OUTCOME OF STRICTUROPLASTY IN PATIENTS WITH INTESTINAL TUBERCULOSIS

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ABSTRACT...Introduction: Abdominal TB is one of the most prevalent forms of extra-pulmonary disease and is prevalent all over the world. Gastrointestinal involvement had been reported to be 55-90%. This study aimed to determine the outcome of stricturoplasty in patients with intestinal tuberculosis. **Objective:** To determine the outcome of stricturoplasty in patients with intestinal tuberculosis. **Study Design:** Descriptive case series. **Setting:** Department of General Surgery, Nishtar Hospital Multan. **Duration with dates:** Three years from January 2009 to December 2011. **Subjects & Methods:** 120 patients of intestinal TB, who presented with intestinal obstruction in emergency and with signs and symptoms of intestinal TB in outdoor patient department were selected. History of contact, family history of tuberculosis, immunization, past history of tuberculosis was taken. Diagnosis was confirmed by histopathology. Laparatomy was done in all cases and stricturoplasty was performed. Patients were followed up during hospitalization. Postoperative complications were noted. All information were recorded on a proforma. **Results:** Out of 120 patients, 56.7% were male and 43.3% were female having age between 14 to 70 years. Main presenting symptoms were pain abdomen, vomiting, distension of abdomen, weight loss, anorexia and low grade fever with sweats. Main complications after stricturoplasty were chest infection 40(33.3%), wound dehiscence in 16(13.3%), leakage in 12(10%), recurrence in 20(16.7%), scar pigmentation in 12(10%), keloid in 12(10%) patients and herniation in 8(6.7%) patients. **Conclusions:** Stricturoplasty is a safe, simple and easy operation, particularly useful at small peripheral hospitals with limited staff and resources.

Key words: Stricturoplasty, Abdominal TB, intestinal TB

INTRODUCTION

Tuberculosis is a disease commonly found in third world countries and is linked to dense population, poor nutrition and lack of sanitation. One-third of the world population is under the risk of acquiring TB. According to WHO report[1], incidence of tuberculosis in Pakistan is 181 cases per 100,000 population per year. Mortality from TB is estimated at 40 deaths per 100,000 population per year. 95% of new TB cases every year occur in developing countries, and In Pakistan, extra pulmonary TB is also very common, with the abdomen as the major site as studied by Martineez[2].Untreated or delayed treatment can result in long morbid conditions, and hence early recognition is important.

It has been estimated that there are about 1500 million cases of TB worldwide, with annual increase of 3-5 million each year. The situation is worst in the underdeveloped countries where poverty, overcrowding and unhygienic circumstances abound. In Pakistan more than 0.3 million new cases of TB are added each year. The increasing incidence is mainly due to factors like poor case findings, improper treatment regarding dosage and duration, which results in multidrug resistant TB.

Abdominal TB is one of the most prevalent forms of extra-pulmonary disease[1] and is prevalent all over the world. Gastrointestinal involvement had been reported to be 55-90 % in patients with active pulmonary TB before the advent of specific anti-TB treatment[1].

TB is a chronic infectious disease caused by an acid fast bacillus, mycobacterium tuberculosis. It usually presents itself as an infection of the lung, but can infect virtually any organ in the body[3]. Besides lung it commonly affects abdomen, lymph nodes, meninges and spine etc.

The primary variety of gastrointestinal tuberculosis results from the ingestion of milk contaminated by mycobacterium bovis, while the secondary is due to swallowing infected sputum[3]. The infection could also come from an infected adjoining organ like the fallopian tubes or by hematogenous spread from a recent foci or

old infection.

The disease usually affects the younger age group and is common between 30-50 years. Presenting symptoms may include abdominal pain, constipation, vomiting, abdominal distention, ascitis, borborygmi and abdominal mass. TB may presents both with systemic symptoms such as weight loss, night sweats, fever malaise and anorexia and localized symptoms depending on the organ involved[4].

Intestinal tuberculosis is very commonly encountered by surgeons in Pakistan and other tropical countries[5]. Abdominal tuberculosis may present clinically as an acute abdomen, either due to bowel obstruction, perforation or mass in right lower abdomen mimic acute appendicitis or appendicular mass[6]. The symptoms are vague in nature, signs are not specific and the disease itself mimics many other diseases[7-9]. Diagnosis of extra pulmonary tuberculosis is usually difficult because of varied presentation and lack of sensitive tests[10]. The preoperative findings are valuable in its management and most importantly histopathology of the specimen to differentiate it from other non tuberculous inflammatory and malignant lesions[11].

Laboratory tests except for raised ESR and abnormal chest x-ray, are helpful. PCR is the preferred investigation[12]. Stricturoplasty is safe, simple and easy procedure particularly suitable at poorly equipped and under staffed district hospitals for tubercuous strictures of small intestine[13]. The type of procedure depends upon the length of the stricture, a Heinecke-Mickulicz stricturoplasy being ideal. Stricturoplasty is superior to resection anastomosis in cases of multiple strictures as it conserves gut length[14].

This study was conducted to determine the outcome of stricturoplasty in intestinal tuberculosis in patients who present to us in emergency & outpatient department.

MATERIALS AND METHODS

This descriptive case study was carried out in Department of Surgery, Nishtar Hospital Multan, for a period of three years from Jan 2009 to Dec 2011. 120 patients suffering from intestinal tuberculosis were studied. Non probability purposive sampling technique was used. All age group patients above 12 years age of both sex suffering from intestinal tuberculosis having no perforation or impending perforation of gut on laprotomy and having a single stricture or more than one stricture at least 9 cm away from each other were included in this study.

DATA COLLECTION PROCEDURE

120 Patients of intestinal TB, who presented to us with intestinal obstruction in emergency and with signs and symptoms of intestinal TB in outdoor patient department were selected according to inclusion criteria. Informed consent about procedure was obtained and patients were explained risks and benefits of the study.

Tuberculosis was confirmed by history of patients that is, history of contact, family history of tuberculosis, immunization, past history of tuberculosis. The presenting symptoms i.e. abdominal pain, abdominal distension, vomiting, constipation, ascites, low grade fever, chronic cough, weight loss, intestinal obstruction, peritonisim, acute abdomen and chronic abdomen were noted.

Laparatomy was done in all cases and stricturoplasty in Heineke-Mikulicz fashion was performed. Diagnosis was confirmed by histopathology (Central Lab, Nishtar Hospital, Multan).

OPERATIVE TECHNIQUE

Bowel was opened longitudinally along the anti-mesenteric border between two loosely applied stay sutures at the centre. The incision extended 1-2 cm in healthy non-strictured bowel on either side. The stay sutures were then pulled apart converting the linear incision into a diamond shaped defect. Biopsy from the margins of the incision including the strictured part was taken and sent for histopathology. Mesenteric lymph nodes and peritoneal tubercles when present were also sent for histopathology. Closure was then started from one stay suture and continued transversely to the other one. The repair was done in two layers, inner full thickness with 2/0 catgut outer seromuscular with 2/0

silk. In patients with multiple strictures, similar procedure was done at more than one site.

Patients were followed from 1st postoperative day, during hospitalization. Patients were kept on nasogastric suction and intravenous fluids for six to seven days. Antibiotics were used in all cases. The patients were monitored for post operative complications. On sixth to seventh day the patients were allowed to take orally and full anti-tubercular regimen was started.

Patients were advised to attend follow up clinics every two weeks and on every visit following observations were made.

1. Detailed history regarding the GIT symptoms such as appetite, type of food patients take, any pain or discomfort after eating, and flatulence were noted.

2. Physical examination regarding anemia, weight loss or gain, productive cough, any enlargement of cervical nodes, X-rays chest (PA view), ESR. USG, and LFTS were done. Examination of scar was done to look for proper healing, hyper pigmentation, keloid formation and herniation.

All the information including postoperative complications were recorded in an especially designed proforma (attached).

DATA ANALYSIS

Data was analyzed by using computer programme SPSS version 10.0. Descriptive statistics was used to calculate mean and ± SD for age of the patients. Percentages and frequencies of postoperative complications i.e. chest infection, wound infection, leakage and recurrence were calculated. As this was a descriptive study, no statistical test was applied.

RESULTS

In present study of 120 patients of intestinal TB, 167 stricturoplasties were done in all patients with either single or multiple strictures. There were 68(56.7%) males and 52(43.3%) females table I

Majority of the patients were in younger age group. The age of the patients ranged between 14–70 years with mean 30.13 ± 12.86 years. There were 40 (33.3%) patients between 14–23 years, 36(30.0%) patients between 24–33 years, 28(23.3%) patients between 34–43 year and 16 patients of more than 43 years of age as shown in table II.

In present study, the main presenting symptoms were pain abdomen, vomiting, distension of abdomen, weight loss, anorexia and low grade fever with sweats found in all 120(100%) patients. The other symptoms were constipation in 104(86.7%) patients, borborygmi in 32(26.7%) patients, diarrhea and ascities in 20(16.7%) each, and abdominal mass in no patients respectively. Table III.

Regarding immediate complications after stricturoplasty, there were 40(33.3%) patients who developed chest infection and 12(10%) patients developed wound infection. Intermediate complications were observed in 28 patients of which 16(13.3%) developed wound dehiscence and 12(10%) had leakage. Late complications were recurrence in 20(16.7%) patients, scar pigmentation in 12(10%) patients, keloid formation in 12(10%) patients and herniation in 8(6.7%) patients table IV.

After the operation regarding general health of the patients, 32(26.7%) patients had weight loss and 88(73.3%) had gained weight. Other complications include anemia in 52(43.3%) patients, cough with expectoration in 44(36.7%) patients, fever in 16(13.3%) patients and 12(10%) patients developed jaundice as shown in Table V.

Wound healing was observed satisfactory in 20(16.7%) patients, good in 64(53.3%) patients and excellent in 36(30%) patients table VI.

Keloid formation occurred in 16(13.3%) patients, hyperpigmentation in 12(10%) patients and herniation in 8(6.7%) patients as mentioned in table VII

DISCUSSION

Abdominal TB is again on the rise all over the world with the resurgence of multidrug resistant TB and with AIDS

Table-I. Sex Distribution (n=120)

Sex	No. of Patients	%age
Male	68	56.7
Female	52	43.3

Table II. Age Distribution (n=120)

Age (years)	No. of Patients	%age
14 - 23	40	33.4
24 - 33	36	30.0
34 - 43	28	23.3
44 and above	16	13.4

Range = 14 – 70 years, Mean ± SD = 30.13 ± 12.86

Table-III. Presenting Symptoms (n=120)

Symptom	No. of Patients	%age
Pain abdomen	120	100.0
Vomiting	120	100.0
Distension of abdomen	120	100.0
Weight loss	120	100.0
Anorexia	120	100.0
Low grade fever with sweats	120	100.0
Constipation	104	86.7
Borborygmi	32	26.7
Diarrhea	20	16.7
Ascities	20	16.7
Abdominal mass	0	0.0

Table-IV. Complications after Stricturoplasty (n=120)

Complication	No. of Patients	%age
Immediate		
Chest infection	40	33.3
Wound infection	12	10.0
Bleeding	0	0.0
Intermediate		
Leakage	12	10.0
Wound dehiscence	16	13.3
Late		
Recurrence	20	16.7
Scar pigmentation	12	10.0
Keloid formation	12	10.0
Herniation	8	6.7

Table-V. Follow up after Stricturoplasty (n=120)

Complication	No. of Patients	%age
Weight loss	32	26.7
Anemia	52	43.3
Fever	16	13.3
Cough with expectoration	14	36.7
Jaundice	12	10.0

Table-VI. Wound Healing after Stricturoplasty (n=120)

Healing	No. of Patients	%age
Satisfactory	20	16.7
Good	64	53.3
Excellent	36	30.0

pandemic. It is also an increasing health problem because of the immigrants from underdeveloped countries where it is more common. Intestinal Tuberculosis is a common and major health hazard in Pakistan just like other countries where ignorance. poverty, overcrowding and malnutrition are prevalent.

Because the signs and symptoms of intestinal TB are nonspecific, a high index of suspicion must be maintained to ensure a timely diagnosis. Stricturoplasty can be used when there is limited, well-localized disease. It is especially useful for patient with poor general condition.

Table-VII. Examination of scar after Stricturoplasty (n=120)

Complication	No. of Patients	%age
Hyperpigmentation	12	10.0
Keloid formation	16	13.3
Herniation	8	6.7

In present study of 120 patients, there were 68(56.7%) males and 52(43.3%) females. Majority of the patients was in younger age group. The age of the patients ranged between 14–70 years with mean 30.13 ± 12.86 years. So, younger age group was more affected with the disease. Our results coincide with a study conducted in Istanbul by Uygur-Bayramiçli and colleagues[1] including 17 males and 14 females, and a median age of 34.2 years. In another study the median age of the 13 male and 9 female patients was 53 years (range, 12-81 years)[15].

In our study, the main presenting symptoms were pain abdomen, vomiting, distension of abdomen, weight loss, anorexia and low grade fever with sweats. Abdominal mass found in no patients. The other symptoms were constipation in 104(86.7%) patients, borborygmi in 32(26.7%) patients, diarrhea and ascities in 20(16.7%) each respectively. Frequent weight loss in intestinal tuberculosis is because of stasis in the bowel due to strictures[13].

Similar symptoms were observed by Uygur-Bayramiçli and colleagues in their study where abdominal pain was 51.2%, weight loss 51.2%, ascites 38.4%, diarrhea 32%, cough and sputum 19.2%, vomiting and nausea 16%, fever 12.8%, perforation 9.6%, bone pain 6.4%, night sweats 6.4%, urinary symptoms 3.2%, mass in the lower quadrant 3.2%, cervical pain 3.2%, incidental 3.2% and evisceration following laparotomy 3.2%[1].

In another study abdominal pain and abdominal tenderness were present in most patients[16].

Common symptoms in the study of Leung et al included abdominal pain (82%), diarrhoea (55%), weight loss (55%), and fever (45%)[15].

In a study conducted by Uzunkoy and colleagues ascites was present in all cases. Other common findings were weight loss (81%), weakness (81%), abdominal mass (72%), abdominal pain (72%), abdominal distension (63%), anorexia (45%) and night sweat (36%)[17].

Immediate complications after stricturoplasty were chest infection in 40(33.3%) patients and wound infection in 12(10%) patients. Intermediate complications were observed in 28 patients of which 16(13.3%) developed wound dehiscence and 12(10%) had leakage. Late complications were recurrence in 20(16.7%) patients, scar pigmentation in 12(10%) patients, keloid formation in 12(10%) patients and herniation in 8(6.7%) patients.

After the operation regarding general health of the patients, 32(26.7%) patients had weight loss and 88(73.3%) had gained weight. Other complications include anemia in 52(43.3%) patients, cough with expectoration in 44(36.7%) patients, fever in 16(13.3%) patients and 12(10%) patients developed jaundice.

Wound healing was observed satisfactory in 20(16.7%) patients, good in 64(53.3%) patients and excellent in 36(30%) patients. Keloid formation occurred in 16(13.3%) patients, hyperpigmentation in 12(10%) patients and herniation in 8(6.7%) patients. No mortality in present study.

Muhammad Akbar[13] has reported 40% patients in his study had wound infection as a major complication of stricturoplasty while 30% had postoperative chest complications. No mortality in his study.

Dandapat and colleagues have reported postoperative mortality was 6.4%. Postoperative complications in most of the cases were wound infection18. In another study Tazeen Zahra and Naheed Sultan have reported that stricturoplasty was carried out with favourable results[19].

According to Katariya and colleagues[20] stricturoplasty procedure has been found to be safe simple and effective in relieving obstructive symptoms. It does appear to carry the disadvantages of entero-anastomosis or multiple and/or massive resections in cases of multiple tubercular

strictures of the small bowel.

Gastrointestinal tract is reported to be the sixth most common extra-pulmonary site of tuberculosis. An increased awareness of intestinal tuberculosis, coupled with knowledge of the pathophysiology, diagnostic methods, and treatment should increase the number of cases diagnosed, thus improving the outcome for patients with this disease.

CONCLUSION

- Stricturoplasty is a safe, simple and easy operation.
- The procedure has been found to be effective in relieving obstructive symptoms.
- In cases of multiple strictures, stricturoplasty conserves gut length.
- It is useful at small peripheral hospitals with limited staff and resources.

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The Aim of an Argument ...
should not be victory, but progress.

Joseph Joubert (1754-1824)