

## Clinical and Surgical Profile of Intestinal Obstruction Due to Tuberculosis: A Prospective Study from a Tertiary Care Centre in Bihar

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### Abstract:

**Background:** Intestinal obstruction remains one of the more serious complications of abdominal tuberculosis, particularly in regions with a high TB burden like Bihar. The condition often presents with non-specific symptoms and may require surgical intervention. Early diagnosis and appropriate management significantly improve outcomes.

**Objectives:** To assess the clinical characteristics, imaging findings, surgical interventions, and short-term outcomes in patients diagnosed with intestinal obstruction due to abdominal tuberculosis.

**Methods:** A prospective observational study was conducted at Jawaharlal Nehru Medical College and Hospital, Bhagalpur, over 15 months. One hundred patients presenting with clinical features of intestinal obstruction and confirmed to have abdominal tuberculosis (via imaging, intraoperative findings, or histopathology) were included. Data on demographics, presenting complaints, imaging findings, type of intervention (conservative or surgical), surgical procedures, postoperative complications, and length of stay were recorded and analyzed.

**Results:** The mean age was 34.2 years, with a male predominance (M: F = 1.8:1). The most frequent symptoms were abdominal pain (96%), vomiting (70%), and abdominal distension (62%). CT imaging revealed ileocecal involvement in 64% of patients. Surgical management was required in 63% of cases. Resection and anastomosis (n = 28), stricturoplasty (n = 21), and adhesiolysis (n = 14) were the most common procedures. Postoperative complications occurred in 16% of surgical cases, primarily wound infection and prolonged ileus. There was no mortality during the study.

**Conclusion:** Tubercular intestinal obstruction remains prevalent in Bihar, particularly among young adults. Ileocecal involvement is most common, and timely diagnosis—followed by appropriate ATT and surgical intervention when indicated—yields excellent short-term outcomes.

**Keywords:** Intestinal obstruction, abdominal tuberculosis, ileocecal TB, stricturoplasty, bowel resection, ATT.

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### Introduction

Tuberculosis continues to be one of the most pressing public health concerns in India, where both pulmonary and extrapulmonary forms are endemic. Among the latter, abdominal tuberculosis remains a significant clinical challenge. The disease frequently affects the gastrointestinal tract, particularly the ileocecal region, and can lead to complications such as strictures, adhesions, perforations, and obstruction.

Intestinal obstruction is one of the most severe and often late-stage manifestations of abdominal TB. It frequently affects young adults and presents with signs typical of mechanical obstruction—abdominal pain, distension, vomiting, and altered bowel habits. In many cases, the clinical presentation closely

mimics other gastrointestinal conditions such as Crohn's disease or malignancy, making diagnosis difficult without imaging or surgical exploration.

The primary mechanisms of obstruction in abdominal TB include mural thickening due to granulomatous inflammation, fibrotic strictures, lymphadenopathy causing extrinsic compression, and adhesive bands. The ileocecal junction remains the most common anatomical site, due to its rich lymphatic supply and physiological stasis.

Diagnosis relies on a combination of clinical suspicion, imaging studies (USG, CT), and, in many cases, intraoperative assessment. Definitive diagnosis is often confirmed through histopathological examination. Management

typically begins with anti-tubercular therapy, but surgical intervention is warranted in patients presenting with complete obstruction, peritonitis, or those unresponsive to medical therapy.

This prospective study was conducted to systematically assess the clinical profile, imaging patterns, management strategies, and early postoperative outcomes of patients presenting with intestinal obstruction secondary to tuberculosis at a government medical college hospital in Bhagalpur, Bihar—an area with a high prevalence of TB.

## Materials & Methods

**Study Design:** Prospective observational study.

**Study Duration:** 15 months (December 2023 – February 2025).

**Study Location:** Department of General Surgery, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar.

**Sample Size:** 100 patients.

### Inclusion Criteria:

- Age 15–65 years.
- Clinical diagnosis of intestinal obstruction.
- Confirmed or presumptive diagnosis of abdominal tuberculosis.
- Provided informed consent.

### Exclusion Criteria:

- Obstruction due to malignancy, hernia, or volvulus.
- Known Crohn's disease or other chronic inflammatory GI diseases.
- Incomplete data or lost to follow-up.

### Diagnostic Tools Used:

- Blood tests: CBC, ESR.
- Chest X-ray.
- Abdominal USG.
- Contrast-enhanced CT scan.
- Histopathological confirmation (where surgery was performed).

### Treatment Protocol:

- Initial resuscitation with fluids, NG decompression, and ATT.
- Surgery for cases with complete obstruction, failed conservative therapy, or complications.
- Postoperative ATT continued for all patients as per NTEP guidelines.

**Follow-up:** Patients were followed in-hospital and post-discharge for 30 days.

## Results

A total of 100 patients with features of intestinal obstruction due to abdominal tuberculosis were included in the study. The mean age of the participants was  $34.2 \pm 11.4$  years, with a male-to-female ratio of 1.8:1, indicating a clear male predominance (Table 1). The majority of patients were in the 20–40 year age group.

The most common presenting symptom was abdominal pain, seen in 96% of cases, followed by vomiting (70%), abdominal distension (62%), and fever (52%). Around 47% reported unintentional weight loss over the preceding few months. These symptoms were typically insidious in onset, with most patients presenting after multiple episodes of subacute intestinal obstruction.

Radiological imaging played a critical role in diagnosis. Contrast-enhanced CT (CECT) was performed in all patients. It revealed ileocecal involvement in 64% of cases, followed by multiple strictures (38%), and adhesions (21%). A localized mass lesion was seen in 17%, most commonly in the right iliac fossa. Ascitic fluid, often minimal to moderate in volume, was present in 19% of patients (Table 2).

Initial management was conservative in all patients, including nasogastric decompression, intravenous fluids, and empirical anti-tubercular therapy (ATT) where appropriate. However, 63 patients (63%) eventually required surgical intervention, due to complete obstruction, non-response to conservative therapy, or clinical deterioration.

Among surgical patients, the most common intraoperative finding was fibrotic stricture involving the terminal ileum or ileocecal junction. Segmental resection with primary anastomosis was performed in 28 cases, stricturoplasty in 21, and adhesiolysis alone in 14 cases (Table 3). Surgery was well tolerated in most cases.

Postoperative complications occurred in 16% of surgical patients. The most frequent complication was wound infection (11.1%), followed by prolonged ileus (4.7%). All were managed conservatively. No anastomotic leaks, reoperations, or mortalities were reported. The mean duration of hospital stay was  $8.5 \pm 2.3$  days.

**Table 1: Patient Demographics and Symptoms**

| Parameter            | Value             |
|----------------------|-------------------|
| Mean Age             | 34.2 ± 11.4 years |
| Gender (Male:Female) | 64:36             |
| Abdominal Pain       | 96 (96%)          |
| Vomiting             | 70 (70%)          |
| Abdominal Distension | 62 (62%)          |
| Fever                | 52 (52%)          |
| Weight Loss          | 47 (47%)          |

**Table 2: Imaging & Intraoperative Findings**

| Finding                        | Patients (%) |
|--------------------------------|--------------|
| Ileocecal thickening           | 64           |
| Multiple strictures            | 38           |
| Adhesions                      | 21           |
| Mass lesion (ileocecal region) | 17           |
| Ascites                        | 19           |

**Table 3: Treatment and Outcomes**

| Parameter                      | Value          |
|--------------------------------|----------------|
| Managed conservatively         | 37             |
| Required surgical intervention | 63             |
| Resection and anastomosis      | 28             |
| Stricturoplasty                | 21             |
| Adhesiolysis                   | 14             |
| Postoperative wound infection  | 7 (11.1%)      |
| Postoperative ileus            | 3 (4.7%)       |
| Mean hospital stay             | 8.5 ± 2.3 days |
| In-hospital mortality          | 0              |

## Discussion

This prospective study presents updated clinical data on intestinal obstruction caused by tuberculosis, gathered over 15 months from a tertiary care center in Bihar. The findings provide valuable insights into the clinical characteristics, diagnostic challenges, and surgical outcomes of a condition that, despite advances in public health, remains common in endemic areas. Intestinal tuberculosis continues to present a diagnostic and therapeutic dilemma, particularly when it leads to mechanical obstruction. The high incidence of surgical cases in our cohort reflects both the advanced disease stage at presentation and the limitations in early detection within the community setting.

The demographic distribution in our study highlights that abdominal tuberculosis leading to obstruction predominantly affects young adults, with most patients in their third and fourth decades of life. A higher proportion of males was noted, which is consistent with the general epidemiology of tuberculosis in India. The majority of patients presented with symptoms typical of mechanical bowel obstruction—abdominal pain, vomiting, and distension—often accompanied by constitutional signs such as fever and weight loss. These overlapping features with other chronic gastrointestinal conditions such as Crohn's disease

or intestinal malignancy frequently complicate the diagnostic process, particularly when there is no prior history of tuberculosis or pulmonary involvement.

Cross-sectional imaging, particularly contrast-enhanced CT, proved helpful in supporting the diagnosis in our patients. The ileocecal region was the most commonly affected site, which aligns with known pathological preferences of abdominal tuberculosis. This pattern is well established in literature and is attributed to the high lymphoid tissue concentration and slower transit time in this segment of the bowel, which facilitates the seeding and persistence of *Mycobacterium tuberculosis*. However, despite suggestive imaging features, definitive diagnosis remained elusive in some cases until surgical exploration or histopathological confirmation. In our setting, access to rapid molecular diagnostics such as CBNAAT was limited, necessitating reliance on clinical judgment and intraoperative findings.

Medical management with anti-tubercular therapy is the mainstay of treatment for abdominal tuberculosis. However, in the presence of complications such as complete obstruction, perforation, or failure of conservative treatment, surgical intervention becomes necessary. In our series, 63% of patients underwent surgical

procedures, highlighting a considerable burden of advanced disease requiring operative management. This figure is higher than what is seen in some urban centers, suggesting that delayed presentation remains a major issue in semi-urban and rural populations. Many patients in our cohort had experienced repeated episodes of subacute obstruction over weeks or months before finally seeking tertiary care.

Intraoperative findings in our patients were diverse. The most common lesion was fibrotic stricture, typically located in the terminal ileum or ileocecal region. Depending on the extent and number of strictures, resection with primary anastomosis or stricturoplasty was performed. In cases where multiple strictures were found with relatively healthy intervening bowel, stricturoplasty allowed for bowel preservation. This approach is particularly useful in patients who may already be nutritionally depleted, as extensive resection in such individuals increases the risk of short bowel syndrome and associated complications. The outcomes of these procedures were largely favorable, supporting the role of stricturoplasty as a safe and bowel-conserving option in appropriate cases.

The postoperative course for most patients was uneventful. A minority developed complications, primarily wound infections and transient ileus. These were managed conservatively and did not result in any readmissions or reoperations. Importantly, no anastomotic leaks or postoperative deaths occurred in our study. This favorable outcome profile reinforces the effectiveness of a structured management protocol involving timely surgical intervention followed by anti-tubercular therapy. The relatively short mean hospital stay also suggests that with proper perioperative care, patients recover well even after undergoing major abdominal procedures for TB-related complications.

Our findings are consistent with other studies from high-prevalence areas. Similar patterns of ileocecal involvement, late presentation, and need for surgery have been documented in prospective and retrospective analyses across different regions of India. However, unlike some studies that report higher morbidity and occasional mortality, our results suggest that with proper surgical technique and postoperative care, complication rates can be minimized. The complete absence of mortality in our series, despite the severity of disease, highlights the importance of early recognition and skilled surgical management.

One of the broader implications of our study is the need for improved awareness and early diagnosis. Many patients in our cohort had symptoms for several weeks or even months before seeking specialized care. This delay often results from low health literacy, financial constraints, or misdiagnosis

at the primary care level. Strengthening the referral chain and ensuring that frontline health workers are trained to recognize signs of abdominal tuberculosis could lead to earlier intervention, reducing the need for surgery in many cases. Additionally, increasing access to diagnostic tools such as GeneXpert or TB culture would enable earlier confirmation and initiation of treatment.

Another area that deserves attention is the continuation and completion of anti-tubercular therapy in surgical patients. While we initiated ATT in all postoperative cases, long-term adherence remains a challenge, especially in low-resource settings. Though our study did not extend beyond 30 days post-discharge, existing literature suggests that incomplete therapy increases the risk of recurrence, chronic strictures, and even drug resistance. Incorporating surgical TB cases into the national TB registry and ensuring regular follow-up through DOTS centers could help maintain treatment continuity and improve long-term outcomes.

This study has certain limitations that must be acknowledged. As a single-center study from a government hospital, the findings may not be representative of all patient populations. Furthermore, due to the relatively short follow-up period, we were unable to evaluate long-term outcomes such as recurrence, nutritional recovery, or adherence to treatment protocols. Despite these limitations, the prospective design, clearly defined inclusion criteria, and uniform treatment approach contribute to the strength of our findings.

## Conclusion

Intestinal obstruction due to tuberculosis remains a significant cause of surgical morbidity in TB-endemic regions like Bihar. Ileocecal involvement is most common, and diagnosis often requires a combination of imaging and intraoperative assessment. While ATT is essential, surgical intervention plays a vital role in complicated or late-presenting cases. With timely diagnosis and appropriate management, outcomes are excellent, as reflected in this prospective study from a tertiary care center in eastern India.

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