



## CASE REPORT

### A Case Report of Atypical Presentation of Abdominal Tuberculosis with Concurrent Broad Ligament Cyst: Laparoscopy as a Diagnostic Tool

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#### Abstract

**Background:** Abdominal tuberculosis (TB) continues to be important health concern in India. The diagnosis is often challenging because of its non-specific presentation. Conventional laboratory and microbiological methods are usually time consuming and requires a high clinical index of suspicion. Laparoscopy with biopsy is an efficient tool for rapid and accurate diagnosis of abdominal tuberculosis. We aimed to demonstrate the effectiveness of laparoscopy in diagnosing a case of abdominal tuberculosis presented as ovarian cyst. **Case presentation:** A 22 year young female presented to our surgery outdoor clinic with history of abdominal pain lasting for 4 months. Her laboratory tests were unremarkable including a normal CA 125 with raised ESR. A CT scan was performed which revealed a cystic mass in left ovary. Considering the possibility of pelvic cyst and abdominal TB, a diagnostic laparoscopy was performed. At laparoscopy, adhesions or fibrinous networks between liver and peritoneum, enlarged mesenteric lymph nodes and ascites were seen along with left broad ligament cyst with left atrophied ovarian tissue. She underwent left sided salpingo-oophorectomy with resection of cyst with biopsy from mesenteric nodes and peritoneal aspiration. The histopathological diagnosis from lymph nodes during the procedure confirmed as chronic granulomatous inflammation with caseous necrosis favouring tuberculosis. The peritoneal aspirate shows a raised ADA and positive CBNAAT for MTB further confirmed the diagnosis. She was started with standard antitubercular drugs. Postoperatively, she recovered uneventfully and responded well to the ATT therapy. **Conclusion:** In cases of chronic abdominal pain, a significant clinical suspicion is necessary keeping abdominal TB as an important differential diagnosis. Laparoscopy with biopsy is an effective tool for early diagnosis of abdominal tuberculosis.

**Keywords:** Tuberculosis (TB), diagnostic laparoscopy (DL), anti-tubercular therapy (ATT), Adenosine deaminase (ADA)

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## Introduction

Tuberculosis (TB) is a major global health problem, mainly affecting the developing nations [1,2]. It remains one of the top ten leading cause of death worldwide [3]. TB caused by mycobacterium tuberculosis, generally affect the lungs but it can also involve other organs of body termed as extrapulmonary TB [4]. Abdominal TB is one of the most common forms of extrapulmonary TB accounting for 1-2% of all cases of tuberculosis [5]. It affects gastrointestinal tract, lymph nodes, peritoneum and solid organs [6]. The presentation of abdominal TB is generally non-specific and may mimics various clinical conditions like inflammatory bowel disease, abdominal malignancies, colitis, gynecological tumors or malignancies [7]. Early and accurate diagnosis of Abdominal TB remains a great challenge due to its non-specific presentation and lack of characteristic laboratory features. Even radiological imaging like ultrasound and CT scan, in many instances fail to reach the definite diagnosis accurately [8].

Particularly in countries with high burden of tuberculosis, strong evidence of clinical suspicion is required. When a patient presents with unexplained abdominal pain or other suspected features of abdominal TB, laparoscopy offers to early and accurate diagnosis [9]. Occasionally, a pelvic mass may present along with abdominal tuberculosis making the diagnosis further more challenging [10,11].

In our case, we established the diagnosis of abdominal tuberculosis in a young female with the help of laparoscopy who initially presented as a case of ovarian cyst.

## Case presentation

A 22 year young female presented to surgery outdoor clinic with a history of dull aching pain abdomen for 4 months. Pain was non-radiating in nature and was associated with vomiting sometimes. There was no history of fever, significant weight loss or night sweats. She denied any urinary symptoms or altered bowel habits. There was no history of pulmonary tuberculosis or close contacts in the past.

On admission; she had a temperature of 98.6 F, a heart rate of 98 per minute, blood pressure of 110/72 mmHg and respiratory rate of 18 per minute. Her general examination was normal and there was no evidence of any systemic lymphadenopathy. On per abdomen examination, patient didn't have any distension present with no palpable lump. Shifting dullness was also absent.

Initially, her ultrasound of whole abdomen and pelvis revealed a large pelvic cyst of size 20.3cm\*15cm with non visualization of left ovary likely suggestive of cystadenoma with normal right ovary. An abdominal CT scan of the patient suggestive of large well defined homogenous hypodense cystic lesion of size 11.5cm\*22cm\*23.7cm with minimally enhancing thin peripheral wall involving lower abdomen and upper part of pelvis possibly arising from left ovary with non-visualization of left ovary separately likely suggestive of left ovarian cystadenoma. Right ovary appears normal with no evidence of any mesenteric lymphadenopathy, peritoneal or omental thickening or ascites (Figure 1). On further workup, CA 125 was found to be 2.1U/ml (normal < 30 U/ml).



Figure 1. CECT abdomen shows hypodense cystic lesion of size 11.5cm\*22cm\*23.7cm with minimally enhancing thin peripheral wall involving lower abdomen and upper part of pelvis possibly arising from left ovary

Ancillary tests done in support of tuberculosis like mantoux test, chest xray (CXR), QuantiFERON-TB Gold were also normal except a mild rise of ESR, 36mm/hr (normal 20 mm/hr in females).

On the basis of history, clinical examination, laboratory investigation and radiological imaging features possible diagnosis of pelvic cyst was suspected.

She was planned for diagnostic laparoscopy. During the procedure, macroscopic visualization of the abdominal

cavity and pelvis with adnexa was done. Intraoperatively, characteristic features of abdominal tuberculosis, in the form of dense adhesions and fibrinous networks between liver and peritoneum, mild ascites in paracolic gutters and pelvis and enlarged mesenteric lymph nodes in distal ileum were present. Encysted fluid in left sided broad ligament with left atrophied and diseased ovarian tissue were also present (Figures 2A-C).

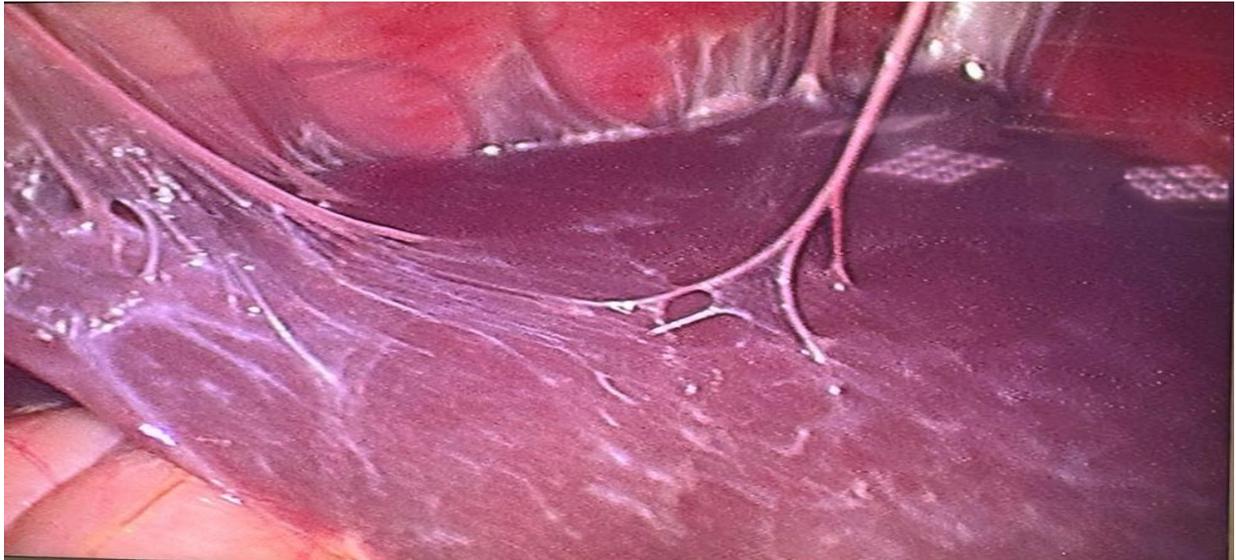


Figure 2A. Diagnostic laparoscopy shows dense adhesions and fibrinous networks between liver and peritoneum



Figure 2B. Diagnostic laparoscopy shows multiple enlarged mesenteric lymph nodes

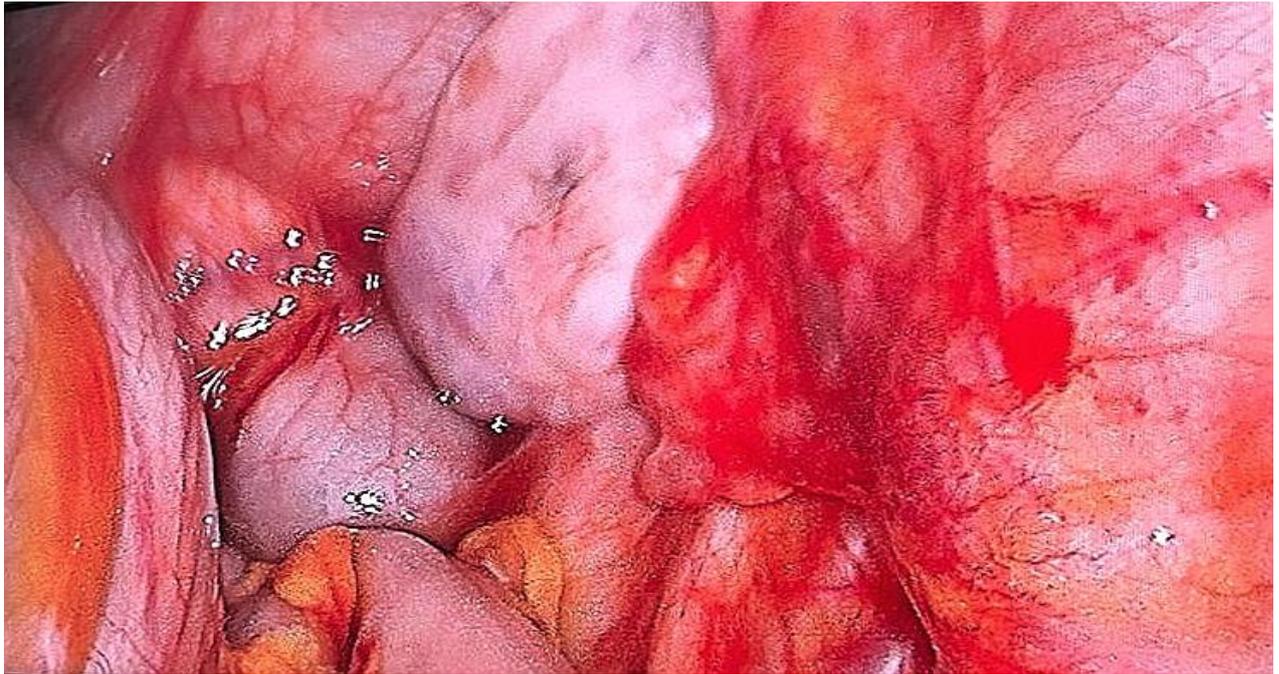


Figure 2C. Diagnostic laparoscopy shows encysted fluid in left sided broad ligament with left atrophied ovarian tissue.

She underwent left sided salpingo-oophorectomy with resection of the cyst and a biopsy from mesenteric lymph nodes was also done along with aspiration of peritoneal fluid for Adenosine deaminase (ADA) analysis, Acid fast bacilli (AFB) staining and Cartridge based Nucleic Acid Amplification Test (CBNAAT) for mycobacterium bacilli. Fluid AFB and liquid culture were found to be negative. Peritoneal fluid CBNAAT was positive for

Mycobacterium tuberculosis with no Rifampicin resistance. An elevated level of ADA (60U/L) was found in peritoneal fluid.

Histopathology examination (HPE) of mesenteric lymph nodes established the presence of epithelial granulomas, Langhans giant cells with central necrosis suggestive of chronic granulomatous lesion with caseous necrosis consistent with tuberculosis (Figure 3).

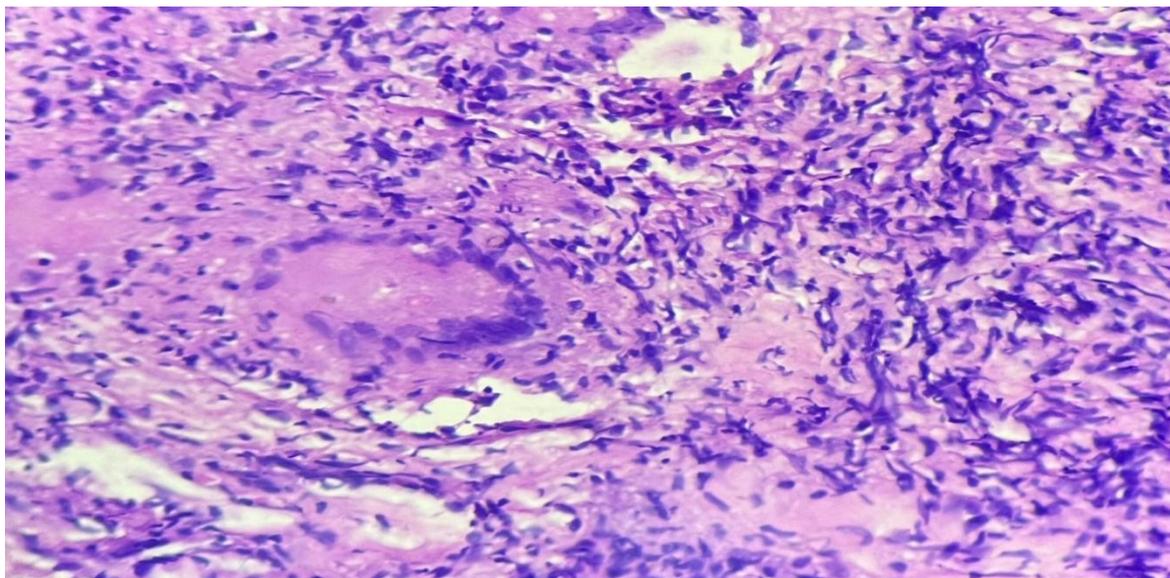


Figure 3: HPE of mesenteric lymph nodes shows the presence of epithelial granulomas, Langhans Giant cells with central necrosis

Hence on the basis of laparoscopic findings and histopathology, the patient was finally diagnosed as a case of abdominal tuberculosis with coexisting left sided broad ligament cyst. She was started on category I anti-tubercular drugs (Rifampicin;10 mg/kg/day, Isoniazid;5mg/kg/day, Ethanbutol;15-20mg/kg/day and Pyrazinamide;20-25mg/kg/day) as per her body weight from post op day 1 onwards. Post operative period was uneventful and she was discharged on postoperative day 2. Anti-tubercular drug therapy were continued. Currently the patient is under regular follow up and she responded well to anti-tubercular medications. During 3 follow up, patient clinical response in the form of improvement of symptoms of pain, increased appetite with increased oral intake and general well being.

### Discussion

Tuberculosis continues to be a global public health menace which threatens health security [12]. In countries with low socioeconomic status, poor

hygiene and high prevalence of HIV coinfection, abdominal tuberculosis is still a matter of concern with great effect on public health increasing overall morbidity and mortality [13]. Abdominal TB can be spread by four different routes. It includes hematogenous spread from a lung focus, or consumption of contaminated milk or food products infected with bacilli, or via lymphatics or through direct spread [14]. The presentation of abdominal TB are very non-specific which includes vague symptoms like abdominal pain of acute or chronic in nature, nausea and vomiting, fever, weight loss, night sweats, altered bowel habits, abdominal distension with or without ascites [15]. Its varied presentation often mimics with other gastrointestinal diseases like IBD, malignancy, abdominal lymphoma or gynecological tumors or malignancies [16]. Interestingly, our patient had both abdominal tuberculosis coexisting with pelvic cyst.

The diagnostic challenges represented due to its varied presentation increases the delay in diagnosis of abdominal TB leading to high mortality and

morbidity. Several criteria included for diagnosing abdominal TB are a) positive Acid-fast bacilli (AFB) smear on Ziehl-Neelsen staining or culture in peritoneal fluid b) histological features of caseating granuloma c) CBNAAT positive in peritoneal fluid d) typical presentation of Koch's abdomen and good response to anti-tubercular treatment [17, 18]. Mantoux test is still not outdated and continues to be widely used in many developing countries with low specificity and negative predictive value [19]. There is very low positive rate (<3%) of AFB smear test from peritoneal aspirate due to its paucibacillary nature [20]. The culture of M. TB bacilli takes a long time of 2-6 weeks making an unnecessary delay in diagnosis of the disease [2,21].

Radiological diagnostic modalities like ultrasound and CT scan are able to detect ascites, thickened bowel loops, enlarged mesenteric lymph nodes. However, these are non-specific and can mimic other abdominal pathologies [8,22]. Remarkably, in our case neither ultrasound nor CT scan suggest these features which was later visualized by laparoscopy.

Adenosine deaminase (ADA) level in peritoneal fluid is a very emerging investigation with high sensitivity and specificity [23]. In our case the ADA value was 60 (>33 was taken as cut off value) [24,25] which is suggestive of abdominal tuberculosis. Cartridge based Nucleic Acid Amplification Test (CBNAAT) for extrapulmonary TB specimens like ascitic fluid is also an emerging molecular assay with high sensitivity (100%) [26]. In our case, the peritoneal fluid aspirate sent for CBNAAT was found to be positive for MTB which further confirmed the diagnosis of abdominal TB. CA125 level measurement in abdominal tuberculosis is

also nonspecific. Many conditions can elevate CA125 like endometriosis, pelvic inflammatory disease, uterine fibroids, liver disease, and pregnancy [15].

Laparoscopy with tissue biopsy is the gold standard method in diagnosing abdominal tuberculosis with a very high diagnostic yield [27-31]. The characteristic features on diagnostic laparoscopy for diagnosing peritoneal TB are yellowish/whitish nodules or tubercles scattered over peritoneum, adhesions or violin strings, omental thickening, abdominal cocoon, mesenteric thickening or enlarged mesenteric lymph nodes [31]. The patient in this case report on diagnostic laparoscopy had characteristic lesions in the form of adhesions/fibronectin networks between liver and peritoneum, multiple enlarged mesenteric lymph nodes with mild ascites favoring the diagnosis of intra-abdominal tuberculosis. Another advantage of laparoscopy is the early diagnosis of abdominal tuberculosis compared to traditional microbiological culture methods which generally yield results in 2-6 weeks [32]. This early diagnosis helps in avoidance of dreadful complications such as intestinal perforation especially in fibronectin type of peritoneal tuberculosis [33].

This case emphasizes the importance of considering abdominal tuberculosis as one of the differentials for non-specific abdominal pain particularly in a young age group in endemic countries like India. It also underscores the role of laparoscopy with biopsy as a rapid and accurate diagnostic tool for diagnosing abdominal tuberculosis and thereby decreasing overall morbidity and mortality.

### Conclusion

In cases of suspected abdominal TB with non-specific presentation, laparoscopy with biopsy is an effective tool for early diagnosis. Appropriate treatment can be started with anti-tubercular drugs to decrease morbidity and mortality.

### Conflict of interests

The authors declare that they have no conflict of interest.

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No funding was received for conducting this study.

### Informed Consent

Written and informed consent was obtained from the patient prior to the study.

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