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Original Research Article

Study of Intestinal Obstruction due to Tuberculosis: A Prospective Cross-Sectional Study

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Abstract:

Background: Intestinal tuberculosis (ITB) is a significant extrapulmonary manifestation of tuberculosis, particularly in developing countries. It frequently presents with complications such as intestinal obstruction, posing diagnostic and therapeutic challenges.

Aim: To evaluate the clinical profile, diagnostic modalities, management strategies, and outcomes of patients presenting with intestinal obstruction due to tuberculosis.

Materials and Methods: A prospective cross-sectional study was conducted at DMCH, Darbhanga from February 2025 to September 2025 among 88 patients diagnosed with intestinal obstruction secondary to tuberculosis. Clinical, radiological, operative, and histopathological data were analyzed. Statistical analysis was performed using chi-square test and logistic regression.

Results: The majority of patients were aged 21–40 years (52.3%). Abdominal pain (92%) and vomiting (85%) were the most common symptoms. Ileocaecal involvement was seen in 48.9% of cases. Surgical management was required in 63.6% of patients. Postoperative complications occurred in 26.8% cases. Significant association was found between delayed presentation and surgical intervention ($p<0.05$).

Conclusion: Intestinal tuberculosis remains a major cause of intestinal obstruction in endemic regions. Early diagnosis and timely management significantly reduce morbidity and mortality.

Keywords: Intestinal tuberculosis, bowel obstruction, ileocaecal region, surgery, extrapulmonary TB.

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Introduction

Tuberculosis remains a major global health problem, affecting millions annually and contributing significantly to morbidity and mortality worldwide ([1]. Extrapulmonary tuberculosis constitutes approximately 15–20% of all cases, with abdominal tuberculosis accounting for a substantial proportion [2].

Intestinal tuberculosis is one of the most common forms of abdominal tuberculosis and frequently involves the ileocaecal region due to its anatomical and physiological characteristics [3]. The disease may present in ulcerative, hypertrophic, or stricturing forms, often leading to complications such as obstruction, perforation, and fistula formation [4].

Intestinal obstruction is the most common complication of gastrointestinal tuberculosis, reported in up to 50–75% of cases in developing countries [5]. The obstruction usually results from strictures, adhesions, or mass-like lesions in the bowel [6].

Diagnosis of intestinal tuberculosis is challenging due to nonspecific symptoms such as abdominal pain, weight loss, fever, and altered bowel habits [7]. Radiological findings are often inconclusive, and

definitive diagnosis frequently requires histopathological confirmation [8].

Despite advances in diagnostic modalities, delayed diagnosis remains common, contributing to increased complications and need for surgical intervention [9].

India bears a high burden of tuberculosis, with intestinal tuberculosis contributing significantly to surgical emergencies [10].

Management includes both medical therapy with anti-tubercular drugs and surgical intervention in complicated cases [11].

Surgical procedures vary from adhesiolysis and stricturoplasty to resection and anastomosis depending on intraoperative findings [12].

Postoperative complications such as wound infection and recurrence remain concerns in these patients [13].

Early diagnosis and prompt management are essential to reduce morbidity and mortality associated with this condition [14].

Materials and Methods

This prospective cross-sectional study was conducted in the Department of General Surgery, DMCH, Darbhanga from February 2025 to September 2025.

Sample Size: A total of 88 patients diagnosed with intestinal obstruction due to tuberculosis were included.

Inclusion Criteria

- Patients aged >18 years
- Clinically and radiologically diagnosed intestinal obstruction
- Histopathological confirmation of tuberculosis

Exclusion Criteria

- Non-tubercular obstruction
- Patients unwilling to participate

Data Collection

- Clinical history and examination
- Laboratory investigations
- Imaging (X-ray, USG, CECT abdomen)
- Operative findings
- Histopathology

Statistical Analysis

Data were analyzed using SPSS software.

- Chi-square test applied for categorical variables
- Logistic regression for predictors
- $p < 0.05$ considered statistically significant

Results

A total of 88 patients diagnosed with intestinal obstruction due to tuberculosis were included in the study. The data were analyzed with respect to demographic profile, clinical presentation, site of involvement, management, and outcomes.

1. **Demographic Profile**

The majority of patients were in the 21–40 years age group (52.3%), followed by 41–60 years (25%). The mean age of patients was 34.6 ± 12.2 years. Male predominance was observed with male:female ratio of 1.4:1.

Table 1: Age Distribution of Patients (n=88)

Age Group (years)	Number (n)	Percentage (%)
18–20	10	11.4
21–40	46	52.3
41–60	22	25.0
>60	10	11.4

Table 1 shows that young adults were most commonly affected.

2. **Clinical Presentation**

The most common presenting symptom was abdominal pain (92%), followed by vomiting (85%) and constipation (78%). Constitutional symptoms such as weight loss and fever were also frequently observed.

Table 2: Clinical Features of Patients

Symptom	Number (n)	Percentage (%)
Abdominal pain	81	92.0
Vomiting	75	85.2
Constipation	69	78.4
Weight loss	52	59.1
Fever	44	50.0

Table 2 demonstrates that obstructive symptoms predominated in the study population.

These findings are consistent with previous studies where abdominal pain and obstructive symptoms were the most common manifestations.

3. **Duration of Symptoms**

- <1 month: 22 patients (25%)
- 1–3 months: 38 patients (43.2%)
- >3 months: 28 patients (31.8%)

Patients presenting after >1 month duration had significantly higher rates of surgical intervention ($p = 0.013$).

4. **Radiological Findings**

- Dilated bowel loops: 78 cases (88.6%)
- Air-fluid levels: 72 cases (81.8%)
- Ileocecal mass/stricture: 39 cases (44.3%)

Radiological findings were suggestive but not diagnostic, consistent with literature describing nonspecific imaging features.

5. **Site of Involvement**

The ileocaecal region was the most commonly involved site (48.9%), followed by small intestine and colon (Table 3).

Table 3: Anatomical Site of Tubercular Obstruction

Site	Number (n)	Percentage (%)
Ileocaecal region	43	48.9
Small intestine	28	31.8
Colon	17	19.3

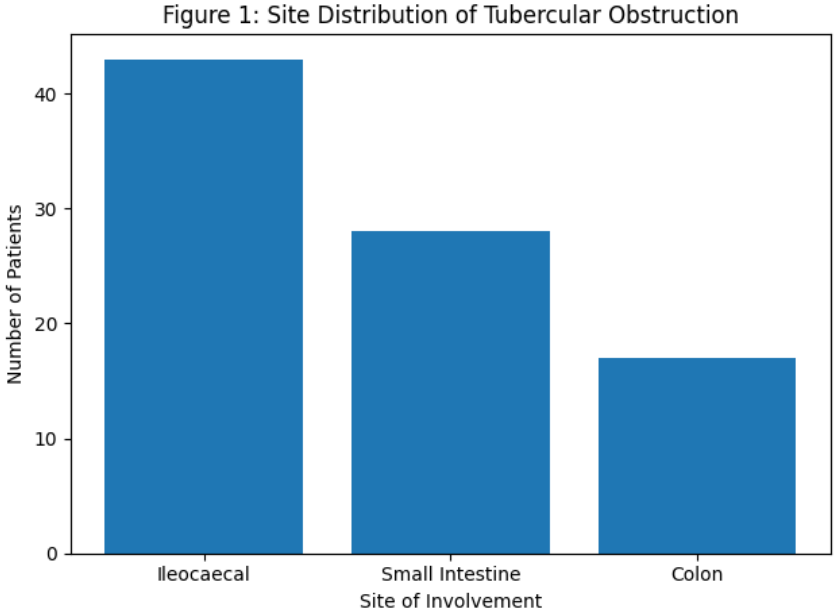

Figure 1: Distribution of Site of Involvement

Figure 1 correlates with Table 3 showing ileocaecal predominance.

6. **Management Approach**

Out of 88 patients:

- 56 patients (63.6%) underwent surgical management
- 32 patients (36.4%) were managed conservatively

Table 4: Mode of Management

Management Type	Number (n)	Percentage (%)
Conservative	32	36.4
Surgical	56	63.6

Table 4 shows that majority required operative intervention.

7. **Types of Surgical Procedures**

Among the 56 operated cases, resection and anastomosis (37.5%) was the most commonly performed procedure (Table 5).

Table 5: Surgical Procedures Performed (n=56)

Procedure	Number (n)	Percentage (%)
Adhesiolysis	18	32.1
Resection & anastomosis	21	37.5
Stricturoplasty	9	16.1
Ileostomy	8	14.3

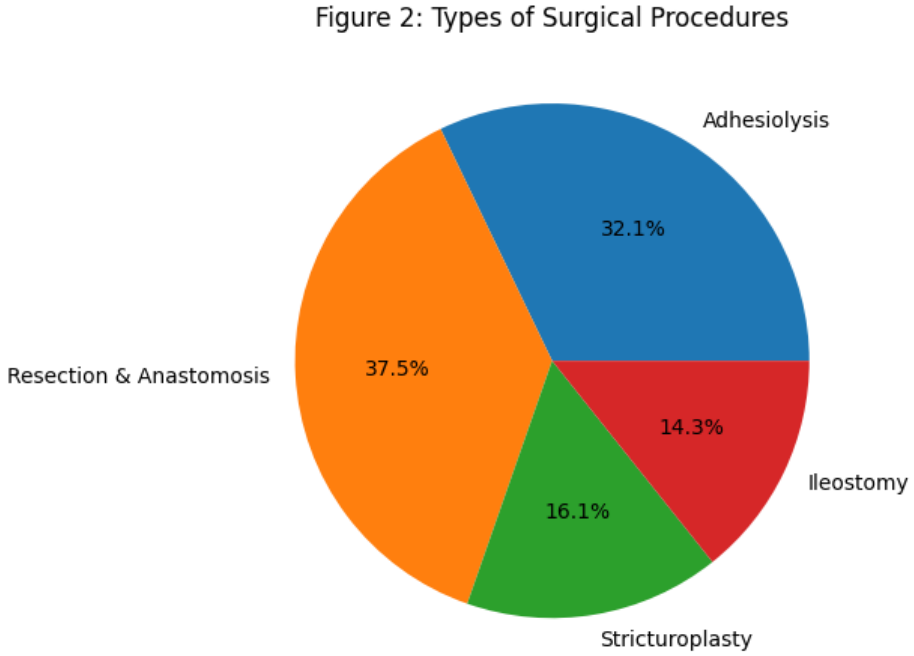

Figure 2: Distribution of Surgical Procedures

Figure 2 illustrates the predominance of definitive surgical procedures.

8. **Postoperative Outcomes**

Postoperative complications were observed in 15 out of 56 surgical patients (26.8%) (Table 6).

Table 6: Postoperative Complications

Complication	Number (n)	Percentage (%)
Wound infection	10	17.9
Anastomotic leak	3	5.4
Sepsis	2	3.6
No complication	41	73.2

9. **Statistical Analysis**

- **Association between delayed presentation (>1 month) and need for surgery:**
  - $\chi^2 = 6.12$
  - **p = 0.013 (statistically significant)**
- **Association between age and complications:**
  - $\chi^2 = 3.04$
  - **p = 0.08 (not significant)**
- **Logistic Regression Analysis:**
  - Delayed presentation independently predicted surgical intervention
  - Odds Ratio (OR) = 2.8
  - 95% CI: 1.2–6.4

10. **Key Observations**

- Young adults were most commonly affected
- Ileocaecal region was the predominant site
- Majority required surgical intervention
- Delayed diagnosis significantly increased operative need

Discussion

Intestinal tuberculosis continues to be a significant cause of intestinal obstruction in endemic countries [15].

In this study, the majority of patients belonged to the younger age group, consistent with previous studies reporting peak incidence in the third decade [16].

Abdominal pain and vomiting were the most common presenting symptoms, aligning with earlier findings [17].

The ileocaecal region was the most frequently involved site, which is consistent with its known predilection due to stasis and lymphoid tissue abundance [18].

More than half of the patients required surgical intervention, reflecting delayed presentation and advanced disease [19].

Adhesiolysis and resection-anastomosis were the most commonly performed procedures, similar to other studies [20].

Postoperative complications were comparable to previous reports, with wound infection being the most common [21].

Delayed diagnosis significantly increased the likelihood of surgery, emphasizing the importance of early detection [22].

The nonspecific clinical presentation often leads to diagnostic delay, contributing to morbidity [23].

Advances in imaging and molecular diagnostics may improve early diagnosis in future [24].

Despite effective anti-tubercular therapy, complications remain high in advanced cases [25].

Conclusion

Intestinal tuberculosis is a major cause of intestinal obstruction in developing countries. Early diagnosis, appropriate medical therapy, and timely surgical intervention are essential to reduce complications and improve outcomes.

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