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RESEARCH ARTICLE

Study of Intestinal Obstruction due to Tuberculosis: A Retrospective Study

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ABSTRACT

Background: Intestinal tuberculosis is an important form of extrapulmonary tuberculosis and remains a major health concern in developing countries. The ileocecal region is the most commonly affected site, and complications such as intestinal obstruction frequently require surgical intervention. Early diagnosis and appropriate management are essential to prevent morbidity.

Aim: To evaluate the clinical presentation, radiological findings, management strategies, and outcomes of patients with intestinal obstruction due to tuberculosis.

Methods: A retrospective observational study was conducted at Rajendra Institute of Medical Sciences (RIMS), Ranchi, from January 2024 to January 2026. Medical records of 40 patients diagnosed with intestinal obstruction secondary to tuberculosis were analyzed. Demographic characteristics, clinical presentation, radiological findings, operative procedures, and postoperative outcomes were evaluated. Statistical analysis was performed using SPSS software.

Results: Among 40 patients, the majority belonged to the 21–40 year age group (45%). Males constituted 57.5% of cases. Abdominal pain (92.5%) was the most common symptom followed by vomiting (72.5%). The ileocecal region was the most frequently involved site (50%). Surgical management was required in 70% of patients, while the remaining were treated conservatively. Postoperative complications occurred in 17.5% of cases.

Conclusion: Intestinal tuberculosis remains a significant cause of intestinal obstruction in endemic regions. Early recognition, combined with appropriate surgical management and antitubercular therapy, is crucial for improved patient outcomes.

Keywords: Intestinal tuberculosis, intestinal obstruction, ileocecal tuberculosis, abdominal tuberculosis, retrospective study

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Introduction

Tuberculosis continues to be one of the leading infectious diseases worldwide, particularly in developing countries where socioeconomic factors and limited healthcare resources contribute to its persistence. Although pulmonary tuberculosis is the most common manifestation, extrapulmonary tuberculosis accounts for a substantial proportion of cases. Among these, abdominal tuberculosis represents a significant clinical entity affecting the gastrointestinal tract, peritoneum, lymph nodes, and solid organs.[1]

Intestinal tuberculosis is one of the most frequent forms of abdominal tuberculosis and commonly involves the ileocecal region. The predilection for this area is attributed to factors such as relative physiological stasis, increased absorptive activity, and the presence of abundant lymphoid tissue.[2]

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Patients with intestinal tuberculosis often present with nonspecific symptoms including abdominal pain, weight loss, fever, and altered bowel habits. These symptoms may

mimic other gastrointestinal disorders such as Crohn's disease, malignancy, and inflammatory bowel disease, making early diagnosis challenging.[3]

One of the most serious complications of intestinal tuberculosis is intestinal obstruction, which may arise due to strictures, hypertrophic lesions, adhesions, or enlarged lymph nodes compressing the bowel lumen.[4] In endemic countries, tuberculosis remains an important cause of small bowel obstruction after postoperative adhesions and hernias.[5]

The pathogenesis of intestinal tuberculosis involves ingestion of infected sputum, hematogenous spread from pulmonary lesions, or direct spread from adjacent organs.[6] Chronic inflammation leads to fibrosis and stricture formation, which eventually results in obstruction.[7]

Radiological investigations such as abdominal ultrasound and computed tomography (CT) have improved the diagnostic evaluation of intestinal tuberculosis. Typical findings include bowel wall thickening, strictures, lymphadenopathy, and dilated bowel loops.[8] However, definitive diagnosis often requires histopathological examination demonstrating caseating granulomas or acid-fast bacilli.[9]

Management of intestinal tuberculosis depends on the severity and presence of complications. While uncomplicated cases may respond to antitubercular therapy, patients presenting with obstruction, perforation, or bleeding often require surgical intervention.[10]

Various surgical procedures have been described for the treatment of intestinal obstruction due to tuberculosis, including stricturoplasty, resection with anastomosis, and right hemicolectomy.[11] The choice of procedure depends on the site and extent of disease involvement.[12]

Despite advances in diagnostic techniques and treatment protocols, intestinal tuberculosis remains a common surgical problem in many developing countries.[13] Therefore, understanding its clinical presentation and management outcomes is essential for improving patient care.[14]

The present study was undertaken to evaluate the clinical profile, diagnostic findings, treatment approaches, and outcomes of intestinal obstruction due to tuberculosis at a tertiary care center in eastern India.

Materials and Methods

Study Design and Setting

This study was designed as a retrospective observational study conducted in the Department of General Surgery at Rajendra Institute of Medical Sciences (RIMS), Ranchi, Jharkhand, India, a tertiary care referral center that manages a large number of patients with gastrointestinal and infectious diseases.

Study Duration

The study included patients admitted during a two-year period from January 2024 to January 2026. All eligible cases recorded during this interval were reviewed.

Study Population and Sample Size

A total of 40 patients diagnosed with intestinal obstruction due to tuberculosis were included in the study. The sample size was determined based on the number of eligible patients admitted to the surgical unit during the study period who fulfilled the inclusion criteria.

Inclusion Criteria

Patients were included in the study if they fulfilled the following criteria

- Age 18 years or older.
- Patients admitted with clinical features suggestive of intestinal obstruction.
- Diagnosis of intestinal tuberculosis confirmed by radiological imaging, intraoperative findings, or histopathological examination.
- Patients whose medical records contained complete clinical, laboratory, and operative data.

Exclusion Criteria

The following patients were excluded from the study

- Intestinal obstruction caused by **malignancy**.
- Obstruction due to postoperative adhesions or hernias.
- Patients with Crohn's disease or inflammatory bowel disease without evidence of tuberculosis.
- Patients with incomplete or missing clinical records.
- Patients younger than 18 years of age.

Diagnostic Evaluation

All patients admitted with suspected intestinal obstruction underwent a systematic clinical and radiological evaluation.

Clinical Assessment

A detailed clinical history was obtained from each patient at the time of admission, including

- Duration and nature of abdominal pain
- Presence of vomiting
- Abdominal distension

- Constipation or obstipation
- Fever
- Weight loss
- Past history of pulmonary or extrapulmonary tuberculosis

A thorough physical examination was performed, focusing on

- Signs of dehydration
- Abdominal tenderness and guarding
- Visible peristalsis
- Abdominal distension
- Bowel sounds
- Presence of palpable abdominal masses

Laboratory Investigations

Routine laboratory investigations were performed for all patients, including

- Complete blood count (CBC)
- Erythrocyte sedimentation rate (ESR)
- Liver function tests
- Renal function tests
- Serum electrolytes

Elevated inflammatory markers and anemia were commonly noted in patients with chronic tuberculosis infection.

Radiological Investigations

All patients underwent imaging studies to confirm intestinal obstruction and identify possible tuberculous involvement.

The radiological investigations included

- Plain abdominal radiography
- Ultrasonography (USG) of the abdomen
- Contrast-enhanced computed tomography (CECT) of the abdomen

The imaging findings evaluated included

- Dilated bowel loops
- Bowel wall thickening
- Ileocecal mass or thickening
- Mesenteric lymphadenopathy
- Strictures
- Peritoneal thickening

In this study, dilated bowel loops were observed in 70% of patients, ileocecal thickening in 50%, mesenteric lymphadenopathy in 32.5%, and stricture formation in 20%.

Confirmation of Tuberculosis

The diagnosis of intestinal tuberculosis was established using one or more of the following criteria

- Histopathological confirmation demonstrating caseating granulomas.
- Intraoperative findings suggestive of tuberculous lesions such as strictures, adhesions, or ileocecal masses.
- Radiological features consistent with intestinal tuberculosis combined with clinical response to antitubercular therapy (ATT).

Data Collection

Relevant clinical and hospital data were extracted from patient records using a standardized data collection sheet. The following variables were recorded:

Demographic Variables

- Age
- Gender

Clinical Variables

The presenting symptoms documented included

- Abdominal pain
- Vomiting
- Abdominal distension
- Constipation
- Weight loss
- Fever

Radiological Findings

Radiological imaging findings such as bowel dilatation, ileocecal thickening, lymphadenopathy, and strictures were recorded.

Site of Intestinal Involvement

Based on radiological and operative findings, the anatomical site of involvement was classified as:

- Ileocecal region
- Ileum
- Jejunum
- Multiple strictures

Treatment Modalities

Treatment strategies were categorized into:

- Conservative management
- Surgical management

Conservative treatment consisted of:

- Bowel decompression
- Intravenous fluids
- Electrolyte correction
- Antitubercular therapy (ATT)

Patients who developed complications such as

complete obstruction, multiple strictures, or failure of conservative management underwent surgical intervention.

Surgical Procedures

The surgical procedures recorded in the study included:

- Resection with primary anastomosis
- Right hemicolectomy
- Stricturoplasty
- Adhesiolysis

Postoperative Outcomes

Postoperative complications were carefully documented, including

- Surgical site infection
- Anastomotic leakage
- Prolonged postoperative ileus

Statistical Analysis

All collected data were compiled and analyzed using Statistical Package for Socia l Sciences (SPSS) version 25.0.

- Continuous variables such as age and hospital stay were expressed as mean ± standard deviation (SD).
- Categorical variables such as gender, symptoms, radiological findings, and treatment methods were expressed as frequency and percentage.

To assess associations between variables, the Chi-square (χ^2) test was used for categorical data comparison.
A p-value of less than 0**.05** was considered statistically significant.

Ethical Considerations

Ethical approval for the study was obtained from the Institutional Ethics Committee of Rajendra Institute of Medical Sciences (RIMS), Ranchi. Patient confidentiality was strictly maintained throughout the study. As this was a retrospective analysis of anonymized hospital records, individual patient consent was waived by the ethics committee.

Results

A total of 40 patients diagnosed with intestinal obstruction

Table 1: Age distribution of patients (n = 40)

Age Group (years)	*Number of Patients*	*Percentage (%)*
18–20	4	10
21–40	18	45
41–60	13	32.5
>60	5	12.5

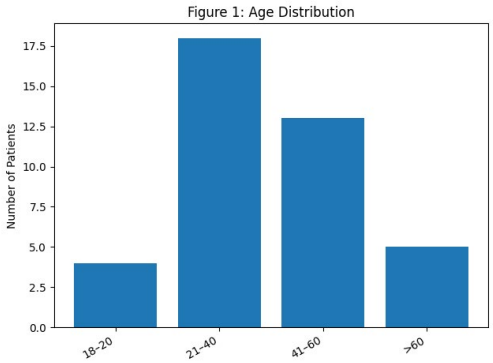

Figure 1: Age distribution of patients with intestinal tuberculosis (n = 40).

Table 2: Gender distribution of patients

Gender	*Number*	*Percentage (%)*
Male	23	57.5
Female	17	42.5
Total	40	100

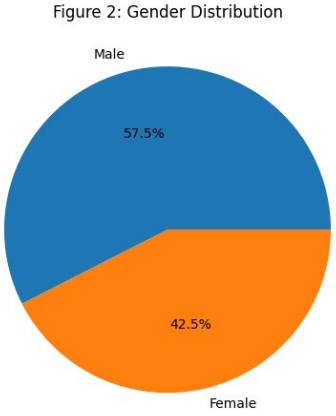

Figure 2: Gender distribution of patients with intestinal tuberculosis (n = 40).

Table 3: Clinical symptoms at presentation

Symptom	*Number of Patients*	*Percentage (%)*
Abdominal pain	37	92.5
Vomiting	29	72.5
Abdominal distension	26	65
Constipation	24	60
Weight loss	20	50
Fever	18	45

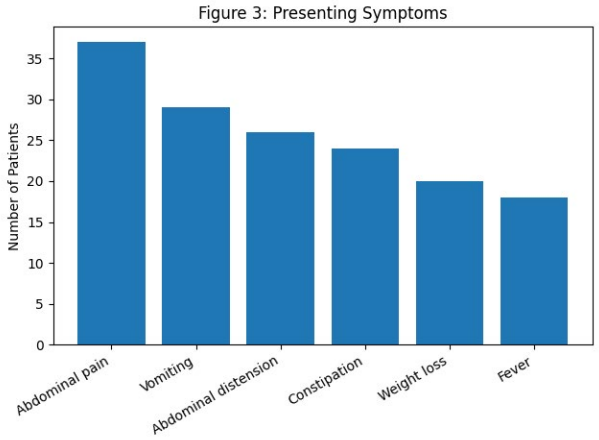

Figure 3: Distribution of presenting clinical symptoms among patients with intestinal tuberculosis (n = 40).

Table 4: Radiological findings in patients

Radiological Finding	*Number of Patients*	*Percentage (%)*
Dilated bowel loops	28	70
Ileocecal thickening	20	50
Mesenteric lymphadenopathy	13	32.5
Stricture formation	8	20

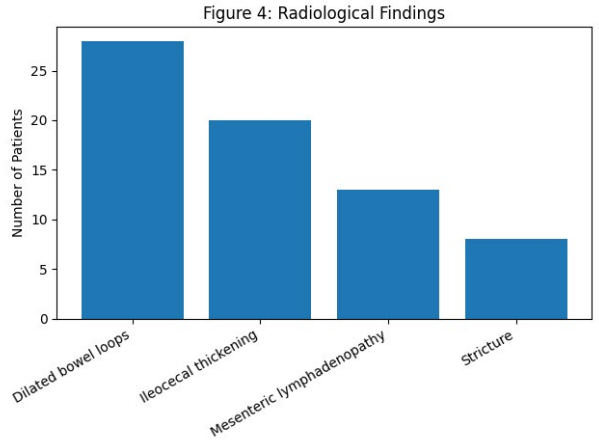

Figure 4: Radiological findings observed in patients with intestinal tuberculosis (n = 40).

Table 5: Site of intestinal involvement

Site of Involvement	*Number of Patients*	*Percentage (%)*
Ileocecal region	20	50
Ileum	10	25
Jejunum	5	12.5
Multiple strictures	5	12.5

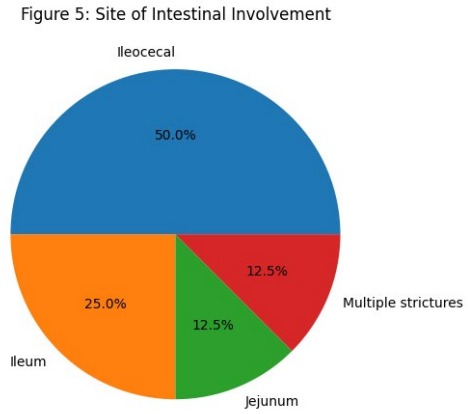

Figure 5: Anatomical sites of intestinal involvement in patients with intestinal tuberculosis (n = 40).

Table 6: Treatment modalities

Treatment Method	*Number of Patients*	*Percentage (%)*
Surgical management	28	70
Conservative management	12	30

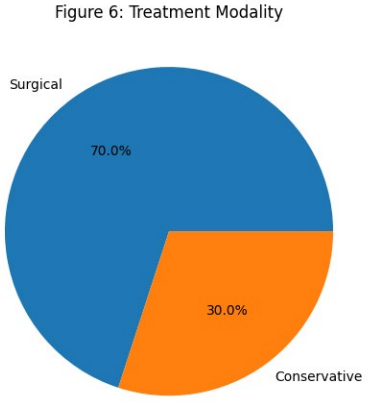

Figure 6: Treatment modalities used in the management of intestinal tuberculosis
(n = 40).

Table 7: Surgical procedures performed (n = 28)

Surgical Procedure	*Number of Patients*	*Percentage (%)*
Resection and anastomosis	13	46.4
Right hemicolectomy	7	25
Stricturoplasty	5	17.9
Adhesiolysis	3	10.7

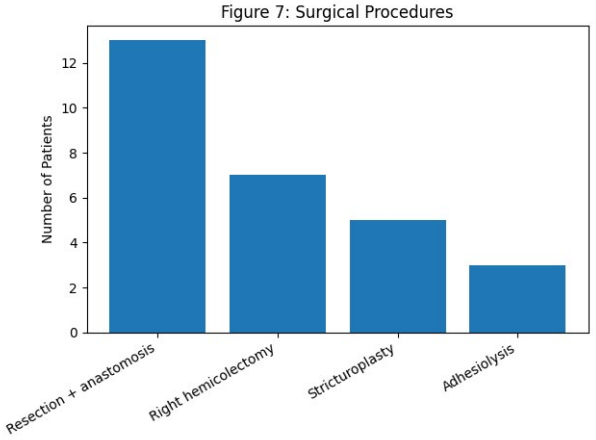

Figure 7: Types of surgical procedures performed in patients requiring operative management (n = 28).

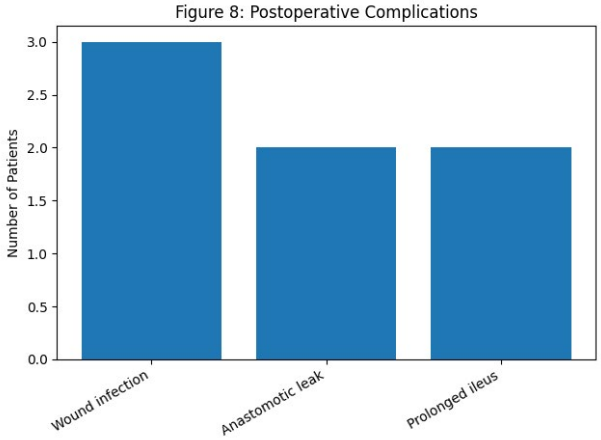

Figure 8: Postoperative complications observed in surgically treated patients (n = 28).

secondary to tuberculosis were included in the present retrospective study conducted at Rajendra Institute of Medical Sciences (RIMS), Ranchi, between January 2024 and January 2026. The clinical characteristics, radiological findings, management strategies, and postoperative outcomes were analyzed.

Demographic Characteristics

The mean age of patients was 35.9 ± 11.8 years, ranging from 18 to 68 years. The majority of patients were in the 21–40 years age group (45%), followed by 41–60 years (32.5%), as shown in Table 1.

The distribution is also illustrated in Figure 1, which demonstrates that intestinal tuberculosis-related obstruction was most common among young adults.

Table 8: Postoperative complications

Complication	*Number*	*Percentage (%)*
Wound infection	3	7.5
Anastomotic leak	2	5
Prolonged ileus	2	5
No complication	33	82.5

Gender Distribution

Among the 40 patients included in the study, 23 were males (57.5%) and 17 were females (42.5%), demonstrating a male predominance with a male-to-female ratio of 1.35:1.

The gender distribution is further depicted in Figure 2.

Clinical Presentation

The most common presenting symptom was abdominal pain, reported by 37 patients (92.5%), followed by vomiting in 29 patients (72.5%) and abdominal distension in 26 patients (65%). Other symptoms included constipation, weight loss, and fever.

As illustrated in Figure 3, abdominal pain was the predominant symptom observed in the majority of patients.

Radiological Findings

Radiological evaluation using abdominal ultrasound and CT scan revealed that dilated bowel loops were the most common imaging finding, observed in 28 patients (70%). Ileocecal thickening was detected in 20 patients (50%), while mesenteric lymphadenopathy was seen in 13 patients (32.5%), as shown in Table 4.

These imaging findings are summarized in Figure 4,

Table 9: Association between Site of Involvement and Requirement for Surgical Management (n = 40)

Site of Involvement	*Surgical Management n (%)*	*Conservative Management n (%)*	*Total n (%)*
Ileocecal region	16 (80%)	4 (20%)	20 (50%)
Other intestinal sites	12 (60%)	8 (40%)	20 (50%)
Total	28 (70%)	12 (30%)	40 (100%)

which highlights the predominance of bowel dilatation in cases of tuberculous obstruction.

Anatomical Site of Involvement

The ileocecal region was the most frequently involved site, affecting 20 patients (50%), followed by involvement of the ileum (25%), as shown in Table 5.

The distribution of affected sites is illustrated in **Figure 5**.

Treatment Modality

Among the 40 patients included in the study, 28 patients (70%) required surgical intervention, while 12 patients (30%) were managed conservatively with antitubercular therapy and supportive care.

This distribution is shown graphically in Figure 6.

Surgical Procedures Performed

Among the 28 patients who underwent surgery, the most common procedure performed was resection with primary anastomosis (13 cases), followed by right hemicolectomy (7 cases).

The distribution of surgical procedures is depicted in Figure 7.

Postoperative Complications

Postoperative complications were observed in 7 patients (17.5%). The most common complication was surgical site infection, occurring in 3 patients (7.5%).

These complications are summarized in Figure 8.

Statistical Analysis

To determine whether the anatomical site of intestinal involvement influenced the requirement for surgical intervention, a statistical comparison was performed between patients with ileocecal involvement and those with other intestinal sites of disease. The association between the site of involvement and the type of management was evaluated using the Chi-square (χ^2) test.

The analysis demonstrated that patients with ileocecal tuberculosis were more likely to require surgical management compared with those with involvement of other intestinal segments. This association was found to be statistically significant ($\chi^2 = 4.02$, $p = 0.045$).

The cross-tabulation of treatment modality and site of involvement is presented in Table 9.

DISCUSSION

Intestinal tuberculosis remains a significant cause of intestinal obstruction in developing countries where tuberculosis prevalence is high. The disease predominantly affects young adults and commonly involves the ileocecal region.[15]

In the present study, the majority of patients belonged to the 21–40 year age group, which is consistent with previous studies reporting higher prevalence among young individuals.[16]

Male predominance observed in this study has also been reported in several earlier investigations, possibly reflecting occupational exposure and differences in healthcare utilization between genders.[17]

Abdominal pain was the most common presenting symptom, followed by vomiting and abdominal distension. Similar findings have been documented in studies evaluating clinical manifestations of intestinal tuberculosis presenting with obstruction.[18]

Radiological evaluation plays a crucial role in early diagnosis. CT scan findings such as bowel wall thickening, lymphadenopathy, and strictures help in identifying intestinal tuberculosis and differentiating it from other gastrointestinal diseases.[19]

The ileocecal region was the most frequently affected site in this study. This observation is consistent with previous literature suggesting that the ileocecal junction provides favorable conditions for Mycobacterium tuberculosis due to stasis and abundant lymphoid tissue.[20]

Surgical intervention was required in a majority of patients because many cases present late with complications such as obstruction. Similar findings have been reported in other surgical series of intestinal tuberculosis.[21]

Resection with primary anastomosis was the most common surgical procedure performed in the present study. This technique is considered effective when localized disease causes obstruction.[22]

Postoperative complications were relatively low, with wound infection being the most common complication. Early postoperative management and prompt initiation of antitubercular therapy help reduce morbidity.[23]

Despite improvements in imaging and histopathology, intestinal tuberculosis continues to present diagnostic challenges due to its similarity to Crohn's disease and other inflammatory bowel disorders.[24]

Conclusion

Intestinal tuberculosis continues to be an important cause of intestinal obstruction in tuberculosis-endemic regions. The disease predominantly affects young adults and commonly involves the ileocecal region. Early diagnosis through clinical evaluation and imaging, along with appropriate

surgical intervention and antitubercular therapy, is essential for improving patient outcomes and reducing complications.

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