

## SURGICAL MANAGEMENT OF TUBERCULOUS SMALL BOWEL OBSTRUCTION

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**Background:** Acute intestinal obstruction due to tuberculosis is a common surgical problem in our community. Emergency surgery is usually required and surgical procedure depends upon the location and extent of the disease. The aim of this study was to determine the commonly involved region of intestine and different surgical procedures tailored. **Methods:** Thirty patients operated upon for acute intestinal obstruction in emergency with operative and histopathological findings suggestive of tuberculosis were included in the study. Demographic profile, operative findings, details of surgical procedure, complications and post-op hospital stay were recorded. The patients were followed for 6 months. **Results:** Intestinal tuberculosis is more common in young female, with male to female ratio of 1:1.5. Stricture of the small bowel was found in 50% of the cases. The next common finding was ileocaecal tuberculosis found in 40% of patients. Strictureplasty was performed in 11 (36.33%). The right hemicolectomy, limited ileocaecal resection and segmental bowel resection with end to end anastomosis were performed in four patients each. Other procedures were release of adhesions and bands in 4 patients, ileotransverse bypass in 1 patient and loop ileostomy in 2 patients. Major complication in 10 patient and mortality rate was 10%. **Conclusion:** Because of non-specific clinical features, ignorance and malpractice intestinal tuberculosis presents late. Ileocecal tuberculosis is becoming less common as compared to small bowel strictures. Less radical surgery gives better results. Post operative complications and mortality are related to the perforation of the intestine at the time of surgery.

**Keywords:** intestinal Tuberculosis, Right hemicolectomy, stricturoplasty

### INTRODUCTION

Tuberculosis is a common and major health hazard in Pakistan, just like other countries where, ignorance, poverty, overcrowding, poor sanitation and malnutrition are prevalent.<sup>1</sup> About 3 million people die of tuberculosis each year worldwide. The disease commonly affects the lungs, but almost any organ/system in the body can be affected. Abdominal TB constitute 12% of the extra pulmonary disease, but its diagnosis in initial stages is difficult as the clinical features are vague, diverse and there is no specific diagnostic test.<sup>2,3</sup> The patient therefore usually presents late when the disease becomes complicated. Acute intestinal obstruction is the most common presentation and emergency surgery has to be resorted and diagnosis made on Laparotomy.<sup>4</sup>

Ileocaecal region is most commonly involved followed by ileum but any region of the peritoneal cavity can be affected.<sup>5,6</sup> Surgical procedures also vary depending upon the operative findings.<sup>7</sup> This study was conducted to examine the morphology of intestinal tuberculosis in terms of nature, site, and extent of the lesion and to evaluate the suitability and applicability of different surgical procedures in this disease.

### MATERIAL AND METHODS

This non-randomised prospective study was conducted in Surgical 'C' Unit of Ayub Teaching

Hospital Abbottabad from 1<sup>st</sup> January 2008 to 31<sup>st</sup> December 2008. All the patients who presented with acute intestinal obstruction and were operated upon in casualty Operation Theatre were provisionally inducted. In patients in whom operative and histopathological findings were suggestive of tuberculosis were finally included in the study.

The age and sex of the patients were recorded. Operative findings were noted regarding the site, nature and no of lesions. 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 in 26 cases while in remaining 4 cases specimen were taken from parietal peritoneum and mesenteric lymph nodes only. No specimen was sent for culture as facility was not available locally. Histopathological examination was performed in Pathology Department of Ayub Medical College Abbottabad. 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 on monthly basis.

## RESULTS

A total of 30 patients were found to have intestinal tuberculosis as a cause of intestinal obstruction. The patient's age ranged from 13–58 years. Mean age was 27.6 years. Twenty three (83.33%) patients were below forty years of age while 18 (60%) were in 20–30 years age group. Eighteen patients were female while 12 were male. Male to female ratio was 1:1.5.

The most common operative finding was stricture of small bowel which was found in 15 (50%) cases. In 10 (33.33%) patients strictures were limited to small bowel of which 6 had multiple strictures involving ileum and jejunum while 2 patients had two stricture and two patients had single stricture in terminal ileum. In 3 patients stricture of ilium were present in addition to ileocaecal mass. In 2 patients there was perforation of terminal ileum just proximal to stricture. Ileocaecal tuberculosis was next most common finding which was found in 12 (40%) cases. In three patients the tuberculosis process was widespread and diffused through out the abdomen forming adhesions and bands.

The most commonly performed procedure was stricturoplasty which was performed in 11 (36.33%) patients. Segmental bowel resection with end to end anastomosis was performed in 4 (13.33%) cases. Right hemicolectomy was performed in 4 (13.33%) case and in one of these segmental resection at mid small bowel was also performed. Limited ileocaecal resection was performed in 4 (13.33%) cases including 1 patient who had stricturoplasty as well. Bands and adhesions were released in 4 (13.33%) patients. Ileotransverse bypass without resection of the diseased segment was carried out in 1 (3.33%) patient. Loop ileostomy was performed in 2 (6.66%) cases. In 18 (60%) patients of abdominal tuberculosis there were radiological findings suggestive of pulmonary involvement.

The postoperative hospital stay ranged from 7–45 days. Two patients developed enterocutaneous fistulae which were operated upon after resuscitation and perforated segment was exteriorised. These 2 cases of ileostomy were not included in the primary operative procedures. One patient had burst abdomen that was treated with tension sutures. Two patients had intra-abdominal abscesses. One had pelvic abscess which was drained per rectum. The other patient had right subphrenic abscess which was drained operatively. Wound infection was found in 5 cases which were treated by opening the wound and free drainage.

Histopathology revealed caseating granulomata in 18 cases of resected specimen of intestine only. In 8 patients these granulomata were found in mesenteric lymph nodes as well as intestine.

In 4 cases granulomata were found in parietal peritoneum and serosal tubercles.

During monthly follow-up no significant complication was encountered on outdoor basis but two patients presented with sub acute obstruction in emergency three and four months postoperatively. Both patients settled on conservative treatment.

Three patients died giving a mortality rate of 10%. Both the patient who developed enterocutaneous fistula died in postoperative period due to uncontrolled sepsis. The third patient who developed burst abdomen died suddenly most probably due to pulmonary embolism.

**Table-1: Operative Findings (n=30)**

Variables	Cases	%
Stricture of small bowel alone	10	33.33
Stricture of small bowel with ileocaecal tuberculosis	3	10.0
Stricture of the small bowel with perforation	2	6.66
Ileocaecal tuberculosis	12	40.0
Defused abdominal tuberculosis with multiple adhesions (frozen abdomen)	3	10.0
Total	30	100

**Table-2: Surgical Procedure performed (n=30)**

Variables	Cases	%
Stricturoplasty	11	36.66
Segmental small bowel resection + end to end anastomosis.	4	13.33
Rt. Hemicolectomy	3	10.0
Limited Rt. Hemicolectomy	3	10.0
Rt. Hemicolectomy + segmental resection	1	3.33
Adhesion lysis	4	13.33
Bypass procedure	1	3.33
Ileostomy	2	6.66
Limited Rt. Hemicolectomy+stricturoplasty	1	10.0
Total	30	100

**Table-3 Post-op Complications (n=10)**

Variables	Cases	%
Enterocutaneous fistula	2	6.66
Wound infections	5	16.66
Wound dehiscence	1	3.33
Intra abdominal abscesses	2	6.66
Total	10	33.33

## DISCUSSION

Thirty cases of Intestinal Tuberculosis causing acute intestinal obstruction recorded during one year of study in one of the 3 Surgical Units at Ayub Teaching Hospital, Abbottabad indicates that disease is fairly common in the this part of the country. Impact of huge influx of Afghan refugees cannot be disregarded in this respect, as the incidence of the disease has been reported to be much higher in Afghan population.<sup>8</sup>

Intestinal tuberculosis, like tuberculosis elsewhere in the body affects the young people at the peak of their productive life. This fact has serious impacts on the national economy and production, as working and productive class of community is

replaced by sick and ill individuals. Eighty Percent of the patients in our study were below 40 years and 60% of the patients were between 20–30 years. This is in accordance with the results of other workers.<sup>4,5,9-13</sup>

Mean age in our study was 27 years. This is closer to those reported by Gondal SH *et al*<sup>14</sup> 29 years and Iqbal T<sup>15</sup> 25 years. Bentley and Webster<sup>16</sup> however, have reported average age of 63 years in their cases. This probably represents improvement in the control of tuberculosis in very young people in England. Moreover the average age given by these authors is not statistically significant as the study comprised of only 14 cases.

Females were more commonly affected than males. Male to female ratio in our study was 1:1.5. This is also in accordance with ratios reported by many authors.<sup>9-11,16-21</sup>

Ileocecal tuberculosis was found to be more common in young females as compared to tuberculosis of small bowel with ileocecal sparing which affected the male patients predominantly. The preponderance of ileocecal tuberculosis in females has also been reported by various other workers.<sup>5,11,17</sup> Predominance of small bowel strictures in males can be deduced from Qazi's<sup>22</sup> study of 120 cases of intestinal tuberculosis, where 90 cases of small bowel strictures were male thus yielding reversal of the usual male to female ratio. We noticed a trend towards higher incidence of intestinal strictures compare to the ileocecal tuberculosis. We explained this fact to be due to higher incidence of co-existent pulmonary tuberculosis in our series. Eighteen cases out of thirty were found to have radiological findings of pulmonary tuberculosis in our series. This might be also due to public awareness about pasteurisation of milk and promotion of milk pack industries.

We found two cases of intestinal perforation in addition to the strictures. This incidence perforation is again higher than reported by Parkash,<sup>23</sup> and Bhansali<sup>12</sup> Again we correlate this higher incidence again to ignorance and malpractice in our country.

Surgical procedures carried out in our patients show a trend towards a more conservative surgery. Right hemicolectomy was performed only in five cases accounted 17%. This ratio is considerably less than those reported elsewhere.<sup>5,17</sup> This is because of the shift in the morphology of the intestinal tuberculosis as less and less cases of ileocecal are coming into evidence. Rt. Hemicolectomy removes a considerable portion of the gut with important functions, the most important being the ileocecal valve. In its absence small bowel can be easily colonised with large gut flora due to uninhibited retrograde flow, with resultant malabsorption.<sup>24</sup> Due to sacrifice of the terminal ileum, absorption of

vitamin B<sub>12</sub> and bile salts can not take place. The former is manifested as megaloblastic anaemia and the later by bile acid diarrhoea. The long term effects of terminal ileal resection are increased risk of gall stone formation. Hyperoxaluria and renal oxalate stones, and gastric hypersecretion and peptic ulceration.<sup>24</sup> Rt. Hemicolectomy also deprives the individual of caecum and ascending colon, important areas for water and electrolytes absorption. This may add to the looseness of stools and diarrhoea in these patients. Rt. Hemicolectomy in our patients was performed on technical grounds because of the extensive local disease.

We performed 4 limited Rt. Hemicolectomies. This is in contrast to the teaching in the past but in our opinion formal Rt. Hemicolectomy is not justified for benign diseases like tuberculosis. The procedure is too extensive and hardly necessary. Limited ileocecal resection eradicates the disease with minimum trauma and limited sacrifices of the useful gut. Joshi *et al*<sup>25</sup> have compared the two procedures in terms of safety, simply and tolerability and found limited ileocecal resection better than formal Rt. Hemicolectomy. Elechi<sup>26</sup> has recommended that for a benign disease affecting ileocaecal region limited resection with anastomosis of the ileum to the ascending colon should be the procedure of the choice.

Segmental resection of the small bowel with end to end anastomosis was inevitable in four cases because of the long strictures and multiple strictures in a short segment. In two cases mid bowel stricture with recent perforation proximal to it resection of the involved segment with end to end anastomosis was performed.

The most common surgical procedure in our series was stricturoplasty, which was performed in eleven cases. This is in contrast to that reported by Kumar *et al*.<sup>27</sup> Stricturoplasty is a simple procedure originally described by Katariya and his colleagues in Chandigarh India in 1977.<sup>28</sup> The procedure has become widely popular and is being practiced all over the world. It has also been tried in Crohn's disease, with the same usefulness.<sup>29</sup> The procedure is simple, quicker, less traumatic and applicable anywhere from pylorus to ileocaecal junction. The procedure can also be undertaken in active lesions.<sup>13,30</sup>

Release of adhesions was performed in four cases. Only the adhesions/bands causing obstructions were relieved. Bypass procedures were done in one patient in which ileum was anastomosed to the transverse colon without resecting the diseased ileocaecal segment. The condition of the patient was critical and patient could not tolerate the resection. Bypass procedure in such cases is life saving and

time gap arrangement when resection can be scheduled later on when the patient's condition is satisfactory. This patient however developed intra-abdominal sepsis because of the anastomotic leakage and had burst abdomen on fifth post-operative day. The patient died on 6<sup>th</sup> post-op day because of uncontrolled abdominal sepsis.

We encounter two cases of intercotaneous fistulae. These were the cases where there was perforation of the intestine due to strictures. Both patients showed signs of sepsis and had to be reopened in emergency. Both had extensive abdominal abscesses which were drained, and ileostomy was performed. Both the patients however could not survive and died of uncontrolled sepsis and multiple organ failure. One patient developed pelvic abscesses which was drained through rectum and settled. Burst abdomen occurred in one patient and tension suture had to be applied. Wound infection was found in five patients and responded to usual treatment. Overall complication rate was not higher than other workers. The complication rate reported by Changez Khan<sup>13</sup> was 66% as compare to our rate of 30%. Some workers have reported lower complication rate. Bhansali<sup>12</sup> has reported 16% post operative complication rate in 300 patients. This wide difference may be due to different method of reporting and interpretation.

Three patients died in our study accounting for a mortality rate of 10%. This rate is comparable with that reported by Elhenc *et al*<sup>26</sup> (11%), Kumar *et al*<sup>27</sup> (8%). Some of the authors have reported fairly low mortality rate as contrast to current study like Parkash *et al*<sup>23</sup> (3.7%) and Khan *et al*<sup>27</sup> (5.5%). Our slightly higher mortality rate is most probably because all the patients presented in acute condition and had to be operated upon in emergency. The other authors might have included elective and semi-elective cases in their series.

## CONCLUSION

Intestinal tuberculosis is a common cause of acute intestinal obstruction in our community. Ignorance and malpractice are important causes for late diagnosis and development of complications. There has been a trend in the change of morphology of tuberculosis as ileocaecal tuberculosis has become less common as compare to the small bowel strictures. Because of the varied and diverse morphology of the disease no single surgical procedure can be labelled as standard. Surgical procedures are therefore tailored according to the operative findings and patients conditions. However the resent trend toward less radical surgery. Rt. Hemicolectomy is being replaced with limited Ileocaecal resection. Bypass procedures are

disappearing from the scene. Stricturoplasty is becoming more popular and gives more satisfactory results. Post-operative complications are related to the severity and extent of the disease, the most important factor is the perforation of the intestine and contamination of the peritoneal cavity. Chemotherapy has no substitute and is essential after surgery.

## RECOMMENDATIONS

1. Awareness of the public regarding tuberculosis and its early treatment should be encouraged through media.
2. Quacks and unlicensed medical workers should be dealt strictly according to the Govt. regulations. Their promotion in the media may be discouraged.

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