Case Report

Laparo-therapy for abdominal tuberculosis: Case report with review of literature

Richa Verma[1], Abhijit Sharadchandra Joshi[2]

From [1]DNB Resident, [2]Consultant General and Advanced Laparoscopic Surgeon, Department of General Surgery, Dr. L. H. Hiranandani Hospital, Mumbai, Maharashtra, India

ABSTRACT

Abdominal tuberculosis (TB) has many varied clinical presentations. It can vary from small bowel obstruction to peritoneal disease to lymphadenopathy to rare colonic TB to a combination of any or all of the above. Herein, the authors present the case of a 25-year-old female patient who had dense parietal adhesions of mesentery and small bowel loops and a large collection of pus in her lower abdomen. She had already been on anti-microbial therapy for 2.5 months for ascites. Investigations (imaging and laboratory) pointed toward worsening and increasing peritoneal collection. She underwent a successful laparoscopic adhesiolysis, drainage of the collection, along with excision of the wall and toilet. The first line anti-Koch's medical therapy (which was already on since 2.5 months), as per culture report, was continued for 1 year. Subsequent surveillance imaging reports revealed no recurrence of the collection and, eventually, a complete cure.

Key words: Abdominal, Adhesiolysis, Adhesions, Bowel loops, Collection, Drainage, First line, Surveillance

Tuberculosis (TB) continues to pose a significant challenge to global public health, being the leading cause of mortality among infectious diseases. In nations such as India, extra-pulmonary manifestations account for approximately 15–24% of all TB cases. This proportion markedly increases in individuals co-infected with the human immunodeficiency virus (HIV), surpassing 50% [1]. Among the various forms of extrapulmonary TB, abdominal TB ranks as the sixth most prevalent, particularly affecting adults living with HIV [2]. Its pathophysiology is varied and has a wide range of clinical presentations.

The rationale for reporting this case was to underscore the feasibility of a safe laparoscopic intervention even in the presence of multiple dense parietal adhesions and a large loculated purulent collection; thereby resulting in a favorable outcome.

CASE REPORT

A 25-year-old female patient presented to the surgical outpatients department (OPD) with complaints of lower abdominal pain and distension for 3–4 days. The pain was non-radiating and dull in nature. Furthermore, she complained of mild low-grade fever for 2 days. She gave a history of having undergone a full-term normal delivery about 3.5 months back.

One month after delivery, she presented to her obstetrician with dull lower abdominal pain and low-grade fever. An ultrasound (USG) scan of the abdomen was done then and had revealed lower abdominal-free fluid. A diagnostic tap of the same had been done then under USG guidance, thereafter. A microscopic analysis of the tapped peritoneal fluid had revealed lymphocyte–predominant exudative fluid. In addition, the fluid adenosine deaminase level was high (80 units/L). After this, she was referred to the chest-TB specialist consultant, who promptly put her on a full course of first-line four-drug anti-Kochs therapy (AKT). She was then asked to follow-up with monthly USG abdomen reports. Over the next 2 months, despite the AKT, the peritoneal-free fluid kept on progressively increasing. Furthermore, her symptoms such as abdominal pain, distension, and fever worsened. She was then referred to the surgical OPD.

Her pulse was 70/min, blood pressure was 120/80mms of Hg, and respiratory rate was 12/min. A per abdomen examination revealed soft distension of the lower abdomen with a dull note on percussion at the lower abdomen. She was admitted to the hospital, and a computed tomography (CT) scan of the abdomen was done and revealed a very large collection 20 × 15 × 12 cm

Access this article online	
Received - 06 September 2025 Initial Review - 25 September 2025 Accepted - 31 October 2025	Quick Response code
DOI: 10.32677/ijcr.v11i12.7851	

Correspondence to: Richa Verma, Department of General Surgery, 1st Floor, Dr. L. H. Hiranandani Hospital, Powai, Mumbai - 400076, Maharashtra, India. E-mail: richa31011998@gmail.com

in size in the lower abdomen (Fig. 1 a and b). The patient and her relations were counseled for a laparoscopic SOS open surgical intervention for the same.

After due investigational workup, she was taken up for surgery. As a precautionary measure, pneumoperitoneum was established by the closed technique at Palmer's point. Then, a 5 mm trocar was introduced there, and a 5 mm telescope attached to the camera was inserted to get a peripheral view of the abdomen, from a relatively safe vantage point. Multiple dense adhesions were noted to the parietes of the small bowel, omentum, and mesentery throughout the abdomen (Fig. 1c-e). All the adhesions were carefully and meticulously lysed without the use of an energy source, so as to minimize the risk of iatrogenic injury (Fig. 1f, 2a and b). Additional medial and lateral working trocars were inserted at relatively safe locations (Fig. 2c). Furthermore, more layers of adhesions in the lower abdomen were noted and duly lysed (Fig. 2d-f). Once they were lysed, the abscess cavity came into view. It was then incised, entered, and drained out (Fig. 3a-d). Copious local toilet was given and the cavity walls were scraped out (Fig. 3e and f, 4a-c). A Romson's 32 Fr tube drain was then inserted through one of the trocar sites (Fig. 4d), pneumoperitoneum desufflated, and the trocar sites suture closed. The operation yielded almost 1500 mL of pus and the abscess cavity scrapings (Fig. 4e and f), which were sent for histopathology as well as TB culture studies.

Her immediate post-operative recovery was uneventful, and the drain was removed on post-operative day (POD) 4. She was discharged from the hospital on POD 5. On her POD 10 post-operative OPD visit, all her wounds had healed well, and she was asymptomatic. Her TB culture came back positive, and she had no rifampicin resistance on the Gene-Xpert report. The histopathology report of the scrapings revealed inflamed granulation tissue with ill-defined histiocytic granulomas, favoring granulomatous inflammation of mycobacterial etiology. As per the sensitivity report, her first-line AKT was continued under the supervision of the Chest-TB specialist for 1 year. At the time of writing this paper, a telephonic interview was conducted with her. Forty-four months after her surgery, she had completed her 1-year AKT, gained weight, and remains asymptomatic.

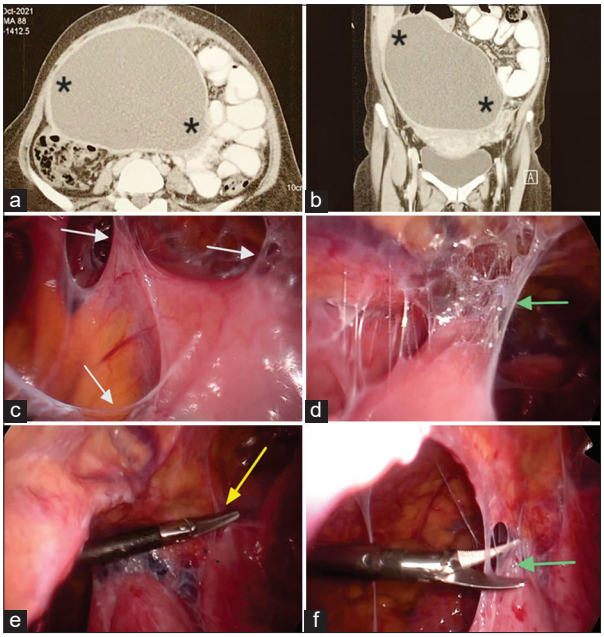

Figure 1: (a and b) Contrast-Enhanced Computed Tomography abdominal axial and coronal views: show large walled off collection (black asterisks) in lower abdomen; (c and d) Intraoperative images – dense adhesions of small bowels to parietes (white, green arrows); (e and f) lysis of adhesions in progress

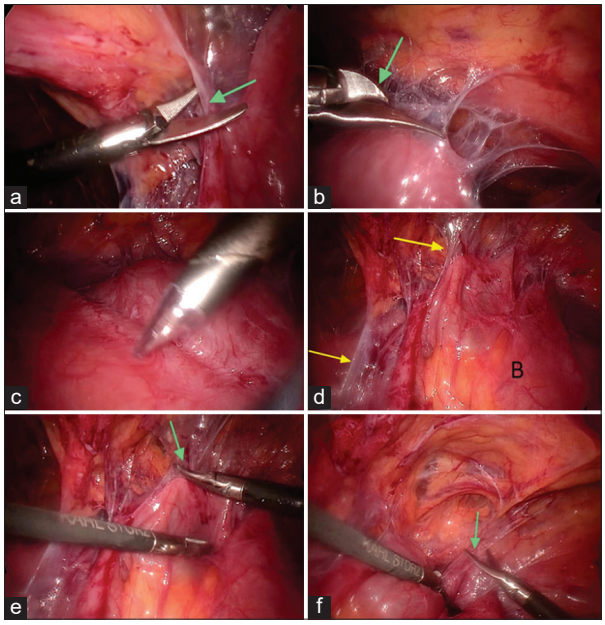

Figure 2: (a and b) Ongoing extensive adhesiolysis (green arrows); (c) insertion of additional trocar/s at sites cleared of adhesions; (d) more small bowel adhesions to parietes in lower abdomen (yellow arrow); (e and f) adhesiolysis (green arrows) in lower abdomen

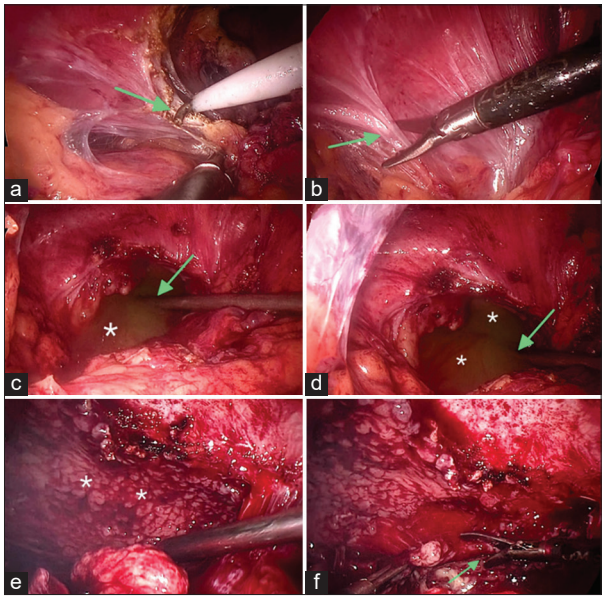

Figure 3: (a and b) Continuing adhesiolysis (green arrows); (c and d) entry into cavity revealing large collection of pus (white asterisks); (e) granulating tissue lining the inner aspect of abscess cavity (white asterisks); (f) scraping/ excision of the inner granular lining of abscess cavity (green arrow)

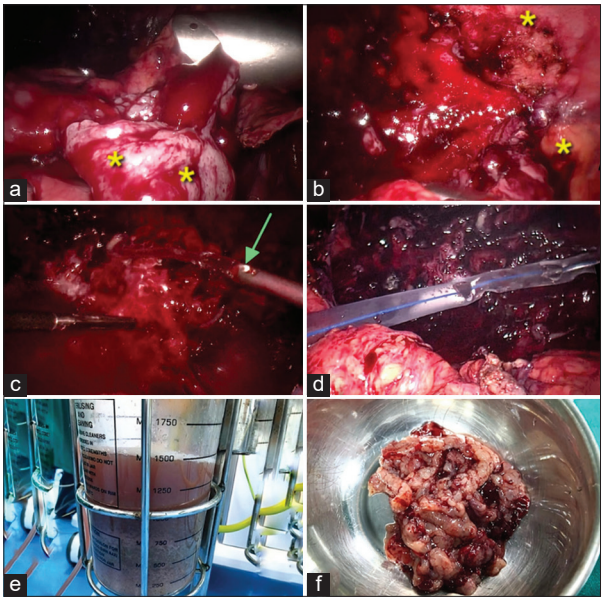

Figure 4: (a) Removal of excised granulation tissue; (b) inner lining of abscess cavity (yellow asterisks) after excision of granulation tissue; (c) local toilet being given (green arrow); (d) tube drain placed in situ; (e) aspirated pus; (f) excised granulation tissue

DISCUSSION

The gastrointestinal tract represents the most frequently affected site in abdominal TB, accounting for approximately 43 –65% of all cases. This is followed by involvement of the peritoneum (20–47%), abdominal lymph nodes (4 –42%), and, less commonly, solid visceral organs such as the liver, gallbladder, spleen, and pancreas, which are implicated in 1 –23% of cases [3]. The infection may disseminate via multiple routes, including ingestion of *Mycobacterium tuberculosis*-contaminated material (e.g., sputum or food), hematogenous spread from a primary pulmonary focus, lymphatic dissemination, or from the fallopian tubes through retrograde transmission, involving the peritoneum [2].

The ileocecal region is the most frequently involved site in abdominal TB, largely attributed to the high concentration of Peyer's patches and the relative stasis of intestinal contents in this area [2]. While the global incidence of TB is gradually declining, the relative proportion of extra-pulmonary TB cases is increasing. Several risk factors have been identified in the pathogenesis of abdominal TB. These include pre-existing medical conditions such as latent TB infection, liver cirrhosis, diabetes mellitus, HIV, chronic kidney disease, and malignancies. Iatrogenic factors such as corticosteroid use and antitumor necrosis factor therapy also contribute to susceptibility. In addition, lifestyle and environmental factors, including malnutrition, tobacco use, intravenous drug use, and excessive alcohol consumption, are associated with increased risk [4].

Abdominal TB is typically categorized into four distinct forms depending on anatomical involvement: peritoneal TB, lymph nodal TB, gastrointestinal (luminal) TB, and visceral TB. Among these, the luminal form is the most prevalent, with the ileocecal region being the site most commonly affected. Abdominal pain is the most commonly reported symptom, with intensity varying from mild discomfort to severe distress. The pain may be localized or diffuse in nature and is typically chronic, though it can present as acute-on-chronic in the setting of superimposed complications. Anatomically, the discomfort frequently localizes to the right lower quadrant and the periumbilical region. Unexplained weight loss is also a common symptom that occurs in patients with intestinal TB due to various causes such as chronic inflammatory processes, decreased intake, and impaired absorption. Alterations in bowel habits such as changes in frequency, stool consistency, or the presence of blood are frequently observed. Chronic diarrhea is often a prominent manifestation, especially in cases involving intestinal TB. In certain cases, a palpable abdominal mass may be detected on physical examination. This finding may result from underlying factors such as mesenteric lymphadenopathy, mesenteric inflammation, or thickening of the intestinal wall, all of which can contribute to the formation of an appreciable mass. Lymphadenopathy represents the most frequently observed manifestation of abdominal TB, with reported prevalence ranging from 25% to 93% [5,6]. In developing regions, it remains the leading cause of cervical lymph node enlargement. In the abdominal cavity, lymph node enlargement is commonly seen, particularly in proximity to affected segments of the gastrointestinal tract. The pattern of lymphatic drainage from primary sites of infection, such as the small intestine, ileocecal region, right colon, liver, and spleen, accounts for the frequent involvement of mesenteric peripancreatic and upper para-aortic lymph nodes [6].

In tuberculous peritonitis, fluid accumulation within the abdominal cavity commonly results in ascites. The most frequent clinical form of abdominal TB is the wet (ascitic) type of peritonitis. In such cases, ascitic fluid may be either localized (as seen in this report) or diffusely distributed throughout the peritoneal cavity. Numerous tubercles are typically observed on both the parietal and visceral layers of the peritoneum. The ascitic fluid is characteristically straw colored, with elevated protein concentrations exceeding 25–30 g/L, a white cell count above 500/mm^3, and a lymphocytic predominance >40% [7]. However, direct smear for acid-fast bacilli (AFB) yields a diagnostic result in fewer than 3% of cases, and culture confirmation may require 4–8 weeks [7]. Tuberculous granulomatous hepatitis may manifest as painless, fluctuating jaundice. Intestinal obstruction is among the most common complications associated with intestinal TB, primarily resulting from luminal narrowing, multiple strictures, or the formation of adhesions. In India, abdominal TB accounts for approximately 3–20% of all cases of intestinal obstruction [7]. The clinical presentation of intestinal and post-tuberculous obstruction is often non-specific, with symptoms ranging from acute to chronic or even acute-on-chronic episodes.

The ileocecal region is most frequently involved, owing to the presence of fibrotic strictures, adhesions, or enlarged lymph nodes. Affected individuals typically present with abdominal pain, distension, vomiting, and constipation. While partial obstruction may be managed conservatively with anti-tubercular therapy, nasogastric decompression, and supportive measures, complete or refractory obstruction generally necessitates surgical intervention. Depending on the extent and nature of the obstruction, procedures such as strictureplasty, bowel resection, or adhesiolysis may be indicated [8].

A definitive diagnosis of abdominal TB necessitates a multimodal approach, integrating clinical evaluation with laboratory investigations, imaging studies, and histopathological confirmation. A high index of suspicion, particularly in endemic areas, remains essential. Among the laboratory tests, ascitic fluid analysis for adenosine deaminase activity serves as a useful marker; levels exceeding 30–40 U/L are highly suggestive of tuberculous peritonitis. Radiologic imaging, especially contrast-enhanced CT of the abdomen, can provide characteristic findings such as necrotic lymphadenopathy, thickened bowel segments (notably in the ileocecal region), and evidence of peritoneal or mesenteric involvement. Histopathological analysis of biopsy specimens, particularly those obtained from intestinal mucosa or lymph nodes, is critical for diagnosis. The presence of granulomatous inflammation with caseating necrosis strongly supports TB. While AFB staining and mycobacterial cultures remain confirmatory, they are hampered by low sensitivity and prolonged turnaround time. Polymerase chain reaction -based molecular diagnostics offer faster and often more sensitive alternatives, especially in pauci bacillary cases where traditional methods may yield inconclusive results. In situations where diagnostic ambiguity persists but clinical suspicion remains high, a therapeutic trial of anti-tuberculous therapy (ATT), coupled with close monitoring of clinical and radiologic response, may be employed as a diagnostic adjunct.

Minimally invasive surgical techniques, particularly diagnostic laparoscopy, have emerged as valuable tools in cases where non-invasive modalities fail to yield a diagnosis. Laparoscopy facilitates direct visualization of intra-abdominal pathology and enables targeted tissue sampling for histopathology, AFB staining, culture, and molecular testing. In more complex or severe presentations, laparotomy may be necessary, serving both diagnostic and therapeutic functions. These surgical approaches enhance diagnostic yield and are often essential when imaging and fluid studies are non-definitive [9].

Abdominal TB is treated with the standard ATT regimen used for pulmonary TB. This includes a 2-month intensive phase with isoniazid, rifampicin, pyrazinamide, and ethambutol , followed by a 4-month continuation phase with isoniazid and rifampicin . In complex cases, including those presenting with intestinal strictures, perforations, or occurring in immunocompromised individuals, the duration of therapy may be prolonged to a period of 9–12 months [10]. In December 2022, the World Health Organization published updated guidelines for the management of multidrug-resistant and rifampicin-resistant TB (MDR/RR-TB) [10]. A key advancement in these recommendations is the endorsement of a novel 6-month treatment regimen consisting of bedaquiline, pretomanid, linezolid (600 mg), and moxifloxacin (BPaLM). This regimen is now preferred over the previous longer courses of 9 months or more (up to 18 months) and is applicable to patients with both extensive pulmonary and extrapulmonary forms of MDR/RR-TB.

Surgical intervention in abdominal TB is generally reserved for individuals with complications or inadequate response to medical therapy. Indications include bowel obstruction, perforation, strictures, fistula formation, or unresolved diagnostic dilemmas. The most commonly performed surgical procedure is segmental bowel resection (e.g., ileocecal resection), with or without anastomosis, depending on intraoperative findings. Strictureplasty may be considered in cases with multiple or long-segment strictures to preserve intestinal length. In patients with peritoneal TB accompanied by dense adhesions or loculated ascites, procedures such as adhesiolysis or abscess drainage may be required. Post-operative management always involves continuation of a full course of ATT to ensure disease resolution and prevent recurrence.

CONCLUSION

As seen in this report, laparoscopy is feasible and relatively safe even in abdominal TB , where there is an expectation of multiple, dense adhesions, and infected-free fluid. An advanced setup, along with the availability of advanced laparoscopic surgical expertise, are prerequisites in managing such challenging cases.

REFERENCES

1. VidyaRaj CK, Vadakunnel MJ, Mani BR, Anbazhagi M, Pradhabane G, Venkateswari R, *et al.* Prevalence of extrapulmonary tuberculosis and factors influencing successful treatment outcomes among notified cases in South India. Sci Rep 2025;15:8290.
2. Vetri R, Kannichamy V, Jacob VA, Sainath S. Abdominal tuberculosis presenting as an umbilical sinus: A case report. Cureus 2022;14:e31184.
3. Al-Zanbagi AB, Shariff MK. Gastrointestinal tuberculosis: A systematic review of epidemiology, presentation, diagnosis and treatment. Saudi J Gastroenterol 2021;27:261-74.
4. Sahibole AS, Farooq R, Ali HM, Bukhari SJ, Al Ozaibi LS. Abdominal tuberculosis presenting with small bowel obstruction: A case report. Cureus 2023;15:e37459.
5. Mehmood A, Ehsan A, Mukhtar M, Inayat F, Ullah W. Acute mesenteric tuberculous lymphadenitis: A comparative analysis of twenty-one cases. Cureus 2019;11:e4454.
6. Messaoud O, Jidal M, Ouali KE, Masrouri R, Boujida I, Zouaidia F, *et al*. Acute abdomen revealing abdominal tuberculosis complicated by a proximal jejunal perforation: Case report. Radiol Case Rep 2024;19:3301-7.
7. Dhandore P, Hombalkar NN, Ahmed MH. Unusual finding in the

inguinal canal: Abdominal tuberculosis presenting as inguinal hernia. J Clin Diagn Res 2016;10:PD13-4.
8. Aregawi AB, Alem AT, Girma A. A rare case of intestinal tuberculosis with chronic partial small bowel obstruction in a 37-year-old Ethiopian man. Int Med Case Rep J 2022;15:725-33.
9. Mahajan M, Prasad ML, Kumar P, Kumar A, Chatterjee N, Singh S, *et al*. An updated systematic review and meta-analysis for the diagnostic test accuracy of ascitic fluid adenosine deaminase in tuberculous peritonitis. Infect Chemother 2023;55:264-77.
10. Vanino E, Granozzi B, Akkerman OW, Munoz-Torrico M, Palmieri F, Seaworth B, *et al*. Update of drug-resistant tuberculosis treatment guidelines: A turning point. Int J Infect Dis 2023;130 Suppl 1:S12-5.

Funding: Nil; Conflicts of interest: Nil.

How to cite this article: Verma R, Joshi AS. Laparo-therapy for abdominal tuberculosis: Case report with review of literature. Indian J Case Reports. 2025;11(12):621-625.