

**Post-Appendectomy Complication: Peritonitis and Abscess Due to Partial Obstructive Ileus in a Patient with Neglected Appendicitis**

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**Abstract**

A 13-year-old male presented with abdominal pain, fever, and vomiting two weeks after open appendectomy for neglected appendicitis. Examination revealed peritonitis signs, including diffuse tenderness. Laboratory findings showed leukocytosis and elevated C-reactive protein (CRP), indicating inflammation. Abdominal X-rays suggested dynamic ileus, while contrast-enhanced CT revealed pelvic fluid collections, gas-forming abscesses, partial ileus, and pneumoperitoneum, consistent with peritonitis complications. Complications such as adhesive small bowel obstruction (SBO), abscess formation, and peritonitis can arise after appendectomy. Adhesions from surgery may cause partial ileus, obstructing bowel motility, while infection can lead to abscesses. Imaging, particularly contrast-enhanced CT, is vital for accurate diagnosis and intervention. Treatment involves surgical drainage of abscesses, adhesiolysis, and broad-spectrum antibiotics to control infection. In this case, timely surgical and medical management resulted in a successful outcome. Peritonitis following appendectomy for neglected appendicitis can result in partial obstructive ileus and abscess formation, underscoring the need for vigilance during postoperative follow-up. Early imaging and intervention are critical to prevent severe outcomes. Prompt surgical and medical treatment enables full recovery, emphasizing the importance of recognizing post-appendectomy complications.

**Keyword:** complications, partial obstructive ileus, patient

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**INTRODUCTION**

Peritonitis is an inflammation of the peritoneum, typically caused by infection, and is considered a serious medical emergency. It can result from a variety of conditions, including perforated abdominal organs, such as in appendicitis, and can lead to systemic complications like sepsis if not treated promptly. The condition is often classified into primary peritonitis, typically seen in patients with cirrhosis, and secondary peritonitis, which is most commonly due to contamination from gastrointestinal perforations (Clements et al., 2021; Ross et al., 2018).

A rare but significant complication following abdominal surgery, such as open appendectomy, is the development of peritonitis due to obstructive ileus and subsequent abscess formation. In such cases, the blockage in the intestines leads to the accumulation of fluids, bacteria, and gases, creating an environment conducive to infection and abscess formation. These complications can worsen if not diagnosed early and treated effectively, emphasizing the need for careful post-operative monitoring (Anupam et al., 2024; Evans et al., 2022).

Reviewing similar cases, studies have shown that postoperative small bowel obstruction (SBO) and abscesses can result from adhesions following appendectomy, particularly in the first few weeks post-surgery (Kaplan, 2023; Moody et al., 2023). Imaging modalities such as contrast-enhanced CT scans and abdominal X-rays are essential for diagnosing such complications (De Simone et al., 2021). A delay in diagnosis and treatment may lead to worsening conditions like bowel perforation, sepsis, and increased mortality (Paspatis et al., 2020). Early intervention with surgical drainage of abscesses and the appropriate use of antibiotics has proven effective in managing such complications (Collard et al., 2021; Koltsidopoulos et al., 2020). The significance of this case lies in the need for heightened awareness of the risks of postoperative complications and the crucial role of imaging in managing suspected peritonitis.

Postoperative complications, particularly peritonitis due to obstructive ileos, are the main cause of morbidity in pediatric patients after appendectomy (Healy et al., 2016). Early detection and appropriate intervention can lower the risk of sepsis and death. However, the limitations of early detection and the lack of studies on the management of these complications in the pediatric population indicate the need for further research. The urgency of this study lies in the high potential for serious complications that can occur if peritonitis and intra-abdominal abscesses are not diagnosed in a timely manner.

A study by Detz et al., (2021) shows that 15% of cases of small bowel obstruction (SBO) after appendectomy are caused by adhesions that develop within 2-4 weeks after surgery. This study highlights the importance of close monitoring in the early postoperative period to prevent further complications. Another study by Sabzghabaei et al., (2022) emphasized the effectiveness of contrast-based abdominal CT scans in detecting abscesses and lesions, with a diagnostic accuracy rate of 92%. This study underscores the important role of imaging in the detection of post-abdominal surgery complications.

The novelty of this study lies in the emphasis on case studies of 13-year-old children who experience peritonitis due to intestinal obstruction after appendectomy. The focus of this research is comprehensive documentation regarding the clinical journey of patients from the preoperative phase to the postoperative phase of exploratory laparotomy. The combination of clinical, radiological and surgical interventions provides a new perspective on the management of rarely reported post-appendectomy complications in the pediatric population.

This study aims to document the clinical course of patients with peritonitis after appendectomy, evaluate the role of imaging such as abdominal CT scan in detecting intra-abdominal abscesses and obstructive ileus, and analyze the effectiveness of surgical interventions in the form of exploratory laparotomy and adhesiolysis in overcoming these complications. This research is expected to be a clinical reference for medical personnel in detecting and managing post-appendectomy complications, increasing awareness of the importance of close monitoring and diagnostic imaging, and providing patients and families with a better understanding of postoperative risks and care. Thus, this study is expected to be able to contribute to improving the quality of care and reducing morbidity rates in pediatric patients with post-adaptometry complications.

## **RESEARCH METHOD**

### **Research Design**

This study uses the case report method to explore and describe the management of patients with post-appendectomy complications. This study aims to provide an in-depth clinical picture of the disease course, diagnostic procedures, and therapeutic management carried out.

### **Research Subject**

The study subject was a 13-year-old male patient who came to the emergency department (ER) with complaints of persistent abdominal pain and abdominal distension for 2 days, which was exacerbated by nausea, vomiting, fever, and weakness. Medical history shows the patient underwent an open appendectomy 12 days prior to the visit to the emergency room.

### **Location and Time**

This research was conducted at a referral hospital that has complete surgical and diagnostic facilities. The study will take place from October 30, 2024, coinciding with the patient's first visit, until the patient undergoes exploratory laparotomy procedures and post-operative care.

### **Data Analysis**

The data were analyzed descriptively to identify clinical patterns and patient responses to the interventions given. The analysis includes the patient's disease course, the effectiveness of the intervention, as well as the final outcome after the surgical procedure.

## **RESULT AND DISCUSSION**

A 13-year-old male presented to the emergency department on 30 October 2024, with a 2-day history of persistent abdominal pain and distension. The pain was described as continuous, accompanied by nausea and vomiting (more than 10 episodes) over the preceding 24 hours. The patient also experienced fever and intermittent weakness, which had progressively worsened 2 hours prior to admission. Due to the abdominal discomfort, his intake of food and fluids had decreased significantly.

The patient's medical history was notable for an open appendectomy performed on 18 October 2024. On physical examination, he was alert and oriented, with a Glasgow Coma Scale (GCS) score of E4V5M6. His body temperature was elevated, and his extremities were warm. Abdominal examination revealed distension, muscle guarding (defans muscular), decreased bowel sounds, and tenderness throughout the entire abdomen. These findings were consistent with a clinical presentation suggestive of acute abdominal pathology.

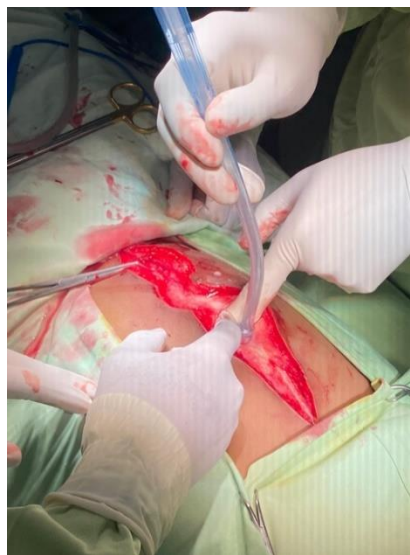
In the emergency department, the patient received initial management, including the placement of a nasogastric tube (NGT) for decompression and a urinary catheter. Laboratory tests revealed an elevated white blood cell count (WBC) of  $10.68 \times 10^3/\mu\text{L}$ , hemoglobin (HB) at 11.2 g/dL, and hematocrit (HT) at 31.5%. The platelet count (PLT) was elevated at  $523 \times 10^3/\mu\text{L}$ . Further analysis indicated a mean corpuscular volume (MCV) of 59.4 fL, mean corpuscular hemoglobin (MCH) of 21.1 pg, and mean corpuscular hemoglobin concentration (MCHC) of 35.6 g/dL. The bleeding time (BT) was 2 minutes, and clotting time (CT) was 10 minutes. Electrolyte imbalances included a sodium (Na) level of 125 mmol/L, potassium (K) at 3.9 mmol/L, and chloride (Cl) at 86 mmol/L. Renal function tests showed urea (Ur) at 34 mg/dL and creatinine (Cr) at 0.3 mg/dL.

Radiology studies, including a chest X-ray, were within normal limits, while an abdominal X-ray in three positions showed findings indicative of adynamic ileus, suggesting a possible small bowel obstruction. These findings, in conjunction with the patient's clinical presentation, raised suspicion of postoperative complications, possibly due to adhesions or obstruction. The patient was managed with fluid resuscitation, pain control via ketorolac, and ceftriaxone antibiotics. The patient was also kept fasting to minimize further gastrointestinal distress.

On the second day of hospitalization, a blood gas analysis and a contrast-enhanced CT scan of the abdomen were performed. The blood gas analysis revealed the following: sodium at 127 mmol/L, potassium at 4.1 mmol/L, chloride at 85 mmol/L, and a blood sugar level of 123 mg/dL. The pH was 7.46, with a PCO<sub>2</sub> of 38 mmHg, PO<sub>2</sub> at 114 mmHg, bicarbonate (HCO<sub>3</sub>) of 27 mmol/L, base excess (ABE) of 3 mmol/L, and standard bicarbonate (SBC) of 29 mmol/L.

The contrast-enhanced abdominal CT scan revealed multiple fluid collections with gas formation within the pelvic cavity, indicative of a possible abscess. In addition, the scan showed features suggestive of enterocolitis, partial ileus, ascites, and pneumoperitoneum. There was also a minimal pleural effusion on the left side. These findings, in conjunction with the patient's clinical presentation, were highly suggestive of significant intra-abdominal pathology, likely resulting from postoperative complications such as infection or bowel obstruction.

An emergency exploratory laparotomy was performed. During the surgery, approximately 1000 cc of abscess was discovered within the abdominal cavity, along with grade 3 adhesions. Fecalith contamination was observed in the inferior peritoneal cavity. The surgical team performed abscess drainage, adhesiolysis, and an omentectomy. After completing the procedure, abdominal cavity was thoroughly irrigated, and two drains were placed on the right and left sides for post-operative drainage. Intraoperative blood loss was estimated to be approximately 200 cc.



**Figure 1.** Abscess was discovered during the laparotomy.



**Figure 2.** Adhesions was discovered during the exploration



**Figure 3.** Fecalith was discovered in the inferior peritoneal cavity

Postoperatively, the patient was transferred to the Pediatric Intensive Care Unit (PICU) for close monitoring and management. The patient was started on an antimicrobial regimen, which included two types of antibiotics: ceftriaxone and metronidazole, to address the infection and prevent further complications.

### **Outcome**

The patient was admitted to the Pediatric Intensive Care Unit (PICU) for postoperative management following an emergency exploratory laparotomy. Over the two-day PICU stay, the patient demonstrated progressive clinical improvement, with stabilization of vital signs, resolution of abdominal tenderness, and normalization of bowel function. Upon achieving stable clinical parameters, the patient was transferred to a regular inpatient ward for continued monitoring and care.

Postoperative drain output was assessed daily, showing a gradual decrease without signs of infection or complications. On postoperative day 8, the surgical drains were removed following confirmation of no significant residual fluid collection on clinical assessments.

On postoperative day 9, the patient was evaluated and deemed fit for discharge. The patient demonstrated adequate oral intake, normal hydration status, and stable vital signs. Discharge planning included instructions for home care, including wound management and signs of potential complications to monitor. The patient was scheduled for outpatient follow-up to assess ongoing recovery and ensure the absence of late postoperative complications.

### **Discussion**

In this case, a 13-year-old male presented with post open appendectomy complications following a neglected appendicitis. The patient developed peritonitis, abscess formation, and partial ileus due to adhesions and fecalith presence. Neglected appendicitis, often referred to as complicated or perforated appendicitis, occurs when the condition is untreated for an extended period, leading to perforation and fecal contamination of the peritoneum. This typically results in severe complications such as peritonitis and abscess formation, as seen in this case.

Several studies have highlighted the increased risk of postoperative complications following appendectomy due to delayed presentation. A study by Jian Li, (2021) found that patients with delayed appendicitis, especially those who present with perforation or abscess, have a higher risk of developing postoperative infections, abscesses, and adhesions compared to those with uncomplicated appendicitis. These findings correlate with our case, where the patient, having experienced a delayed appendicitis, developed significant intra-abdominal pathology, including abscess and adhesions, leading to further complications like ileus.

Moreover, the presence of a fecalith, which is common in neglected appendicitis, has been shown to increase the likelihood of perforation and abscess formation. A study by Fikri et al., (2023) concluded that the presence of fecaliths was strongly associated with complicated appendicitis, as fecaliths can obstruct the appendiceal lumen, promoting bacterial overgrowth,

and increasing the likelihood of perforation and peritonitis. This finding is consistent with our case, where the surgical team identified a fecalith during the exploratory laparotomy, which contributed to the formation of the abscess and the development of postoperative complications.

In terms of management, the approach outlined in this case prompt exploratory laparotomy to release adhesions, drain abscesses, and remove the fecalith aligns with best practices in managing complicated appendicitis with abscess formation and ileus. Studies, such as one by Virdis et al., (2021), have emphasized that early surgical intervention in such cases significantly reduces the risk of sepsis and mortality. The decision to drain the abscess and perform adhesiolysis is crucial in preventing further morbidity and improving patient outcomes.

Additionally, while the mortality rate from post appendectomy complications has decreased over time, it remains a significant concern. According to a retrospective review by Ogbuanya et al., (2023), the mortality rate for patients with complicated appendicitis, including abscess and perforation, ranges from 1% to 3%, with increased risk in those presenting with delayed diagnoses and advanced peritonitis. However, early surgical intervention, as demonstrated in this case, is key to minimizing mortality.

### CONCLUSION

Based on the results and discussion, this case study emphasizes the importance of early recognition and prompt surgical treatment in patients with appendicitis that is neglected and progresses to complications such as peritonitis, abscess formation, and ileus. Similarities with previous studies suggest that late diagnosis often leads to appendix perforation and intra-abdominal infection, with fecal obstruction (fecalith) as the main risk factor. The use of imaging, especially CT scans of the abdomen with contrast, has proven to be a highly accurate diagnostic tool in detecting these complications, as revealed in previous studies.

The differences found in this case compared to other studies lie in the younger age of the patients and the higher severity of the abscess, signaling that children may be more susceptible to the rapid and widespread development of complications. In addition, the presence of grade 3 adhesions in this case showed a more significant level of intra-abdominal inflammation than reported in adult patients.

Clinically, this study highlights the urgency of close monitoring after appendectomy, particularly in the pediatric population, to prevent further complications. Proper management, including exploratory laparotomy and adhesiolysis, has been shown to be effective in reducing the risk of morbidity and mortality. Thus, this study contributes to enriching the understanding of clinical differences and specific treatment needs in pediatric patients who experience post-appendectomy complications.

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