

A Prospective Study of Clinicopathological Profile, Diagnosis & Surgical Outcome of Abdominal Tuberculosis in a Tertiary Care Center

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Abstract

Background: Abdominal tuberculosis denotes involvement of the gastrointestinal tract, peritoneum, lymph nodes, and solid viscera. Tuberculous bacteria reach to the gastrointestinal tract via hematogenous spread, ingestion of infected sputum or contiguous spread from adjacent organs. The present study was undertaken to study the various clinicopathological manifestations of abdominal tuberculosis presented as acute abdomen. **Methods:** This study was conducted on 67 patients of acute abdomen diagnosed as a case of abdominal tuberculosis admitted in department of Surgery, Nehru Hospital attached to B.R.D. Medical College, Gorakhpur, from Jan 2015 to Dec 2015 & have given consent for the study. **Results:** This study demonstrates that intestinal TB is more common in males (M:F::2.1:1) & average age of presentation was 42.7 yrs. Abdominal pain, altered bowel habits, vomiting and fever were common symptoms, while common diagnosis were that of subacute intestinal obstruction, ileal perforation, adhesions, plastered abdomen and multiple bowel strictures, Diversion loop ileostomy & segmental resection were commonly done procedures, Pulmonary complications & surgical site infection were common complications. Hyperplastic type of intestinal Tuberculosis was more common than Ulcerative type in our study. **Conclusion:** Abdominal TB has spectrum of presentation from vague abdominal pain with mild fever vomiting and loss of appetite to subacute

intestinal obstruction, ileal perforation and plastered abdomen. Surgical intervention were needed whenever the presentation was like acute abdomen, Diversion loop ileostomy was commonly done procedure. On histopathological examination hyperplastic variety was more common than ulcerative type. Rest findings were comparable to the other studies done on abdominal tuberculosis.

Keywords: Acute Abdomen; Intestinal Obstruction; Intestinal Tuberculosis; Ileostomy; Perforation; Stricture.

Background

Tuberculosis has been one of the oldest diseases known to mankind. Even today, every year, 10.4 million new infections and 1.8 million deaths are caused by tuberculosis in 2015 according to CDC data [1], making it one of the top ten-killer diseases. It forms a major health hazard in the underdeveloped and developing countries like India despite the advent of anti tubercular chemotherapeutic drugs and near adequate control measures. Along with AIDS it has acquired the "Deadly duo" status. The development of multiple drug resistance is another area of concern. Tuberculosis is a social disease with medical aspects, described as the barometer of social welfare. Abdominal tuberculosis is a highly endemic entity. It is most common in areas where overcrowding and under nutrition predominate. In our country intestinal tuberculosis is the single largest causes of intestinal obstruction. The precise prevalence of tuberculosis of abdomen has not been determined due to lack of survey in random samples of population. Primary tuberculosis of intestine without antecedent or associated pulmonary tuberculosis is fairly

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common. Abdominal tuberculosis represents the sixth most frequent form of extra pulmonary tuberculosis after lymphatic, genitourinary, bone and joint, miliary and meningeal tuberculosis [7-9].

Abdominal tuberculosis denotes involvement of the gastrointestinal tract, peritoneum, lymph nodes, and solid viscera, e.g., liver, spleen, pancreas, etc. The gastrointestinal tract is involved in 65% to 78% of patients; associated peritoneal and lymph node involvement is common in these patients. Tuberculous bacteria reach the gastrointestinal tract via hematogenous spread, ingestion of infected sputum or contiguous spread from adjacent organs [2-10].

Perforation is a serious complication of abdominal TB associated with high morbidity and mortality [5,7,9,15-17]. The low incidence of tuberculous perforation is due to a reactive fibrosis of the peritoneum [7,15,16,18-20]. However, in recent years, intestinal perforation, which was relatively rare in the past, has been reported more frequently. The cause of this remains unknown. This common entity of protean manifestations and presentations with varied complication poses a challenge to the diagnostic & therapeutic skill and ingenuity of a surgeon.

The role of surgery in abdominal tuberculosis is:

- i. *Diagnostic:* For Etiopathological, microbiological diagnosis.
- ii. *Therapeutic:* For Complications like intestinal obstruction, perforation and peritonitis. Internationally, there is growing awareness about the significant morbidity and mortality associated with abdominal tuberculosis. On our national level, we need mass awareness and dissemination of knowledge about the medical and socio-

economic implications of this common public health issue.

The present study was undertaken to document the presentation of abdominal tuberculosis in our study population, analyze the profile of the patients, evaluate the various surgical treatment plan sand generate an evidence base that may prompt measures to address the issue more efficiently.

Methods

This study was conducted on patients of acute abdomen admitted in department of Surgery, Nehru Hospital attached to B.R.D. Medical College, Gorakhpur, from Jan 2015 to Dec 2015, total 67 patient of abdominal tuberculosis have been included in the study who have given oral & written consent for study. The diagnosis of intestinal tuberculosis was made on the basis of detailed history, physical examination, investigations and operative findings. A detailed record maintained for every patient. For conduction of study permission from ethical committee of institute was sought.

Results

Age

In the present study maximum 17 patients were in age group of 51-60years (25%), 7 patients in 10-20 years (10%), 13 were in age group 21-30 years (19%), 11 in 31-40 years (16%) and minimum 6 patients were in 41-50 years (8%), 13 patients were in elderly group >60 years (19%).

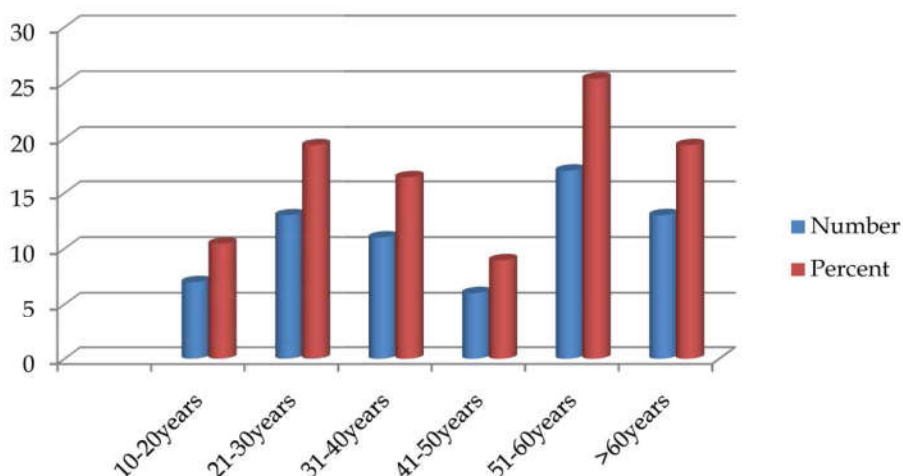
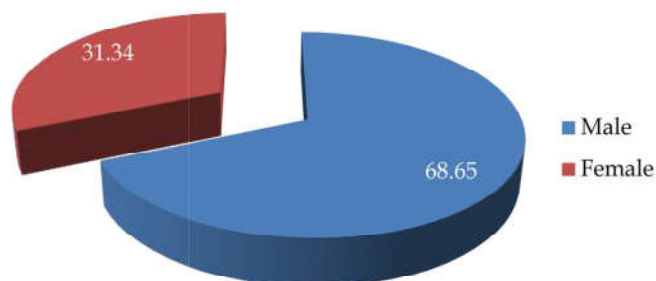


Chart 1: Distribution of abdominal Tuberculosis cases according to age groups.

Table 1: Distribution of patients according to different ages

Age	Number	Percent
10-20 years	7	10.44
21-30 years	13	19.40
31-40 years	11	16.41
41-50 years	6	8.95
51-60 years	17	25.37
>60 years	13	19.40
Total	67	100

Distribution of patients Abdominal Tuberculosis according to sex**Chart 2** distribution of patients of abdominal tuberculosis according to sex.**Table 2:** Distribution of patients according to sex

Sex	Number	Percent
Male	46	68.65
Female	21	31.34

Distribution According to Sex

In total 67 patients of abdominal tuberculosis 46 were male (68.65%) and 21 were females (31.34%) and male: female ratio was found to be 2.1:1

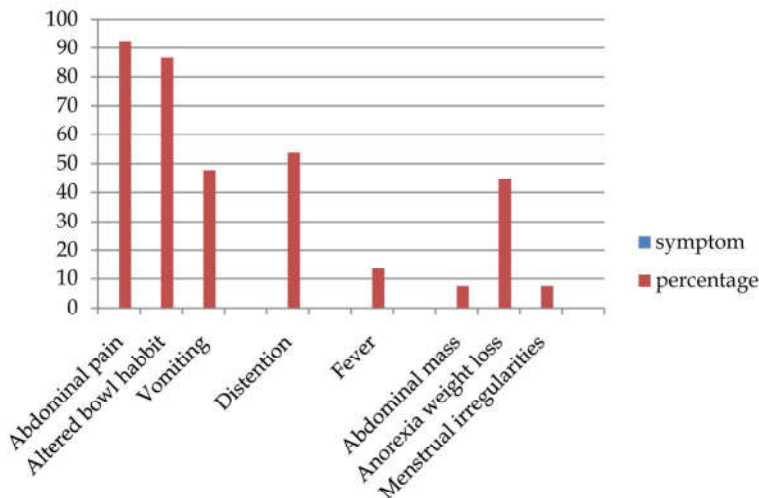
Symptomatology

In present series abdominal pain was the most common presenting complaint, present in 92 % of cases. Lower abdominal pain was the commonest followed by periumbilical and generalised abdominal pain. In most cases pain was described as colicky. Other common symptoms were vomiting seen in 47% of patients, Altered bowel habits, especially

constipation, were found in 86% of patients, diarrhoea was found in two cases. In the present series fever was present in 13% of cases; fever was mild to moderate, with evening rise of temperature. Abdominal distension was the presenting complaint in 53% of cases, which was generalised in ten cases and lower abdominal distension was seen in twelve cases. Anorexia and weight loss was found in 44% of cases, most of these cases were that of sub acute intestinal obstruction with duration of more than 2 months of complaints. Menstrual irregularities were a major complaint in 7% of cases in the present series. Graph 3 shows the most common symptoms in the present series.

Table 3: Distribution of patients according to symptoms

Symptom	Number	Percentage
Abdominal pain	62	92.53
Altered bowl habit	58	86.56
Vomiting	32	47.76
Distention	36	53.73
Fever	9	13.43
Abdominal mass	5	7.46
Anorexia weight loss	30	44.77
Menstrual irregularities	5	7.46



Graph 3: Symptoms

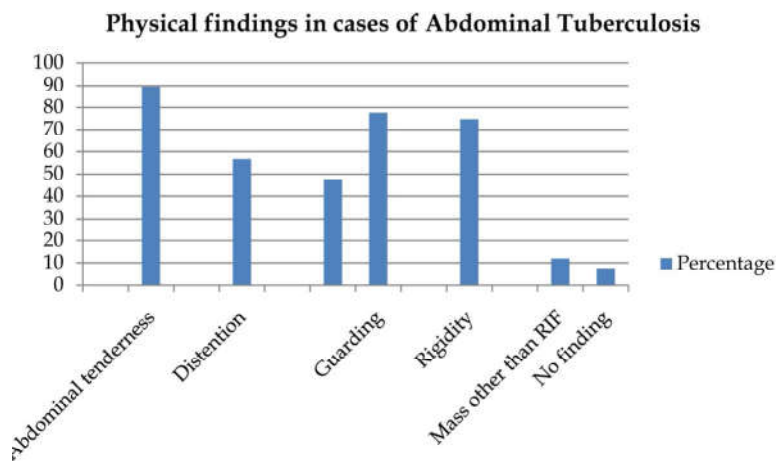
Physical Findings

As shown in Table number 4 and in Graph 4, in the present study abdominal tenderness was the most common finding being present in 89% of cases. Rebound tenderness was present in 14%, all of them were cases of perforation peritonitis. Abdominal distension was seen in 56% of cases, generalised distension was present in 10 patients and lower abdomen distension was found in 12 patients. Guarding and rigidity were present in 14% of cases and all of them were cases of hollow viscus perforation, and were all associated with rebound tenderness. In the present study, mass was found in 26% of cases, in most cases it was found in right iliac fossa and only one was in the right lumbar region. Hyperperistalsis was found in 18% of cases. Active Pulmonary Tuberculosis was found in four cases, one of them had extensive military mottling. No

significant physical findings were found in two (4%) patients.

Mode of Presentation

In the present series of 67 cases the most common diagnosis was that of subacute intestinal obstruction contributing 53% of the total, 26% patients of abdominal tuberculosis presented as perforation peritonitis. The preoperative diagnosis was more accurate in cases with ileocaecal mass and sub acute obstruction than in cases that underwent emergency laparotomy for acute intestinal obstruction or perforation peritonitis. 8% cases of abdominal tuberculosis presented with acute intestinal obstruction and 11% presented with mass per abdomen. Graph 5 shows various modes of presentations.



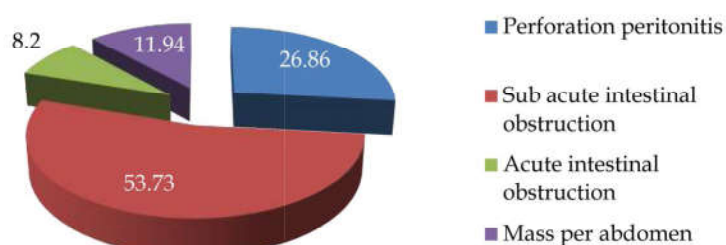
Graph 4: Physical Findings

Table 4: Physical Findings

Physical finding	Number	Percentage
Abdominal tenderness	60	89.55
Distention	38	56.71
Hyperperistaltic bowel sounds	32	47.76
Guarding	52	77.61
Rigidity	50	74.62
Mass other than RIF	8	11.94
No significant finding	5	7.46

Table 5: Mode of Presentation

Mode of presentation	Number	Percentage
Perforation peritonitis	18	26.86
Sub acute intestinal obstruction	36	53.73
Acute intestinal obstruction	5	8.20
Mass per abdomen	8	11.94

Mode of Presentation in cases of Abdominal Tuberculosis**Graph 5:** Mode of Presentation in cases of Abdominal Tuberculosis

Operative Findings

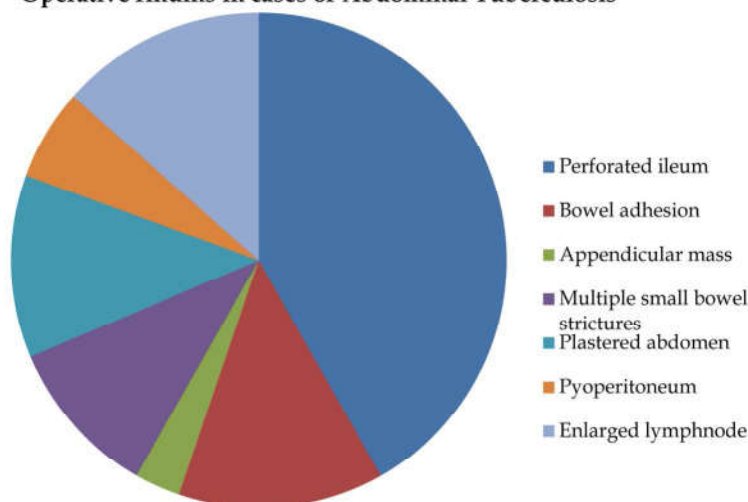
Because the present study done in emergency setting most patients presented with intestinal obstruction or perforation peritonitis. In the present series of 67 cases, fifty seven cases 94%, showed features of intestinal Tuberculosis in which 28 patients had ileal perforation single or multiple 9 patients had adhesions all over the bowel, 8 were cases of plastered abdomen secondary to peritoneal

tuberculosis, surgery was abandoned in these cases and simply drain was kept in peritoneal cavity and biopsy was taken. 7 patients had multiple small bowel strictures, 4 cases had pyoperitoneum & 2 had appendicular mass and total 9 cases had multiple enlarged mesenteric lymph nodes along with small tubercles scattered all over bowel. Most of the cases had multiple findings.

Table 6: Operative findings in cases of abdominal tuberculosis

Operative Finding	Number	Percent
Perforated ileum	28	41.79
Bowel adhesions	9	13.43
Appendicular mass	2	2.98
Multiple small bowel strictures	7	10.44
Plastered abdomen	8	11.94
Pyoperitoneum	4	5.97
Enlarged mesenteric lymph nodes	9	13.43
Total	67	100

Operative findings in cases of Abdominal Tuberculosis



Graph 6: Operative findings in cases of abdominal tuberculosis

Operative Management

In the present study, 59 cases underwent definitive procedure; one patient in the obstructive group had extensive matting of the bowel and obstruction., he had massive adhesions and probably from tubercular peritonitis, and was thought to be inoperable. Operation was abandoned and only biopsy was taken. The reason for surgery in most cases was either persistent pain with suspicion of tumoral lesion,

intestinal obstruction or preoperative diagnosis of perforation peritonitis. Most commonly performed procedure was diversion loop ileostomy in 28 patients (41%), segmental resection done in 6 patients (8.95%). In 2 patients right hemicolectomy was done, in 12 patients with ileal perforation, primary repair and proximal ileostomy done. Strictureplasty was done for 12% of cases; Adhesiolysis was done in 9 cases 13.43%.

Table 7: Surgical options

Surgical treatment	Number	Percentage
Loop ileostomy	28	41.79
Primary repair and proximal loop ileostomy	12	17.91
Adhesiolysis	9	13.43
Segmental resection	6	8.95
Right hemicolectomy	2	2.98

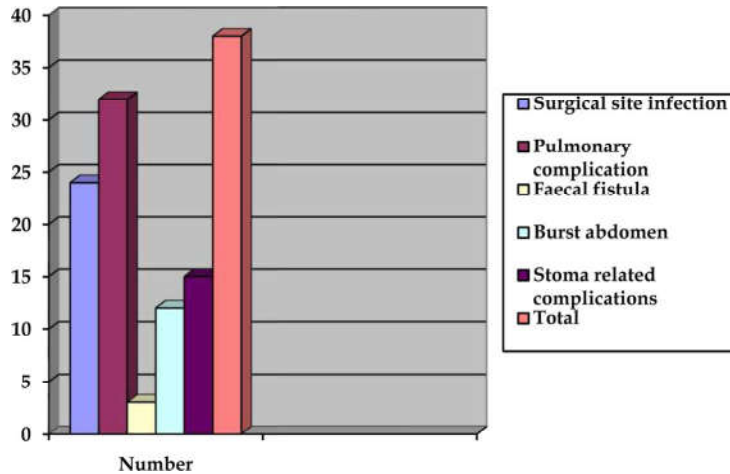
Complications

In total 67 patients of abdominal tuberculosis some or other post operative complication were present in 38 patients, 56% most of them having one or more complications. The most common complications was pulmonary complications present in 32 patients (84%), next most common complication was surgical

site infection present in 24 patients (63%), Other complications were stoma related complications in (39%), Burst abdomen in (31%) and faecal fistula in (7%) cases. 4 patients died with a mortality rate of (6%). Those who died following operation generally had multiple complications.

Table 8: Post operative complications in patients of abdominal tuberculosis.

Post Operative Complications	Number	Percent
Pulmonary complication	32	84.21%
Surgical site infection	24	63.15%
Stoma related complications	15	39.47%
Burst abdomen	12	31.57%
Fecal fistula	3	7.89%
Total	38	

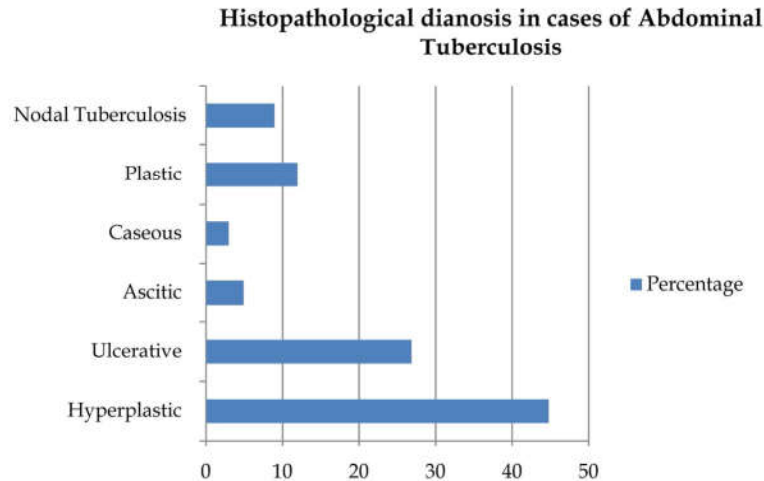


Graph 8: various post operative complications in cases of abdominal tuberculosis

Pathological Consideration

Most common pathological diagnosis was that of Hyperplastic type of intestinal Tuberculosis, in 44% of cases, of which 24 presented with features of intestinal obstruction and 6 presented with mass per abdomen. Ulcerative type of intestinal Tuberculosis was found in 26% of cases, twelve cases had ileal

perforation, six presented with intestinal obstruction, of which one had jejunal stricture and rest had ileal strictures and one case presented as mass per abdomen. Peritoneal involvement was seen in 13 case in which 3 cases were of ascitic type, 2 caseous type and 8 were plastic type.



Graph 9: Histopathological diagnosis in cases of Abdominal Tuberculosis

Table 9: Histopathological diagnosis

Site	Pathological diagnosis	Numbers	Percentage
Intestinal	Hyperplastic	30	44.77
	Ulcerative	18	26.86
	Ascitic	3	4.92
Peritoneal	Caseous	2	2.98
	Plastic	8	11.94
	Mixed	-	-
Mesenteric node	Nodal Tuberculosis	6	8.95

Discussion

Tuberculosis is still a highly prevalent disease in India like other developing countries of the world where malnutrition, overcrowding and poor sanitary conditions exist. Intestinal tuberculosis also represents a relatively common health problem. In this series 67 cases of intestinal tuberculosis with various symptoms and signs have been reported. The main focus of this study was the epidemiological observation, clinical manifestation, diagnosis and surgical treatment of patients with intestinal Tuberculosis. The results are analysed in comparison to various studies done on Abdominal Tuberculosis.

1. *Sex Incidence:* In the present series the M: F ratio was 2.1:1, while Bhansali. S.K [21] reported a ratio of 1:1, while Forrest C et al [23] reported a ratio of 1.28:1, M.B. Islam et al [25] reported a female preponderance with a ratio of 0.7:1.
2. *Symptomatology:* Pain abdomen was the commonest symptom in the present study, present in 90% of cases. In Forrest C et al series [22], it was present in 86% of subjects, while in M.B. Islam et al series [25] it was present in 83.3% of subjects. Altered bowel habits were the second most significant complaints in the present series, 52% cases had it as a presenting complaint. Forrest C et al [22] reported it to be present in 50% of cases, while M.B Islam et al [25] reported the symptom in 71.6% of cases in both the studies it was the second most common presenting complaint. The other common symptoms in the present series and series by Forrest C et al [22] and M.B. Islam et al [25] were distension, vomiting, mass per abdomen, fever and anorexia with weight loss.
3. *Physical Findings:* Abdominal tenderness was the most common sign in the present study was present in 56% of cases, while in Forrest C et al series [22], abdominal distension was the most common finding being present in 41% of subjects, distension was present in 48% cases in present series. Mass per abdomen was present in 26% of subjects in the present series, while it was present in 14% of cases in Forrest C et al series [22]. Other findings of hyperperistaltic bowel sounds, rigidity, guarding mass other than RIF were comparable in both the series.
4. *Diagnosis:* Diagnosis is difficult because of vague symptoms and signs with no pathognomic investigations. Das and Shukla [6] working in an endemic area reported that diagnosis was made only in 50% of cases. Forrest C et al [22] reported preoperative diagnosis was made in 69% of the

cases. In the present study correct preoperative diagnosis was made in 60% of cases, diagnosis was more often correct in sub acute intestinal obstruction or mass per abdomen, than in acute obstruction or atypical presentation.

5. *Operative Management:* In the present study nearly 9% of cases underwent Limited or segmental resection and nearly 3% cases underwent right hemicolectomy. As compared to the present study, in Forrest C et al series [22] 18% of the cases underwent Limited resection, while in M.B. Islam et al series [26] only 10% underwent Limited resection. In Forrest C et al series [22] and M.B. Islam et al series [25], 12% and 63.3% respectively underwent right hemicolectomy. Strictureplasty was done in 12% cases in present series, while it was done in 36% cases in Forrest C et al series [22], while only 3.3% patients underwent the same procedure in M.B. Islam et al series [25], ileotransverse bypass was done in 3% cases in the present series, while it was done for 18% cases in Forrest C et al series [22] and 16.6% cases in M.B. Islam et al series. Bhansali S.K [21] even suggested that bypass patient should be subjected to a secondary excisional procedure when conditions are favourable.
6. *Morbidity and Mortality:* In the present series operative morbidity was (38/67) 56.7%, wound infection was reported in 24 (63.15%) cases. Wound infection is common (Pujari, 1979) [24] Forrest C et al [22] reported a morbidity of 36%, while M.B. Islam et al [25] reported a morbidity of 8%. Mortality in the present series was low i.e. 4 (nearly 8%), all underwent emergency procedures, and no deaths were reported in elective cases. Only M.B. Islam et al [25] reported mortality lower than the present study, no cases died in their study. In Forrest C et al [22] series, it was 3% in elective surgery and 18% in emergency, while Bhansali S.K [21] reported it as 2% and 24% respectively. Follow up with six months of anti tubercular treatment gave excellent results in 90% of the patients after surgery.

Conclusion

In total 67 patients, In the present study maximum 30 patients were in age group of more than 50 year (44.7%), 20 patients in less than 30 year age group (29.85%) & 17 in 31-50years age group (25.37%). 46 were male 68.65% and 21 were females 31.34% and male: female ratio was found to be 2.1:1. Abdominal pain was the most common presenting complaint,

present in 92% of cases. Other common symptoms were, altered bowel habits in nearly 86% patients, (constipation more than diarrhea). Abdominal distension was the presenting complaint in 53% of cases, vomiting was seen in 47% of patients, fever was present in 13% of cases; most common diagnosis was that of subacute intestinal obstruction contributing 53% of the total and 26% patients presented as perforation peritonitis. 28 patients had single or multiple ileal perforation, 9 patients had adhesions, 8 were cases of plastered abdomen, 7 patients had multiple small bowel strictures, 4 cases had pyoperitoneum & 2 had appendicular mass and total 9 cases had multiple enlarged mesenteric lymph nodes along with small tubercles scattered all over the bowel.

Most commonly performed procedure was diversion loop ileostomy in 28 patients (41%), segmental resection done in 6 patients (8.95%), in 2 patients right hemicolectomy was done, perforation site primary repair and proximal ileostomy done in 12 patients, 17% Limited (segmental) resection, Strictureplasty was done for 12% of cases; Adhesiolysis was done for 2 cases. The most common complications was pulmonary complications present in 32 patients, next most common complication was surgical site infection present in 24 patients, other complications were stoma related complications, burst abdomen and faecal fistula. 4 patients died because of multiple complications, MODS.

Most common pathological diagnosis was that of Hyperplastic type of intestinal Tuberculosis, in 44% of cases, followed by Ulcerative type found in 26% of cases, twelve cases had ileal perforation, six presented with intestinal obstruction, of which one had jejunal stricture and rest had ileal strictures and one case presented as mass per abdomen. Peritoneal involvement was seen in 13 case in which 3 cases were of ascitic type, 2 caseous type and 8 were plastic type.

References

1. <https://www.cdc.gov/tb/statistics/default>
2. Marshall JB. Tuberculosis of the gastrointestinal tract and peritoneum. *Am J Gastroenterol* 1993;88:989-99.
3. Aston NO. Abdominal Tuberculosis. *World J Surg* 1997;21:492-9.
4. Kapoor VK. Abdominal tuberculosis: the Indian contribution. *Indian JGastroenterol* 1998;17:141-7.
5. Kapoor VK, Abdominal Tuberculosis. *Postgrad Med J* 1998;74:459-67.
6. Das P, Shukla HS. Clinical diagnosis of abdominal tuberculosis. *Br J Surg* 1976;63:941-6.
7. Bhansali SK. Abdominal tuberculosis: Experiences with 300 cases. *Am J Gastroenterol* 1977;67:324-37.c
8. Prakash A. Ulcero-constrictive tuberculosis of the bowel. *Int Surg* 1978;63:23-9.87.
9. Horvath KD, Whelan RL. Intestinal tuberculosis: Return of an old disease. *Am J Gastroenterol* 1998;93:692-6.
10. Tandon HD. The pathology of intestinal tuberculosis and distinction from other diseases causing stricture. *Trop Gastroenterol* 1981;2:77-93.
11. Paustian FF, Bockus HL. So-called primary ulcerohypertrophic ileocecal tuberculosis. *Am J Med* 1959;27:509-18.
12. Prakash A, Tandon HD, Nirmala L, Wadhwa SN, Prakash O, Kapur M. Chronic ulcerative lesions of the bowel. *Indian J Surg* 1970;32:1-14. .
13. Tandon HD, Prakash A. Pathology of intestinal tuberculosis and its distinction from Crohn's disease. *Gut* 1972;13:260-9. .
14. Howell JS, Knapton PJ. Ileocaecal tuberculosis. *Gut* 1964;5:524-9.
15. Talwar S, Talwar R, Prasad P. Tuberculous perforations of the small intestine. *Int J Clin Pract* 1999;53:514-8.
16. Seabra J, Coelho H, Barros H, Alves JO, Rocha-Marques A. Acute tuberculous perforation of the small bowel during anti-tuberculosis therapy. *J Clin Gastroenterol* 1993;16:320-2.
17. Wig JD, Malik AK, Chaudhary A, Gupta NM. Free perforations of tuberculous ulcers of the small bowel. *Indian J Gastroenterol* 1985;4:259-61.
18. Dhar A, Bagga D, Taneja SB. Perforated tuberculous enteritis of childhood: A ten year study. *Indian J Pediatr* 1990;57:713-6.
19. Chaudhary SK. The perforation of tuberculous lesion of the intestine is extremely rare. *J Indian Med Assoc* 1997;95:59-63. .
20. Arunabh AS, Kapoor VK, Chattopadhyay TK. Tuberculous perforations of the small intestine. *Indian J Tuberculosis* 1986;33:190-1.
21. Bhansali S.K.; Abdominal Tuberculosis: Experience with 300 cases; *Am. J. Gastroenterol*; 1971;67:324-337.
22. Forrest C Egleston et al Surgery in abdominal Tuberculosis—results in 137 cases: *Ind. J, Tub.* 1983; 30:139.
23. Prakash, A: Ulcero-Constrictive Tuberculosis of the Bowel: *Internat'l Surg.* 1975;63:23-29.
24. Pujari, B.D.: Modified Surgical Procedures in Intestinal Tuberculosis: *Br. J. Surg.* 1979;66:180 181.
25. M.B.Islam et al, Clinicopathological study of abdominal tuberculosis and its management *TAJ: Journal of Teachers Association* 1997-98.