

FREQUENCY OF COMMON CAUSES IN MECHANICAL INTESTINAL OBSTRUCTION

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ABSTRACT

BACKGROUND: Obstruction of the bowel may be Dynamic (mechanical) obstruction or adynamic (non-mechanical) obstruction in which no true peristalsis is seen. Abdominal pain, vomiting, constipation, abdominal distension and failure to pass flatus are the cardinal features of intestinal obstruction. The objective of this study is to determine frequency of common causes in mechanical intestinal obstruction.

MATERIALS AND METHODS: This Descriptive (cross sectional) study was conducted over 6 months duration from 4/8/2017 to 3/2/2018, in Department of Surgery, Mardan Medical, Mardan. Consecutive (non-probability) sampling technique was used for sample collection. All patients of either gender aged 18-60 years and diagnosed with mechanical intestinal obstruction were included in the study. Patients with Non Mechanical intestinal obstruction, Irreducible hernia, Paralytic ileus and previous laparotomy were excluded. 184 patients were observed by using WHO software, 13.9% proportion of sigmoid volvulus, 95% confidence level and 5% margin of error.

RESULTS: This study shows that mean age was 30 years with $SD \pm 11.56$. Sixty two percent patients were male and 38% patients were female. More over the incidence of intestinal tuberculosis was found in 18% patients, sigmoid volvulus was found in 15% patients and adhesions was found in 37% patients and hernias was found in 10% patients.

CONCLUSION: Our study concludes that the most common cause of mechanical intestinal obstruction in our setup was adhesions was 37%, followed by intestinal tuberculosis was 18%, sigmoid volvulus 15% and hernias was 10%.

KEY WORDS: common causes, mechanical intestinal obstruction

INTRODUCTION

Obstruction of the bowel may be Dynamic (mechanical) obstruction or adynamic (non-mechanical) obstruction in which no true peristalsis is seen.¹ Abdominal pain, vomiting, constipation, abdominal distension and failure to pass flatus are the cardinal features of intestinal obstruction.² Mechanical obstruction is one of the most serious and frequently encountered emergencies on surgical floor, presenting as acute abdomen.³ An estimated 20% of hospital general surgical emergency admissions are for the management of intestinal obstruction.⁴

Intestinal obstruction occurs when the normal flow of intestinal contents is interrupted. The most frequent causes of intestinal obstruction are postoperative adhesions and hernias, which cause extrinsic compression of the intestine. Less frequently, tumours or strictures of the bowel can cause intrinsic blockage.⁵

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The causes of intestinal obstruction are variable in different parts of the world. This makes it essential that the studies should be conducted periodically in every region to define the local causes with idea of improving surgical health services. The rationale of this study is to find out the frequency of various etiological factors of mechanical intestinal obstruction and to evaluate the morbidity and mortality in adult patients presenting with intestinal obstruction.

OPERATIONAL DEFINITION

MECHANICAL INTESTINAL OBSTRUCTION:

It was diagnosed on the basis of all of the following features;

1. Abdominal pain,
2. Forceful expulsion of gastric contents through mouth even one along with abdominal pain
3. History of constipation since last 48 hours
4. Abdominal distension as detected on clinical examination.
5. History of flatus being not passed since last 48 hours.

COMMON FACTORS INTESTINAL TUBERCULOSIS:

It was diagnosed on the basis of all of the following features on histopathology of intestinal tissue obtained during laparotomy.

1. Positive Tuberculin Skin test.
2. Endoscopy of Upper or Lower GI tract revealing mucosal nodules, ulcers of varying sizes, hyperemic friable mucosa and pseudo polyps.

3. Histopathology showing confluent granulomas with caseous necrosis, ulcers lined by conglomerate epithelioid histiocytes, disproportionate sub mucosal inflammation.

SIGMOID VOLVULUS

Twist of sigmoid colon about its mesentery confirmed at laparotomy.

MATERIAL AND METHODS

This Descriptive (cross sectional) study was conducted over 6 months duration from 4/8/2017 to 3/2/2018, in Department of Surgery, Mardan Medical, Mardan. Consecutive (non-probability) sampling technique was used for sample collection. All patients of either gender aged 18-60 years and diagnosed with mechanical intestinal obstruction were included in the study. Patients with Non Mechanical intestinal obstruction, Irreducible hernia, Paralytic ileus and previous laparotomy were excluded. Sample size of 184 was calculated using WHO software for sample calculation using 13.9% proportion of sigmoid volvulus with 95% confidence level and 5% margin of error.

After getting approval from hospital ethical and research committee, patients meeting the inclusion criteria were included in study. A written informed consent was obtained from all included patients. The diagnosis of intestinal obstruction was made on the basis of detail history, clinical finding, X ray abdomen (Air fluid level and gas shadows) and USG abdomen (Mass, foreign body, fecal impaction). Laparotomy was done in those cases who did not improve with conservative treatment and where mechanical cause of intestinal obstruction was suspected like adhesion, hernias, volvulus, intestinal TB. The operative diagnosis was confirmed by histological diagnosis of tissues specimen. Information including name, age, gender, outpatient number, study group, address and telephone number was recorded on a pre-designed proforma. Strict exclusion criteria were followed to control confounders and bias in the study results.

All data was entered and analyzed in SPSS (version 16). Frequencies and percentages were calculated for categorical variables like gender, common causes (adhesion, hernias, volvulus, intestinal TB). Mean + SD were

calculated for quantitative variables like age and duration of symptoms. Common causes were stratified among the age and gender to see the effect modification. Post stratification was done through chi-square test keeping p-value < 0.05 as significant. All the results were presented as tables and charts.

RESULTS

Age distribution among 184 patients was analyzed as 51(28%) patients were in age range 18-30 years, 74(40%) patients were in age range 31-40 years and 39(21%) patients were in age range 41-50 years, 20(11%) patients were in age range 51-60 years. Mean age was 30 years with $SD \pm 11.56$. (Table 1).

Gender distribution among 184 patients was analyzed as 114(62%) patients were male and 70(38%) patients were female. (Table No 2).

Intestinal tuberculosis was found in 18% of patients with intestinal obstruction. Sigmoidvolvulus was found in 15% patients, adhesions were found in 37% of patients and Hernias was found in 10% patients. (Table3)

Stratification of common causes with age and gender is given in table no 4, 5.

DISCUSSION

Obstruction of the bowel may be Dynamic (mechanical) obstruction or adynamic (non-mechanical) obstruction in which no true peristalsis is seen.¹ Abdominal pain, vomiting, constipation, abdominal distension and failure to pass flatus are the cardinal features of intestinal obstruction.² Mechanical obstruction is one of the most serious and frequently encountered emergencies on surgical floor, presenting as acute abdomen.³ An estimated 20% of hospital general surgical emergency admissions are for the management of intestinal obstruction.⁴

Intestinal obstruction occurs when the normal flow of intestinal contents is interrupted. The most frequent causes of intestinal obstruction are postoperative adhesions and hernias, which cause extrinsic compression of the intestine. Less frequently, tumours or strictures of the bowel can cause intrinsic blockage.⁵

Our study shows mean age was 30 years with $SD \pm 11.56$. Sixty two percent patients were male and 38% patients were female. More over the incidence of intestinal tuberculosis was found in 18% patients, sigmoid volvulus was found in 15% patients and adhesions was found in 37% patients and hernias was found in 10%

TABLE NO 1: AGE DISTRIBUTION (n=184)

Age	Frequency	Frequency
18-30 years	51	28 %
31-40 years	74	40 %
41-50 years	39	21 %
51-60 years	20	11 %
Total	184	100 %

Mean age was 30 years with $SD \pm 11.56$

TABLE NO 2: GENDER DISTRIBUTION (n=184)

Gender	Frequency	Frequency
Male	114	62 %
Female	70	38 %
Total	184	100 %

TABLE NO: 4 COMMON CAUSES (n=184)

Common Causes	Frequency	Frequency
Intestinal Tuberculosis	33	18%
Sigmoid Volvulus	28	15 %
Adhesions	68	37 %
Hernias	18	10 %

TABLE NO: 5 STRATIFICATION OF COMMON CAUSES WITH AGE DISTRIBUTION (n=184)

Common Causes		18 -30 years	31 -40 years	41 -50 years	51 -60 years	Total	P Value
Intestinal Tuberculosis	Yes	9	13	7	4	33	0.392
	No	42	61	32	16	151	
Total		51	74	39	20	184	
Sigmoid Volvulus	Yes	8	11	6	3	28	0.381
	No	43	63	33	17	156	
Total		51	74	39	20	184	
Adhesions	Yes	19	27	14	8	68	0.377
	No	32	47	25	12	116	
Total		51	74	39	20	184	
Hernias	Yes	5	7	4	2	18	0.351
	No	46	67	35	18	166	
Total		51	74	39	20	184	

TABLE NO: 6 STRATIFICATION OF COMMON CAUSES WITH GENDER DISTRIBUTION (n=184)

Common Causes		Male	Female	Total	P Value
Intestinal Tuberculosis	Yes	20	13	33	0.276
	No	94	57	151	
Total		114	70	184	
Sigmoid Volvulus	Yes	17	11	28	0.311
	No	97	59	156	
Total		114	70	184	
Adhesions	Yes	42	26	68	0.292
	No	72	44	116	
Total		114	70	184	
Hernias	Yes	11	7	18	0.253
	No	103	63	166	
Total		114	70	184	
Common Causes		Male	Female	Total	P Value
	Yes	20	13	33	0.276
Intestinal Tuberculosis	Yes	20	13	33	0.276
	No	94	57	151	
Total		114	70	184	
Sigmoid Volvulus	Yes	17	11	28	0.311
	No	97	59	156	
Total		114	70	184	
Adhesions	Yes	42	26	68	0.292
	No	72	44	116	
Total		114	70	184	
Hernias	Yes	11	7	18	0.253
	No	103	63	166	
Total		114	70	184	

patients.

Intestinal obstruction occurs when the normal flow of intestinal contents is interrupted. The most frequent causes of intestinal obstruction are postoperative adhesions and hernias, which cause extrinsic compression of the intestine. Less frequently, tumours or strictures of the bowel can cause intrinsic blockage. The most common cause for mechanical intestinal obstruction was adhesions (36.1%). Intestinal tuberculosis was the second most common cause (19.4%), while hernias and sigmoid volvulus affected 13.9% patients each. Malignancies were found in 5.6% cases.⁵

Similar findings were observed in another study conducted by Hasnain QS et al⁶ in which 208 patients were observed, 108 were males and 100 females. Adhesions,

hernias, malignancy and tuberculosis accounted for 74% of all the cases of intestinal obstruction. Tuberculous strictures were thrice as common and adhesions nearly twice as common in patients aged 50 years or less as compared with those over 50 years. The reverse was true of cancer which was nearly twice as common in patients over 50 years of age. Previous general surgical (65%), obstetrical-gynaecological (21%), urological (10%) and other unknown procedures (4%) accounted for the cases of adhesive intestinal obstruction (n= 71). Among the hernias, there were 15 inguinal, 14 incisional, four paraumbilical and one femoral. In the group with malignant obstruction 18 had recto sigmoid carcinoma and 10 patients had widespread intra-abdominal malignant disease. The tubercles strictures involved the ileocecal

region and the terminal ileum. Although bacteriological/histological proof of tuberculosis could only be established in nine out of 21 patients, who underwent surgery, strong clinical and radiological evidence of intestinal tuberculosis was present in the other patients. Notably, diverticular disease was a rare cause of intestinal obstruction in the present series. Disease distribution was also analyzed according to the financial status of the patient. The ratio of self-paying to welfare patients was significantly lower ($P < 0.05$) for tuberculous obstruction as compared with adhesions or malignancy and for obstruction due to hernia as compared with malignancy. The need for surgical intervention was high in patients with cancer and external hernia. Only 43% of patients with adhesive obstruction and obstruction due to tuberculosis underwent surgery.

Similar findings were found in another study conducted by Asad S et al⁷ in which 36 patients with age ranging from 12 to 80 years (Mean age 37.72 +/- 19.74 years) and male to female ratio of 1.77:1, were treated for mechanical intestinal obstruction. The most common

cause for mechanical intestinal obstruction was adhesions (36.1%). Intestinal tuberculosis was the second most common cause (19.4%), while hernias and sigmoid volvulus affected 13.9% patients each. Malignancies were found in 5.6% cases. Moreover he concluded that Adhesions and Tuberculosis are the leading causes of mechanical intestinal obstruction in Pakistan. Although some patients can be treated conservatively, a substantial portion requires immediate surgical intervention. Similar findings were found in another study conducted by Chalya P et al⁸ in which the most common cause for mechanical intestinal obstruction was adhesions (19%). Intestinal tuberculosis was the second most common cause (10%), while sigmoid volvulus affected 17% patients. Malignancies were found in 7% cases.

CONCLUSION

Our study concludes that the most common cause of mechanical intestinal obstruction in our setup was adhesions was 37%, followed by intestinal tuberculosis was 18%, sigmoid volvulus 15% and hernias was 10%.

REFERENCES

1. Zerey M, Sechrist CW, Kercher KW, Sing RF, Matthews BD, Heniford BT. The laparoscopic management of small-bowel obstruction. *Am J Surg.* Dec 2007; 194(6):882-7.
2. Khaikin M, Schneidereit N, Cera S, Sands D, Efron J, Weiss EG, et al. Laparoscopic vs. open surgery for acute adhesive small-bowel obstruction: patients' outcome and cost-effectiveness. *SurgEndosc.* May 2007; 21(5):742-6.
3. van der Wal JB, Iordens GI, Vrijland WW, van Veen RN, Lange J, Jeekel J. Adhesion prevention during laparotomy: long-term follow-up of a randomized clinical trial. *Ann Surg.* Jun 2011; 253(6):1118-21.
4. Di Saverio S, Coccolini F, Galati M, Smerieri N, Biffl WL, Ansaloni L, et al. Bologna guidelines for diagnosis and management of adhesive small bowel obstruction (ASBO): 2013 update of the evidence-based guidelines from the world society of emergency surgery ASBO working group. *World J Emerg Surg.* Oct 10 2013; 8(1):42.
5. Thompson WM, Kilani RK, Smith BB, Thomas J, Jaffe TA, Delong DM, et al. Accuracy of abdominal radiography in acute small-bowel obstruction: does reviewer experience matter? *AJR Am J Roentgenol.* Mar 2007; 188(3):W233-8.
6. Hasnain QS, Ahmed M. Intestinal Obstruction in Adults at the Aga Khan University Hospital. *JPMA.* 1994; 143:5
7. Asad S, Khan H, Khan IA, Ali S, Ghaffar S, Zia urRehman. Aetiological factors in mechanical intestinal obstruction. *J Ayub Med Coll Abbottabad.* 2011 Jul-Sep; 23(3):26-7.
8. Chalya P, Mabula, JbAlphonseB. Dynamic bowel obstruction: aetiology, clinical presentation, management and outcome at Bugando Medical Centre, Mwanza, Tanzania. *Tanzania Journal of Health Research.* 2014; 16 (1):1-10