

# A Case Report on the Surgical Management of Subhepatic Perforated Appendicitis: A Rare Presentation

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## Case report

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## Abstract

**Background:** Subhepatic appendicitis is an exceedingly rare presentation accounting for 0.01% of Acute appendicitis. It is of prime importance to be aware of various variants and thereby managing such challenging cases accordingly.

**Case presentation:** We present a middle-aged female patient with subhepatic perforated appendicitis and peritonitis who underwent an exploratory laparotomy and appendectomy.

**Conclusions:** Surgical management of such patients is challenging due to an atypical presentation. The surgical management of such patients is discussed with a brief review of literature.

## Background

The appendix a vestigial organ is a small tube-like structure that belongs to the midgut of the digestive tract system. The most common location of the appendix is retrocecal (74%), followed by pelvic (21%) region. Other locations include subcecal (1.5%), preileal (1%), and postileal (0.5%) positions [1]. Acute appendicitis continues to be one of the most frequently encountered surgical emergencies in pediatrics and adults. The site of normally placed appendix and its classical presentation of appendicitis are well documented in the literature. However, the deviations in the anatomical position of the appendix contribute to the difficulty in diagnosing appendicitis.[2–7, 8]. Subhepatic, left-sided, intraherniary, lateral pouch, mesocolic, and lumbar positions include rare positions of the appendix. It is of prime importance to be aware of various variants and thereby managing such challenging cases accordingly. Subhepatic appendicitis could mimic cholecystitis and liver abscess, resulting in delayed diagnosis, and appendiceal rupture [1, 7].

We present a middle-aged female patient with subhepatic perforated appendicitis and peritonitis. The surgical management of such patients is discussed and with a brief review of literature.

## Case Presentation

IRB approval is not required for single patient case reports at Saudi German Hospital (Khamis Mushaiyat, Al-Aseer). The patient was a 41-year-old female with no past medical history and a prior history of a Cesarean section 1 year back presenting with abdominal pain since 3 days. The pain started in the epigastric region and progressed in intensity over the 3 days and became prominent in the right upper and lower quadrants. It was associated with one episode of non-bilious emesis and PO intolerance at home. In the ED on presentation the patient was hypotensive to a systolic blood pressure(SBP) of 90 mmHg and showed signs of dehydration. Abdominal exam showed an obese abdomen, with tenderness to palpation in all the quadrants, prominently in the right upper and lower quadrants, signs of peritonitis like rebound tenderness and severe pain on percussion were present in the right abdomen. The patient was given a 1L bolus of LR in the ED with a response of 100 mmHg SBP. Labs obtained showed a WBC count of 11.8, Creatinine of 0.75. An Ultrasound abdomen showed subhepatic intraperitoneal fluid

collection and inability to visualize the appendix. A CT scan with PO and IV contrast showed subhepatic perforated appendicitis with subhepatic and pelvic collections. (Fig-1, 2). The pt was given IV Ceftriaxone 1 gm and IV Metronidazole in the ED. Based on the CT findings and the clinical presentation it was deemed necessary to proceed for an emergent laparotomy. Under aseptic precautions and general anesthesia the patient was placed in a supine position. A midline laparotomy incision was made. On entering the peritoneal cavity, a short ascending colon with a subhepatic perforated appendix acutely inflamed with a subhepatic collection was noticed. Localized peritonitis was present. A pyogenic membrane was noticed under the liver and between the liver and the diaphragm. A purulent collection was also noticed in the pouch of douglas. Appendicectomy was performed. Complete hemostasis was achieved. Adequate peritoneal lavage was done with normal saline. After drainage of almost all the fluid, a Right subhepatic and a Left pelvic drain were placed. Abdominal wall closure of rectus with PDS and skin by staples was done. Dressing placed. The patient was extubated in a stable condition. No uneventful complications. Pt did well POD-1, tolerated diet and drains were subsequently removed on POD-2. The patient was discharged home in a good condition. Post op follow up at 2 weeks showed good healing and recovery of the patient.

## **Discussion And Conclusions**

### **Discussion and Conclusions**

The annual incidence rate of subhepatic appendicitis is approximately 0.09 per 100,000 populations [2]. Incomplete rotation and fixation of the intestine due to a defect in fetal gut rotation results in a subhepatic caecum and appendix. [9]. This being a very rare phenomenon. The earliest review of subhepatic caecum and appendix has been documented in 1863 in a review of by King in 1955.[3] Often mimicking of hepatobiliary or gastric disease clinically is seen in subhepatic appendicitis resulting in a delay in diagnosis.[1, 7]. This results complications such as sepsis, suppuration, and perforation [2]. Radiologic imaging thereby is of prime importance in identifying such anomaly. Due to the availability and ease to perform ultrasound may be the preferred first-line screening modality. High suspicion and caution must be maintained in atypical presentations due to reports where subhepatic appendiceal disease was misdiagnosed as liver abscess or cholecystitis [1, 2]. In our case the abdominal ultrasound showed subhepatic fluid collection and inability to visualize the appendix. Computed tomography(CT) of the abdomen and pelvis provides high sensitivity (100%), specificity (95%), and accuracy (98%) in identifying acute appendicitis.[10] In our patient, CT scan delineated subhepatic perforated appendicitis with a subhepatic and pelvic collection. The appendix also contained a fecolith.

In a subhepatic appendix a conventional Lanz incision in the right lower quadrant may not be suitable to remove the appendix. In our case we performed a midline laparotomy due to subhepatic location of the appendix and the possibility of retrocecal, dense adhesions or fibrosis and perforation which would make a laparoscopic approach an unsafe option. In addition to the fact that open access would provide better tactile input and direct access to the appendix. laparoscopy could also be an option in patients who are clinically stable and not peritonitic in a similar situation for its versatility, diagnostic, and therapeutic

ability [7]. If one were to proceed laparoscopically steps which would be beneficial include using an angled laparoscope for better viewing, initial mobilization of the cecum, using an extra port for better access, twisting of the appendix making dissection easier. In conclusion, subhepatic appendicitis is a rare presentation and as surgeons one must be cognizant of the atypical presentation, and surgical modalities.

## Declarations

Ethics approval and consent: Not applicable

Consent for publication: Written and informed consent was obtained from the patient.

Availability of data and materials: Not applicable

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Author's contributions: MH helped in the writing, review of literature and operative management. RM helped in the review of literature and operative management. SS helped in the writing, review of literature and operative management. MS helped in review of literature and operative management. All authors read and approved the final manuscript.

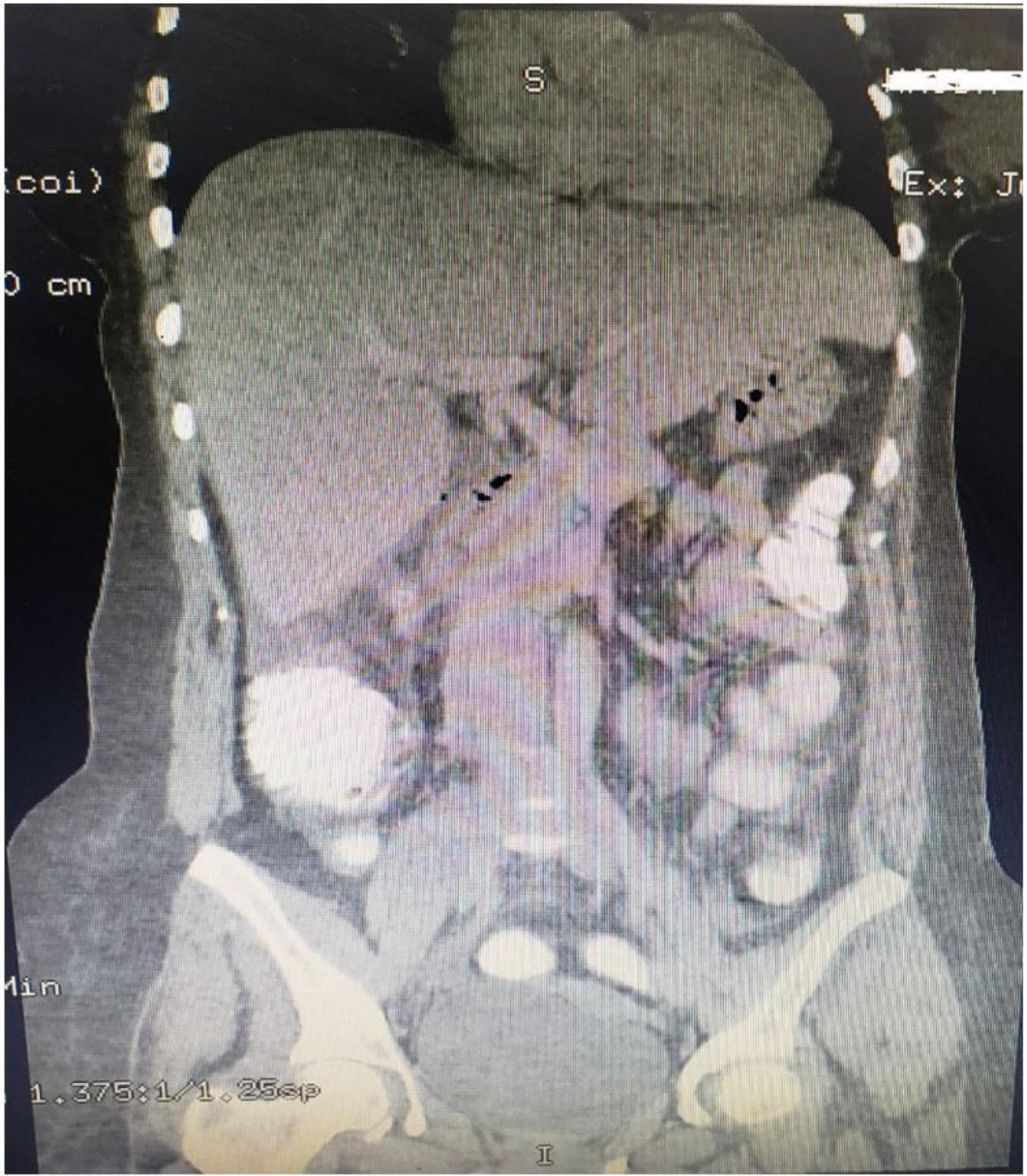
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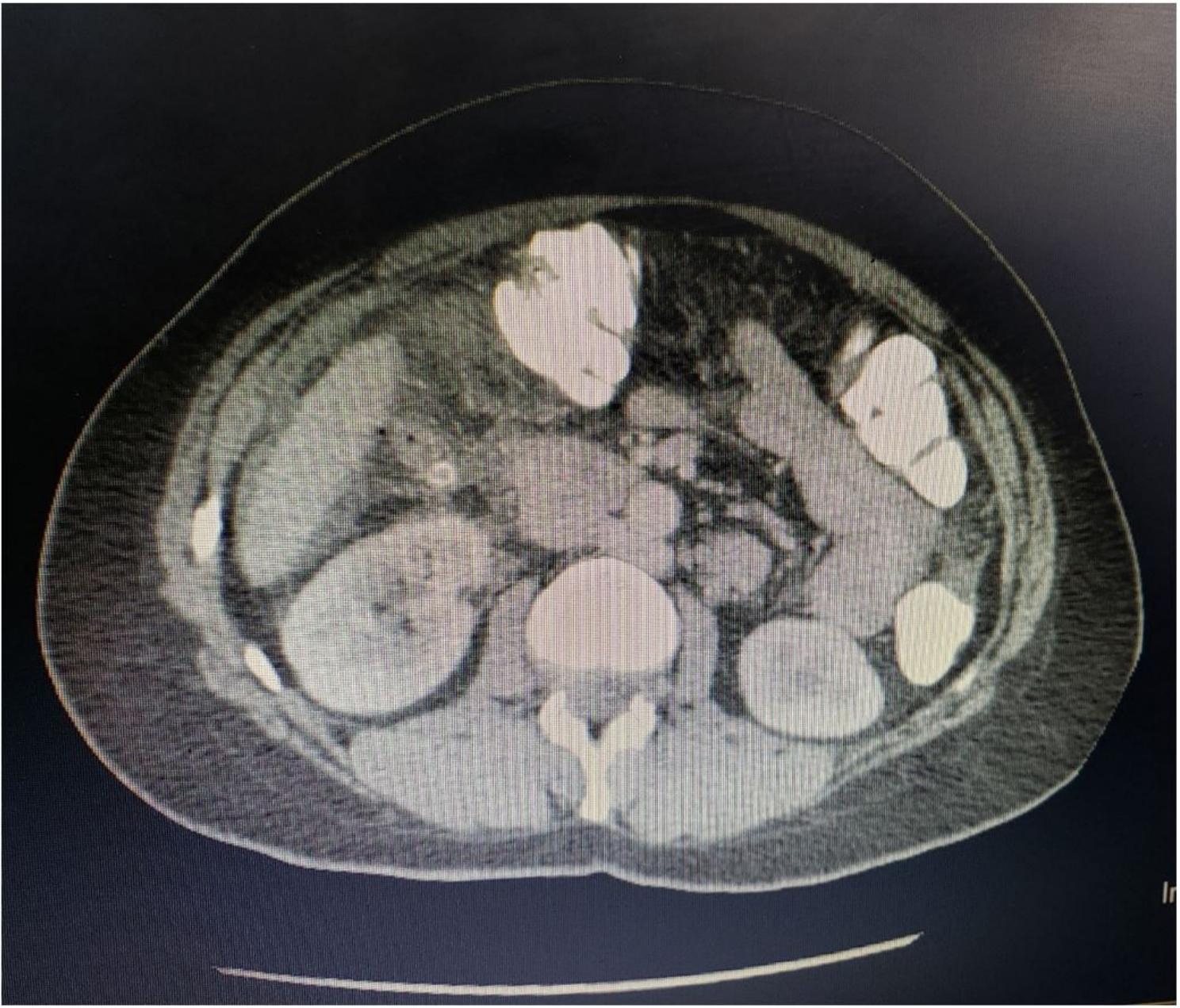
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## Figures



**Figure 1**

CT images showing perforated subhepatic appendicitis with a fecolith.



**Figure 2**

CT images showing perforated subhepatic appendicitis with a fecolith.