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Research Article

**RESULTS OF STRICTUREPLASTY VERSUS RESECTION
ANASTOMOSIS FOR THE TREATMENT OF INTESTINAL
TUBERCULOSIS OBSTRUCTION**¹Dr Ayesha Siddiqa, ²Dr Alina Khalid, ³Dr Hina Khan¹Nishtar Medical University, Multan²Nishtar Medical University, Multan³Nishtar Medical University, Multan**Article Received** November 2020**Accepted:** December 2020**Published:** January 2021**Abstract:**

Objectives: To compare the results of strictureplasty with resection and anastomosis in patients with obstruction of small intestine due to Tuberculosis (TB).

Study Design: A Case control study.

Place and duration: At the Surgical Unit-II of Nishtar Hospital, Multan for one-year duration from August 2019 to August 2020.

Methodology: Eighty (80) patients with intestinal obstruction due to tuberculosis spasms who underwent strictureplasty or resection and anastomosis were enrolled in the study. Data was collected on a proforma, and complications such as anastomotic leakage, wound infection, recurrent intestinal obstruction and postoperative stay were searched for.

Results: The results showed that there is no significant difference between the two procedures.

Conclusions: Both procedures were equally effective, but strictureplasty is superior to resection and anastomosis in the case of strictures and multiple strictures in order to maintain effective bowel length.

KEYWORDS: intestinal tuberculosis, Strictureplasty, resection and anastomosis, comparison

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INTRODUCTION:

Tuberculosis (TB) is one of the most serious infectious causes of morbidity and mortality in the world. Currently, epidemiologists estimate that 1/3 of the world's population is infected with *Mycobacterium tuberculosis*, which is responsible for 8-9 million deaths annually worldwide. About 95% of new cases and 98% of deaths occur in developing countries. TB is contagious disease; spread by aerosols from patients with *Mycobacterium Tuberculosis* (Mtb) lung disease. Many factors influence an individual's susceptibility to *Mycobacterium Tuberculosis*. Progress in disease exposure depends on exposure risk, infection risk, and disease risk, which in turn depend on host and environmental factors. Cases of tuberculosis without sputum infect their contacts more often than cases of tuberculosis without sputum. Infection with Mtb bacilli does not always lead to active disease, approximately 90% of people develop a latent infection without visible clinical consequences, while 10% develop a progressive disease. Congestion and poverty increase the risk of exposure to Mtb and thus the risk of infection and disease. Healthcare professionals have also been found to have a greater risk of exposure and latent infection. In the case of the genetic factor, HLA-DR2 is known to be associated with tuberculosis susceptibility in some populations. Research by Leindhardt in West Africa has shown that male gender, a family history of tuberculosis, smoking, and HIV infection are risk factors. Abro in 1998 made similar findings locally in Pakistan. The interaction of Mtb with the host begins when the drop nuclei measuring 1-2 micrometers of microorganisms from an infectious patient are inhaled; particles of this size enter the distal airways. Larger particles are captured by a layer of mucus which is expelled through the cilia into the trachea and eventually swallowed. The lungs are the most common site of lung involvement, but the abdomen is the most common site of extrapulmonary tuberculosis. Abdominal tuberculosis can affect the gastrointestinal tract, peritoneum and lymph nodes, or the solid viscera (liver, spleen, pancreas). GIT concerns 66-75% of patients with abdominal tuberculosis. The most common sites are the terminal ileum and ileocecal gut, followed by the jejunum and colon. There are often multiple sites in GIT. Most patients have chronic symptoms but can appear late with complications such as subacute and acute obstruction and sometimes manifest as a palpable tumor, as shown by Anuradha, or strictures as shown by Kapoor, Ahmed, and Gondal. Constitutional symptoms may or may not be present. Microbial diagnosis is difficult in intestinal tuberculosis. The basis of the diagnosis is histopathology and

radiology. Most patients with abdominal tuberculosis can be treated with tuberculosis therapy alone, but some may require surgery to remove the obstruction through Strictureplasty or resection and anastomosis. Surgical identification of pale straw-colored ascites, peritoneal nodules, adhesions, enlarged mesenteric lymph nodes, ileocecal hypertrophic lesions, colon and short fibrotic strictures of the intestine suggest the diagnosis of abdominal tuberculosis. There may be numerous constrictions in the small intestine. Patients with an acute abdomen require urgent laparotomy. Patients with patent strictures respond to conservative treatment, and patients with bowel obstruction, narrowing, or masses usually require surgery. During the operation, conservative surgical procedures are recommended, e.g. in patients with an ileocecal lesion, limited segmental ileo-caecal resection is performed. Strictureplasty is performed in the case of strictures of the small intestine. Resection and anastomosis are performed in patients with tight strictures that almost completely block the lumen. Stricturephasty is a relatively new procedure and is considered safer for resection and anastomosis in the treatment of patients with recurrent bowel disease. This is especially true for patients with limited residual length of the intestine or patients with multiple strictures, all of which may lead to short bowel syndrome. The effectiveness and safety of this procedure is well documented, however, Maqbool and Agarwal in their studies assessed it for abdominal tuberculosis; while Tonelli described the same procedure for Crohn's disease.

METHODOLOGY:

This clinical study was conducted in the Surgical Unit-II of Nishtar Hospital, Multan for one-year duration from August 2019 to August 2020. The study involved 80 patients with tuberculosis of the small intestine. Sixty of them underwent Strictureplasty, and twenty resections and anastomoses due to acute and sub-acute intestinal obstruction.

Admission Criteria

- Only cases of intestinal tuberculosis.
- Histologically confirmed cases of tuberculosis

Exclusion criteria

- Tuberculous peritonitis
- Perforation due to TB
- Crohn's disease
- HIV-infected patients

Strictureplasty with the Henike-Meckuliz method was performed in sixty patients with intestinal tuberculosis with multiple or single strictures, while resection and anastomosis were performed in only

twenty patients, especially in cases where the ileocecal area was involved (right hemicolectomy). All patients were held with NPO on nasogastric aspiration for 5-6 days. Oral ingestion on day 7 was permitted, first liquids for 4 days, then semi-solids for 4 days, and then any type of food. Proforma data was collected and the results analyzed, the success and efficacy of both treatments calculated based on the presence of postoperative complications such as anastomotic leakage, wound infection, postoperative

stay, recurrent obstruction and any other complications noted in the postoperative period.

RESULTS:

The mean age at reporting was 25 years (range 8-70) and the male to female ratio was 1: 2. Of all patients, 80% presented to the emergency department with acute and subacute intestinal obstruction, in ten (12.5%) cases of acute obstruction have been diagnosed. Other related signs and symptoms are listed in Table I and related studies in Table II.

| Symptoms/Signs (n=80) | % |
|----------------------------|----|
| Generalized Abdominal Pain | 76 |
| Localized Abdominal Pain | 24 |
| Vomiting | 80 |
| Fever | 40 |
| Weight loss | 20 |
| Ascites | 15 |
| Abdominal mass | 10 |
| Peritonitis | 20 |
| Cervical Lymph Adenopathy | 10 |
| Pulmonary Tuberculosis | 30 |

Table I. Clinical Features at the time of admission

| Investigations (n=80) | % |
|--------------------------------------|-----|
| Lymphocytosis | 30 |
| Erythrocyte Sedimentation Rate | 10 |
| Mycodot (Positive) | 25 |
| Histopathology from tissue taken | 100 |
| Acid Fast Bacilli of sputum | 20 |
| Tuberculin skin test | 35 |
| Plain film abdomen - Air fluid level | 40 |
| Barium meal | 10 |
| PCR done in only 5 patients | 5 |
| Culture from sputum | 20 |

Table II. Investigation at time of admission

Forty-six patients (57.5%) were operated on an emergency basis, while 34 patients (53.4%) were operated on an elective basis. Of the 80 patients, 60 underwent Strictureplasty and 20 underwent resection and anastomosis due to bowel stricture due to probable tuberculosis. Anastomotic leak was found in 4 patients (5%) who underwent anastomosis after resection, while in patients undergoing strictueplasty there was no leakage, wound infection occurred in 8 patients (5 patients with anastomosis after resection and 3 patients with Strictureplasty). Two patients had a ruptured abdomen in the resection and anastomosis group. No patient in either group presented severe postoperative complications during the 4-year study period. No patient presents with recurrent obstruction, so morbidity and mortality did not show major differences between the two groups, as can be seen in detail in Table III.

Table III. Postoperative Complications

| Complications | Group I (n=60) (Strictureplasty) | Group II (n=20) (Resection and anastomosis) | Total (n=80) |
|---------------------------------|-------------------------------------|--|--------------|
| Paralytic ileus | 9 (15%) | 16 (80%) | 25 (31.5%) |
| Anastomosis leakage | 0 (0.0%) | 2 (10%) | 2 (2.5%) |
| Peri anastomotic/Pelvic abscess | 0 (0.0%) | 2 (10%) | 2 (2.5%) |
| Fistula formation | 0 (0.0%) | 1 (0.5%) | 1 (1.25%) |
| Wound Infections | 5 (8.33%) | 8 (40%) | 13 (16.25%) |
| Wound dehiscence | 0 (0.0%) | 3 (15%) | 3 (3.75%) |
| Incisional Hernia | 1 (1.66%) | 2 (10%) | 3 (3.75%) |
| Recurrent obstruction | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |

The mean time of surgery is shorter for Strictureplasty was (45 min) than in patients after resection and anastomosis (80 min). The mean hospital stay for Strictureplasty was 8 days, and for resection and anastomosis, the mean

hospital stay was 10 days, while close follow-up was observed after each month in the first year and no patients dropped out of the first-year follow-up.

DISCUSSION:

Tuberculosis is a common cause of intestinal obstruction in Pakistan, which is among the five countries accounting for more than 50% of tuberculosis cases worldwide, and its prevalence in Pakistan is 177 / 100,000. It is believed to be the fourth leading cause of all deaths in Pakistan. Although it may occur in any region, abdominal involvement is the most common and is considered the most common cause of intestinal obstruction in Pakistan. The mean age of patients in this study was 25 years (range 8-70 years), which is comparable with other national and international studies. However, it is more common in the teen age group. The ratio of men to women is also similar to other studies in Pakistan, with a slight increase in the number of women in local surveys. Since all patients were operated on for intestinal obstruction, symptoms are symptoms of acute and sub-acute obstruction. All patients experience abdominal pain and mild gas. Vomiting was reported in 80%, fever in 40% and weight loss in 20%. Ascites was found in 15% of patients and abdominal weight in 10%. Peritoneal involvement was reported in 20% of patients. Associations with lymphatic adenopathy occurred in 10% and pulmonary tuberculosis in 30% of patients with abdominal tuberculosis. These numbers are comparable to other studies presented by Agarwal, Tariq in 1993, and Ihekwa. Lymphocytosis was found in 30% of patients, an increase in ESR in 10%, and Mycodot in 25%. Tuberculin tests were positive in 35% of patients with subacute intestinal obstruction, but were not performed in emergency cases. Similarly, AFB in 20% and culture in 20% of patients were positive. These laboratory results are comparable to those of other studies. The treatments were successful in both cases. The observed complications were paralytic illusion in 25 patients (9 in the case of Strictureplasty and 15 in the case of resection and anastomosis). Anastomotic leakage was found in 02 patients, only in the case of resection and anastomosis, which is comparable with other studies. Similarly, peri-anastomotic leakage, wound infections, and postoperative hernias were more common in resection and anastomotic patients than in patients with Strictureplasty. Occasionally, multiple Strictureplasty has been performed that did not affect the outcome, as resection of a large part of the intestine may result in short bowel syndrome. Therefore, Strictureplasty of multiple strictures is effective, safe and outperforms resection anastomosis in many cases, especially when intestinal tuberculosis involves multiple strictures. One patient with

resettable anastomosis had fistulas, which were treated conservatively and healed within 6 weeks. In the literature, 15% of postoperative interdigital fistulas are reported, but these are already perforated tuberculosis intestines, which are excluded from this study. There were no deaths in either group. The time to return to eating after both types of surgery, the length of hospital stays, and the time to return to routine activities were similar in both groups. There were no long-term complications due to the limited follow-up lasting 1 year, and the course of Anti-Tuberculosis Therapy was 8 months, but there were no recurrences or late complications.

CONCLUSION:

Diagnosis is based on laparotomy and histopathology of the lymph node, peritoneum or tissue taken from the diseased area. Strictureplasty is an effective and safe method of re-clearing the intestinal obstruction caused by tuberculosis and is safer and better than resection anastomosis in cases where there are multiple strictures to maintain the length of the intestine.

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