical picture [22–25].

Imaging plays a crucial role in such cases. Ultrasonography is often the first-line modality in children due to its safety and accessibility. In this case, ultrasound successfully identified the inflamed appendix in the subhepatic region, guiding the surgical team toward the correct diagnosis. Computed tomography (CT) is considered more sensitive and specific, but its use in children is limited due to radiation exposure and it was also not used in our case [12, 23, 24].

Surgical exploration remains the definitive diagnostic and therapeutic step. Intraoperatively, the appendix was found inflamed in the retroperitoneal subhepatic region. A midline incision provided adequate exposure, and appendectomy was performed without complications. The patient's postoperative recovery was uneventful, underscoring the importance of timely recognition and intervention [25].

This case highlights several important points:

- **Diagnostic challenge:** Subhepatic appendicitis can mimic hepatobiliary disease, delaying diagnosis.
- **Role of imaging:** Ultrasound is invaluable in pediatric patients with atypical abdominal pain.
- **Surgical approach:** A midline incision allows adequate exposure for appendectomy in unusual anatomical positions like in this case.
- **Clinical awareness:** Surgeons and pediatricians should consider anatomical variations when evaluating children with atypical abdominal pain.

Conclusion

- This case emphasizes the importance of considering atypical locations of the appendix in children presenting with right upper quadrant pain. Imaging studies and surgical exploration remain vital in establishing the diagnosis and guiding appropriate treatment.

Declarations

Consent to publish statement

Informed consent was obtained from the patient's family for publication.

Consent to participate

Informed consent was obtained from the patient's family for participation in this study

Ethical approval

The protocol was approved by Ethical review committee of the Department of Surgery, College of Health Sciences, Salale University in accordance with the declaration of helsinki.

Conflict of interest statement

The authors declare that there are no competing interests regarding the publication of this paper.

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Author Contribution

1. Getahun Jiru Bedada :-conception, writing and submitted a case report on behalf all authors. 2. Dereje Tufa Bedasa :- operated the patient and contributed writing. 3. Diriba Shiferaw Negese :- reviewed a case report. 4. Shallo Alemu Gameda :- reviewed the manuscript.

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We acknowledge our patient's family for their permission to publish this case report .

Data Availability

All data generated or analyzed during this study are included in this published article.

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Figures

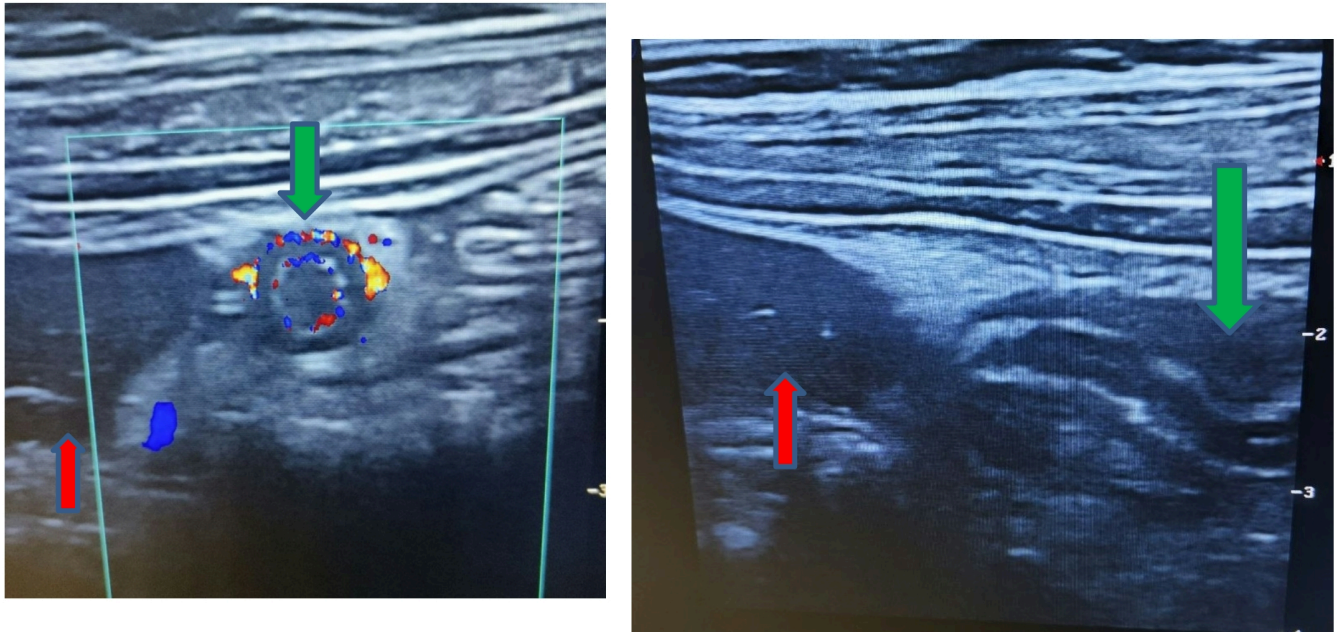


Figure A:

Figure 1

Figure A:

Transverse and longitudinal view of ultrasound using linear probe demonstrates visualized appendix in the subhepatic region. It is dilated with an anteroposterior diameter of 9mm. Hyperemia is noted on color Doppler imaging with surrounding fat stranding and periappendiceal fluid indicating inflamed appendix. Red arrow shows the tip of liver and the green arrow shows the inflamed appendix.

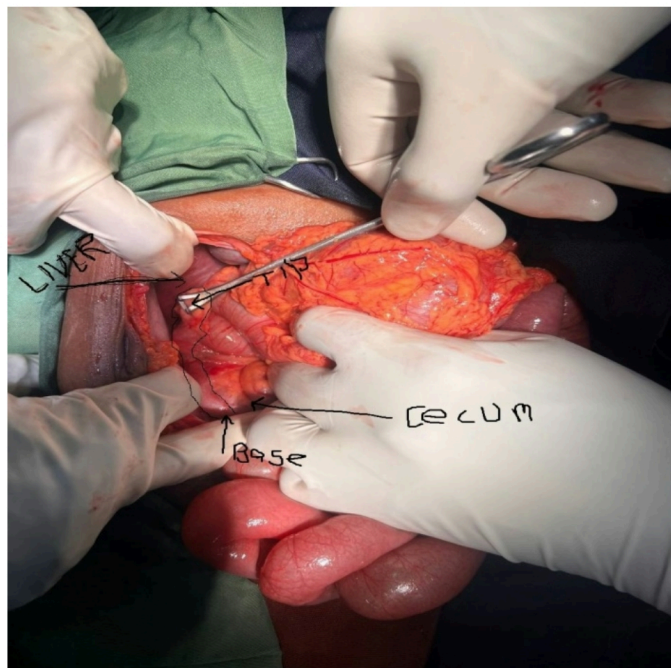
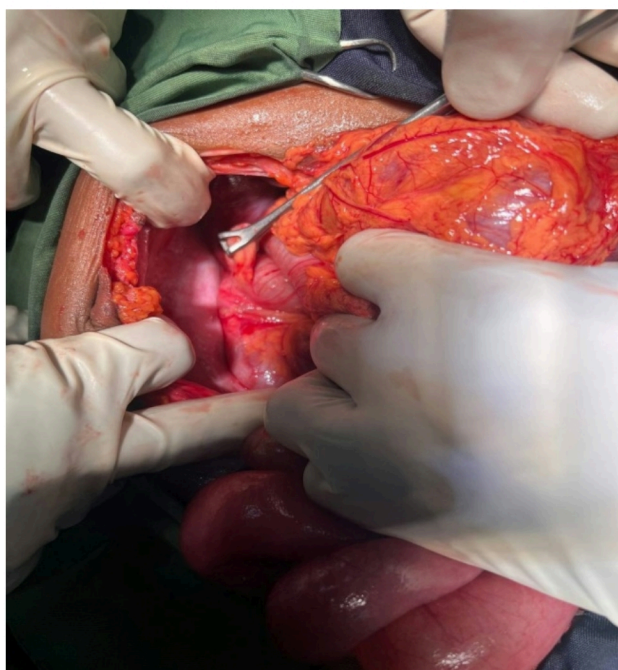


Figure 2

Figure B:

Shows intraoperative findings of inflamed appendix which is subhepatic and retroperitoneal in location.

Supplementary Files

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