

**Original article:**

## **Study of gastro intestinal tuberculosis and role of surgery in its management in Navi mumbai: analysis of 50 cases**

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### **Abstract**

Gastrointestinal tuberculosis is one of the commonest sites of extra pulmonary involvement. It is still the disease of the present , and has assumed much greater significance today in the background of a rising incidence of tuberculosis in association with HIV and emergence of MDR tuberculosis. Its protean clinical manifestations and varied complications continue to challenge the diagnostic acumen and therapeutic skills of all surgeons. Most of the studies in the literature are on abdominal tuberculosis as a whole, which to a certain extent is responsible for the current confused clinical presentation picture. Hence this study aims at a fresh look into Gastro intestinal tuberculosis as a separate entity with the following objectives in mind.

**Key words:** Gastro Intestinal Tract Tuberculosis, Abdominal Tuberculosis, Conservative Surgery

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### **Introduction**

.....there is always some little thing that is too big for us..... One of these little things, Mycobacterium tuberculosis has since early days been exacting a substantial toll of morbidity and mortality on Humanity in the form of Tuberculosis<sup>1</sup> Tuberculosis is a chronic granulomatous infectious disease, primarily affecting the lungs. However it is a systemic infection and may involve any organ. According to WHO estimates, a third of the worlds population is infected with tuberculosis, claiming more lives than any other infectious disease. Each year it causes an estimated 3 million deaths (6% of total deaths) worldwide, majority of which occur in developing countries. Because of the growing burden of TB, and the recognition that it is one of the most neglected health problems worldwide, in 1993 the WHO declared TB as ‘A global health emergency’. Indeed, although the metaphor of TB as “*The Captain of all men of death*” was thought to be reaching obsolescence, we are currently in a period of

resurgence of the disease. The incidence of TB cases which was on a steady decline since last 50 yrs, especially in the developed nations, has seen increases since early 1990s. This has been largely attributed to the emerging HIV epidemic, although MDR tuberculosis, neglect of control programs, immigration and other social changes have been important factors<sup>2</sup>. Gastrointestinal tuberculosis is a localized manifestation of this infectious disease being the 6th commonest form of extrapulmonary involvement. Its non specific and protean clinical manifestations cause intestinal tuberculosis to be confused with many other diseases especially Crohn’s disease and intestinal neoplasms. The symptoms and signs often quite vague and laboratory investigations and radiological findings are sometimes non-conclusive. There is no single feature which is diagnostic for Gastro intestinal tuberculosis. In case of any localized involvement of the structures of the abdomen the presenting clinical picture will mimic the disease of that organ only. It continues to challenge the

diagnostic acumen and therapeutic skills of the present day surgeon.

The Management of Gastrointestinal tuberculosis is still controversial. Surgical intervention which was frequently used in the past for diagnosis is not necessary and is reserved for complications such as obstruction, perforation, fistula, or a mass which does not resolve with medical therapy<sup>3</sup>. In most cases a trial of medical therapy should be undertaken prior to surgical intervention<sup>3</sup>. However complications can be fatal and may occur after initiation of antituberculous medications<sup>3</sup>. Many author advocate surgical management in intestinal obstruction due to TB as the obstructed lesion is often hypertrophic this form according to many authors, often responds badly to medical management<sup>4</sup>.

The Surgical treatment of intestinal tuberculosis too has passed through many phases, from the bypass procedures of the pre- antibiotic era to the radical surgeries such as Hemicolectomy and wide resection, followed by the more recent and more conservative, modified surgical procedures such as limited ileocecal resection, and Strictureplasties<sup>5</sup>.

### **Objectives**

To analyze and define the clinical features of Gastro Intestinal Tuberculosis.

To study the pathological features.

To evaluate the role of surgery and to choose procedures in management of this disease.

### **Methodology**

This Study on Gastro Intestinal Tuberculosis is a prospective study conducted at Dr. D.Y.Patil Hospital & Research Centre, Nerul, Navi Mumbai From August 2010 to October, 2012. About 50 patients with proven gastrointestinal tuberculosis admitted during this period formed the material for the study.

The diagnosis of the patients for inclusion into the study was based on a detailed clinical history taking, clinical

signs, investigations especially barium studies, Ultrasonography, Endoscopy & Per operative findings. In all cases, a definitive histopathological lesion characteristic of tuberculosis in the diseased Gastro intestinal segment or in the draining lymph node or a positive tissue biopsy culture for *M tuberculosis* was sought. However a favorable response to ATT in a case with lesions characteristic of TB in barium studies and per operative findings, too was considered adequate for inclusion into the study.

Other forms of abdominal tuberculosis, without definitive involvement of GI tract were not considered into the study group.

### **Study Design:**

All patients were clinically evaluated with meticulous history and physical examination and were investigated by available tests like Hb, Blood counts including TC,DC, ESR, Mantoux test , Chest X-ray, Abdominal X-ray & Abdominal Ultrasonography. Investigations such as Barium Contrast X-rays, Upper GI endoscopy ,Colonoscopic study, Abdominal laparoscopy and CT Scan were carried out in selected patients, as per requirement and depending on the mode of presentation.

Most of the patients presented with features of obstruction, either acute or sub acute, and the rest presented with features of peritonitis due to perforation or mass per abdomen or other Atypical features such as altered bowel habit, Chronic pain abdomen etc.

Those presenting with acute obstruction or with signs of perforation were immediately operated upon, on emergency basis. Those presenting with Sub acute obstruction or mass per abdomen or with atypical symptoms were subjected to further investigations . On clinical diagnosis of GI tuberculosis, were treated with ATT and then were either operated on elective basis or managed conservatively with continuation of ATT. Patients operated on elective basis received ATT for a

minimum of 2 weeks preoperatively and all patients (both postoperative & those on conservative management) included in the study received ATT for 6 months short course chemotherapy as per DOTS regimen.

All patients were followed up postoperatively for complications, for varied durations ranging from 2 yrs to 4 months.

Most of the earlier studies have focused on the Abdominal tuberculosis as a whole. However Gastrointestinal tuberculosis forms the bulk of what goes by as abdominal tuberculosis. While no purpose may be served by retaining the omnibus term, it is likely that the current confused clinical presentation picture may become less so if the several conditions are sorted out and dealt with separately<sup>6</sup>. Hence amidst all this controversies and confusions, this study aims at a fresh look into Gastrointestinal tuberculosis as a distinct condition, and at a better understanding of its clinical manifestations, diagnostic modalities and its management.

**Results**

During the period of July 2010 to October 2012 a total of 50 patients who were treated for Intestinal tuberculosis in Dr. D.Y. Patil Hospital & Research Centre, Nerul, Navi Mumbai were enrolled into the study. Of these 50 patients,

40 patients underwent surgery and the rest were managed conservatively. Based on the Mode of presentation and the chief presenting complaints, patients were subdivided into four groups. the largest group consisted of 32 pts(64%)who presented with *Obstruction*, of these 20 pts being acute and subacute in 12 pts. 12(24%) patients presented with complaints of *Mass per Abdomen*, 6(12%) patients and with *Perforation as shown in Figure 1*

symptoms such as pain abdomen, altered bowel habit, wt: loss etc..The results of this study have been analyzed and presented here.

Age and sex:

There were a total no of 50 patients who fulfilled the inclusion criteria. Of these the incidence of GI tuberculosis was almost equal among both sexes with 23 males and 27 females.

Age and presentation:

The mean age of presentation was 36.84 yrs. Patients who presented with mass had a lesser mean age of about 28.75yrs when compared to patients who presented with other modes of presentation. Patients who presented with perforation had the highest mean age of 38 yrs at presentation.

AGE	OBSTRUCTION	MASS	PERFORATION	TOTAL
Mean Age	36.84	28.75	38	34.53

SEX Vs MODE OF PRESENTATION.

AGE	OBSTRUCTION	MASS	PERFORATION	TOTAL
Male	13 (41%)	5 (42%)	3 (50%)	21 (42%)
Femal e	19 (59%)	7 (58%)	3 (50%)	29 (58%)
	32	12	6	50

#### CLINICAL HISTORY & SYMPTOMATOLOGY

Symptoms depended on the mode of presentation. Pain abdomen was the most common symptom seen in about 100% of patients. It varied in nature from dull aching to intermittent colicky pain. The next common symptom was loss of appetite 72% and longer duration in people presenting with mass per abdomen. Fever was seen in about 56% of people and was commonly of low grade. Figure 2.

There was a wide variation in duration of symptoms, ranging from 1 yr to 2 days.

#### CLINICAL SIGNS:

Abdominal distension, seen in 72% of the patients was the most common physical finding followed by Abdominal tenderness, seen in about 64% of the patients. Pallor was another common sign seen in about 62% of patients. Figure 5.

#### ASSOCIATION WITH PULMONARY TB:

Past history of Pulmonary tuberculosis was seen in 10 patients (20%), of which 2 was on ATT at presentation with resolved lung lesions on chest x ray. Rest had completed their ATT.

Active pulmonary TB was seen in 8 patients (16%) at presentation. Of these all patients had positive X ray changes and 6 were sputum +ve. 3 of these patients was a case of recurrence with h/o irregular ATT.

#### MODE OF MANAGEMENT:

Out of 50 patients who formed part of the study, 40 patients were operated upon, 22 patients (44%) on emergency basis and 18 patients (36%) electively. Rest of the 10 patients were managed conservatively with ATT. All the patients who were operated electively were subjected to thorough bowel preparation and received ATT preoperatively for a minimum of 2 wks. All the patients both postoperative & those on conservative management) included in the study received short course

chemotherapy for 6 months as per DOTS regimen. Figure 3

All patients presenting with perforation – 4 were operated on emergency basis. Similarly all patients who had a presenting symptom of Mass per abdomen - 12 were operated on elective basis.

Patients with intestinal obstruction, presented with mostly acute type of onset and had to be operated on emergency basis. Conservative mode of management was chiefly resorted to among those sub acute intestinal obstructions.

#### LAPAROTOMY FINDINGS:

Among the 40 patients, who underwent surgery, the most common gross pathological findings included Ileocecal masses and Strictures. A gross pathological finding of thickened, hypertrophic caecum and Ileum with or without enlarged draining mesenteric lymph nodes was considered as an Ileocecal mass, and these constituted 24 Pts, with majority of them presenting as obstruction – 12 Pts. 21 Patients presented with strictures and 18 of them presented as obstruction. Of these 21 Pts, 10 had Ileal strictures, 4 had Ileal + Jejunal strictures, 4 had only Jejunal strictures, 2 had Ileocecal junction strictures and 1 patient had Colonic stricture at sigmoid colon. The no of strictures per case, varied from 1 to 5. Figure 4

All the 6 patients who presented with perforation had a solitary perforation proximal to a tubercular stricture. 1 of these was a contained perforation with abscess. Many of these pts had additional nodal involvement in the form of enlarged mesenteric nodes- 24 pts, and Peritoneal involvement in the form of adhesions – 20 pts, tubercles – 17 pts and Ascitis – 2 pt.

#### SURGICAL PROCEDURES:

A total of 40 patients underwent surgery, of these 18 were elective and 22 were emergency procedures. Some of these patients underwent more than 1 procedure and

biopsy of Mesenteric lymph nodes draining the diseased segment was taken in almost all cases. Of the 25 cases with Ileocecal TB 14 underwent LLR, 7 underwent RHC and 1 underwent ileo transverse anastomosis. Figure 8 Adhesiolysis was usually carried out as a secondary procedure in about 8 patients.

**SITE OF DISEASE:**

Many cases had more than 1 site of involvement.

**HISTOPATHOLOGY:**

Caseating granuloma of the bowel	NO	PERCENTAGE
Caseating granuloma of the bowel	29	58
Non caseating granuloma of the bowel	21	42

Table No: 16 , Histopathology

Presence of a positive histopathology suggestive of Tb either in the diseased bowel segment or in the draining lymph node was the diagnostic criteria for inclusion into the study. Biopsy specimens were obtained in all patients either by endoscopy or preoperatively. In 29 of these patients Caseating granuloma (single or multiple) was seen in the diseased bowel. In the rest Non caseating granuloma was seen in the bowel, however in these patients histopathological findings suggestive of TB were seen in draining lymph nodes.

Patients with signs of Ileus beyond Post op day 3 were considered .

Paralytic Ileus was seen in about 13 patients(26%), out of which 11 had undergone emergency surgery.

Surgical site Infection was seen in 17 Pts( 34%), out of which 14 had undergone emergency surgery. Most were superficial infections except for 1 case of deep seated infection in the form of pelvic abscess.

The commonest site of disease in this study is the Ileocecal region constituting 50% of the cases. Next commonest site was Ileum – 37.5%.

**GROSS PATHOLOGY:**

The gross pathologic findings were based on endoscopic , per operative and operative biopsy specimen examination findings . the most commonest variety was the Ulcerative form seen in about 59% of the patients. Figure 9

Pulmonary complications like Bronchitis and bronchopneumonia were seen in 14 patients

( 28%). Anastomotic leak resulting in fecal fistula was seen in 3 patients, who had undergone segmental resection on emergency basis for perforation with stricture. 2 was a low out put fistula which resolved on conservative management. 2<sup>nd</sup> patient expired due to septicemia.2 patient developed recurrent obstruction due to bowel adhesions , however tubercular lesions had healed completely during reoperation.

Mortality was seen in 3 patients ( 6%) operated on emergency basis. Both were cases of perforation and had gone segmental resection. 1 of these had developed anastomotic leak and died of severe sepsis on POD 8. Second patient died on POD 2 due to aggravation of Pre op sepsis and pulmonary complications. No mortality was seen in patients undergoing elective surgery.

## Discussion

This study is an attempt to focus exclusively on the tuberculous affliction of the Gastrointestinal tract as it was reasoned appropriate, that the old and popular term, 'Abdominal Tuberculosis' should be phased out of usage, because it comprises several conditions such as tuberculosis of gastrointestinal tract, tuberculous peritonitis including tuberculousomentum and mesenteric tuberculous lymphadenitis. Gastrointestinal tuberculosis forms the bulk of what goes by as abdominal tuberculosis. While no purpose may be served by retaining the omnibus term, it is likely that the current confused clinical presentation picture may become less so if the several conditions are sorted out and dealt with separately<sup>6</sup>.

When the results of this study are analyzed against the backdrop of the available literature, few disparities are noticeable, which are attributable probably to the fact that most of the available data in the literature encompassed the abdominal tuberculosis as a whole and very few on GI tuberculosis in specific. In this study, patients were divided into 3 groups based on the mode of presentation for a better analysis and interpretation of the data. 64% of the patients presented with obstruction, 24% with mass, 12% with perforation. The incidence of intestinal obstruction due to tuberculosis ranges from 12% to 60%. Intestinal obstruction is known to be the most common complication of intestinal tuberculosis<sup>7,12</sup>. In India tuberculosis has been reported to be the cause in 3 to 20% of pts with intestinal tuberculosis<sup>9</sup> and 5 to 7% of all GI perforations<sup>10</sup>.

Ages ranged from 14 – 79 yrs, with majority of the patients in their 3<sup>rd</sup> decade (43.8%) or 4<sup>th</sup> decade (21.9%) with a mean age of presentation of 34.53 yrs. These results are comparable with other studies<sup>17,18</sup>. Those patients who presented with perforation had a higher mean age of presentation of 38 yrs, when compared to

other groups. Similarly those who had mass had a lesser mean age of 28.75 yrs at presentation.

Incidence among sexes was slightly higher among males with a female to male ratio of 1.13:1. Similar results were seen in the series of JC Vijet al<sup>7</sup> and FC Eggleston et al<sup>17</sup>. However there are many more studies which report either an equal incidence<sup>20</sup> or an higher incidence among females<sup>21</sup>. The females presented at a relatively younger age in comparison to males with 80% of them presenting in 2<sup>nd</sup>, 3<sup>rd</sup> or 4<sup>th</sup> decade in comparison to 42% of males. There was no significant difference in the mode of presentation among males and females.

Symptoms depended on the type of presentation. Pain abdomen was the most common complaint, varying from dull aching to colicky type, seen in 100% of patients. In almost all series, abdominal pain was the most common symptom, being present in 63%<sup>22</sup> to 100%<sup>12</sup>. Symptoms of Abdominal distension, vomiting and inability to pass flatus were almost exclusively seen in patients presenting with obstruction. Only 10 patients- 20% gave past history of pulmonary tuberculosis, of these all had received ATT and 2 patient was still on ATT. Active pulmonary TB was confirmed in 8 patients- 16% through sputum examination and radiology. 2 patient was a case of recurrence. The incidence of pulmonary TB in GI TB is highly varied in various series and was found to be nil<sup>13</sup>, 5.1%<sup>8</sup>, 30%<sup>19</sup>, 34%<sup>10</sup>. In a collective analysis of seven series on abdominal TB from different parts of the world, 700 out 935 (75%) chest roentgenograms were negative<sup>23</sup>. Physical findings too varied with the presentation, Abdominal distension being the commonest finding seen in 72% of patients. Distension was commonly of gaseous type in association with obstruction. In FC Eggleston's<sup>17</sup> series too, abdominal distension was the commonest finding – 41%. Increased Bowel sounds and visible peristalsis were almost exclusively seen in those presenting with obstruction.

Similarly rigidity and guarding were seen in almost all cases presenting with perforation.

Routine investigations revealed varying degrees of anemia, with hemoglobin% reduced in about 60%, and most having 8-10 gms%. Anemia is a common finding in all studies on GI TB varying from 64%<sup>24</sup> to 80%<sup>18</sup>. An ESR estimation showed elevated values in 91%, comparable to other series – 85%<sup>18</sup>. Barium Contrast study was done selectively in 18 patients who did not undergo emergency surgery. Of these Tuberculosis was diagnosed in 12 pts- 66%. Other studies reported a positivity of 61%<sup>11</sup>. However these findings can be non specific and mimic Crohn's disease or Ca caecum.

The endoscopic appearances of tuberculous lesions are fairly characteristic though not diagnostic. Aoki et al<sup>25</sup> were the first to describe the endoscopic features of tuberculous lesions. Hoshino et al<sup>26</sup> on reviewing several small series found 50% positive yield for endoscopic biopsies utilizing both histology and culture. In this series, colonoscopy was done in 18 patients. 6-8 biopsies were taken in all of them by well technique and microscopic lesions specific for GI TB were seen in 8 cases – 45% and yielded growth in 5 patients – 27%.

According to many authors , Intestinal tuberculosis most commonly occurs in the Ileocecal region<sup>11,27</sup> and Ulcerative or ulcero-constrictive form is the commonest gross pathological type. In this study too, Ileocecal TB was the commonest type accounting for 50% of the cases. Ileal lesions were seen in 38% of the cases & no cases of gastroduodenal TB were seen. The ulcerative type was the most frequently seen gross pathology, in about 60% of the patients. The type of lesion had some relationship with the site of involvement . In this study majority of the patients with Jejunal, Ileal and colonic disease had ulcerative/ ulceroconstrictive lesions, whereas majority of the patients with ileocecal tuberculosis had hypertrophic or ulcerohypertrophic

lesion. About 59% of the patients showed caseating granulomatous lesions in the diseased bowel, and the rest showed non caseating granuloma, and almost all of these patients had a caseating lesion in the draining lymph node.

Surgery is indicated in GI tuberculosis only in case of complications. Our series consisted predominantly of such cases presenting with various complications, chiefly influenced by the nature of cases referred to us, ours being a tertiary referral centre. Management of perforation is definitely surgical however, management of intestinal obstruction due to tuberculosis is controversial. Bhansali<sup>4</sup> advised vigilant and cautious conservative management with 6- hourly reassessment of the patient. If the obstruction does resolve, elective surgery is performed after 2-4 wks . Sherman et al<sup>28</sup> suggested that surgery is needed only if an obstruction persists, because 50% of their cases responded to medical management. Nonetheless, many authors advocate surgical management because the obstructed lesion is often hypertrophic . This form, according to many authors, often responds badly to medical management. The other advantage of surgical intervention is the availability of specimens for exact pathological diagnosis.

In our series, out of 50 patients, 22 patients underwent emergency surgery because of an unresolved acute obstruction or a perforation. 18 patients were operated on elective basis. This group chiefly consisted of those whose obstruction had resolved and those presenting with mass. 10 patients were treated conservatively on ATT.

When surgery is done, it must suit the pathological findings<sup>5</sup>. The surgical treatment of tuberculosis has gone through many phases. Bypassing the stenosed segment either by enteroenterostomy or by enterocolostomy was practiced in the pre antibiotic era. This practice has 2

main disadvantages; it is likely to produce a blind loop syndrome and the strictures in the remaining segments may produce fistulas or recurrent obstructions.

With the advent of the specific antituberculous drugs, tuberculosis of the intestine was treated in a more radical fashion either by right hemicolectomy with or without extensive removal of lymph nodes or by wide resection for intestinal tuberculosis<sup>30</sup>. These procedures had the advantages of eradicating the disease locally.

The extensive and often multiple procedures may not be tolerated by a patient, who is hypoproteinemic, anemic and toxic, or by a patient presenting with perforation. Moreover, the lesions are often widely spaced and not suitable for resection without causing significant loss of normal bowel<sup>5</sup>. Tuberculous perforations are usually associated with strictures<sup>16</sup>. These patients may not tolerate a single resection. Simple suture of the peritoneal cavity has limited application<sup>29</sup>.

Limited resection of the ileocecal region was advocated by Dutta Gupta<sup>14</sup> in 1958 and Sharma and Mehta<sup>15</sup> in 1964. It can be done through a relatively small incision and relatively less mobilization of the colon. It is safe, quick and relatively easy procedure, suitable for use in an emergency. These merits have been specifically emphasized by Singh et al<sup>16</sup>.

Tuberculous lesions of the small intestine with minimal obstruction should be left alone. They are unlikely to cause trouble. A segment of the intestine bearing multiple lesions is best treated by resection either end to end anastomosis provided the patient's condition permits<sup>5</sup>. In multiple lesions two criteria are used for selection of lesions for enteroplasty; i) if the lumen is reduced by half or more ii) the degree of proximal hypertrophy of the bowel<sup>5</sup>.

In this study too emphasis was laid on modified surgical procedures such as limited ileocecal resection and enteroplasties, however radical and bypass procedures

too were carried out in a few patients as per the demands of the clinical situation and per operative findings. Limited ileocecal resection was carried out in 19 patients -33.3%. Right hemicolectomy was carried out in 5 cases. Decision for right hemicolectomy was to some extent influenced by the involvement of ascending colon in a couple of cases. Perforation was treated by segmental resection in 2 cases as there was associated stricture, and by stricturoplasty in 3 cases after excising the perforation with a rhomboid incision. Stricturoplasty was done in 14 cases. Ileotransverse anastomosis was done in 4 cases as it was considered appropriate in view of the poor general condition and dense bowel adhesions.

Surgical site infection was the commonest complication occurring in 34% of the patients and 44% of these had been operated on emergency basis. This can probably be attributed to the emergency nature of the surgery and the rampant antibiotic resistant pathogens encountered in our set up. 3 patients developed anastomotic leak and fecal fistula, both were cases of perforation. 1 patient expired on POD 8 due to ensuing severe sepsis. The other patient had a low output fistula, and recovered on conservative management. The second patient who died was also operated for perforation, and the cause was aggravation of pre-op sepsis and multi organ failure. There was also a case of recurrent intestinal obstruction due to adhesions. He was treated with adhesiolysis.

Conservative mode of treatment with ATT was adopted in 10 patients, 8 with subacute obstruction and with mass in abdomen. All these patients have had complete recovery and are being followed up. Though medical management in tubercular affliction of GI tract is controversial, many studies have shown upto 50% response to medical management in the absence of obstruction or an acute abdomen.



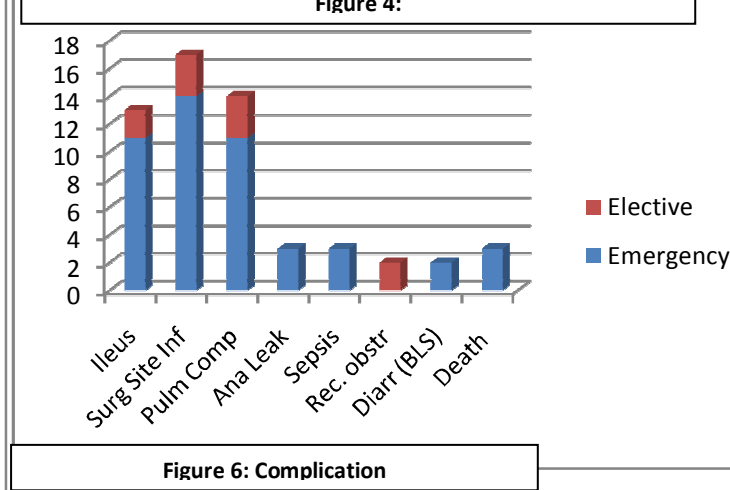
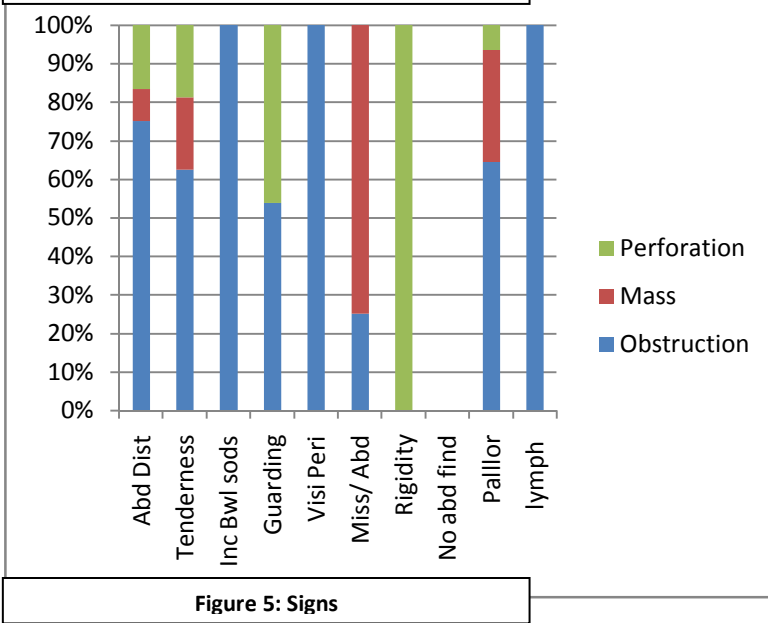
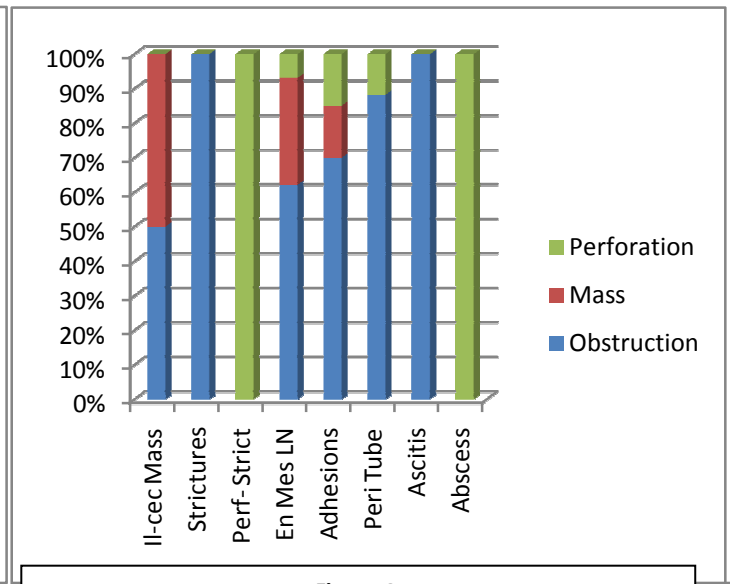
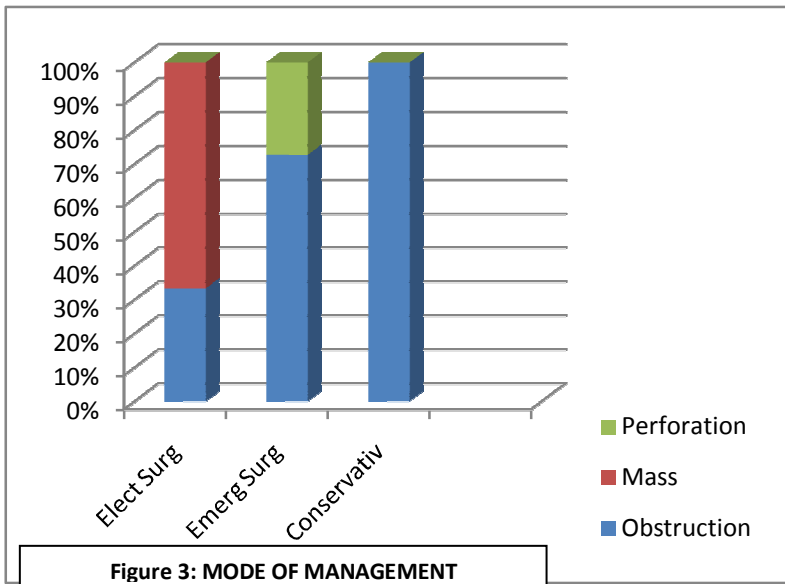
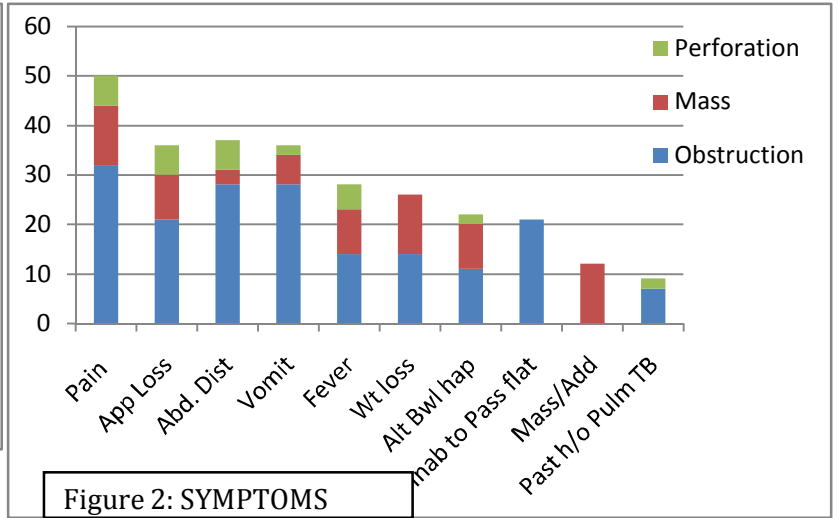
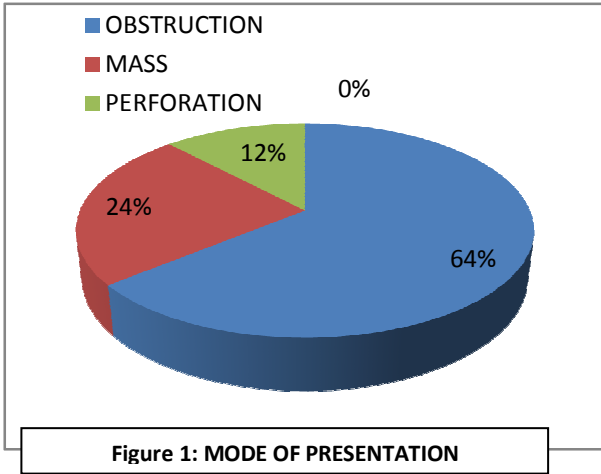
## Conclusion

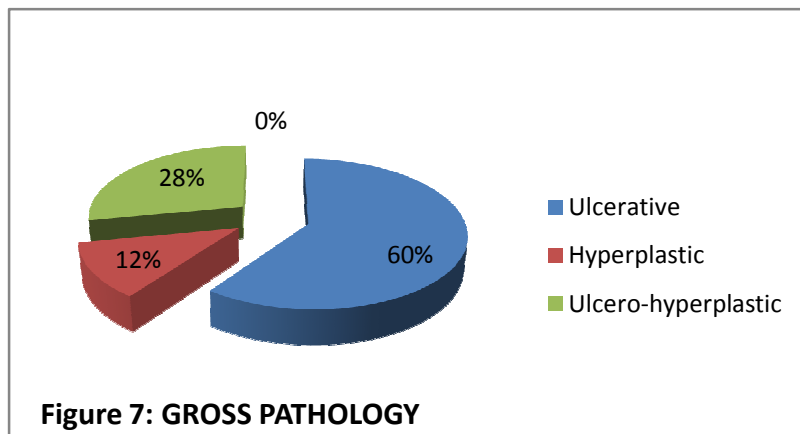
Fifty cases of Gastro intestinal tuberculosis have been studied in detail. An analysis of the data has enabled this study to arrive at the following conclusions. Tuberculosis of the GI tract is still very much a reality, with incidence on the rise , Especially HIV associated TB, MDR tuberculosis and the endemicity of the disease in our country contributing in a big way, there is a need for vigilance on the part of the surgeon in detecting and appropriately treating the disease. Incidence of GI tuberculosis is almost the same in either sexes, with a slight male predominance . It commonly affects the adults in their 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> decades. Notably the earning age group, hence can have economic implications. Also females are affected at slightly a younger age than males. Patients commonly present with one of the complications and the most common among them is intestinal obstruction. Patients who present with a mass are of slightly a higher age group and those presenting with a perforation are relatively younger. Clinical symptoms and signs vary with the mode of presentation. Abdominal pain is the most common complaint and abdominal distension is the most common finding. Patients presenting with vague symptoms and often without any obvious clinical signs form a considerable chunk , emphasizing the protean nature of the disease.

Patients commonly present with a poor general condition with anemia and hypoproteinemia, hence preferably radical and prolonged surgeries are better avoided in emergency set up and in elective surgeries these deficiencies should be adequately corrected prior to surgery for a better outcome. Co existence of other forms

of tuberculosis, especially pulmonary TB is considerable, hence all patients should be screened for the same. All patients with tuberculosis should also be screened for HIV infection as the Tubercular infection in immunocompromised AIDS patient is on the rise. Though accurate diagnosis of GI Tuberculosis still poses a problem, a combination of thorough clinical examination, serology, newer imaging modalities and especially endoscopy and diagnostic laparoscopy can increase the chances of arriving at a proper diagnosis. Ileocecal region is the commonest site of tubercular affliction and the ulcerative and ulcero-constrictive type of lesion is the commonest type of gross pathology.

Conservative mode of management is preferable in patients of GI involvement, not presenting with a acute abdomen, mass or significant luminal obstruction. Patients presenting with acute obstruction or perforation need emergency surgery, however if obstruction resolves by conservative management it is advisable to operate electively as the patients undergoing emergency surgery have significant long term as well as short term mortality and morbidity. Modified conservative surgical procedures are tolerated well, and suitable for both emergency as well as elective setup, with lesser operating time, tissue dissection and fewer complications. These when followed up with post op ATT give good disease cure rates. The incidence of fecal fistula is low despite the presence of active tuberculosis in the area of anastomosis, probably attributable to specific antibiotic therapy. Bypass procedures should be limited to patients in poor general condition in whom stricturoplasty is not possible and resection is deemed inadvisable. When done , two stage resection should be contemplated.





### Bibliography

1. Larry I Lutwick. Tuberculosis, a clinical handbook, 1<sup>st</sup> Ed, Chapman and Hall Medical 1995; 1.
2. Peter MS, Uzi MS. Tuberculosis. In: Thomas Strickland Ed, Hunters tropical medicine and emerging infectious diseases, 8<sup>th</sup> Ed, Philadelphia, W B Saunders 2000:77; 491.
3. David H Alpers, Loran Iain. Chronic infectious diseases of the small intestine. In: Tadatakayamada Ed, Textbook of Gastroenterology, Vol2 , 3<sup>rd</sup> Ed. Lippincott. 1999:73; 1650- 53.
4. Van Hai Nguyen. Intestinal obstruction due to tuberculosis. Asian J Surg 2002;25(2):145-8.
5. Pujari BD. Modified surgical procedures in intestinal tuberculosis. Br J Surg 1979; 66 : 180-1.
6. DR Nagpaul. Abdominal tuberculosis, Editorial. Ind J Tub 1992;39:4.
7. Paustian FF, Marshal J B. Intestinal Tuberculosis. In: JE Berk Ed., Bockus Gastroenterology, 4th Edition, Philadelphia: W B Saunders 1985; 2018 -36.
8. Ukil, A.C. (1942) Ind. Med. Gaz. 77, 613-620
9. Bhansali S.K, Sethna J.R : Intestinal Obstruction, A Clinical analysis of 348 cases. Indian Journal of surgery, 1970;32:57-70.
10. Bhansali SK. Gastrointestinal perforations .A Clinical study of 96 cases. J of Post Graduate Medicine 1967; 13:1-12.
11. Pritam Das, Shukla HS. Clinical diagnosis of Abdominal Tuberculosis. Br.J.Surg.1976; 63:941-946.
12. Bhansali SK. Abdominal Tuberculosis experiences with 300 cases. Am.J.Gastroenterol.1977; 67:324-27.
13. Hoon, J.R. *et. al.* (1950) Ileocaecal tuberculosis including a comparison of this disease with non specific regional enterocolitis and noncaseous tuberculated enterocolitis. Int. Abstr. Surg. 91, 417.
14. Dutta, Gupta. Intestinal Tuberculosis. Ind J.Surg 1958; 20:396.
15. Sharma GS, Mehta PC. Ileocecal resections .Ind J Surg 1964; 26:319-326.
16. Singh HN Roy SK. Surgical treatment of Ileocecal Tuberculosis-conservative versus radical resection, Ann surg. 1973; 39:706-709.
17. Eggleston FC, Madhu C, Deodhar, Ashutosh K. Surgery in abdominal tuberculosis – Results in 137 cases. Ind J Tuberc, 1983;30:139-144.
18. Mukerjee P, Rajor R, Abdominal tuberculosis. Ind J Tub, 1979;26:62-66.

19. VijJC ,MalhotraV, Choudhary, Nk Jain et al. A Clinicopathological study of abdominal tuberculosis. *Ind J Tub* 1992;39;21320.
20. NovisBH,Banks Marks IN. Gastrointestinal and Peritoneal tuberculosis. *S Afr MedJ*1973;47;365-72.
21. Prakash, Atm. (1978) Intestinal tuberculosis. 18 Year Review. *Ind. J. Surg.* Vol. 40, No. 2 & 3, p. 56-64.
22. Lambriander AL, Ackroyd N Shorey BA. Abdominal tuberculosis. *BJS* 1989;67;887-89.
23. Haddad FS, Ghossain A, Sawaya E, Nelson AR. Abdominal tuberculosis. *Dis Colon. Rect*;1987;30:24.
24. Sharma YR. Abdominal Tuberculosis- A study of 22 cases. *Kathmandu University Medical Journal.* 2003;2;137-41.
25. Aoki G, Nagasoko K, Nakae Y, et al. Fibro-colonoscopy diagnosis of intestinal tuberculosis. *Endoscopy*; 1975,7, 113
26. Hoshino M, Shibata M, Goto N et al. A clinical study of tuberculous colitis. *Gastroenterologica Japonica*; 1979,14, 209
27. Pimparker DD, Donde UM, Intestinal tuberculosis: Clinical and Radiological . *J AssocPhys India* 1974; 22:219-28.
28. Sherman S, Rohwedder JJ, Ravikrishan KP, Weg JG. Tuberculous enteritis and peritonitis: report of 36 general hospital cases. *Arch Intern Med* 1980; 140:506-8.
29. Prakash A, Acute tuberculous perforation of the small intestine . *Int J Surg* 1975;62;397-98.



