

SUBHEPATIC PERFORATED APPENDICITIS COMPLICATED BY INTESTINAL OBSTRUCTION: A CASE REPORT

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ABSTRACT

Subhepatic appendicitis is an anatomical variant of acute appendicitis that sometimes occurs secondary to midgut malrotation or developmental abnormalities during fetal development. It represents only 0.01% of cases of appendicitis and can be misdiagnosed for other intra-abdominal conditions like acute cholecystitis or liver abscesses, resulting in delayed diagnosis. This is a case of a 30-year-old patient with subhepatic perforated appendicitis complicated by intestinal obstruction. The patient was taken for emergency exploratory laparotomy after thorough investigations and clinical examination. Subhepatic appendicitis was found intraoperatively. Appendectomy was performed under aseptic techniques. Postoperatively, the patient was stable and tolerating oral fluids. This case highlights the role of imaging and early surgical approach in managing subhepatic appendicitis.

KEYWORDS: Subhepatic Appendicitis, Perforated Appendix, Intestinal Obstruction, Exploratory Laparotomy

INTRODUCTION

Subhepatic appendicitis is a rare anatomical variant of acute appendicitis that represents only 0.01% of all cases.¹ This rare presentation is secondary to an unusual anatomical location of the appendix, usually due to midgut malrotation or developmental abnormalities during fetal development. The subhepatic appendix is in the inferior surface of the liver in contrast to the usual retrocecal or pelvic appendix, often leading to diagnostic confusion with acute cholecystitis or liver abscesses.^{1,4} Therefore, surgeons must be aware of such variations in the anatomical location of the appendix, which is essential for early diagnosis and treatment to avoid complications such as perforation or sepsis. Subhepatic appendicitis is not uncomplicated to

diagnose because clinical and imaging features are unusual. Patients with subhepatic appendicitis do not show resemblance in clinical signs to retrocecal appendix, i.e right lower quadrant pain and tenderness at McBurney's point.^{1,2} CT and ultrasound are also useful in diagnosing subhepatic appendicitis since they provide better visualisation of the appendix and any associated pathology, including fluid, abscess formation, or inflammation.^{2,4} The appendix, located beneath the liver, can appear as part of a complex pattern of anatomical variants, which includes cecal malrotation and vascular malformations. The surgical procedures become more challenging because of these different locations, which require different surgical approaches. The preferred approach for appendix removal requires open midline incisions instead of

gridiron incisions to ensure complete visualisation because their improper recognition leads to delayed treatment and increased morbidity.¹ The case report explains this unusual presentation of the appendix, which should be included in differential diagnosis for atypical abdominal pain. We aim to highlight this uncommon presentation and its management through early imaging and surgical expertise based on previous studies.

CASE PRESENTATION

Our patient was a 30-year-old male plumber with no known medical and surgical history. He has no significant socioeconomic status, family history, or allergies, and he was not taking any medication. The patient presented to the Emergency Department of Lady Reading Hospital, Peshawar, with a history of three days of generalised abdominal pain with constipation and low-grade fever. The patient described the pain as first localised to the umbilicus and dull. The patient had three episodes of vomiting and was feeling drowsy. He never indulged in smoking or drug addiction. Initial vital signs included temperature: 39.4°C, blood pressure: 110/75 mmHg, heart rate: 102 beats per minute, respiratory rate: 21 breaths per minute, and oxygen saturation: 95% on room air. He was conscious, alert, and well oriented, with a Glasgow Coma Scale score of 15 and normal breathing and vesicular breath sounds. On abdominal examination, the whole abdomen was found to be tense, tender and guarded. Percussion was dull with no fluid thrill and shifting dullness. Bowel sound was faint on auscultation. Other systemic examination was unremarkable. Initial baseline investigations were ordered, which were within normal limits, and this included a complete blood count (CBC), total leukocyte count (TLC), liver function tests (LFTs), and serum electrolytes. Initial ultrasonography demonstrated a subhepatic appendicitis with no ascites. An x-ray of the abdomen shows multiple gas-filled loops in the small bowel. Axial computed tomography (CT) without contrast showed the appendix, a single slice below the liver and multiple air-fluid levels. The patient was administered cefoperazone, sulbactam 2g stat, metronidazole 400 mg, and one litre of Normal Saline 0.9%. Suspecting perforated appendicitis and subsequently peritonitis, it was decided to proceed with an emergency laparotomy.

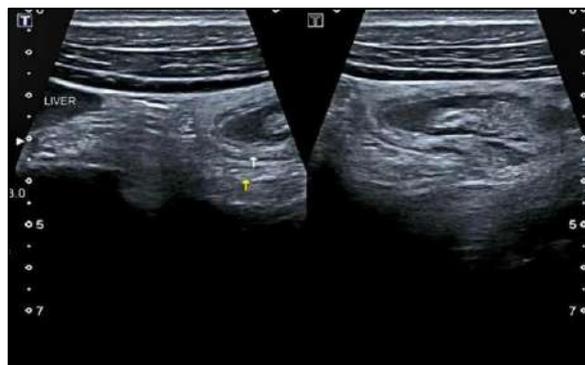


Figure 1: Ultrasound Image Showing a Subhepatic Appendix with Echogenic Mesentery.



Figure 2: Axial Non-Contrast Ct Scan Demonstrating an Appendix Located Single Slice below Liver, With Multiple Air Fluid Levels.



Figure 3: Erect X-ray of the Abdomen Shows Multiple Gas-Filled Loops of the Small Intestine.

The patient had undergone emergency laparotomy under general anesthesia and aseptic measures. A midline incision was given, and the abdomen was opened layer by layer. Significant intraoperative

findings included a subhepatic perforated appendicitis that contained a fecalith adhering to the liver and widely surrounded by dense adhesions. The dense adhesions were carefully lysed, and then appendectomy was carried out, followed by the irrigation of the area using normal saline and the placement of a pelvic drain. The abdomen was closed in layers in a reverse fashion.

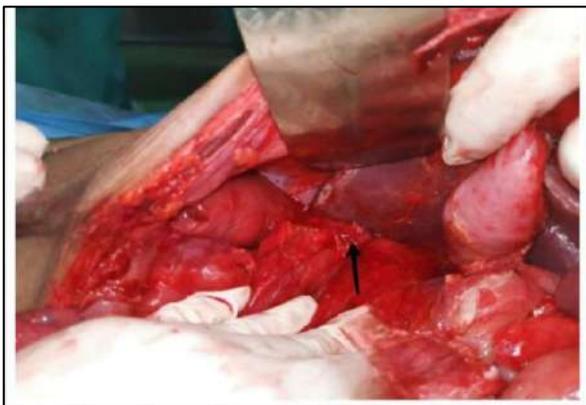


Figure 4: Intraoperative View of the Perforated Appendix Adherent to the Liver

The patient had an uneventful postoperative course. The pelvic drain was removed on the second postoperative day with no fluid collection. He was tolerating oral liquid and solid diets. The patient was discharged on the third postoperative day, stable with a resolved fever. A 10-day follow-up was found to have a clean surgical wound, an uneventful removal of sutures, complete patient mobilisation, and continued clinical stability.

DISCUSSION

Subhepatic perforating appendicitis is a rare disease, representing 0.08% of total acute appendicitis.⁶ This atypical presentation is due to abnormalities in cecal descent or midgut malrotation during embryogenesis. The subhepatic position of the appendix can be misdiagnosed for different abdominal pathologies like cholecystitis, liver abscess, and pancreatitis, causing delayed diagnosis and a higher rate of complications in the form of perforation and peritonitis.^{4,6} Early diagnosis becomes essential because subhepatic appendicitis shows different signs and symptoms than acute appendicitis. The typical signs of retrocaecal appendicitis include right lower quadrant pain and McBurney's point tenderness, while subhepatic appendicitis often manifests as diffuse or upper abdominal pain.³ The patient's initial presentation of umbilical pain spreading throughout the abdomen strengthened the physician's diagnostic suspicion.⁶ Detecting anatomical abnormalities and concurrent complications such as perforation, abscesses, or adhesions requires imaging modalities, including

computed tomography (CT) and ultrasonography. CT imaging is the most accurate diagnostic tool for subhepatic appendicitis and its unusual manifestations.^{2,4} The surgical approach for subhepatic perforated appendicitis differs from standard laparoscopic appendectomy because it serves as the gold standard treatment for uncomplicated appendicitis.⁶ The surgical approach for subhepatic appendicitis requires open surgery because of dense adhesions and proximity to vital structures such as the liver and hepatic flexure.³ A midline laparotomy approach allowed proper visualisation and delicate adhesive release for a secure appendix removal while providing thorough abdominal cavity irrigation.⁵ Managing complex anatomical structures requires personalised surgical approaches that help minimize postoperative complications.⁶ Perforated appendicitis will increase the morbidity, particularly in delayed presentation.⁵ It is reported that 42% of patients develop surgical site infections, while intra-abdominal abscesses (1.6%) and longer stays in the hospital are also frequent.⁵ Mortality rates in perforated appendicitis can be as high as 4.8%, more so in complicated or severe cases or with co-morbidities.⁴ Prompt diagnosis and early operation are necessary to prevent these outcomes. Moreover, perioperative antibiotics have been documented to lower complication rates, stressing the value of a multidisciplinary treatment process for perforated appendicitis.⁷ This case also points out the general significance of the anatomical variations of the appendix. The unusual anatomical variations of subhepatic appendicitis are to be kept in mind in case of unexplained abdominal pain.⁶ Clinical suspicion, along with thorough Imaging and surgical readiness can significantly improve the diagnostic rate and treatment results.⁷ In addition, reporting such cases helps the medical fraternity understand such unusual presentations and guides future clinical practice.^{1,7}

CONCLUSIONS

The anatomical variations in subhepatic perforated appendicitis pose both diagnostic and therapeutic challenges. This case illustrates the management of this relatively uncommon condition by using advanced imaging, maintaining high clinical suspicion, and tailoring surgical strategies for managing this rare condition. Raising awareness and integrating knowledge from similar cases into clinical guidelines can improve diagnostic accuracy and optimise patient outcomes in such complex presentations.

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