

Intestinal Obstruction- Etiological and Treatment Outcome

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Abstract

Background: To study the causes of intestinal obstruction with regards to symptoms, duration of symptoms and subsequent management.

Methods: This observational study included 120 consecutive patients with clinical symptoms and signs of intestinal obstruction along with abdominal radiographic findings consistent with mechanical intestinal obstruction or those verified at operation subsequently to have obstructive pattern of disease. Immediate fluid and electrolyte resuscitation was started on every patient. Failure of relief of obstruction on this conservative treatment for more than 48-72 hours or development of signs of toxicity lead to exploratory laparotomy of the patient. Patients with clinical suspicion and previous history of tuberculosis were also initially kept on conservative regime and patients with failure of relief in 72 hours or clinical deterioration were subjected to laparotomy.

Results: Abdominal tuberculosis(26.7%), adhesion(25%), obstructed hernias(12.5%), left sided malignancies(8.3%), volvulus(6.7%), phytobezoar(6.7%), mesenteric ischemia(4.2%), worm infestation(4.2%), intussusceptions(1%) and colonic pseudo obstruction(1%) were the causes encountered in descending order. Chief complaints were abdominal distension(84%), vomiting(66%), absolute constipation(76%) and pain abdomen(70%). Majority (68.8%) of tuberculous patients underwent surgery and 67% of adhesion obstructions settled with conservative management. All the rest underwent surgery for the relief of symptoms.

Conclusion: Intestinal tuberculosis is the main cause of intestinal obstruction in developing countries.

Key Words: Intestinal obstruction, Abdominal Tuberculosis

Introduction

Acute intestinal obstruction remains a common cause of emergency laparotomy with high morbidity and mortality, accounting for 30% of acute abdominal emergencies.¹ Western studies show adhesion

obstruction to be the most common cause but in our part of the world, literature advocates obstructed hernias to be more common.² In past decade there is a shift towards adhesions and abdominal tuberculosis to be more important etiologies of intestinal obstruction in developing countries.³ In developed countries, postoperative adhesions and malignancy ranked high but in developing countries, strangulated hernias were the main cause of intestinal obstruction.⁴

The problem of bowel obstruction dates back to 3rd century when creation of enterocutaneous fistula was the ultimate management of intestinal obstruction.⁵ Non operative measures as laxatives, leeches, heavy metals etc remained a rule until late 1800s but the advent of aseptic surgical intervention along with decompression and isotonic fluid resuscitation facilitated and promoted surgical management of intestinal obstruction.⁶ However period of observation between presentation and surgical intervention remains debatable and depends upon the cause of obstruction. Newer imaging techniques have allowed sophisticated evaluation of the patient but still observation time and best investigation for the diagnosis remains uncertain.⁷ Intestinal Obstruction still remains one of the main cause of surgical emergency with variable management protocols.

Patients and Methods

Study was observational and 120 consecutive patients admitted to Surgical Department of Benazir Bhutto Hospital Rawalpindi, from January 2014 to January 2015 were included. The patients included in this study were those with clinical symptoms and signs of intestinal obstruction along with abdominal radiographic findings consistent with mechanical intestinal obstruction or those verified at operation subsequently to have obstructive pattern of disease. Patients below the age of 10 years and 8 patients with paralytic ileus were excluded from the study. All patients were admitted through casualty department and were received in the emergency ward. Upon arrival of the patients in the ward, an immediate fluid and electrolyte resuscitation was started on every patient, and necessary investigations were done. Patients with previous laparotomy were initially put

on conservative management comprising of nasogastric decompression, fluid and electrolyte correction by intravenous route and broad-spectrum antibiotics. Failure of relief of obstruction on this conservative treatment for more than 48-72hours or development of signs of toxicity lead to exploratory laparotomy of the patient. Patients with clinical suspicion and previous history of tuberculosis were initially kept on conservative regime and patients with failure of relief in 72 hours or clinical deterioration were subjected to laparotomy.

Results

Males constituted 59.2% (71) of the study population; and females 40.8% (49). Site of obstruction was found to be in the small bowel in 82%, while in 18% patients, the site of obstruction was in the large bowel. The most common features on presentation included distension of the abdomen (84%) (Table 1). In 37.5% of the patients, there was a substantial delay in admission to the hospital from the time of development of the symptoms (i.e.>5days) with 25% presenting after 10 days of development of symptoms (Table 2). There were multiple air-fluid levels on plain x-ray films in 83% of the patients. Patients with adhesive obstruction and suspected abdominal tuberculosis were given a trial of conservative treatment for 48 to 72 hours. Of the patients with abdominal tuberculosis 31.2% responded to conservative management and 68.8% ended up in laparotomy due to worsening of symptoms. Of the patients with adhesive obstruction reverse results were obtained with 66% were responders and 33% needed exploration. Overall 98 patients were operated. Abdominal TB was the commonest pathology accounting for 26.7% of cases with mean age of 26.81years and 81% female preponderance and 62.5% patients below 30years of age. In patients of tuberculosis commonest presentation were obstruction (100%) and low grade fever with evening rise (87.5%) (Table 3). Gross findings of stricture was the commonest presentation (43.75%) and tuberculous mass formation at ICJ was seen in 25% cases (Table 4). Usually there are vague and non-specific clinical features which ultimately present with acute obstruction when fibrotic strictures or masses form (Table 4). After intestinal tuberculosis, adhesion obstruction ranked 2nd with 25% of cases (Table 5). Appendectomy (43.3%) was the commonest cause of adhesions (Table 6). Sixty seven percent of these settled on conservative management. Colonic cancer accounts for 7% with mean age of 52 years and 85% males. All were operated in emergency. Colonic pseudo obstruction was seen in 6% cases with 75%

males and mean age of 55.25 years. Fifty percent underwent emergency surgery. Mesenteric ischemia occurred in 4.2% cases with 80% males and mean age of 28.4 years. All were operated in emergency and there was 60% mortality. Bezoars account for another 4.2% with mean age of 38years and male preponderance. Ascaris lumbricoides infestation caused 2.5% of intestinal obstruction with mean age of 13.66 years and intussusceptions accounted for 1% cases with mean age of 11years. All underwent emergency laparotomy. Depending upon the underlying cause of the obstruction, various treatment modalities were adopted, ranging from conservative measures to resuscitation followed by laparotomy and resection anastomosis wherever indicated. There was an overall mortality of 7.5%. Mortality was high in patients who were brought too late to hospital (p < 0.001) after the onset of the symptoms and also old age and mesenteric ischemia (60%) (Table 5).

Table 1: Clinical complaints in patients with intestinal obstruction

Clinical Complaints	Percentage
Abdominal Distension	84
Vomiting	66
Absolute constipation	76
Dehydration	62
Abdominal Pain	70

Table 2: Duration of symptoms in patients with intestinal obstruction

Duration of symptoms	No. of patients	Percentage (%)
<or=1day	19	15.8
2-5days	56	46.7
6-10days	15	12.5
>10days	30	25

Table 3: Symptoms in Tuberculosis patients

Symptoms	No of Patients		Percentage
Obstructive symptoms	0-1 day	0	100
	2-5 days	10	
	6-10days	2	
	>10 days	20	
Low grade fever (evening rise)	28		87.5
Weight Loss	26		81.25
Anorexia	22		68.75

Table 4: Gross findings in T.B abdomen (n=32)

Gross findings	No of T.B patients	Percentage
Stricture	14	43.75
Mass formation	8	25
Cake abdomen	10	31.2

Table 5: Causes of intestinal obstruction and their management

Cause	No	Percentage	Mean age (years)	Conservative (%)	Surgery (%)
Intestinal TB	32	26.7	26.81	31.2	68.8
Adhesions	30	25	35.2	66	33
Obstructed hernia	15	12.5	45.2	0	100
Volvulus	10	8.3	73.2	0	100
Rectosigmoid cancer	8	6.7	52	0	100
Colonic pseudo-obstruction	8	6.7	55.25	50	50
Mesenteric ischemia	5	4.2	28.4	0	100
Bezoars	5	4.2	38	0	100
Ascaris lumbricoides	3	2.5	13.66	0	100
Lymphoma	2	1	48	50	50
Intussusceptions	2	1	11	0	100

Table 6: Intestinal obstruction due to adhesions- Etiology

Cause	Percentage
Appendectomy	43.3
Gynecological procedures	33
Other abdominal surgeries	32

Discussion

Acute intestinal obstruction is a frequently encountered problem and a common cause of hospital admissions in emergency surgical departments and a significant cause of morbidity and mortality.³ There was a mortality of 7.5% in our study due to late presentation, old age and ischemia. In our study small bowel obstruction was found to be common in accordance with literature reporting around 80%.^{3,5} Most common clinical presentation remained abdominal distension (84%), bilious vomiting (66%), absolute constipation (76%) and abdominal pain (70%) with some variations from international literature.⁶⁻¹⁰ Abdominal tuberculosis, adhesions, obstructed hernias, left sided malignancies, volvulus, phytobezoar, mesenteric ischemia, worm infestation, intussusceptions and colonic pseudo obstruction were the causes encountered in our study patients with variation from western literature where adhesions, incarcerated hernias, and large bowel cancer constitute the most frequent causes of obstruction.¹¹⁻¹⁴

Intestinal tuberculosis was the commonest (26.7%) cause of intestinal obstruction in accordance with another Pakistani study.¹⁵ Pakistan ranks 6th in term of TB burden with WHO estimated incidence of 181/100,000 or 28,600 new cases annually and intestinal tuberculosis is reported as the 3rd commonest cause of extra pulmonary tuberculosis.¹⁵ The significant features we observed were presentation at a younger age group (62.5% cases=<30 years) with a female preponderance(81%). Other studies from developing countries also report tuberculosis to be the commonest cause for intestinal obstruction occurring mainly in younger age group of lower socioeconomic strata.¹⁷ Trend is however different in developed countries where postoperative adhesions take the major burden of acute intestinal obstruction.¹⁸ Gross findings of stricture was the commonest presentation in our cases(43.75%) tallying with other studies.^{19,20} Tuberculous mass formation at ICJ was seen in 25% cases. Usually there are vague and non-specific clinical features which ultimately present with acute obstruction when fibrotic strictures or masses form. Concomitant perforations were also present but not taken into study as peritonitis was excluded from study. Primarily a disease of terminal ileum but, resulting from trans-mural inflammation and fibrosis, obstructive tuberculous lesions in colon have also been reported concomitant with ileal or even as isolated colonic involvement.¹⁶ It then usually presents as inflammatory strictures or as exophytic lesions in ascending colon.²¹ None of such isolated lesions were seen in our study.

The 2nd most common underlying cause of obstruction in our study was adhesive obstruction accounting for 25% of cases. Several studies however postulated adhesions to be causing 32%-74% of intestinal obstruction making it the leading cause around 45%-80% in most studies.¹¹⁻¹⁴ There has been an increase in the number of laparotomies, and this has led to incidence in adhesive obstruction in our institute. The patients with adhesive obstruction have undergone previous abdominal operations.^{8,12} In another study, appendectomies, gynecological operations, cholecystectomies, and large bowel cancer resections were more prevalent in accordance with the literature.²⁴ All patients with adhesive obstruction were initially given a trial of conservative treatment for 48-72hrs, and this approach is recommended and adopted by many other authors in their trials.^{3,22,24} A total of 67% of patients of adhesive obstruction responded with complete recovery in our study with remaining 33% subjected to exploration as in another

local study.³The appropriate management of adhesive obstruction is still controversial but in various studies, 35% to 75% were safely and effectively treated with non operative management. ^{5,13} The increasing incidence of adhesion obstruction demands preventive measures during surgery to minimize adhesion formation. A number of intra operative measures are taken into account in elective abdominal surgery to reduce the incidence of adhesions .¹²

Third most common cause was obstructed hernias accounting for 12.5% of cases. This was contrary to the results of earlier studies in our region when obstructed hernias accounted for the commonest cause of acute intestinal obstruction.^{3,8}This result is believed to be due to greater elective hernia repair due to increased awareness of possible complications and improved health care facilities. And thus fewer people present as obstructed/ strangulated bowel obstruction.³ Our results were in concordance with a Nigerian study.⁵Bowel ischemia was reversible in half of our cases with obstruction due to incarcerated hernias. This justifies immediate surgery in these patients. As abdominal hernias still account for 8%-25% of all cases of intestinal obstruction.^{11,14} In some series represent the most common cause of intestinal obstruction accounting for 30%-55%.²² These are still the commonest cause of strangulation.¹¹Aggressive elective surgical repair needs to be continued along with immediate emergency surgery in patients presenting with acute obstruction secondary to obstructed/incarcerated hernias.

Volvulus was the 4th most common cause of intestinal obstruction in our study accounting for 8% patients mainly sigmoid volvulus. The degree of twisting was not documented and mortality in the patients with volvulus in this study was 46.2%. The high mortality rate is connected with the late presentation, the associated gangrene and resection along with old age. Volvulus accounted for 4-15% in various studies.^{12,22} Volvulus necessitating emergency surgery carries higher mortality therefore sigmoidoscopic reduction followed by elective resections should be done electively in same hospital stay. Facilities for endoscopic untwisting were not available in our setup. In our study, 8% of the cases were due to colonic neoplasm with mean age of 52 years and 1% due to lymphoma. Out of these 6 were males and 2 females with 87% accounting for rectosigmoid cancer. Large bowel cancer, particularly sigmoid cancer, is the most common etiology of large intestinal obstruction with a prevalence of 40%-90% in various studies^{11,12} Acute mesenteric ischemia was seen in 4.1% cases of

intestinal obstruction with mean age of 28.4years and male dominance. Patients underwent major resections and mortality was 60% due to short gut syndromes and nutritional deficiencies. However 8 patients presented with colonic pseudo obstruction. Intussusceptions accounted for 1% of cases with mean age of 11years. In studies, intussusceptions accounted for and 4%-8% of total obstruction cases.^{12,13}Bezoars have a reported incidence of 2-4.8% in literature.²⁷ In our study 3% phytobezoars were seen as a cause of intestinal obstruction and 0.8% trichobezoar with mean age of 38years, treated with enterotomies. There is reported incidence of 18% in a study of *Ascaris lumbricoides* as a cause of intestinal obstruction.²⁸ however in our study 2% of the acute intestinal obstruction was caused by worm infestation with mean age of 13.66 years and male preponderance. In general, there is no consensus on appropriate treatment and timings for surgical intervention for patients with acute intestinal obstruction²⁵ Adhesion obstruction has significantly lower risks of strangulation, ischemia and perforations or gangrene compared to hernias.¹¹ Close and careful evaluation with prompt clinical evaluations, laboratory and imaging studies is pivotal for proper management of patients with intestinal obstruction.

Conclusion

1. Abdominal distension and absolute constipation were the most common symptoms and air fluid levels were present in majority of abdominal X rays.
2. Intestinal TB, adhesions, hernia, volvulus and colonic cancer were the main pathological entities causing intestinal obstruction.
3. Non operative management settled cases of adhesion obstruction but rest of the entities required prompt surgical intervention. However caution is needed as risk of strangulation and ischemia is high.

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