# Prevalence of Tubercular Perforation in Acute Abdomen

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## ABSTRACT

**Background:** Tuberculosis is an important cause of morbidity in Pakistan. Abdominal Tuberculosis is a great mimicker and is difficult to diagnose.Most of the patients with abdominal tuberculosis presents with acute abdomen. **Objective:** This study aims to document the prevalence of tuberculous gut perforations in patients of acute abdomen. The study also discusses the indications and extent of surgical intervention. **Study design:** This was randomized prospective study of 247 patients who presented with acute abdomen. **Settings:** Surgical Unit of Sheikh Zayed Hospital, Rahim Yar Khan. **Period:** 2 years from 1st May 2014 to 30th April 2016. **Methodology:** Patients of abdominal trauma both blunt and penetrating were excluded from the study. Patients were mostly admitted through the Casualty department. A specially designed proforma was filled in for every patient. Parameters studied included age, sex, socio-economic condition, past history of TB, family history, medical history and surgical history. Macroscopic appearance of abdominal tissues during surgery suggested the diagnosis of tuberculosis. The diagnosis was confirmed by histopathology. All patients were subsequently treated with a full course of antitubercular drugs (ATD). Patients were followed up for six months. **Results:** 247patients presented with acute abdomen with male prevalence (male to female ratio 2.5:1). 40 patients were diagnosed as abdominal tuberculosis with female to male ratio of 1.85:1. There were 17 cases of tuberculous gut perforations. Different surgical procedures done in patients of tuberculous gut perforations. Most of postoperative complications were seen in patients of tuberculous gut perforations and patients developed more than one complications Patients of tuberculous gut perforations carried high morbidity and mortality rate of 35.29%. **Conclusion:** Abdominal Tuberculosis is very difficult to diagnose and diagnosis is often delayed till an acute abdomen is presented. In our area tuberculous gut perforations is more common due to delay in diagnosis and low socio-economic status. Almost all patients needed surgical intervention. Irrespective of surgery, all patients of abdominal tuberculosis require a full ATT.

**Keywords:** Tuberculosis, Acute abdomen, Gut perforations.

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## INTRODUCTION

Intra-abdominal tuberculosis is very common in the developing world. The incidence is however rising in areas of the developed world as a consequence of migration and immunosuppression where Mycobacterium avium-intracvellulare is becoming increasingly prevalent with widespread increase in HIV coinfection.[1,2]

In developing countries it is a major health problem.[3] Approximately 95% of new cases and 98% of deaths occur in the under developed countries.[4] Malnutrition, unhygienic living, overcrowding and lack of adequate medical care are the factors favoring increased incidence of tuberculosis.[5]

Abdominal Tuberculosis includes tuberculous infection of gastrointestinal tract, mesentery, lymph nodes and omentum, the peritoneum and related solid organs such as liver and spleen.[6]

It can occur as a primary disease or develop secondary to pulmonary tuberculosis. It carries significant morbidity and mortality.[7]

Abdominal TB typically presents itself in three major forms as well as with several less common symptoms: (I) the ascitic type, (II) the plastic type, which causes intestinal obstruction, and (III) the glandular type, which involves the mesenteric nodules. It is less common to observe tuberculous strictures, nodules, fistulae, or an interconnected association of these manifestations.[8] There are several complications involving intestinal TB, including bowel obstruction (31.7%), intestinal perforation (4.9%), enterocutaneous fistula (2.4%), and small bowel volvulus resulting from mesenteric

lymphadenitis (2.4%).[9] Free intestinal perforation is an uncommon complication of intestinal TB due to a reactive thickening of the peritoneum and subsequent adhesion formations with surrounding tissues.[10] It accounts for 1-10% of abdominal TB cases and has a poor prognosis, with a mortality rate higher than 30%.[10]

## METHODOLOGY

**Study Design:** This randomized prospective study.
**Place of Study:** Surgical Unit-I, Sheikh Zayed Medical College Hospital, Rahim Yar Khan.
**Duration of Study:** 1st May 2014 to 30th April 2016
**Methods:** 247 patients with history of acute abdomen. Patients of abdominal trauma both blunt and penetrating were excluded from the study. Patients were mostly admitted in emergency through the Casualty department. A specially designed proforma was filled in for every patient. Parameters studied included age, sex, socio-economic condition, family history and medical history. Assessment of the patients was done by a detailed history and clinical examination. Investigations including Complete Blood Count and ESR, Serum Electrolytes, Urea, Creatinine and Blood Sugar were done. X-ray Chest and plain X-ray abdomen, erect and supine including both domes of the diaphragm, and Ultrasound of the abdomen were also performed. Blood was arranged after grouping, cross matching and the screening. All patients were initially resuscitated by correction of fluid and electrolytes imbalance, insertion of nasogastric tube, Broad spectrum antibiotics and analgesics. After initial optimization and anesthetist's opinion, the Patients were operated. During surgery macroscopic appearance of the intestine, mesentery, regional lymph nodes suggested the diagnosis of Abdominal Tuberculosis. Different operative procedures were performed depending upon site of the disease. These operative procedures were recorded. Specimen for histopathology were taken from three sites, i.e., parietal peritoneum, mesenteric lymph nodes and resected segment of the intestine. Final diagnosis and postoperative treatment was dependent on the operative findings and histopathological confirmation. No specimen was sent for culture as facility was not available locally. Histopathological examination was performed in Pathology Department of Sheikh Zayed Medical College/ Hospital, Rahim Yar Khan. The post-operative stay of the patient was recorded regarding duration and any complication. After histo-pathological confirmation, anti-tubercular drugs were started. All the patients were investigated for tuberculosis elsewhere in the body. Patients were followed for period of six months.

## RESULTS

A total of 247 patients with acute abdomen were included in study. Their ages ranged from15 -65 years with mean age of 27.5 years.163 patients with acute abdomen were below 40 years. Out of 247 patients 155 were male and 92 were females with male to female ratio of 2.5:1. (Table 1)

**Table 1: Age distribution in acute abdomen**

| | Age in years | Frequency | Percentage |
|---|---|---|---|
| 1 | 15-20 | 75 | 30.36% |
| 2 | 21-30 | 74 | 30% |
| 3 | 31-40 | 40 | 16.19% |
| 4 | 41-50 | 9 | 3.64% |
| 5 | >50 | 49 | 19.83% |
| Total | | 247 | 100% |

Out of 247 patients 40 patients were diagnosed as a case of abdominal tuberculosis. 28 patients were below the age of 30 years and 12 were above age of 30 years. The disease was predominant in females (26) as compared to male (14) with female to male ratio of 1.85:1. In abdominal tuberculosis bowel perforation was the most common finding 17 (42.5%) followed by adhesive obstruction 15 (37.5%), ileo-cecal mass 3 (7.5%), strictures 5 (12.5%). (Table 2)

**Table 2: Age distribution in patients of abdominal tuberculosis**

| | Age | Number of patients | Percentage |
|---|---|---|---|
| 1 | 15-20 | 15 | 37.5% |
| 2 | 21-30 | 13 | 32.5% |
| 3 | 31-40 | 4 | 10% |
| 4 | 41-50 | 4 | 10% |
| 5 | >50 | 4 | 10% |
| | Total | 40 | 100 |

Majority of patients with abdominal tuberculosis belong to poor and lower middle class groups. The

most common symptom was abdominal pain in patients with acute abdomen as shown in table 3.

### Table 3: Symptoms of patients

| Symptoms | No | percentage |
|---|---|---|
| Abdominal pain | 247 | 100% |
| Abdominal distension | 197 | 79.75% |
| Constipation | 172 | 69.63% |
| Vomiting | 100 | 40.48% |
| Diarrhea | 25 | 10.12% |
| Fever | 40 | 16.19% |
| Weight loss | 45 | 18.21% |
| Night sweats | 25 | 10.12% |

On examination abdominal distension was present in all patients, abdominal tenderness in 185 (74.89%) patients, abdominal rigidity in 140 (56.68%) patients. Straight X-ray of abdomen in erect posture in patients of acute abdomen revealed multiple fluid and gas levels in (49.19%) patients while pneumoperitoneum was found in about (40.81%) patients of cases. Ultrasonography showed thickened bowel loops, enlarged mesenteric lymph nodes, ascites, ileocaecal mass suggestive of Abdominal Tuberculosis. After resuscitative measures surgery was performed in all patients through midline incision. Following were the findings on laparotomy and causes are shown in following table 4.

### Table 4: Findings on laprotomy for acute abdomen

| | Findings | Frequen -cy | Percenta -ge |
|---|---|---|---|
| 1 | Gastric and duodenal ulcer perforations | 67 | 27.12% |
| 2 | Ileal perforations(tuberculous and typhoid | 17+30 = 47 | 19.02% |
| 3 | Perforated appendix | 44 | 17.8% |
| 4 | Obstructed hernias(inguinal,paraumblical and incisional) | 30 | 12.14% |
| 5 | Adhesions obstruction (tuberculous and benign post-operative) | 15+15 = 30 | 12.14% |
| 6 | Vovulous | 10 | 4.04% |
| 7 | Strictures | 10 | 4.04% |
| 8 | Mesenteric ischemia | 6 | 2.42% |
| 9 | Ileocecal mass | 3 | 1.21% |

Final diagnosis was made after histopathology reports. The most common cause of acute abdomen in our study was duodenal and gastric ulcer perforations 67 (27.12%) followed by Perforated appendix 44(17.8%), enteric perforation 30 (13.60%) and tuberculous bowel perforation 17(6.88%), postoperative adhesive bowel obstruction 15(6.07%) (tuberculous bands / adhesions / coccon 15(6.07%), strictures 10(4.04%) and ileocecal mass 3(1.21%). In cases of tuberculosis, on laparotomy the predominant site of involvement was terminal ileum and ileo caecal region followed by proximal ileum and jejunum. The pathological changes demonstrated on laparotomy included hypertrophic variety of ileocaecal tuberculosis, single or multiple sites of intestinal perforation, multiple small intestinal strictures, mesenteric lymphadenopathy with presence of caseous tubercles and abdominal cocoon. Out of 17 patients with tubeculous bowel perforation, 5 patients had single perforation with strictures, 5 patients had single perforation without strictures and 7 patients had multiple perforations with no stricture.

### Table 5: Diagnosis

| | Disease | No of patients | Percentage |
|---|---|---|---|
| 1 | DU/Gastric ulcer perforation | 67 | 27.12% |
| 2 | Perforated appendix | 44 | 16.32% |
| 3 | Abdominal tuberculosis | 40 | 16.19% |
| 4 | Enteric perforation | 30 | 12.14% |
| 5 | Obstructed hernia | 30 | 12’14% |
| 6 | Benign adhesions(postoperative) | 15 | 6.07% |
| 7 | Vovulous of gut | 10 | 4.04% |
| 8 | Mesenteric ischemia | 6 | 2.42% |
| | Total | 247 | 100% |

Among all cases of acute abdomen, 40 patients had abdominal tuberculosis on the basis of operative finding and histopathology. Operative findings and site of involvement of intestinal tuberculosis is shown in table.

**Table 6: Operative findings in intestinal tuberculosis**

| | Disease | Patients | percentage |
|---|---|---|---|
| 1 | Ileocecal hyperplastic TB | 3 | 7.5% |
| 2 | Single/multiple perforations | 12 | 30% |
| 3 | Strictures without perforation | 5 | 12.5% |
| 4 | Strictures with perforation | 5 | 12.5% |
| 5 | multiple adhesions between bowel loop and abdominal wall | 11 | 27.5% |
| 6 | Mesenteric lymphadenopathy with caseous tubercles | 4 | 10% |
| | Total | 40 | 100% |

In cases of abdominal tuberculosis following procedures were performed.

**Table 7: Procedures in abdominal tuberculosis**

| | Procedures | Operative findings | |
|---|---|---|---|
| 1 | Adhenolysis and mesenteric lymph node biopsy | Tuberculous adhesion obstruction | 15 |
| 2 | Ileostomy | Ileal Perforation/Perforations without stricture | 17 |
| 3 | Right hemicolectomy | Ileocecal mass | 3 |
| 4 | Stricturoplasty | Tuberculous strictures | 5 |

Ileostomy was the most common procedure performed in abdominal tuberculosis. Patients of acute abdomen were given antibiotics postoperatively. Patients with intestinal TB were started ATT postoperatively. Patients were followed up for 6 months. Complications were recorded.

**Table 8: Complications of acute abdomen**

| | Diseases | Wound infection | Intra-abdominal abscess | Abdominal dehisence | RTI | Fistula |
|---|---|---|---|---|---|---|
| 1 | TB Adhesion obstruction | 5 | | | | 1 |
| 2 | TB Ileocecal mass | | | | | |
| 3 | Tuberculous gut strictures | | | | | |
| 4 | Tuberculous gut perforation | 7 | 3 | 3 | 3 | 6 |
| 5 | DU/Gastric ulcer perforations | 7 | | 2 | 3 | 2 |
| 6 | Enteric gut perforation | 6 | 2 | 2 | 2 | 3 |
| 7 | Obstructed/strangulated hernias | 3 | | | | |
| 8 | Perforated appendix | 6 | 2 | | | |
| 9 | Volvulous | | | | | |
| 10 | Benign postoperative adhesion and band | | | | | |
| 11 | Mesenteric ischemia | 2 | | | | |
| | Total | 36 | 7 | 7 | 8 | 12 |

The most common complication seen was wound infections in 36 patients followed by fistula formation in 12 patients. The most common complications were seen in patients of tuberculous gut perforation and patients developed more than one complications. Mortality rate was high in patients of tuberculous gut perforations. Out of 17 patients with tuberculous gut perforations, 6(42.5%) patients were expired.

## DISCUSSION

Tuberculosis is a common chronic inflammatory disease in the developing countries. The abdominal form of tuberculosis is the second commonest extra pulmonary form of the disease.

The pathogenesis of involvement of abdominal contents and coverings by mycobacterium tuberculosis has not been fully explained. However poor nutritional status with low socio-economic order, lack of health facilities and poor pasteurization of milk have been considered to contribute greatly to this problem.[12]

Tuberculous peritonitis appears to be more common in females than in males.[13] This observation was also made in our study with female to male ratio of 1.85:1. The increase frequency of female preponderance was reported not only in local Pakistani literature[14] but also in western literature.[12] Tuberculosis in females commonly reaches the peritoneum through tubal infection and attacks the tubes during the sexually active period of life but in our socioeconomic set up poverty and male dominant society also had major contribution because diet of female is relatively deficient both quantitatively and qualitatively.[13]

Abdominal TB is a disease that predominantly affects young adults.[15] Two-thirds of all cases involve patients between 21 and 40 years of age. In our study 28 patients of Abdominal TB were below 30 years. In the majority of cases, constitutional symptoms are present, including fever (40-70%), pain (80-95%), diarrhea (11-20%), constipation, alternating constipation and diarrhea, weight loss (40-90%).[16]

Many papers published on abdominal TB emphasize the difficulty of diagnosing this enigmatic pathology. Unfortunately, the tests that clinicians and surgeons rely on are often not sufficiently conclusive to guarantee a reasonably definitive diagnosis. The primary problem is not diagnosing the intestinal perforation, as this is often straightforward enough. There are several complications involving intestinal TB, including bowel obstruction (31.7%), intestinal perforation (4.9%), enterocutaneous fistula (2.4%), and small bowel volvulus resulting from mesenteric lymphadenitis (2.4%).[9] Free intestinal perforation is an uncommon complication of intestinal TB due to a reactive thickening of the peritoneum and subsequent adhesion formations with surrounding tissues.[10] It accounts for 1-10% of abdominal TB cases and has a poor prognosis, with a mortality rate higher than 30%.[11] In our study prevalence of tuberculous perforations is 17 (6.88%) and mortality is 35.29% Surgical treatment of tuberculous perforations is rather controversial. Although pharmacological treatment remains the central pillar of abdominal TB.[17] However, direct closure of the perforation with or without bypass is generally associated with poorer results. Resection and anastomosis is therefore recommended,[18] especially if combined with postoperative anti-tubercular therapy.[19] However, regardless of the surgical procedure, the mortality rate is relatively high, ranging from 30% to 60%.[18] In our study mortality was 35.29%.

The most common postoperative complications were respiratory tract infections followed by wound infection which was treated with favorable response. But in our study wound infection was high. However, three patients had an anastomotic leak which later lead to septicemia, multi organ failure & death. Similar complications have been described by other authors. The mortality is more or less the same as reported by most authors.[20]

## CONCLUSION

Abdominal Tuberculosis is very difficult to diagnose and diagnosis is often delayed till an acute abdomen is presented. In our area tuberculous gut perforations is more common due delay in diagnosis and low socio-economic status. Almost all patients needed surgical intervention. Irrespective of surgery, all patients of abdominal tuberculosis require a full ATT. Early diagnosis is the key to the success.

## REFERENCES


1. William N.S, Bulstrode C.J.K andO'Connell P Ronan (editors).Tuberculous Peritonitis. Bailey and love's short practice of surgery. 26th : 2013; 993-994.
2. Farooq T, Rashid MU, Nasir M, Mustafa G, Farooq A. Incidence of Abdominal Tuberculosis in 186 cases of Acute Abdomen presenting in our Surgical Emergency Department. APMC. 2010;4(1):28-32.
3. Gomez JE and McKinney JD. Tuberculosis persistence, latency and drug tolerance. Tuberculosis 2004;84:29-44.
4. Ducati RG, Ruffino NA, Basso LA, Santos DS. The resumption of consumption-a review on tuberculosis. Mem Inst Oswaldo Cruz 2006;101:697-714.
5. Kapoor VK. Abdomial tuberculosis. Postgrad Med J 1998;74:459-67..
6. Kapoor VK. Modern Management of Abdominal Tuberculosis. In: Taylor I and Johnson CD (Eds) Recent Advances of Surgery. 35 th vol.2013:pp156-69

7. Wadhwa N, Agarwal S, Mishra K. Reappraisal of abdominal tuberculosis. J Indian Med Assoc 2004; 102: 31-2
8. King M, Bewes P, Cairns J, Thornton J. Chap. 29. In Primary surgery, Vol. 1., (non-trauma). Oxford medical publications, Oxford, UK, 2009. p. 496-507.
9. Akinoğlu A, Bilgin I. Tuberculous enteritis and peritonitis. Can J Surg 1988;31:55-8.
10. Kakar A, Aranya RC, Nair SK. Acute perforation of small intestine due to tuberculosis. Aust N Z J Surg 1983;53:381-3.
11. Clarke DL, Thomson SR, Bissetty T, Madiba TE, Buccimazzal, Anderson F. A single surgical unit's experience with abdominal tuberculosis in the HIV/AIDS era. World J Surg 2007;31:1087-98..
12. Jaffer, AJ. Kock's abdomen in Afghan refugees. JSurg Pakistan(Int) 1997 ;2 (2):23.
13. Vogel Y, Bous JC, Winnekendonk G, Henning BF. Case report tuberculous peritonitis in a German patient with primary biliary cirrhosis: a case report. J Med Case Reports 2008;2:32.
14. Baloch AN, Baloch AM, Baloch AF. A study of 86 cases of abdominal tuberculosis. J Surg Pak 2008;13(1):30–2.
15. Tanrikulu AC, Aldemir M, Gurkan F, Suner A, Dagli CE, Ece. A. Clinical review of tuberculous peritonitis in 39 patients in Diyarbakir, Turkey. J Gastroenterol Hepatol 2005;20:906-9.
16. Sefr R, Rotterová P, Konecný J. Perforation peritonitis in primary intestinal tuberculosis. Dig Surg 2001;18:475-9.
17. Tan KK, Chen K, Sim R. The spectrum of abdominal tuberculosis in a developed country: a single institution's experience over 7 years. J Gastrointest Surg 2009;13:142-7.
18. Bhansali SK, Desai AN, Dhaboowala CB. Tuberculous perforation of the small intestine. A clinical analysis of 19 cases. J Assoc Physicians India 1968;16:351-5.
19. Shah S, Thomas V, Mathan M, Chacko A, Chandy G, Ramakrishna BS, et al. Colonoscopic study of 50 patients with colonic tuberculosis. Gut 1992;33:347-51.
20. 19. Jamal S, Khan ZM, Ahmed I ,Shabbir S. Presentation and Outcome of Abdominal Tuberculosis in a Tertiary Care Unit.Ann. Pak Inst Med Sci. 2011; 7(1):33-6.

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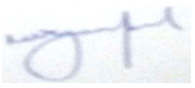
| **Dr. M. Najam Iqbal**<br>Assistant professor of surgery<br>SZMC/Hospital rahim yar khan | Researcher, Data Collector |  |
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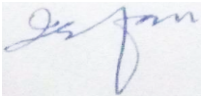
| **Dr. Irfan**<br>PGRS<br>SZMC/Hospital RYK | Interpretation and manuscript writing |  |