

LOWER GI ENDOSCOPY IN ILEOCAECAL AND COLONIC TUBERCULOSIS

DR SANDEEP NIJHAWAN

MD, DM (GASTROENTEROLOGY), AIIMS, New Delhi

FISG, MISG, FSGE, FINASL, FACG

Past President ISG; President SGEI

Former Head of Medical Gastroenterology, SMS Medical College, Jaipur.

Current Senior Professor and Head of Medical Gastroenterology,

Mahatma Gandhi Medical College, Jaipur.

GI Tuberculosis (GI TB)

Definition

- Involvement of any **segment** of the **digestive tract**, associated **viscera**, and **peritoneum**.
 - Leading extrapulmonary TB manifestation that **can defy diagnosis - overlap of symptoms** with other gastrointestinal diseases and limited accuracy of diagnostic tests

GI TB Epidemiology

- Global TB incidence: 10.7 million (2024)
- Abdominal TB: 1–3%
 - Significant geographic variation
 - Rising trend

GI TB Pathogenesis

- Hematogenous dissemination of active foci of pulmonary or miliary TB
- Swallowing of sputum in patients with PTB
- Ingestion of contaminated milk or food (mainly by *M. bovis*)
- Contiguous spread from adjacent organs

Abdominal TB proportion of different sites						
<i>n</i>	Gastrointestinal	Peritoneal	Lymph nodal	Solid organs	Mixed	Coexist PTB
1180	43-65%	20-47%	4-58%	1-20%	9-33%	3-64%

Gastrointestinal TB proportion of different infected sites						
<i>n</i>	Ileocecal	Large bowel	Esophagus	Stomach	Duodenum	Small bowel
719	44%-84%	3%-71%	4%-8%	4%-6%	1%-6%	8%-85%

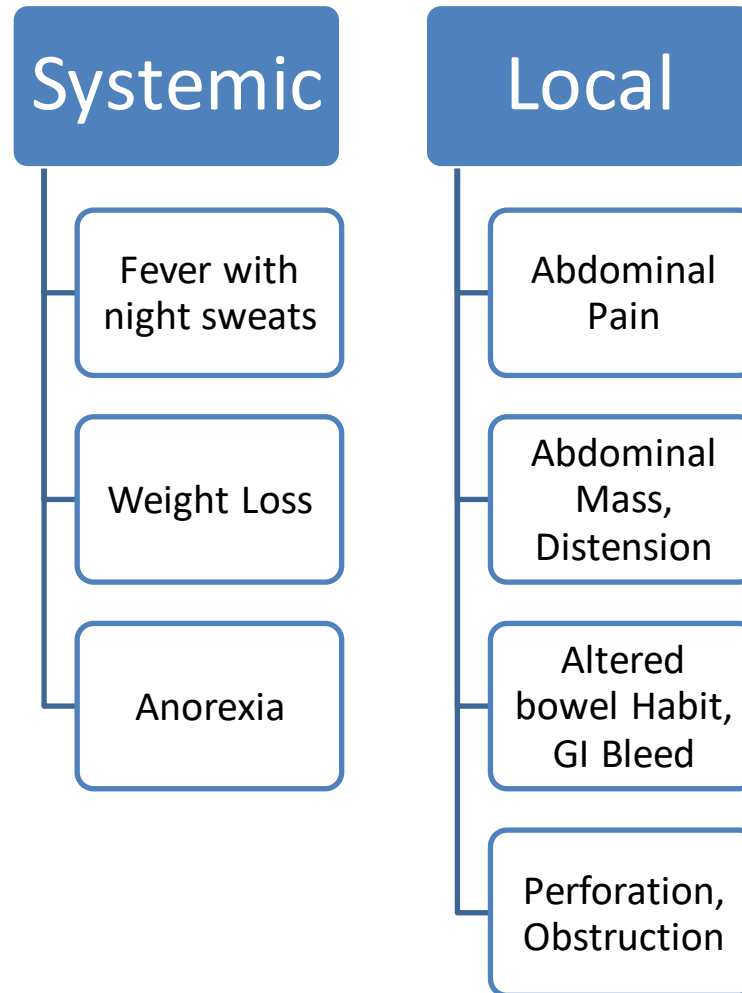
Al-Zanbagi AB et. al., Gastrointestinal tuberculosis: A systematic review of epidemiology, presentation, diagnosis and treatment. Saudi J Gastroenterol. 2021

GI TB Ileocaecal Predilection

Possible affinity of the bacteria to:

1. Slow intestinal **transit**
2. High **nutrient** absorption rate
3. Abundance of **lymphoid tissue**

Abdominal TB Clinical Features

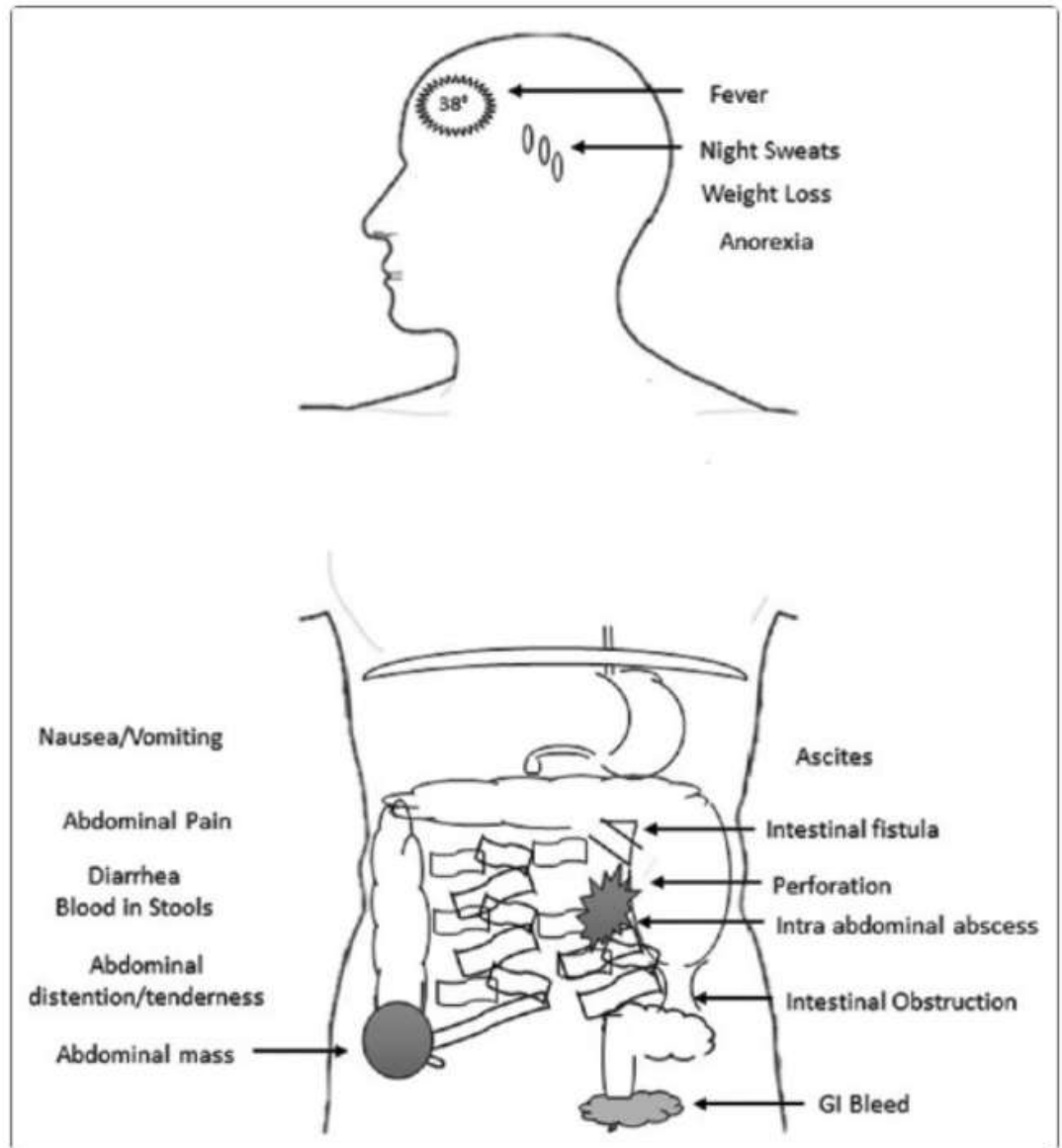


Abdominal TB Clinical Features

Symptoms	Mukewar et al	Makharia et al	Khan et al
Abdominal pain	80.6%	90.5%	93%
Weight loss	74.6%	83%	47%
Loss of appetite	62.7%	69.8%	52%
Fever	40.30%	41.5	64%
Diarrhoea	16.4%	37.7%	12%
Constipation	25%	49%	31%
Bleeding Per rectum	11.9%	16.9%	14%

Abdominal TB

Clinical Features



Al-Zanbagi AB et. al., Gastrointestinal tuberculosis: A systematic review of epidemiology, presentation, diagnosis and treatment. Saudi J Gastroenterol. 2021

Colonoscopic Findings

1. Mild disease

Loss of vascular pattern, erythema, and superficial ulcerations

2. Advanced disease

Deep ulcerations, nodularity, and strictures.

Classification of colonoscopic lesions

- Ulcerative
- Ulcerohypertrophic: Inflammatory mass around IC valve with ulcerated thick wall
- Hypertrophic: Fibrosis and pseudotumor lesions
- Order of occurrence: Ulcerative > Ulcerohypertrophic>Hypertrophic



Ulcerative form of ileocaecal (IC) tuberculosis - multiple ulceration on IC valve, caecum and ascending colon with nodularity in intervening area and some mucosal bridges



Hypertrophic form of ileocaecal tuberculosis - mass like lesion on IC valve with ulceration on surface

Colonoscopy in IC TB: Ulcers

- Up to 78% of the cases
- Varying sizes and orientation
 - Transverse
 - Ring Shaped
 - Aphthous
 - Longitudinal
 - Ill-defined, sloping or overhanging edges surrounded by inflamed mucosa

IC TB: Ileo-cecal tuberculosis

Al-Zanbagi AB et. al., Gastrointestinal tuberculosis: A systematic review of epidemiology, presentation, diagnosis and treatment. Saudi J Gastroenterol. 2021; Moka P et. al., GK. Endoscopic features of gastrointestinal tuberculosis and crohn's disease. Journal of digestive endoscopy. 2017



An ulcer with purulent exudate and surrounding mucosal hyperplasia at the terminal ileum



An ulcer with luminal involvement at the terminal ileum

Huang G et. al., Intestinal tuberculosis with small bowel stricture and hemorrhage as the predominant manifestation: Three case reports. World J Gastrointest Surg. 2024

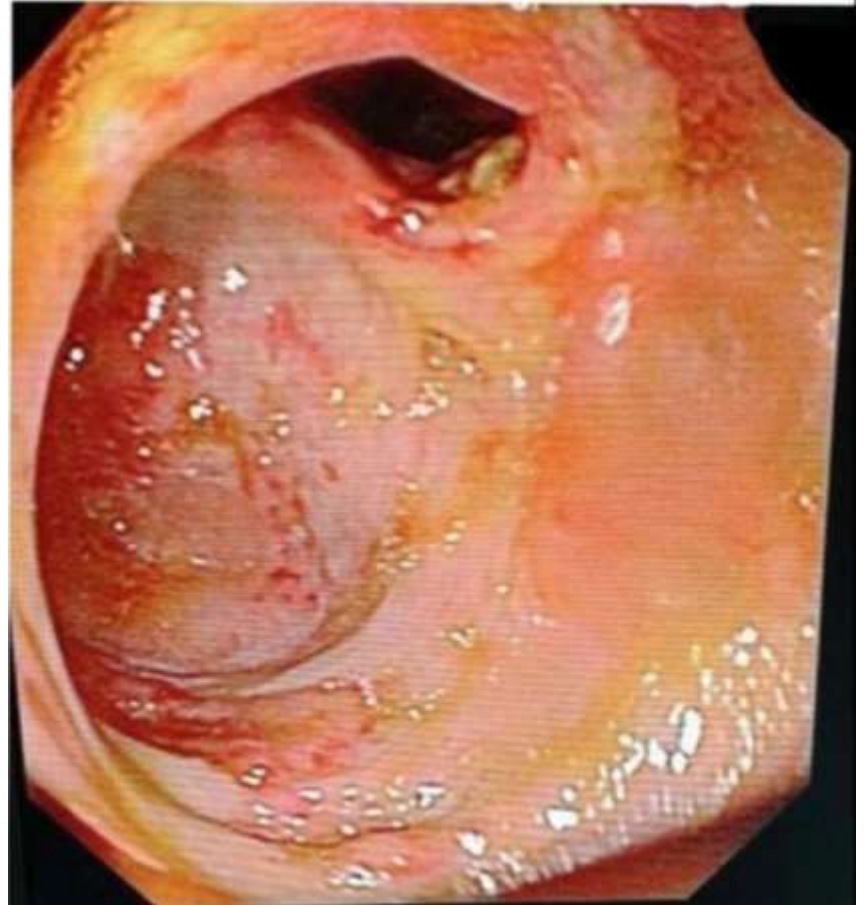


Ulcer in Terminal Ileum

Zeng J et. al., Clinical Analysis of Intestinal Tuberculosis: A Retrospective Study. J Clin Med. 2023

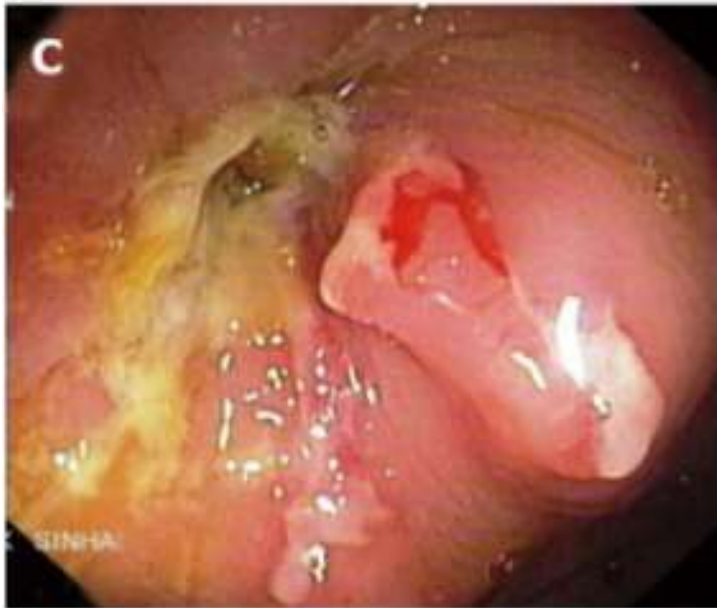
IC TB: Endoscopic features: Ileocaecal Valve

- Deformed
- Patulous (widely open)
ileocaecal valve

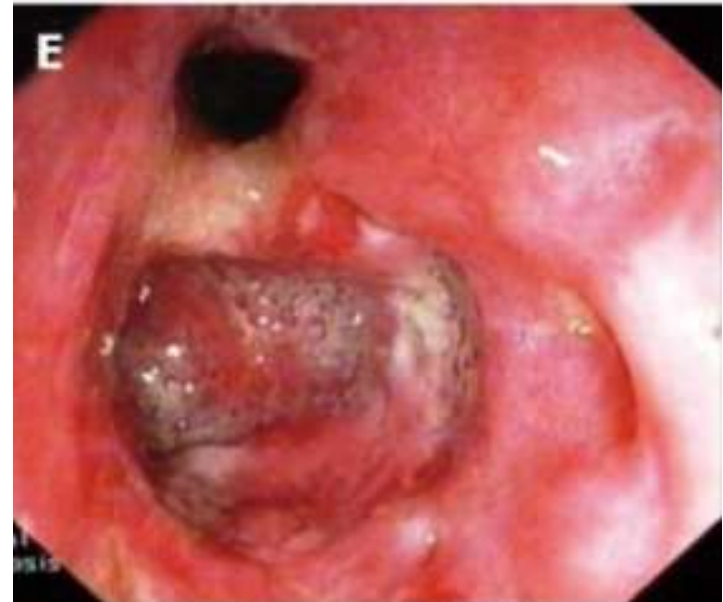


Al-Zanbagi AB et. al., Gastrointestinal tuberculosis: A systematic review of epidemiology, presentation, diagnosis and treatment. Saudi J Gastroenterol. 2021; Patel B et. al., Clinical and laboratory features of intestinal tuberculosis. Clinical and experimental gastroenterology. 2018

IC TB Endoscopic features



Ileocaecal tuberculosis - contracted caecum, narrowed and **deformed IC valve** and multiple ulceration on IC valve, caecum and ascending colon



Gaping IC valve with multiple ulcers on IC valve, caecum and ascending colon

IC TB: Endoscopic Features: Caecum

- Deformed caecum
- Ulcer, Nodule
- Luminal narrowing, Fibrotic strictures (Cicatrization)
- Polypoid lesion



Terminal ileal stricture with multiple ulcers on ileocaecal valve and contracted caecum.

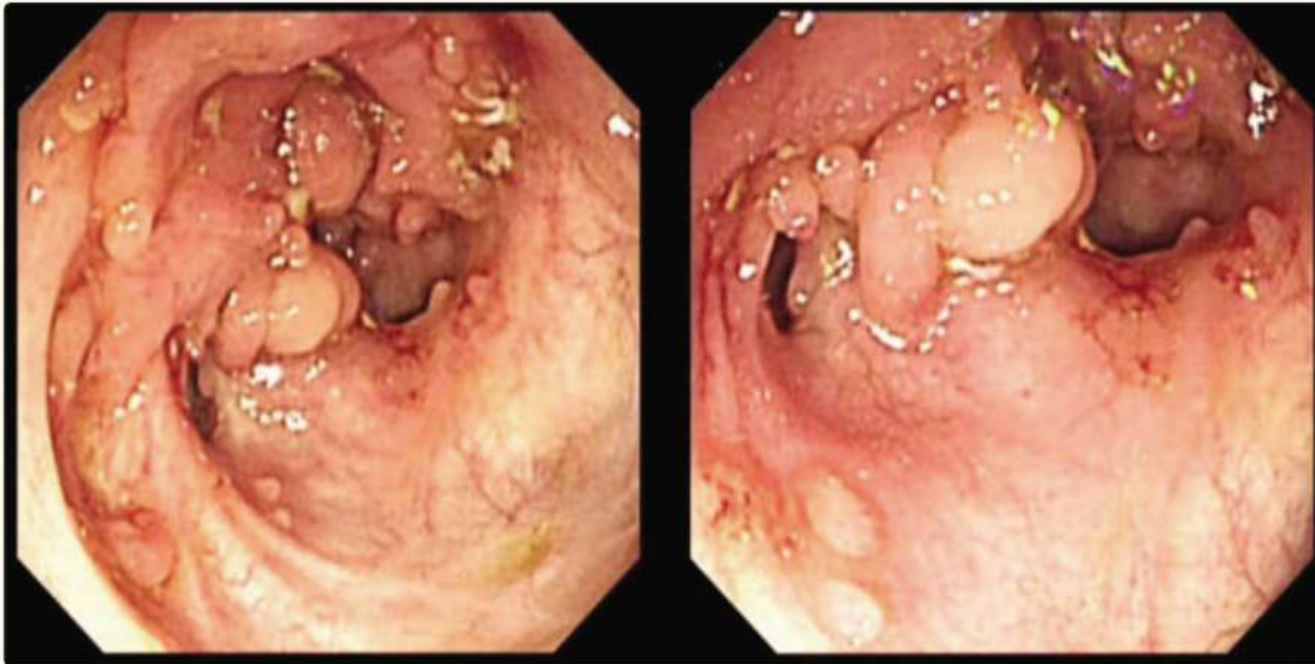
Sharma B et. al., Gastrointestinal tuberculosis: 8-year experience from a tertiary care hospital in North India. J Assoc Physicians India. 2024 ; Mukewar S et. al., Colon tuberculosis: endoscopic features and prospective endoscopic follow-up after anti-tuberculosis treatment. Clin Transl Gastroenterol. 2012; Debi U et.al., Abdominal tuberculosis of the gastrointestinal tract: revisited. World J Gastroenterol. 2014

Endoscopic Features of Colon involvement

- **Ulcer** with surrounding **inflammation** (erythema, nodularity, or edema)
- **Traction diverticula**
- **Sinus tracts** (adjacent lymphadenitis)
- **Pseudopolyps** (chronic inflammation)
- **Less frequent findings:** Strictures, cobblestone appearance and skip lesions

Al-Zanbagi AB et. al., Gastrointestinal tuberculosis: A systematic review of epidemiology, presentation, diagnosis and treatment. Saudi J Gastroenterol. 2021; Moka P et. al., GK. Endoscopic features of gastrointestinal tuberculosis and crohn's disease. Journal of digestive endoscopy. 2017

Ascending Colon: Endoscopic Features



Ulcerative lesions were seen in the ascending colon, with irregular hyperplasia and narrow intestinal cavity.

Lu S et. al., J. Clinical diagnosis and endoscopic analysis of 10 cases of intestinal tuberculosis. Medicine (Baltimore). 2020

Endoscopic features of patients with intestinal tuberculosis.

Features	Cases (<i>n</i> = 42)	Percent
Ulcer in the terminal ileal /ileocecal region	25	59.5%
Colonic ulcer	15	35.7%
Ileocecal valve deformation	11	26.2%
Pseudopolyps	9	21.4%
Inflammation and erosion in the terminal ileal/ileocecal region	7	16.7%
Stricture	6	14.3%
Colonic inflammation	5	11.9%
Inflammation and erosion in the ileocecal valve	1	2.4%
Scar	1	2.4%
Jejunal ulcer	1	2.4%
Small intestinal inflammation	1	2.4%
Colonic mass	1	2.4%

Colonoscopic findings	Alvares et al	Misra SP et al	Singh V et al	Das HS et al
Ulceration	70%	92%	83%	47%
Nodularity	56%	88%	79%	42%
Deformed caecum and IC valve	40%	42%	55%	NA
Strictures	23%	25%	27%	14%
Polypoid lesions	14%	6%	5%	4.7%
Segmental involvement	19%	22%	19%	14%
Fibrous bands	7%	8%	NA	NA
Lesions mimicking carcinoma	16%	NA	20%	NA

How to take colonoscopic biopsy?

- Ulcer margins
- More biopsy samples: Higher histological yield. (Minimum eight biopsy samples: diagnostic accuracy of 11.4%)
- Diagnostic accuracy of biopsy also depends on:
 - Specimen volume, depth and location of specimen

Horvath KD et. al., Intestinal tuberculosis: return of an old disease. The American journal of gastroenterology. 1998 ; Mehta V, et. al., Making a Positive Diagnosis of Intestinal Tuberculosis with the Aid of New Biologic and Histologic Features: How Far Have We Reached? Inflamm Intest Dis. 2019; Maulahela, H. et. al., Recent advances in the diagnosis of intestinal tuberculosis. BMC Gastroenterol 2022

Differential Diagnosis

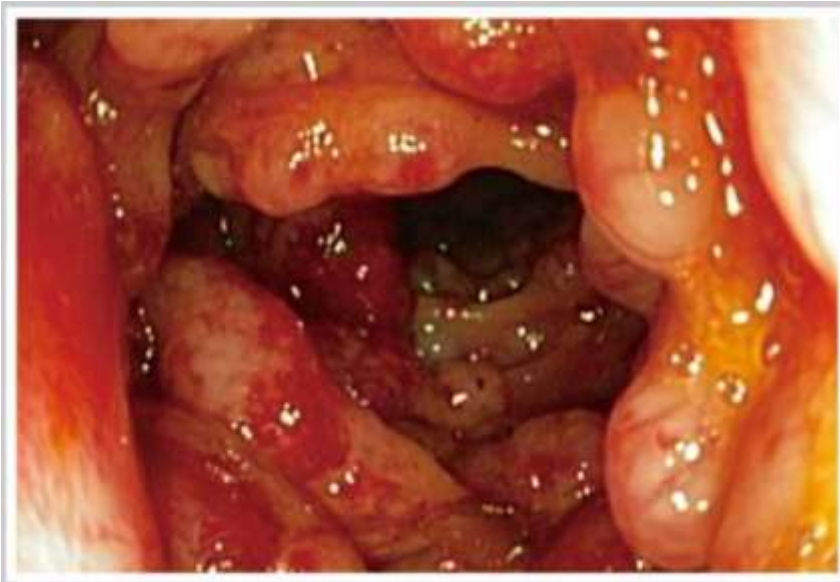
Crohn Disease *

Primary Intestinal
Lymphoma

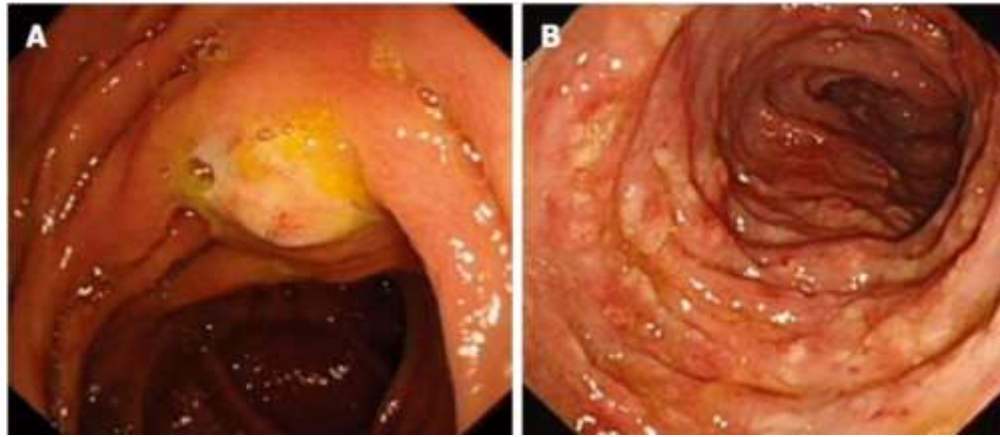
Chronic Granulomatous
Infections (Histoplasma,
Cryptococcus)

Chronic Inflammatory
Conditions (Sarcoidosis)

Colorectal Lymphoma



- Variable growth patterns on colonoscopy
- Typical lesions: Large, polypoid lesions
- Others: Mucosal ulcerations



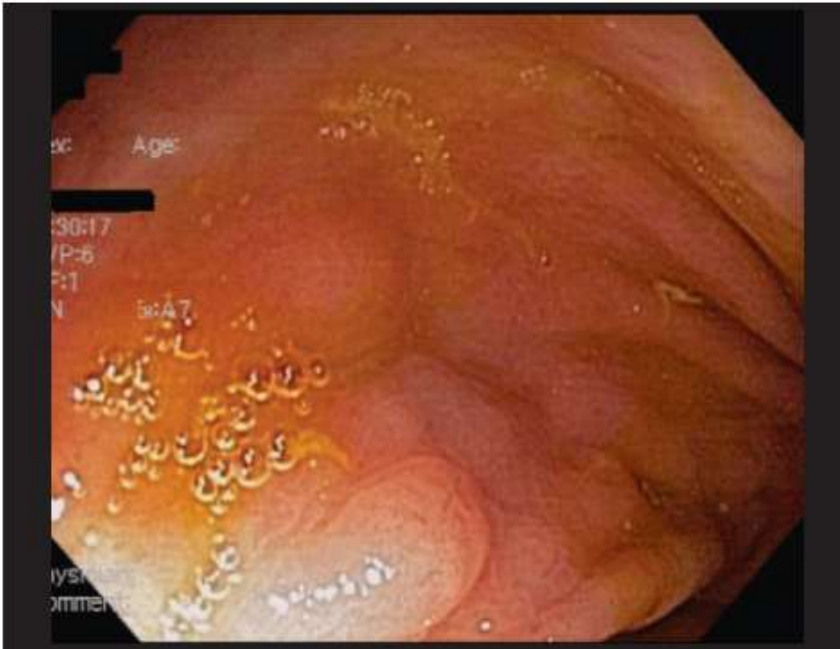
Isolated mucosal nodular bulging lesion central erosion; Diffuse nodular mucosal changes and aphthoid ulcers in a case of **Histoplasmosis**



Polypoid mass at IC valve with multiple clean-based ulcer at cecum in a case of **Cryptococcosis**

Zhu LL et. al., *Intestinal histoplasmosis in immunocompetent adults. World Journal of Gastroenterology.* 2016; Chavapradit N et. al., *Disseminated cryptococcosis in Crohn's disease: a case report. BMC Infectious Diseases.* 2018

Colonic Sarcoidosis



Nodular hyperplasia in a case of Sarcoidosis

Colonoscopic findings:

- Mild to marked inflammation of mucosa
- Mass or polyps

IBD-CD vs TB

	Favors Gastrointestinal Tuberculosis	Do not favor a particular diagnosis	Favors Crohn's Disease
Clinical Presentation	Shorter History (< 6 months) Pulmonary symptoms (Cough, hemoptysis) Peritoneal involvement (Ascites) Abdominal lump	Abdominal Pain Intestinal Obstruction	Chronic diarrhea Hematochezia Perianal symptoms Extraintestinal manifestations
Imaging findings	Necrotic lymph node Patulous ileo-cecal valve Short strictures Asymmetric mural thickening Ascites, peritoneal or omental involvement Pulmonary lesions	Mural thickening Strictures Lymph nodes	Mural stratification Fibrofatty proliferation Comb sign Skip lesions Long segment involvement (> 3cm)

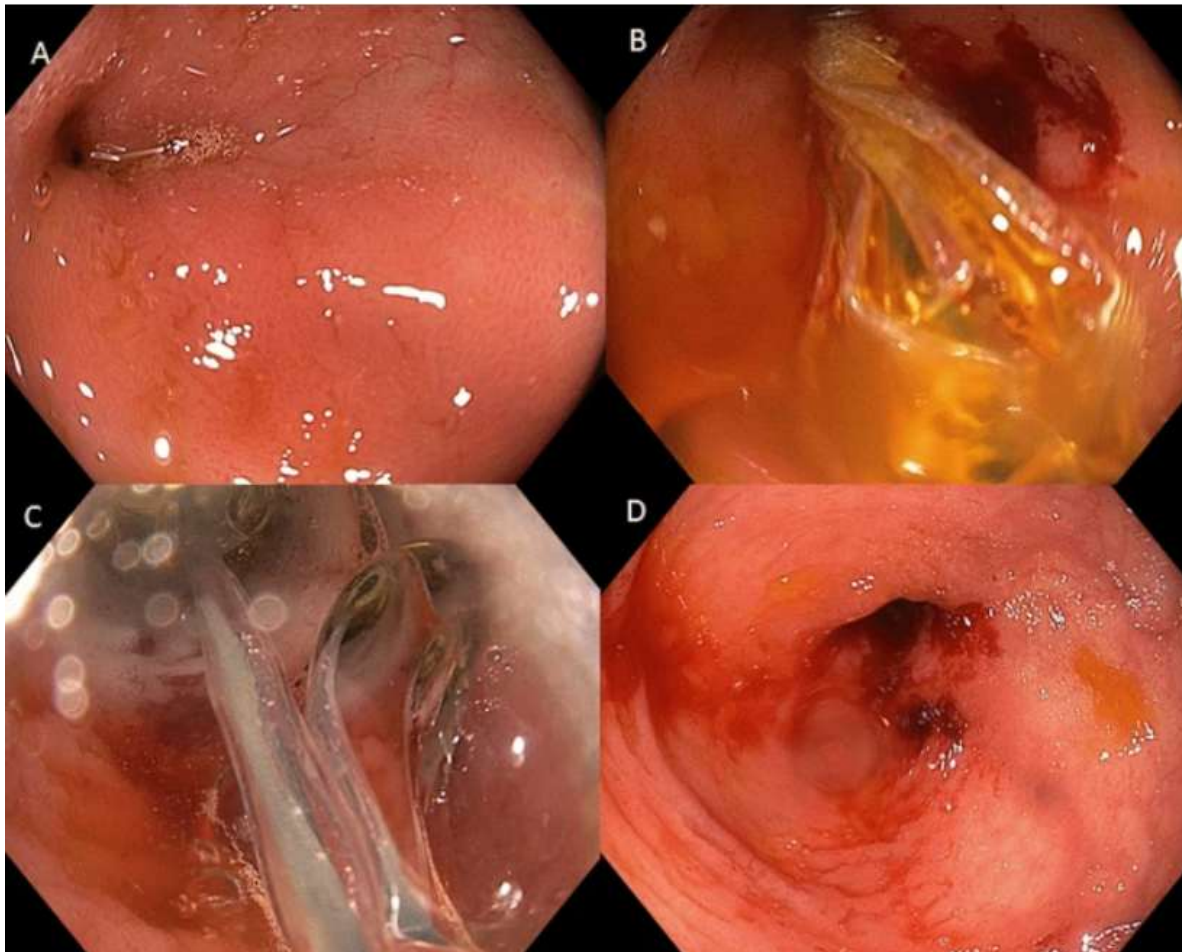
IBD-CD vs TB

	Favors Gastrointestinal Tuberculosis	Do not favor a particular diagnosis	Favors Crohn's Disease
Colonoscopic findings	Patulous ileo-cecal valve Circumferential or transverse ulcers	Ulcers Pseudopolyps Strictures Ulcerated narrowing	Aphthous ulcers Longitudinal ulcers Serpiginous ulcers Cobblestoning Skip lesions
Histopathology	Large granuloma Confluent granuloma Caseating granuloma Ulcer lined by histiocytes	Granuloma Chronic inflammation including distorted architecture Paneth cell metaplasia	Focally enhanced colitis Microgranuloma Sparse granuloma

Endoscopic dilatation of Fibrotic Strictures

- Feasible for **short fibrotic strictures**
- Controlled Radial Expansion using through-the-scope (**TTS-CRE**) balloon: Appropriate size balloon maintained at stricture for **30 seconds**.
- Sessions repeated **every 2 weeks** until **symptomatic relief** or final diameter of **15 mm** achieved

Jena, A. et. al, Frequency, outcomes, and need for intervention in stricturing gastrointestinal tuberculosis: a systematic review and meta-analysis. BMC Gastroenterol 2023



A Terminal ileal stricture. **B** Endoscopic through the scope balloon negotiated across the stricture. **C** Stricture dilatation. **D** Post dilatation

Jena, A. et. al, Frequency, outcomes, and need for intervention in stricturing gastrointestinal tuberculosis: a systematic review and meta-analysis. BMC Gastroenterol 2023

Conclusion

- **Detect** typical endoscopic lesions
- **Complement** other modalities for diagnosis of Intestinal TB
- Obtain **specimens** for histopathological and microbiological analysis
- **Endoscopic dilatation of strictures**

THANK YOU