Role of Deliberate Creation of Control Enterocutaneous Fistula in Patients of Abdominal Tuberculosis with Perforation of Small Bowel and Matted Small Intestine

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Objective: To study the results after forming the controlled enterocutaneous fistula in the patient of abdominal tuberculosis with matted and perforated small bowel. **Design, place and duration of study** This study based on therapeutic trial and conducted in one and half years from january1999 to june2001 at Mayo Hospital, Lahore. **Patients and methods:** All these 20 patients either operated in emergency or on elective list were malnourished, toxic and their operative findings were almost the same , these patients had extensively matted, friable and perforated gut. In these patients it was technically not possible to perform some definite procedure like right haemecolectomy or ileostomy with out increasing the morbidity or mortality. Under these circumstances, minimal surgical procedure which can be life saving is to oppose the anterior abdominal wall to the perforation and thus create a controlled enterocutaneous fistula. In 11 patients fistula closed on its own and in eight patients fistula remained patient and needed re-exploration and repair. **Conclusion:** This new method of treatment has yielded excellent results. We were able to cure the disease with no mortality. It is recommended that in cases of TB peritonitis with perforation and matted gut making of a controlled enterocutaneous fistula saves the life of the patient
Key words: controlled enterocutaneous fistula, zbdominal tuberculosis, matted and perforated gut

The term abdominal tuberculosis includes tuberculous infection of the gastrointestinal tracts,mesentery,its nodes and omentum,the peritonium and the solid organs related to the GIT such as liver and spleen[1]. Intestinal tuberculosis can be either primary or secondary.Patients suffering from intestinal tuberculosis need early diagnosis and proper management due to its serious complications such as peritonitis and obstruction[2-4]. Peritonitis due to tuberculous gut perforation have a high mortality.Various operative techniqes have been advised to deal with this grave complication,ranging from simple drainage under local anaesthesia to segmental rection with end to end anastomosis, ileostomy, Rt.haemicolectomy, ileotransverse bipass and lastly the deliberate creation of controlled enterocutaneous fistula. An enterocutaneous fistula is defined as an abnormal passage or communication between some part of gut and skin. Some times due to extensive matting and friability it is technically impossible to perform a definite standard procedures such as right haemicolectomy, resection with end to end anastomosis or ileostomy with out increasing morbidity or mortality in an already septicaemic, malnourshed patient because no free bowel is present due adhesions. Under these circumstances a minimal surgical procedure which can be life saving is to bring the skin to the perforation and thus create an enterocutaneous fistula.

History of the procedure: This is a new technique evolved by Prof. Waseem Ahmed using his past experience. In his experience, patients with T. B. peritonitis with perforation in the ileum and matted small bowel used to do very badely postoperatively when dealt by junior doctors in emergency. Most of them used to die because of sepsis and fistulae. This new technique was discovered in one of his patients who came to him with peritonitis and refused to have an operation and went home .She came back after three days and was then operated upon. There was 4 litres of pus in the abdomen and an ileal perforation. The small intestine was not matted and there was no evidence of T.B. at all. He closed the perforation after freshening the edges. Later on the 5th day the perforation opened up again and become a fistula through the drain site. The patient started to become toxic. He decided to have a look again. On rexploration the small intestine was matted, and while trying to adhenolyse one loop near to the perforation an iatrogenic perforation occurred. He did not know what to do at this stage. He descrubbed and thought patiently. the situation came up with an answer. He joined the two perforations and brought the abdominal wall near to the place of the perforation in the intestine, after making a hole in the abdominal wall and put four to five sutures in whilst taking good bites of bowl tissue and by doing so, created a controlled enterocutaneous fistula. With other treatments and second line ATT the patient improved and recovered. Initially in this patient the controlled fistula closed on its own. However, at times it used to leak little for a while and therefore, it had to be closed by an operation. After this case, he perform this technique in 12other cases with absolute success.

Materials and methods:
The study was conducted in east surgical ward Mayo Hospital Lahore from December 1999 to January 2001,included 20 cases. It is a new study based on therapeutic trial.

Inclusion criteria.

1. Patients above 12 years with abdominal tuberculosis, where during laparoscopy it was found that gut loops

were widely matted with each other due to multiple adhesions and perforations, the state of intestine did not permit extensive resection and end to end anastomosis at the primary operation.

2. All those tuberculous patients in whom a primary procedure, like resection anastomosis was done and it had broken down these patients require a redo laparotomy and are suitable candidates for creating an enterocutaneous fistula.
3. All iatrogenic perforations caused during gut handling in those tuberculous patients with matted gut, were included and treated like wise.

Method:

All the patients in this study had the routine investigations done, like blood complete examination, ESR, Blood sugar Level, Blood Urea level and electrolyte level, plain X-ray abdomen in erect and supine posture were taken. X-ray chest P/A view was also taken. Patients were kept nil per oral (NPO). An intravenous line was maintained and a nasogastric tube was passed to decompress the gastrointestinal tract. A Foley's catheter was passed and an intake out put record was maintained. Patients with dehydration were given ringer lactate. Blood was transfused only to patients with low haemoglobin level. Patients in whom marked hypokalaemia was found on laboratory investigations (below 3.5 mmol/l) were given 20-40mmol of potassium chloride in infusion.

Pre-operative antibiotics were administered. Patients were shifted to Operation Theater. At laparotomy, operative findings noted, and controlled enterocutaneous fistula was made. A hole is made in the anterior abdominal wall, exactly opposite to the perforation in the bowel and abdominal wall is opposed to perforation by putting four to five silk No. 1 sutures between bowel wall, taking good bites of intestinal tissue and the skin of abdominal wall. Tissue specimens sent for histopathology in all patients who had undergone laparotomy for confirmation of the diagnosis. Post operatively, patients were administered. Inj. Ciprofloxacin, Inj. Metronidazole and Inj. Streptomycin. After confirmation of tissue diagnosis anti-tuberculous therapy was started.

Progress of these patients were recorded in terms of their; general condition, working of the controlled enterocutaneous fistula, post-operative complication. Such as wound infection, abscess formation, gut herniation and retention of the gut. Follow-ups were symptoms, gain in body weight, monitoring of ESR, liver function tests and closure of the controlled enterocutaneous fistula on its own or with the assistance of exploration.

Results:

All cases had abdominal tuberculosis with one or more perforations of the matted small intestine. Those were 7 (35%) males and 13 (65%) females (Table- 1, Group-1). At the time of presentation, the mean age of majority of patient was 15-30 years (Table-1, Group-1).

Out of those, two patients were admitted through the Out-Patients Department and the remaining eighteen admitted through emergency (Table-3, Group-3)

Fourteen patients underwent exploratory Laparotomy in the emergency theater and the remaining patients were operated on an elective list (Table-4, Group- 4)

All of these 20 patients, both in the emergency theater or on elective list, they were malnourished, toxic and their operative findings were almost the same.

The patients had extensively matted friable and perforated guts. The perforation was either primary or iatrogenic in nature. In these patients it was technically not possible to perform some definite standard procedures e.g. a right hemicolectomy or resection with end to end anastomosis, without increasing morbidity or mortality. In these cases it was not even feasible to create a formal stoma like an Ileostomy or Jejunostomy. Under these circumstances a minimal surgical procedure which could be life saving was to bring the skin (of the anterior abdominal wall) to the perforation and thus create a controlled enterocutaneous fistula.

In sixteen patients a primary controlled enterocutaneous fistula was made and in four patients a controlled enterocutaneous fistula was made after re-exploration.

In eighteen patients a controlled fistula was made through a virgin skin site at the anterior abdominal wall and in two patients a controlled fistula was made through the main Laparotomy wound. Tissue from all cases taken for biopsy, were subjected to histopathological examinations for confirmation of diagnosis.

All patients were administered I/v Ciprofloxacin, I/v Metronidazole and I/m Streptomycin for a week. In most of the patients oral feeding and split anti tuberculeous therapy was started on the 8th post-operative day. Some required prolonged parenteral antibiotics and two patients required parental feeding as well.

Table I: Sex incidence(n=20)

Sex	=n	Percentage
Male	7	35
Female	13	65

Table II: Age and sex distribution (n=20)

Age in years	Male	Female	Total	%age
11-20	2	3	5	25
21-30	3	6	9	45
31-40	1	2	3	15
41-50	1	1	2	10
51-60	0	1	1	5
61-70	0	0	0	0

Table III: Mode of admission (n=20)

Mode of Admission	=n	%age
Emergency	18	90
OPD	2	10

Table IV: Surgical setting (n=20)

Setting	=n	%age
Emergency	14	70
Elective	6	30

Table V: Symptoms of patients operated in emergency (n=20)

Symptoms	=n	%age
Abdominal Pain	14	100
Abdominal distension	14	100
Absolute constipation	14	100
Vomiting	12	85.7
Fever	6	42.8
Previously known tuberculosis	3	21.3

Table IV: Physical sign in patients operated in emergency (n=20)

Sign	No. of Patients	%age
BP < 90 mmHg	8	57.1
Pulse > 120/min	10	71.4
Fever > 102° F	6	42.8
Pallor	14	100
Dehydration	12	85.7
Bower sounds:		
• Absent	12	85.7
• Normal	2	14.3

Follow up:
Most of the patients were discharged after 10-15 days post operatively, but three patients were discharged between 21-30 days post-operatively. The nature of the disease and application of ileostomy bag was explained to all the patients. At the same time the importance of regular long term treatment and frequent check ups was emphasized.

During follow-ups, there was treatment in terms of abdominal symptoms and the renal health of the patients. All patients were pyrexia free and their appetite had improved follow-ups. In eleven patients fistula closed on their own within two to three months without any surgical intervention.

In one patients after four months, on re-exploration a right hemicolectomy with end to end ileocolic anastomosis was performed. In another patient the fistula was closed on its own. But the gut herniated from the fistula site and this defect had to be repaired at a later date.

Discussion:
The diagnosis of tuberculosis is difficult and it poses a great challenge to clinicians. It continuous to be seen on surgical floor. In many cases clinical picture is bizzare and misleading. The results of investigations are non-specific, thus causing a delay in the diagnosis and treatment. Antituberculous chemotherapy is the mainstay of treatment. Surgery is reserved for tissue diagnosis in patients for certainty of the diagnosis and for the management of complications such as intestinal obstruction and peritonitis.

Operative findings: In this study all cases with abdominal tuberculosis having one or more perforations of the matted small intestine (higher than the study of Ahmed[5] 39%. Procedure adopted in all cases was formation of controlled enterocutaneous fistula. Some had a single operation, laparatomy and formation of controlled enterocutaneous fistula. A few patients had a second operation for formation of controlled enterocutaneous fistula where the first operation resulted in small bowel fistula due to dehiscence .

Since this is a new method of treatment for a perforated matted small bowel in cases of abdominal tuberculosis. No comparative studies are available.

Mortality: Other surgeons who do not practice this technique deal such cases with trying to mobilize the gut which results in iatrogenic perforations. Thereafter, they either repair the perforations primarily Fakhar[6] or perform the ileostomy or jejunostomy Manzoor[7]. This results in increased morbidity and mortality. On the other hand because of minimal handling and dissection, the outcome of controlled fistula is much better as we have experienced. We have observed that forming controlled enterocutaneous fistula resulted in negligible mortality and morbidity (because of minimal handling and dissection of matted intestine) as compared to other studies where mortality is very high.

Grinner et al[8], reported a 100% mortality rate in patients with perforations in abdominal tuberculosis.

Kakar et al[9] described mortality rate upto 45% in cases of perforations in abdominal tuberculosis.

Fakhar H. and Akram M[6] in their study stated mortality rates were upto 42.85%, if gut was found to be perforated in cases of abdominal tuberculosus.

Jamil A and Zafar I[5] reported that three of their patients died of a total of 9 patients, they had operated on for tuberculous peritonitis due to gut perforation, which reflected a 33.33% mortality rate.

Akgun Y[10] in his study described the mortality rate upto 20.5% in emergency operations for abdominal tuberculosis (but not mention the indications for operations in emergency). So for as the western references are concerned, abdominal tuberculosis have not been studied and mentioned in their literature in detail especially the complications such as perforated matted gut Azhar[11].

Other important aspect of our study is that we only required parenteral in only three patients. Enteral nutrition was the main stay in such cases, so patients remained free of complications of parenteral nutrition. Complications of total parenteral may be mechanical, septic or metabolic Jones[12]. Wolf[13] and their co-workers noted 6.7% mechanical, 4.7% septic and 27.5% metabolic complication in their patients.

Stoma complications are probably more frequent than many surgeon realized, this is partly because of deficiencies in the literature and partly because of widely held view that stoma complications are a mark of poor surgery. MH Irving and Ohulme[14] have noted loop stoma's being more prone to complications, they have mention stenosis, prolapse, skin problems and parastromal hernia to

more frequent complications. In our study (although controlled fistula is not a formal stoma) but it works as stoma). We experience gut herniation in one patient and this defect had to be repaired at a later date.

Due to interesting and innovative design of these controlled enterocutaneous fistulae, we did not find any difficulty in applying and handling stoma bags, as the hole of the fistulae were small and not all of the intestinal contents were coming out of the hole. These patients were put on ATT and the disease was cured and 60% of the fistulae closed by themselves. If due to partial distal obstruction or epithelization the fistulae did not close by themselves, then they could be dealt with at a later date, when the disease is well under control and the patients are in a much better condition.

Conclusion:

This method of treatment has yielded excellent results in our study. We were able to cure the disease process and no mortality was observed. It is concluded and recommended that in cases of tuberculous peritonitis with perforated and matted intestine, making a controlled enterocutaneus fistula saves the life of the patients. Life is no longer endangered. It is further suggested that in cases of re-operation of tuberculous peritonitis with perforations, which had given way after being repaired, this is the method of choice.

References:

1. Rangabashym N. Abdominal tuberculosis. In Morris and Malt. Ist. Ed. Oxford Text book of Surgery. 1994; 41(3): 2484-95.
2. Kapoor VK. Abdominal tuberculosis. Postgrad Med J 1998; 74(874): 459-67.
3. Kapoor VK. Abdominal tuberculosis the Indian contribution Indian J Gastroenterol 1998; 17(4): 141-7.
4. Veeragandham RS, Lynch FP, Canty TG. Abdominal tuberculosis in children. Review of 26 cases. J Pediatr Surg 1996; 31(1): 170-5.
5. Ahmad J, Malik IZ. Abdominal tuberculosis. PIMS experience. J. Surg. 1996; 11-12: 38-40.
6. Hameed F, Malik AM. Abdominal tuberculosis -- profile of 50 cases JCPSP 2000; 10: 125-7.
7. Ahmed M and Ahmad M. Duodenal tuberculosis. J. Pak. Med. Assoc. 1985; 35: 53-4.
8. Griner MV, Skrynik NA, Shteinsaig, Al-perforatsia Kiski priee tuberkulize (intestinal perforation in tuberculosis) Vestin Khir LM 11 Greak 1997; 156(4): 46-9 (English Abstract).
9. Kakar A, Aranya RC and Nasir SK. Acute perforation of small intestine due to tuberculosis Aust NZ J Surg 1983 53:381.
10. Akgun Y, Yilmiaz G, Tacyildiz I. Intestinal and peritoneal tuberculosis Ulus-Travma – Derg 2002; 8(1): 43-48.
11. Atiq A. Aetiological aspects of dynamic intestinal obstruction, A Mayo Hospital experience, P J Surg. 1996; 12(3): 118-119.
12. Jones KW, Salteer MH, Slocum BA. Parenteral nutrition complications in Voluntary Hospital JPEN: 1984; 385-390.
13. Wolfee BM, Ryder MA, Hischikawa RA. Complications of parenteral nutrition. Am J Surg 1986; 152: 93-99.
14. Irving MH, Hulme O. Intestinal stromas. BMJ 1992; 304: 1679-81.