

The Efficacy in Optimizing Outcomes of Minimally Invasive Surgery for Management of Intra-Abdominal Abscess in Koch's Abdomen - A Case Report

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Abstract: *Tuberculosis is a global health problem. The diagnosis of abdominal tuberculosis (Koch's abdomen) remains one of the most challenging tasks in clinical practice, clinicians worldwide are faced more and more with such unfamiliar cases. Most of the patients present with chronic abdominal pain, pronounced weight loss and fever with night sweats diagnosed with Koch's abdomen along with positive tuberculosis specific tests. These patients well managed with Anti tubercular therapy with regular laboratory biochemical monitoring. A few of them develop complications like perforation peritonitis, intra-abdominal abscess, peritoneal nodules, intra peritoneal and bowel adhesions. Traditionally, they were managed by open surgeries but with evolution of minimal invasive surgeries such as laparoscopic either for diagnostic or therapeutic purpose for favourable outcomes and reducing morbidity. We are presenting this case report of a favourable outcome of a young lady presenting with Koch's abdomen with intra-abdominal collection managed by a minimal invasive approach.*

Keywords: Koch's abdomen, perforation peritonitis, intraabdominal collection, adhesiolysis, diagnostic laparoscopy, intraabdominal infection

1. Introduction

Intra-abdominal infections (IAI) are categorized in complicated and uncomplicated. Uncomplicated IAI usually involve single organ, not involving the peritoneum and managed either with antibiotics or surgical intervention. Complicated IAI means localised or diffuse peritonitis that would require both interventions i.e. antibiotics and surgery [1]. Source control of the IAI is one and most important to treat the patient, either with non-operative i.e. percutaneous drainage of intraabdominal abscess or surgical intervention according the pathology. Laparoscopic evaluation and their management in IAI are very useful technique [2]. Laparoscopic procedure is most viable technique in acute cholecystitis, colonic diverticular disease, acute appendicitis, gastroduodenal perforation and postoperative infections [3& 4]. We are presenting a young lady with complicated IAI, managed with laparoscopy and drainage of the intraabdominal abscess.

2. Case Presentation

34 years lady came with chief complaint of pain abdomen, vomiting and fever for 2-3 days. She was a known case of abdominal tuberculosis and on anti-tubercular treatment for last 3 months. She had a history of similar attack 1 months back and remain admitted in hospital for 3 days. On workup, she was diagnosed with complicated appendix with sealed of perforation peritonitis. She was managed conservatively and remained comfortable for 1 month. She again developed similar complaint. On arrival she was conscious oriented, tachycardiac, tachypnoea, febrile and dehydrated. She was immediately resuscitated with intravenous fluids, antibiotics, nasogastric tube insertion, foley's catheterization and analgesics. On work up, she was found to have thrombocytosis, anemia, hypoalbuminemia. Xray abdomen revealed no pneumoperitoneum and no dilated bowel. Ultrasound abdomen was done revealed collection in pelvis, right paracolic area and right perihepatic area (figure 1).

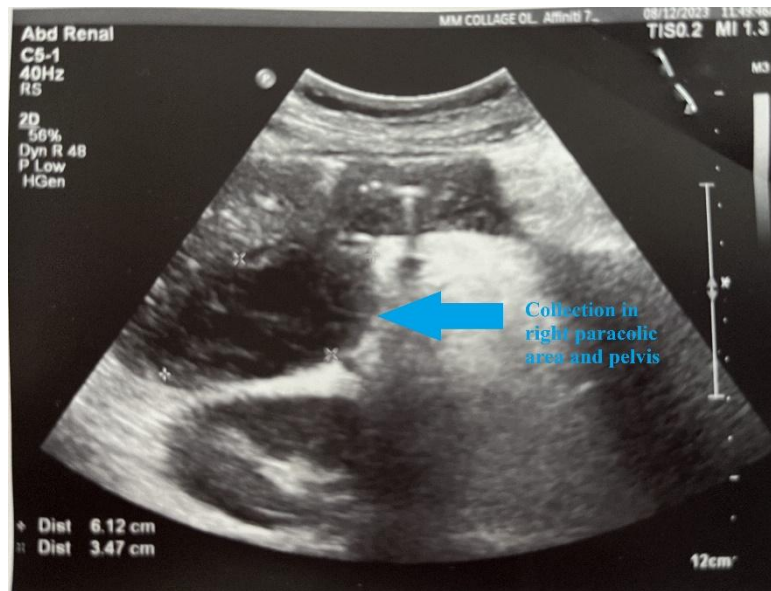


Figure 1: Showing heterogenous collection in right paracolic area

X ray abdomen supine and erect revealed dilated bowel and air fluid levels but no air under diaphragm (figure 2). So further investigation was planned.

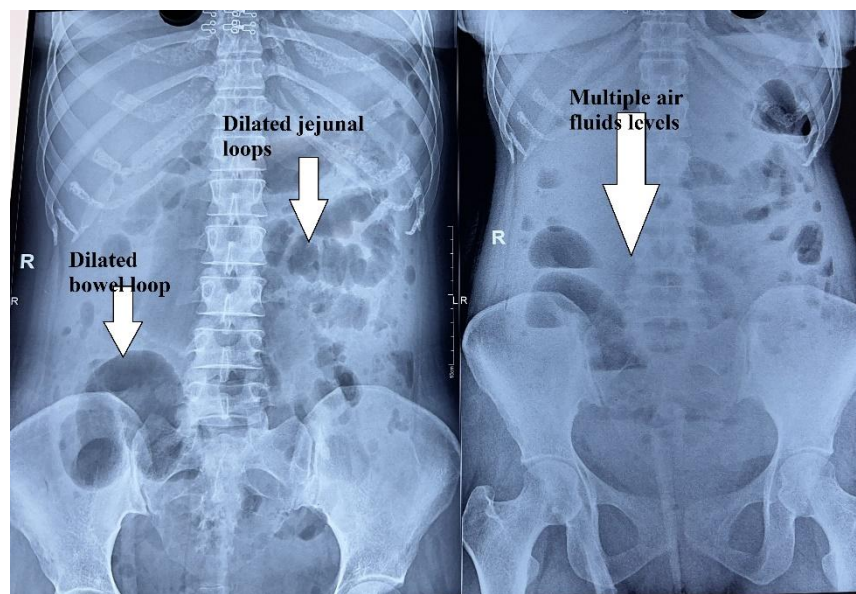


Figure 2: Xray abdomen supine and erect showing dilated small bowel

Contrast enhanced computed tomography abdominopelvic was done, revealed free fluid in pelvis, right paracolic abdomen with pneumoperitoneum (figure 3&4).

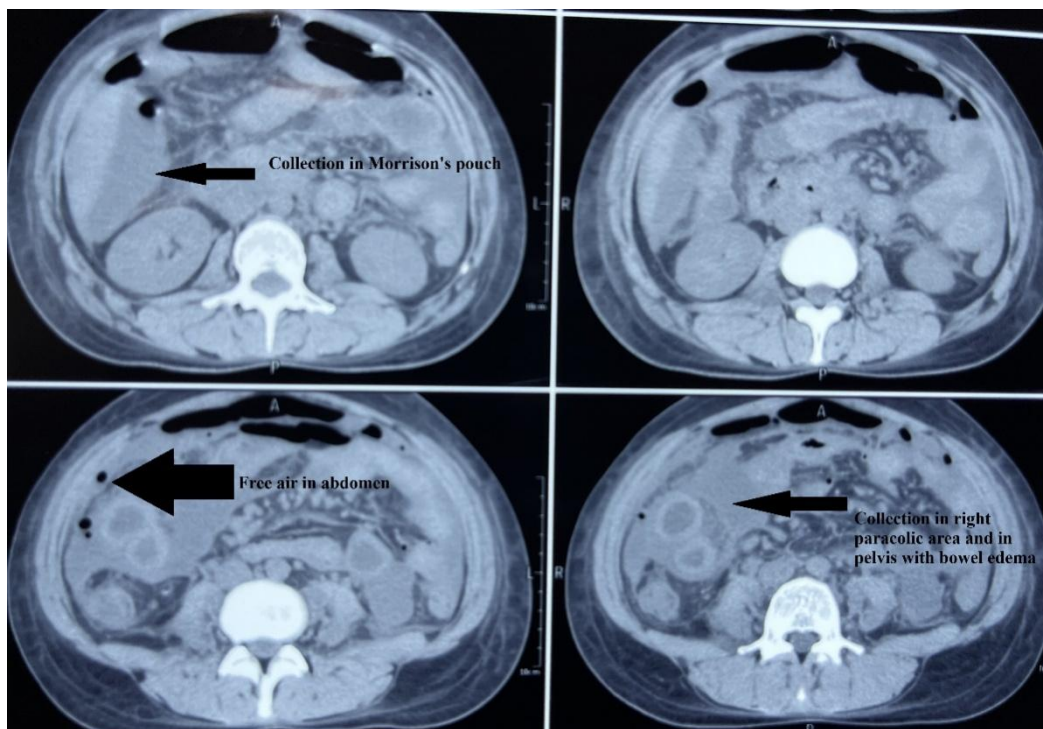


Figure 3: Axial view revealed free fluid and collection in right perihepatic, right paracolic area.

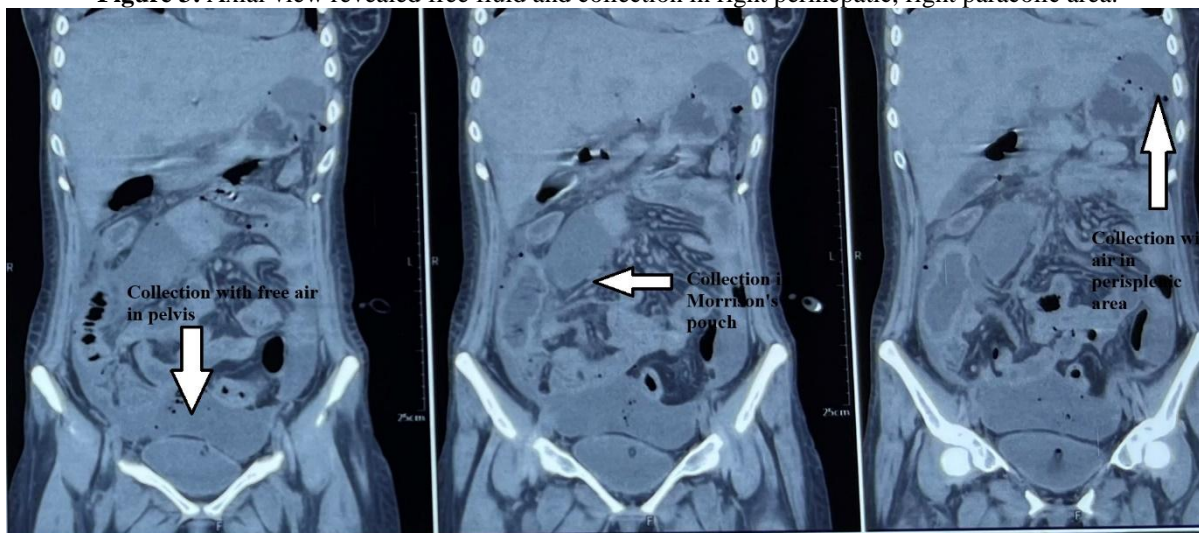


Figure 4: Coronal view collection with air in pelvis, perisplenic area

She was comfortable, passing flatus after 24 hours. She responded to conservative management, passed stool. She remained hemodynamically stable, nasogastric tube removed and gradually oral liquid started. She tolerated well. But on day of admission five, she had been having high grade fever and increasing total leukocyte counts. Repeated ultrasounds showed air pockets and collection in pelvis and right paracolic area. Intervention radiology consultation was taken to drain the collection but was unsuccessful. After

discussion, laparoscopic drainage of collection was planned. She underwent laparoscopic surgery, intraoperative there were adhesion of bowel to abdominal wall, interbowel and with liver (figure 5). Adhesiolysis was done, 200-250cc purulent collection was in pelvis and pus flakes all around bowel wall & perihepatic area (figure 6&7). Purulent collection drained and thorough wash was given. Two large bore drain was inserted.

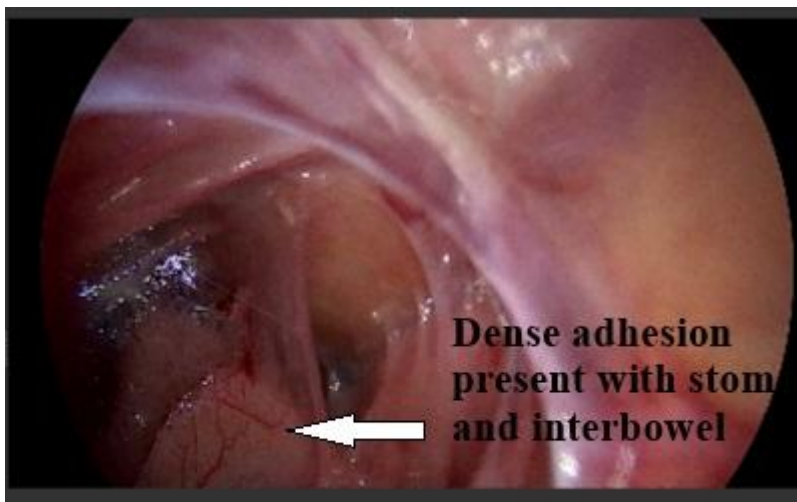


Figure 5: Showing adhesion with anterior abdominal wall

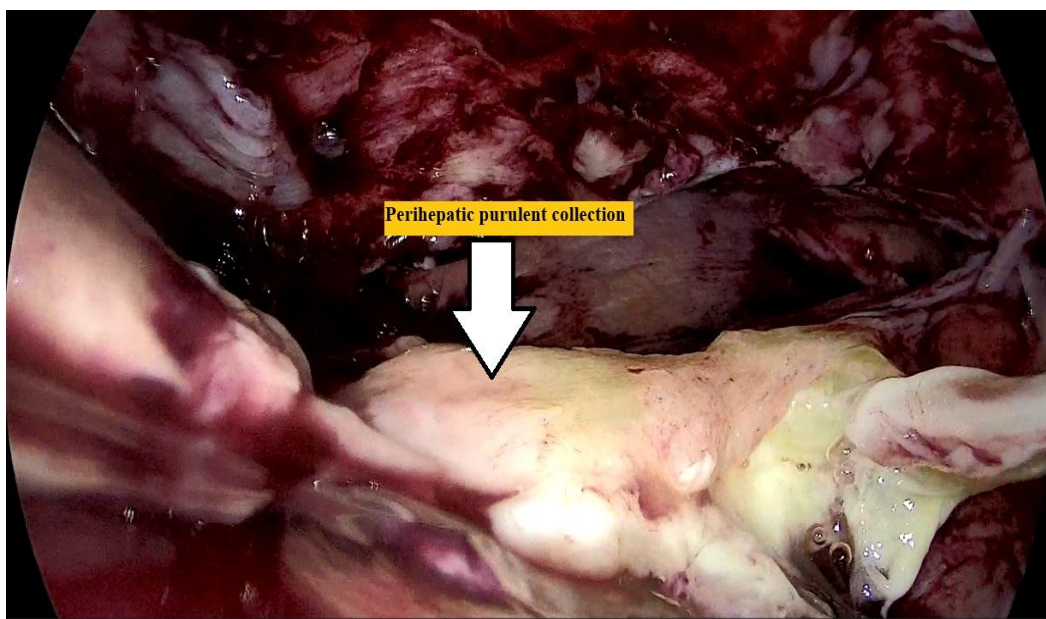


Figure 6: Showing purulent collection in right perihepatic area.

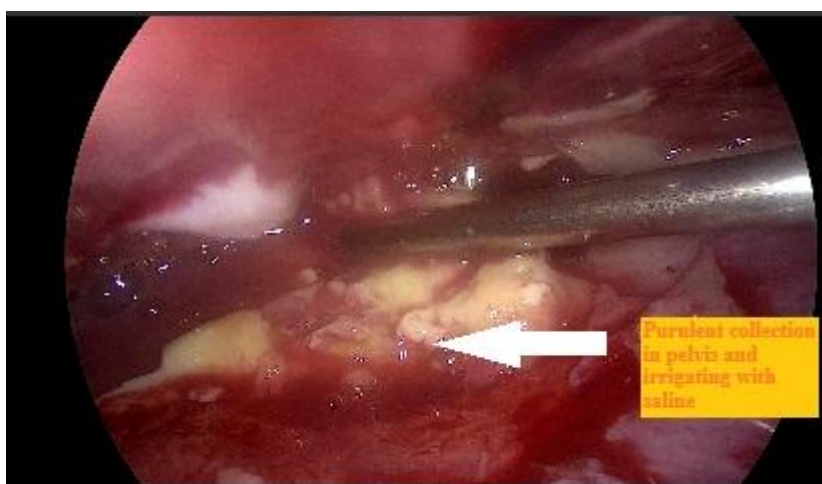


Figure 7: Showing purulent collection in pelvis.

She was gradually mobilised, nasogastric tube removed and enteral diet started. Multiple units were packed red blood cells and fresh frozen plasma was transfused. Oral antitubercular treatment (ATT) was restarted. She recuperated well and was discharged in satisfactory

condition. On follow up, she remained comfortable and continued with ATT.

3. Discussion

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Tuberculosis is a global health problem. The diagnosis of abdominal tuberculosis remains one of the most challenging tasks in clinical practice, clinicians worldwide are faced more and more with such unfamiliar cases. Globally, Tuberculosis is one of the top 10 causes of death with 10.6 million people developing tuberculosis in 2022, with an estimated 1.3 million deaths [5]. Clinicians should keep a high index of suspicion is essential for reaching this diagnosis which is characterized with abdominal pain and pronounced weight loss were the predominant presenting complaints, followed by loss of appetite, nausea, vomiting or diarrhoea along with fever and night sweats [6].

Tuberculous peritonitis mainly classified into three types:

- 1) The wet type which is the most common (90% cases) and free ascites or localized fluid
- 2) The dry type (plastic) which has peritoneal nodules and dense adhesions
- 3) The fibrotic-fixed type which shows clumping matted bowel loops along with thickened mesentery and omentum [7].

Routine laboratory tests including complete blood count, liver function test, erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP) levels along with tuberculosis specific tests such as Mantoux test, sputum Mycobacterial culture and Quantiferon-TB Gold test were conducted and crucial to assess the inflammatory status and diagnosis of Koch's abdomen [8]. Radiological Imaging modality such as ultrasound and X-ray of abdomen, CT and magnetic resonance imaging (MRI) were indispensable in the surgical planning which provided detailed insights into the anatomy and the extent of the abscess, facilitating the selection of the most appropriate minimally invasive technique. The precision of these imaging modalities ensures the accurate localization of the abscess, which is critical for successful MIS intervention. In this case, initial investigations played a pivotal role in formulating the treatment plan. The patient underwent a comprehensive abdominal CT scan, which revealed the presence of an intra-abdominal abscess with air pockets [9]. Patient underwent diagnostic laparoscopy, often used both as a diagnostic and therapeutic tool, provided visual confirmation and allowed for sample collection for histopathological examination, crucial for confirming the diagnosis of abdominal tuberculosis [10].

Traditionally, open surgery has been questioned due to its invasive nature and postoperative complications. The evolution of Minimal invasive surgery (MIS) including laparoscopic and robotic-assisted procedures has been a game changer in abdominal surgeries. MIS is now used more often for diagnosing and therapeutic tuberculous peritonitis offer distinct advantages such as reduced tissue trauma, less postoperative pain, and faster recovery [11]. It potentially reduces the risk of dissemination of tubercular infection by reducing exposure of intra-abdominal contents to the external environment. On comparing MIS with conventional open procedures, patients with Koch's abdomen are at an increased risk of developing wound infections and hernias, and they typically have longer hospitalization periods that are often associated with higher morbidity [10].

We are reporting in this case the use of MIS in demonstrating several benefits for the drainage of an intra-abdominal abscess in Koch's abdomen. Following MIS, patients experienced minimal postoperative pain, low risk of wound infection, and a rapid return to normal activities [12]. In this patient MIS involved targeted drainage and debridement with minimal disruption to surrounding tissues.

Patient's postoperative follow-up with radiological imaging primarily through ultrasound and CT scans along with anti-tubercular therapy was vital in ensuring the complete resolution of the abscess. In this report, the author recommends promising results of MIS in managing Koch's abdomen with intra-abdominal abscess. This case report should aim to develop standardized protocols and identify patient populations that would benefit most from MIS approach with favourable patient outcomes.

4. Conclusion

The emerging management of Koch's abdomen with intra-abdominal abscess represents an essential and preferable option by minimal invasive surgery, which provides significant advantages over transitional open surgery as laparotomy. Early presentation, timely diagnosis, appropriate surgical intervention, and peri operative care are essential elements for achieving better outcomes, reducing the risk of complications and improving the patient's overall quality of life. This case report highlights better patient outcomes including reducing morbidity and quick recovery and success are essential depending on patient selection, surgeon expertise and consideration of available appropriate resources.

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