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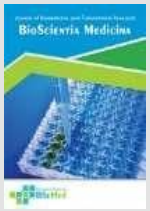

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Successful Management of Complex Intestinal Tuberculosis with Ileal Perforation: A Case Report

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A B S T R A C T

Background: Intestinal tuberculosis (ITB) with ileal perforation represents a formidable challenge in the realm of extrapulmonary tuberculosis. This case report underscores the complexities inherent in managing such cases, highlighting the critical need for a multidisciplinary approach that integrates pharmacological and surgical interventions. **Case presentation:** A 57-year-old male presented with a history of both pulmonary and intestinal tuberculosis, complicated by ileal perforation. He had previously undergone a six-month course of anti-tuberculosis treatment and a laparotomy for ileal perforation repair. The patient's current presentation included abdominal pain, nausea, and vomiting, indicative of obstructive ileus. Diagnostic assessments revealed elevated inflammatory markers and imaging confirmed partial obstructive ileus and active pulmonary tuberculosis. The patient was managed with extended anti-tuberculosis therapy and intravenous antibiotics, resulting in significant clinical improvement and enhanced quality of life. **Conclusion:** This case report emphasizes the importance of early detection, comprehensive assessment, and individualized treatment plans in managing complex ITB cases. The successful outcome achieved in this case underscores the efficacy of a multidisciplinary approach that combines pharmacological and surgical interventions.

1. Introduction

Tuberculosis (TB), primarily caused by *Mycobacterium tuberculosis*, remains a significant global health challenge, despite decades of concerted efforts to control and eradicate it. The World Health Organization (WHO) estimates that approximately 10 million new TB cases occur annually, resulting in over 1.5 million deaths, making it one of the leading causes of mortality from a single infectious agent worldwide. While significant progress has been made in reducing the global burden of TB, the disease continues to pose a substantial threat, particularly in low- and middle-income countries, where access to healthcare and diagnostic facilities may be limited.[1,2]

Although pulmonary TB is the most common manifestation of the disease, extrapulmonary tuberculosis (EPTB), affecting organs beyond the lungs, accounts for a significant proportion of cases, ranging from 15% to 20% globally. EPTB can involve various organ systems, including the lymph nodes, pleura, central nervous system, genitourinary tract, bones and joints, and the gastrointestinal tract. The diverse clinical presentations of EPTB, often mimicking other diseases, can lead to diagnostic delays and misdiagnosis, contributing to increased morbidity and mortality. The diagnosis of EPTB often requires a combination of clinical, radiological, and microbiological investigations. However, obtaining microbiological confirmation, considered the gold

standard for diagnosis, can be challenging due to the paucibacillary nature of EPTB lesions and the difficulty in accessing affected tissues. This diagnostic challenge underscores the importance of a high index of suspicion and a multidisciplinary approach involving various medical specialties to ensure timely and accurate diagnosis. The treatment of EPTB generally follows the same principles as pulmonary TB, involving a multi-drug regimen for an extended duration. However, the specific treatment regimen and duration may vary depending on the site of involvement, severity of disease, and presence of drug resistance. Additionally, surgical intervention may be required in certain cases, such as those with complications like abscess formation, obstruction, or fistula.[3,4]

Intestinal tuberculosis (ITB) is a form of EPTB that affects the gastrointestinal tract. It is more prevalent in regions with high burdens of pulmonary TB and is often associated with underlying immunosuppression, such as HIV infection. ITB can involve any part of the gastrointestinal tract, but the ileocecal region is the most commonly affected. The clinical presentation of ITB is often nonspecific, with symptoms such as abdominal pain, diarrhea, weight loss, and fever, mimicking other inflammatory bowel diseases like Crohn's disease. The diagnosis of ITB relies on a combination of clinical, radiological, and microbiological findings. Imaging modalities such as computed tomography (CT) and endoscopy can help visualize intestinal lesions and guide tissue sampling for microbiological confirmation. However, obtaining microbiological evidence can be challenging, and a diagnosis is often made based on a combination of clinical, radiological, and histological findings in the appropriate clinical context. The treatment of ITB primarily involves ATT, with surgery reserved for cases with complications such as obstruction, perforation, or fistula formation. The duration of ATT for ITB is typically six months, but it may need to be extended in cases with extensive disease or complications. Surgical intervention, when required, aims to address the specific complication and may involve procedures such as resection, stricturoplasty, or bypass.[5,6]

Ileal perforation is a rare but potentially life-threatening complication of ITB. It occurs due to transmural inflammation and necrosis of the intestinal wall, leading to a breach in its integrity. The clinical presentation of ileal perforation is often dramatic, with sudden onset of severe abdominal pain, peritonitis, and sepsis. Prompt diagnosis and surgical intervention are crucial to prevent mortality and morbidity associated with this complication. The management of ITB with ileal perforation requires a multidisciplinary approach involving gastroenterologists, infectious disease specialists, and surgeons. Surgical intervention is the mainstay of treatment, aiming to control the perforation, remove any necrotic tissue, and restore intestinal continuity. The specific surgical approach may vary depending on the location and extent of the perforation, as well as the patient's overall condition. Post-operative management includes ATT, antibiotics, and supportive care to ensure optimal healing and prevent complications.[7,8]

This case report describes the successful management of a complex case of ITB with ileal perforation in a 57-year-old male. The patient presented with a history of both pulmonary and intestinal TB, along with previous surgical intervention for ileal perforation repair. The presence of obstructive ileus secondary to post-surgical adhesions further complicated the clinical picture.[9,10] This case highlights the challenges associated with diagnosing and managing complex ITB cases, particularly those complicated by ileal perforation. It underscores the importance of a multidisciplinary approach involving various medical specialties to ensure timely diagnosis and appropriate management. The successful outcome in this case demonstrates the efficacy of combining pharmacological and surgical interventions in managing ITB with complications. This case report also contributes to the existing medical literature by providing valuable insights into the clinical presentation, diagnostic workup, and management of ITB with ileal perforation. It

emphasizes the importance of a high index of suspicion for ITB in patients with gastrointestinal symptoms, especially in endemic areas or in individuals with risk factors for TB. Additionally, it underscores the need for individualized treatment plans and close monitoring to optimize patient outcomes in these complex cases.

2. Case Presentation

A 57-year-old male presented to our gastroenterology clinic with a chief complaint of persistent abdominal discomfort. The patient had a complex medical history, notable for a dual diagnosis of pulmonary and intestinal tuberculosis (TB) established one year prior to this presentation. The intestinal TB had initially manifested with lower gastrointestinal bleeding, necessitating surgical intervention. Post-operatively, the patient developed adhesions that required a second surgery for removal. He had completed a six-month course of anti-tuberculosis treatment for intestinal TB and was currently undergoing treatment for pulmonary TB. Two months prior to this visit, he had undergone another laparotomy for adhesiolysis and repair of ileal perforation, a complication of his intestinal TB. This perforation had been managed with a double-barrel ileostomy. Despite these interventions, the patient continued to experience progressive abdominal pain, nausea, and vomiting, prompting his current presentation.

Upon presentation, the patient appeared visibly unwell and distressed due to abdominal pain. His vital signs were notable for tachycardia, with a heart rate of 127 beats per minute, and hypertension, with a blood pressure reading of 147/90 mmHg. He also had a low-grade fever of 37.6°C, suggesting an ongoing inflammatory or infectious process. Physical examination revealed generalized abdominal tenderness, but notably, there were no signs of peritonitis, such as rebound tenderness or guarding, which would suggest a more acute intra-abdominal process.

Laboratory investigations were performed to further evaluate the patient's condition. A complete blood count revealed an elevated white blood cell count of 13,600/uL, with a significant predominance of neutrophils at 84.7%. This finding was consistent with an ongoing inflammatory or infectious process, aligning with the patient's clinical presentation and medical history. Other laboratory parameters, including liver and kidney function tests, were within normal limits. Imaging studies were crucial in delineating the nature and extent of the patient's abdominal complaints. Plain abdominal X-rays demonstrated evidence of a partial high-level obstructive ileus, suggesting a blockage in the small intestine. This finding corroborated the clinical suspicion of an obstruction, likely related to post-surgical adhesions from the patient's previous abdominal surgeries. Chest radiography was also performed, revealing active signs of pulmonary TB, reaffirming the systemic nature of the patient's TB infection and its ongoing activity.

Based on the collective clinical, laboratory, and imaging findings, the primary diagnosis was partial obstructive ileus secondary to post-surgical adhesions. This diagnosis was supported by the patient's history of multiple abdominal surgeries, the presence of abdominal pain and obstructive symptoms, and the imaging evidence of intestinal obstruction. However, given the patient's complex medical history and the presence of active pulmonary TB, other potential diagnoses were considered. These included; Recurrent or worsening intestinal TB: Although the patient had completed a course of anti-TB treatment for intestinal TB, the possibility of recurrence or incomplete resolution could not be excluded, especially in the context of ongoing pulmonary TB; Intra-abdominal abscess or new infection: The patient's recent surgeries and the presence of fever raised the possibility of an intra-abdominal abscess or a new infection, which could contribute to the obstructive symptoms; Other unrelated causes of intestinal obstruction: While adhesions were the most likely cause of obstruction in

this patient, other potential etiologies, such as hernias, tumors, or strictures, needed to be considered and ruled out.

The patient was admitted to the hospital for further management and close monitoring. Intravenous antibiotics, specifically levofloxacin, and metronidazole, were initiated to address the obstructive symptoms and potential secondary bacterial infection. The choice of these antibiotics was based on their broad-spectrum activity against common enteric pathogens and their effectiveness in managing intra-abdominal infections. In addition to antibiotics, the patient's anti-TB treatment regimen was continued and extended to 12 months due to the complexity of his case and the presence of both pulmonary and intestinal TB. This prolonged treatment duration aimed to ensure complete eradication of the *Mycobacterium tuberculosis* infection and minimize the risk of relapse. The patient's condition improved significantly during his hospital stay. His abdominal pain, nausea, and vomiting resolved, and he was able to tolerate oral intake. After six days of hospitalization, he was discharged in stable condition with instructions to continue his anti-TB treatment for the full 12-month duration and to follow up regularly in the outpatient clinic.

During subsequent follow-up visits, the patient reported a marked improvement in his quality of life. He was able to resume his daily activities without significant limitations and experienced no further abdominal symptoms. Repeat imaging studies demonstrated resolution of the obstructive ileus and improvement in his pulmonary TB. The patient successfully completed his 12-month course of anti-TB treatment without any complications or recurrence of disease.

Table 1. Timeline of disease.

Date/Period	Event	Clinical actions and observations
1 year ago	Diagnosis of Intestinal and Pulmonary TB	Endoscopy performed leading to the diagnosis of intestinal TB. Initiation of a 6-month anti-tuberculosis treatment regimen.
2 months ago	Surgical Intervention	Underwent laparotomy for adhesiolysis and double-barrel ileostomy repair due to ileum perforation. Post-operative symptoms included progressive abdominal pain, nausea, and vomiting.
Current episode	Presentation for Follow-up	Complaints of persistent abdominal discomfort and signs of obstructive ileus. Physical examination revealed generalized abdominal tenderness without muscular guarding. Elevated heart rate (127 bpm), blood pressure (147/90 mmHg), and mild fever (37.6°C). Laboratory findings showed elevated WBC count (13,600/uL) with neutrophilia (84.7%). Abdominal imaging suggested partial high-level obstructive ileus. Chest radiography confirmed active signs of pulmonary TB.
Discharge	Management and Recovery	Administered intravenous antibiotics: levofloxacin (1x500 mg) and metronidazole (3x500 mg). The patient was discharged in good condition after 6 days. Continued anti-tuberculosis therapy for a total of 12 months, leading to a cure.

3. Discussion

The case presented in this report serves as a stark reminder of the intricate challenges posed by intestinal tuberculosis (ITB), a manifestation of extrapulmonary tuberculosis (EPTB) that affects the gastrointestinal tract. The patient's journey, marked by a delayed diagnosis, surgical complications, and the need for prolonged treatment, underscores the

insidious nature of ITB and the critical importance of a vigilant and multidisciplinary approach to its management. ITB has earned the moniker of the "great mimicker" due to its propensity to masquerade as a variety of other gastrointestinal disorders, leading to diagnostic delays and potential mismanagement. The nonspecific nature of its clinical presentation, often characterized by abdominal pain, diarrhea, weight loss, and fever, can easily overlap with symptoms of more common conditions such as Crohn's disease, irritable bowel syndrome, or even malignancy. This diagnostic ambiguity is further compounded by the fact that ITB can affect any part of the gastrointestinal tract, from the esophagus to the rectum, with varying degrees of severity and complications. In the case of our patient, the initial presentation with abdominal pain, nausea, and vomiting was understandably attributed to post-surgical adhesions, a known complication of his previous abdominal surgeries. However, the coexistence of active pulmonary TB and elevated inflammatory markers served as crucial red flags, prompting a broader diagnostic evaluation. This case underscores the importance of maintaining a high index of suspicion for ITB, particularly in patients with a history of TB, those residing in endemic areas, or individuals with unexplained gastrointestinal symptoms. The diagnostic workup for ITB often involves a combination of clinical assessment, laboratory investigations, and imaging studies. While advanced imaging modalities, such as computed tomography (CT) and endoscopy, can provide valuable insights into the location and extent of intestinal involvement, obtaining definitive microbiological confirmation remains a challenge. The paucibacillary nature of ITB lesions and the difficulty in accessing affected tissues can hinder the isolation of *Mycobacterium tuberculosis*, the causative agent. Consequently, a diagnosis of ITB is often made based on a constellation of clinical, radiological, and histological findings in the appropriate clinical context. Once the diagnosis of ITB is established, the therapeutic journey begins, often requiring a delicate balance between medical and surgical interventions. Anti-tuberculosis therapy (ATT) forms the cornerstone of treatment, aiming to eradicate the underlying *Mycobacterium tuberculosis* infection and prevent its dissemination to other organs. The standard duration of ATT for ITB is six months, but it may need to be extended in cases with extensive disease, complications, or evidence of drug resistance. The prolonged treatment duration, coupled with the potential side effects of anti-TB medications, necessitates close monitoring and patient education to ensure adherence and minimize adverse events. Surgical intervention is often warranted in cases of ITB complicated by perforation, obstruction, fistula formation, or uncontrolled bleeding. The specific surgical approach is tailored to the individual patient's needs and may involve procedures such as resection, stricturoplasty, or bypass. In our patient's case, the ileal perforation had been previously managed with a laparotomy and ileostomy creation. However, the subsequent development of obstructive ileus due to post-surgical adhesions posed a new challenge, requiring a judicious approach to avoid further surgical intervention. The decision to manage the obstruction conservatively with intravenous antibiotics and continued ATT was based on the patient's clinical improvement and the absence of signs of peritonitis or bowel ischemia. This approach highlights the importance of individualized treatment plans and the need to weigh the risks and benefits of surgical intervention in each case. The successful resolution of the obstruction without the need for further surgery underscores the potential for conservative management in select cases, particularly when the patient's condition is stable and there is no evidence of life-threatening complications. Beyond the medical and surgical complexities, the management of ITB also involves addressing the human element of the disease. Patient education and empowerment play a pivotal role in ensuring treatment adherence, minimizing complications, and improving overall outcomes. Patients need to be informed about the nature of their illness, the importance of completing the full course of ATT, the potential side effects of

medications, and the need for regular follow-up care. Empowering patients to actively participate in their treatment decisions and providing them with the necessary support and resources can significantly enhance their quality of life and long-term prognosis. In our patient's case, his successful recovery can be attributed not only to the timely and appropriate medical and surgical interventions but also to his adherence to the prolonged ATT regimen and his active engagement in follow-up care. His positive attitude and willingness to partner with his healthcare team undoubtedly contributed to his favorable outcome.[11,12]

Intestinal tuberculosis (ITB) is often called the "great mimicker" due to its ability to present with a wide array of nonspecific gastrointestinal symptoms, making its diagnosis a complex and challenging endeavor. The clinical manifestations of ITB can easily overlap with those of more common gastrointestinal disorders, such as Crohn's disease, irritable bowel syndrome, or even malignancy. This diagnostic ambiguity often leads to delays in diagnosis and potential misdirection of treatment, which can have serious consequences for the patient's health and well-being. The clinical presentation of ITB is remarkably diverse, reflecting the ability of *Mycobacterium tuberculosis* to infect any part of the gastrointestinal tract, from the esophagus to the rectum. Abdominal pain, a hallmark of ITB, can vary in intensity and location, making it difficult to distinguish from other causes of abdominal discomfort. Diarrhea, another common symptom, can be chronic or intermittent and may be accompanied by blood or mucus. Weight loss, fatigue, and fever are also frequently reported, further contributing to the diagnostic confusion. The variability in clinical presentation is further compounded by the fact that ITB can mimic specific gastrointestinal diseases, depending on the site of involvement and the extent of inflammation. For instance, ITB affecting the ileocecal region, the most common site of involvement, can closely resemble Crohn's disease, with features such as abdominal pain, diarrhea, weight loss, and perianal lesions. ITB involving the colon can present with symptoms suggestive of ulcerative colitis, including bloody diarrhea and tenesmus. In some cases, ITB can even manifest as a mass lesion, mimicking malignancy and leading to unnecessary invasive procedures. The case presented in this report exemplifies the diagnostic challenges posed by ITB. The patient's initial presentation with abdominal pain, nausea, and vomiting was understandably attributed to post-surgical adhesions, a known complication of his previous abdominal surgeries. The absence of alarming signs, such as peritonitis or fever, further supported this initial assessment. However, the coexistence of active pulmonary TB and elevated inflammatory markers raised a red flag, prompting a more extensive diagnostic evaluation. This case underscores the importance of maintaining a high index of suspicion for ITB, even in the presence of seemingly plausible alternative diagnoses. The patient's history of TB, although treated, served as a crucial clue, reminding us that TB can reactivate or disseminate to other organs, even after successful treatment of the primary infection. The presence of active pulmonary TB, in particular, should always raise the possibility of concomitant EPTB, including ITB. In the face of diagnostic uncertainty, a thorough clinical assessment, coupled with appropriate laboratory and imaging investigations, is paramount. A detailed history, including questions about TB exposure, previous TB treatment, and any constitutional symptoms, can provide valuable clues. Physical examination, although often unremarkable in ITB, may reveal subtle findings such as abdominal tenderness, palpable masses, or lymphadenopathy. Laboratory investigations, such as a complete blood count and inflammatory markers, can offer supportive evidence of an ongoing inflammatory or infectious process. However, these tests lack specificity for ITB and can be elevated in various other conditions. Imaging studies play a pivotal role in the diagnosis of ITB. Abdominal ultrasound, CT scan, and endoscopy can help visualize intestinal lesions, assess the extent of involvement, and guide tissue sampling for microbiological confirmation. Endoscopic findings in

ITB can vary widely, ranging from mucosal ulcerations and strictures to mass lesions and fistulae. Histopathological examination of biopsy specimens can reveal granulomatous inflammation, a hallmark of TB, but the absence of caseating necrosis or acid-fast bacilli does not rule out the diagnosis. The gold standard for diagnosing ITB remains the isolation of *Mycobacterium tuberculosis* from intestinal tissue or fluid samples. However, achieving microbiological confirmation can be challenging due to the paucibacillary nature of ITB lesions and the difficulty in obtaining adequate specimens. Culture techniques, although highly specific, can take several weeks to yield results, delaying diagnosis and treatment. Newer molecular diagnostic techniques, such as polymerase chain reaction (PCR), offer faster turnaround times but may have lower sensitivity, particularly in paucibacillary cases. In many cases, a diagnosis of ITB is made based on a combination of clinical, radiological, and histological findings in the appropriate clinical context. A strong clinical suspicion, supported by suggestive imaging and histological features, may warrant initiating empirical ATT while awaiting definitive microbiological confirmation. The importance of early diagnosis in ITB cannot be overstated. Delayed diagnosis can lead to disease progression, complications, and increased mortality. Intestinal obstruction, perforation, fistula formation, and malnutrition are some of the potential complications of ITB, each carrying its own set of challenges and risks. Early diagnosis and prompt initiation of treatment can significantly improve outcomes and reduce the burden of disease.[13-15]

The successful management of intestinal tuberculosis (ITB), especially when complicated by severe manifestations like ileal perforation and obstructive ileus, hinges on a well-coordinated, multidisciplinary approach. This collaborative strategy, involving gastroenterologists, infectious disease specialists, surgeons, and other allied healthcare professionals, is crucial to address the multifaceted nature of ITB, encompassing both the underlying infection and its associated complications. The case presented in this report serves as a prime example of how such a multidisciplinary approach can lead to favorable outcomes even in complex scenarios. At the heart of ITB management lies anti-tuberculosis therapy (ATT), the pharmacological cornerstone aimed at eradicating the causative agent, *Mycobacterium tuberculosis*. ATT typically involves a multi-drug regimen, carefully selected based on drug susceptibility testing and patient-specific factors. The standard duration of ATT for ITB is six months, but this can be extended in cases with extensive disease, complications, or evidence of drug resistance. The rationale behind prolonged treatment lies in ensuring complete bacterial clearance and minimizing the risk of relapse, which can occur in up to 10% of ITB patients. In the present case, the patient had previously completed a six-month course of ATT for his initial ITB diagnosis. However, the recurrence of symptoms and the presence of active pulmonary TB necessitated an extension of ATT to 12 months. This decision reflects the dynamic nature of TB treatment, where adjustments may be required based on the patient's clinical response and the presence of complications. The successful completion of the extended ATT regimen in this case, evidenced by the resolution of symptoms and radiological improvement, underscores the importance of individualized treatment plans and close monitoring. While ATT is the primary modality for treating ITB, surgical intervention often plays a critical role in managing complications such as ileal perforation, obstruction, or fistula formation. These complications can arise due to the destructive nature of the tuberculous inflammatory process, leading to tissue necrosis, fibrosis, and stricture formation. Timely surgical intervention is essential to prevent life-threatening consequences, such as peritonitis and sepsis, and to restore intestinal continuity and function. In the present case, the patient had previously undergone a laparotomy for ileal perforation repair, highlighting the potential severity of ITB complications. However, the subsequent development of obstructive ileus due to post-surgical adhesions presented a new challenge.

The decision to manage the obstruction conservatively with intravenous antibiotics and continued ATT was a testament to the multidisciplinary team's careful assessment and clinical judgment. The absence of signs of peritonitis or bowel ischemia, coupled with the patient's clinical improvement, supported this approach. The conservative management of obstructive ileus in this case underscores the importance of weighing the risks and benefits of surgical intervention in each individual patient. While surgery is often necessary to address complications of ITB, it is not without risks, including bleeding, infection, and anastomotic leak. In select cases, where the patient's condition is stable and there is no evidence of life-threatening complications, conservative management with close monitoring may be a viable option. The successful management of ITB extends beyond the acute phase of illness. Long-term follow-up is crucial to monitor for disease recurrence, assess treatment response, and manage any long-term sequelae. Regular clinical assessments, laboratory investigations, and imaging studies may be necessary to ensure complete eradication of the infection and to detect any complications early. In the present case, the patient's follow-up visits demonstrated significant clinical improvement, with resolution of obstructive symptoms and radiological evidence of healing. The successful completion of the extended ATT regimen without any complications or recurrence of disease is a testament to the effectiveness of the multidisciplinary approach and the patient's adherence to treatment. The multidisciplinary approach to ITB management is not merely a collection of individual specialties working in parallel. It is a dynamic and interactive process that fosters collaboration, communication, and shared decision-making among healthcare professionals. This collaborative effort ensures that the patient receives comprehensive care that addresses not only the physical manifestations of the disease but also its psychological, social, and economic implications. The gastroenterologist plays a key role in diagnosing ITB, performing endoscopic procedures, and managing any gastrointestinal complications. The infectious disease specialist provides expertise in the selection and monitoring of ATT, ensuring optimal treatment outcomes and minimizing the risk of drug resistance. The surgeon's skills are essential in managing complications requiring surgical intervention, such as perforation, obstruction, or fistula formation. Other allied healthcare professionals, such as nutritionists, pharmacists, and social workers, contribute to the patient's overall well-being by addressing nutritional deficiencies, medication adherence, and psychosocial needs.[16-18]

In the intricate tapestry of intestinal tuberculosis (ITB) management, patient education and adherence emerge as indispensable threads, weaving together the diverse strands of medical and surgical interventions to create a fabric of successful outcomes. The significance of patient education and adherence extends far beyond mere compliance with treatment regimens; it encompasses a holistic understanding of the disease, its potential complications, and the proactive role patients can play in their own recovery. Patient education serves as the bedrock upon which the edifice of successful ITB management is built. It empowers patients with knowledge, enabling them to make informed decisions about their treatment and actively participate in their care. Patients need to understand the basic pathophysiology of ITB, its mode of transmission, and its potential impact on their health and well-being. This knowledge helps dispel misconceptions, alleviate anxieties, and foster a sense of control over their condition. A clear explanation of the anti-tuberculosis therapy (ATT) regimen, including the names of medications, their dosages, potential side effects, and the expected duration of treatment, is crucial. Emphasizing the importance of completing the full course of treatment, even if symptoms improve, is essential to prevent relapse and the emergence of drug resistance. Patients should be informed about the potential complications of ITB, such as intestinal obstruction, perforation, fistula formation, and malnutrition. Recognizing early warning signs and seeking prompt medical attention can prevent these

complications from escalating and causing further harm. Certain lifestyle modifications, such as dietary adjustments and stress management techniques, may be beneficial in managing ITB symptoms and promoting overall well-being. Providing patients with practical tips and guidance on these modifications can enhance their quality of life and facilitate their recovery. The importance of regular follow-up visits for monitoring treatment response, assessing for complications, and addressing any concerns or questions should be emphasized. This ongoing communication between the patient and the healthcare team fosters a sense of partnership and ensures continuity of care. Adherence to treatment, particularly the prolonged course of ATT, is the linchpin of successful ITB management. Non-adherence or premature discontinuation of treatment can lead to treatment failure, relapse, and the development of drug-resistant TB, posing a significant threat to individual and public health. Several factors can influence adherence to ATT, including the complexity of the regimen, the duration of treatment, potential side effects of medications, and socioeconomic factors such as poverty and lack of access to healthcare. Addressing these barriers and implementing strategies to improve adherence are crucial for achieving optimal outcomes. Directly observed therapy (DOT), a strategy where healthcare workers directly observe patients taking their medications, has been shown to significantly improve adherence rates in TB treatment. DOT not only ensures that patients take their medications as prescribed but also provides an opportunity for healthcare workers to monitor for side effects, address any concerns, and provide ongoing support and encouragement. Patient counseling and education also play a vital role in promoting adherence. By providing patients with clear and concise information about their treatment, addressing their concerns, and emphasizing the importance of adherence, healthcare providers can empower patients to take ownership of their health and actively participate in their treatment plan. The successful outcome in the case presented in this report can be attributed, in part, to the patient's adherence to the prolonged ATT regimen and his active participation in follow-up care. Despite the challenges posed by the extended treatment duration and the potential side effects of medications, the patient remained committed to his treatment plan, demonstrating a remarkable level of self-discipline and motivation. The resolution of his obstructive symptoms and the improvement in his pulmonary TB on subsequent imaging studies serve as a testament to the effectiveness of the multidisciplinary approach and the patient's unwavering commitment to his treatment. This case highlights the transformative power of patient adherence, showcasing how it can turn the tide in even the most complex and challenging cases of ITB. The role of the patient in ITB management extends beyond mere adherence to treatment. Sharing any concerns, questions, or side effects they experience allows for timely adjustments to the treatment plan and prevents complications. Eating a balanced diet, getting adequate rest, and managing stress can support the body's healing process and improve overall well-being. Seeking reliable information about the disease, its treatment, and its potential complications can empower patients to make informed decisions and take an active role in their care. Connecting with other individuals with ITB through support groups or online communities can provide emotional support, practical advice, and a sense of shared experience. By embracing these roles, patients can become active partners in their care, working alongside their healthcare team to achieve the best possible outcomes.[19,20]

4. Conclusion

This case report underscores the complexity and challenges inherent in managing intestinal tuberculosis with ileal perforation. The successful outcome achieved through a multidisciplinary approach, integrating pharmacological and surgical interventions, highlights the importance of early detection, comprehensive assessment, and individualized treatment plans. The extended duration

of anti-tuberculosis therapy, while crucial, emphasizes the need for meticulous monitoring and adherence to treatment. This case serves as a valuable reminder of the importance of personalized, multidisciplinary care in managing complex tuberculosis cases, particularly those with extrapulmonary manifestations and surgical complications. Continued research and clinical efforts are necessary to refine treatment approaches and optimize patient outcomes in similar clinical scenarios.

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