



TO STUDY THE CLINICAL PROFILE AND MANAGEMENT OF ACUTE INTESTINAL OBSTRUCTION AT ACHARYA VINOBA BHAVE RURAL HOSPITAL

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ABSTRACT

Acute intestinal obstruction is one of the most common surgical emergencies. It describes failure of aboral progression of intestinal contents. It involves a partial or complete blockage of the bowel which induces mechanical impairment or complete arrest of the passage of content through the intestine. Obstruction may occur in the small bowel (SBO) or large bowel (LBO). Intestinal obstruction is found in 20% of individuals admitted to hospital with acute abdominal pain; of this 80% of the obstructions involve the small intestine and the other 20% occur in the colon. The overall mortality and morbidity of bowel obstruction is substantial. Mortality rates range from up to 3% for simple obstructions to as much as 30% when there is vascular compromise or perforation of the obstructed bowel. This study aims to evaluate common causes of intestinal obstruction, clinical features and to assess the mortality and morbidity in rural setup, undertaken at AVBRH sawangi (meghe). **Aim:** To identify the common causes of acute intestinal obstruction. **Objectives:** To study the various clinical features of intestinal obstruction. To compare the morbidity and mortality rate with the various studies published. **Material and Methods:** Patients that attended the outpatient department and the casualty and those who got admitted in the surgical wards of Acharya Vinoba Bhave hospital in the period of May 2009 - Sep 2011 were included in the study. Patients belonged to the age groups ranging from 1 year to 85 years were included. **Conclusion:** In our study, most of the patients (43.14%) had no complications however fever occurred as a postoperative complication in 17.65% of patients, wound gaping in 16.67% of patients, prolonged ileus was seen in 9.80% of patients, burst abdomen was seen in 4.90% patients, faecal fistula in 2.94% patients and short bowel syndrome in 98% patients.

KEYWORDS: Small bowel, Large bowel, obstruction.

INTRODUCTION

Acute intestinal obstruction is one of the most common surgical emergencies. It describes failure of aboral progression of intestinal contents. It involves a partial or complete blockage of the bowel which induces mechanical impairment or complete arrest of the passage of content through the intestine. Obstruction may occur in the small bowel (SBO) or large bowel (LBO). Intestinal obstruction is found in 20% of individuals admitted to hospital with acute abdominal pain; of this 80% of the obstructions involve the small intestine and the other 20% occur in the colon. The overall mortality and morbidity of bowel obstruction is substantial. Mortality rates range from up to 3% for simple obstructions to as much as 30% when there is vascular compromise or perforation of the obstructed bowel. Bowel obstruction may be functional due to causes affecting bowel wall or due to splanchnic nerve dysfunction or due to a mechanical barrier. **SBO** is mainly of two types^[1,2], Mechanical or dynamic obstruction and functional or adynamic obstruction.

Mechanical obstruction means that luminal contents cannot pass through the gut tube because the lumen is physically blocked or obstructed, whereas functional obstruction means that luminal contents fail to pass because of disturbances in gut motility that prevent coordinated transit from one region of the gut to the next. This form is commonly referred to as ileus or pseudo-obstruction^[2], **LBO** can result from either mechanical interruption of the flow of intestinal contents or by the dilation of the colon in the absence of an anatomic lesion (pseudo-obstruction, diverticulitis). Intussusception is a unique type of obstruction that results from invagination of a segment of bowel into another. Polyps, Meckel's diverticulum (MD) and intestinal duplications are seen in 5% of the total number of intussusception.^[3]

AIM AND OBJECTIVES

Acute intestinal obstruction is a common surgical emergency that a general surgeon comes across and one has to accomplish the skills of diagnosing, art of surgery and knowledge of postoperative management, which

carries gratifying results. With this in mind, I opted to take this study with following aim and objectives. To identify the common causes of acute intestinal obstruction.

- To study the various clinical features of intestinal obstruction.
- To compare the morbidity and mortality rate with the various studies published.

MATERIAL AND METHODS MATERIAL

Patients that attended the outpatient department and the casualty and those who got admitted in the surgical wards of Acharya Vinoba Bhave hospital in the period of May 2009 - Sep 2011 were included in the study.

Patients belonged to the age groups ranging from 1 year to 85 years were included.

INCLUSION CRITERIA

Patients with acute intestinal obstruction who have undergone operative management are included in this study.

EXCLUSION CRITERIA

1. Patients who refused surgical intervention were excluded.
2. Patients those who were treated conservatively for subacute intestinal obstruction.

ETHICS COMMITTEE PERMISSION

The study was initiated only after obtaining permission from the institutional ethics committee, AVBRH, Sawangi (M), Wardha. Cases selection was done in the criteria of history, clinical examination and radiological examination. All the cases studied subjected to surgery and the diagnosis was established. Soon after the admission, clinical data were recorded according to the proforma. The diagnosis was mainly based on clinical examination and often supported by radiological examinations.

Various investigations carried out

1. Routine examination includes haemoglobin percentage, blood grouping and typing, WBC count and differential count, and blood urea, serum creatinine, serum electrolyte.

2. Urine

Routine examinations-albumin, sugar and microscopy.

3. Radiology Imaging

Plain x-ray erect abdomen to detect fluid gas levels, ultrasound abdomen was done in most of the cases. Immediately after the admission along with above procedure resuscitation with IV fluids especially ringer lactate and normal saline infusion started till the hydration and urine output become normal.

Nasogastric decompression with Ryle's tube was carried out and antibiotic prophylaxis started and close observation of all bedside parameters (like pulse rate, BP, RR, abdominal girth, bowel sounds and tenderness and guarding) was done. By improved bowel motility, reduction in pain/tenderness were managed by conservative treatment. Such individuals are excluded in this study.

Patients with clear-cut signs and symptoms of acute obstruction were managed by appropriate surgical procedure after resuscitation. Surgery adopted and criteria for deciding the procedure were noted.

Histopathological examination of the specimen of resection/biopsy was done whenever necessary.

The postoperative period was monitored carefully and all parameters were recorded hourly or four hourly basis depending upon the patients general condition and toxemia. Routine intermittent oxygen inhalation was instituted in patients having strangulation of the bowel to reduce the damage induced by ischemia.

FOLLOW UP

Postoperative follow up after the discharge of patients was done in majority of the patients up to 3 months. Most of the patients did not come for follow up after one or two visits.

The results are tabulated mostly stressing on following points age, sex, symptoms, examination findings, investigations, abnormalities, probable causative factors, operative findings and operative procedure adopted.

DATA MANAGEMENT AND STATISTICAL ANALYSIS

All the information was collected using a structured proforma. Completed information was entered in computer software. Crosschecking and data cleaning was done.

- Nominal data such as demographic data were presented as number and percentages.
- Continuous data (age, duration of disease, pulse BP) were expressed as mean, standard deviation and range.
- *Chi-Square test* or *Fisher exact test* were applied as appropriate for comparison of nominal data.
- For continuous data, *Unpaired t test* was **applied to compare two group** P value of 0.05 was considered as statistically significant.

RESULTS

Out of the 102 patients studied the following observations and results were obtained at AVBRH SAWANGI.

Table: 1 Age wise and Gender wise distribution of patients

Age Group(vrs)	Male	Female	Total
0-10	5(4.90%)	2(1.96%)	7(6.86%)
11-20	6(5.88%)	6(5.88%)	12(11.76%)
21-30	5(4.90%)	4(3.92%)	9(8.82%)
31-40	8(7.84%)	5(4.90%)	13(12.75%)
41-50	7(6.86%)	5(4.90%)	12(11.76%)
51-60	19(18.63%)	12(11.76%)	31(30.39%)
61-70	12(11.76%)	3(2.96%)	15(14.72%)
>70	2(1.96%)	1(0.98%)	3(2.94%)
Total	64(62.75%)	38(37.25%)	102(100%)
Mean Age	44.07		
SD	19.80		
Range	2.85 years		

Table: 2 Distribution of patients according to signs and symptoms

Signs and symptoms	No of patients	Percentage(%)
Pain	96	94.12
Vomiting	83	81.37
Distention	99	97.06
Constipation	95	93.14
Fever	18	17.65
Dehydration	63	61.76
Tenderness	86	84.31
Guarding	22	21.57
Rigidity	0	0.00
Palpable Mass	14	13.73
Increased bowel sounds	86	84.31
Absent bowel sounds	16	15.69

Table: 3 Distribution of patients according to duration of pain

Duration of pain(days)	No of patients	Percentage(%)
1	40	39.22
2	39	38.24
>2	17	16.67
No Pain	6	5.88
Total	102	100.00

Table: 4 Distribution of patients according to duration of vomiting

Duration of vomiting(days)	No of patients	Percentage(%)
1	83	81.37
2	14	13.73
>2	1	0.98
No Vomiting	4	3.92
Total	102	100.00

Table 5: Distribution of patients according to nature of vomiting

Nature of vomiting(days)	No of patients	Percentage(%)
Bilious	79	77.45
Faeculent	19	18.63
No Vomiting	4	3.92
Total	102	100.00

Table 6: Distribution of patients according to presence of distention

	No of patients	Percentage(%)
Present	96	94.12
Absent	6	5.88
Total	102	100.00

Table 7: Distribution of patients according to presence of constipation

Presence of constipation	No of patients	Percentage (%)
Present	95	93.14
Absent	7	6.86
Total	102	100.00

Table 8: Distribution of patients according to etiology

Etiology	No of patients	Percentage(%)
Adhesions	30	29.41
Hernia	19	18.63
Tuberculous Obstruction	19	18.63
Volvulus	15	14.71
Malignancy	10	9.80
Intussusception	3	2.94
Meckels diverticulum	4	3.92
Others	2	1.96
Total	102	100.00

Table 9: Age and sex distribution of study group against causes of obstruction #

Age Cause	0-10		11-20		21-30		31-40		41-50		51-60		61-70		>70	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Adhesions (30)	1	1	3	4	4	1	4	3	3	1	-	-	3	1	1	-
Tuberculous obstruction (19)	1	-	1	1	"	3	2	2	1	1	1	3	2	1	-	-
Hernia (19)	-	-	-	-	1	-	1	-	2	-	10	1	4	-	-	-
Volvulus (15)										2	6	4	2	1	-	-
Malignancy (10)	-	-	-	-	-	-	1	-	-	1	2	3	1	-	1	1
Meckel's diverticulum (4)	1	-	2	1												
Intussusception (3)	2	1														-
Others (2)	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-
Total (102)	7		12		9		13		12		31		15		3	

Table 10 Distribution of patients according to type of adhesions

Cause of adhesions	No of patients	Percentage (%)
Post operative	25	83.33
Others	5	16.67
Total	30	100.00

Table 11 Distribution of patients according to type of volvulus.

Cause of volvulus	No of patients	Percentage (%)
Sigmoid	12	80.00
Ileum	3	20.00
Total	15	100.00

Table 12 Distribution of patients according to type of hernia

Type of hernia	No of patients	Percentage (%)
Right Inguinal	12	63.16
Left Inguinal	5	26.32
Incisional	1	5.26
Umbilical	1	5.26
Total	19	100.00

Table 13: Distribution of patients according to site of malignancy

Site of malignancy	No of patients	Percentage (%)
Hepatic Flexure	1	10.00
Splenic Flexure	1	10.00
Descending Colon	2	20.00
Sigmoid Colon	4	40.00
Caecum	2	20.00
Total	10	100.00

Table 14: Radiological findings of x ray abdomen standing among the patients

X ray abdomen findings	No of patients	Percentage (%)
Multiple air fluid level	78	93.98%
Ground glass appearance	05	4.82%

Table 15: Distribution of patients according to type of operative management

Type of operative management	No of patients	Percentage (%)
Adhesiolysis	25	24.51
Resection Anastomosis	20	19.61
Derotation of Volvulus	12	11.76
Hemicolectomy	13	12.75
Sigmoidectomy	10	9.80
Hernioraphy	17	16.67
Ilio Transverse Anastomosis	17	16.67

Table 16: Distribution of patients according to causes of mortality

Causes of mortality	No of patients	Mortality (%)
Adhesions	30	0(0%)
Hernia	19	0(0%)
Tuberculous Obstruction	19	3(15.79%)
Volvulus	15	1(6.67%)
Malignancy	10	3(30%)
Intussusception	3	0(0%)
Meckels diverticulum	4	0(0%)
Other	2	0(0%)

Table 17: Distribution of patients according to post operative complications

Post operative complications	No of patients	Percentage (%)
Wound Gaping	17	16.67
Fever	18	17.65
Prolonged Ileus	10	9.80
Faecal Fistula	3	2.94
Burst Abdomen	5	4.90
Short Bowel Syndrome	1	0.98
Septicaemia(Death)	7	6.86
No Complications	44	43.14

Table: 18 Association of etiology with postoperative complications

Etiology	Postoperative complications		total
	present	absent	
Adhesions	07(23.33%)	23(76.66%)**	30
Tuberculous obstruction	16(84.21%)**	3(15.79%)	19
Hernia	9(47.36%)	10(52.64%)	19
Volvulus	13(86.66%)	2(13.34%)	15
Malignancy	8(80%)**	2(20%)	10
Meckel's diverticulum	1(25%)	3(75%)	4
Intussusception	2(66.67%)	1(33.33%)	3
Others	2(100%)	-	2
Inference	Tuberculous obstruction and malignancy are more prone for complications		

DISCUSSION

Acute intestinal obstruction is one of the most common surgical emergencies. It involves a partial or complete blockage of the bowel which induces mechanical impairment or complete arrest of the passage of the content through the intestine either in the small bowel (SBO) or large bowel (LBO). The

overall mortality and morbidity of bowel obstruction is substantial. Bowel obstruction may be functional or due to a mechanical barrier. **SBO** is mainly of two types.^[1,2] Mechanical or dynamic obstruction and functional or adynamic obstruction.^[2] **LBO** can result from either mechanical interruption of the flow of intestinal contents or by the dilation of the colon in

the absence of an anatomic lesion (pseudo-obstruction, colon cancer and diverticulitis). Intestinal obstruction continues to be a frequent emergency, which surgeons have to face (1-4% of emergency operations). Brewer et al analysed 1000 consecutive abdominal surgeries in 1976 and reported an incidence of 2.5%.^[4] In our hospital, about 102 cases of acute intestinal obstruction were studied in the period of May 2009 - Aug 2011, who required hospital management. The involvement of small bowel in obstruction is much more common than that of large bowel.^[5] Many Indian studies demonstrated that the pattern of intestinal obstruction differs from the Western world with obstructed hernias being the most important cause. However, little data is available from the Central part of the India especially from the rural population. Therefore, this study was planned at AVBRH Sawangi (Meghe) Wardha.

Demographics

In our study, we 102 patients were enrolled, 64 (62.75%) were male and 38 (37.25%) were female. Mean age of patients in the study was 44.07±19.80 years and maximum number of patients belongs to 51 to 60 years age group. Male to Female ratio is 1.68: 1.00. The results of our study are in the line with published literature. In a study by *Rehman* et al, there were 32 male and 22 female patients. Male to female ratio was 1.00: 0.7. The age range was from 15-70 years with mean age 34 ± 16.7 years.^[6] In retrospective review by *Madziga* in Nigeria 372 patients, a male: female ratio was 2.4:1. The mean age was 34.5 years. Patients below 10 years and those between the third and fifth decades accounted for 60% of the cases.^[7]

Symptoms

In our study, majority of patients had symptoms of distention (97.06%), pain (94.12%), constipation (93.14%), tenderness (84.31%), increased bowel sounds (84.31%), vomiting (81.37%) and dehydration (61.76%) however symptoms of guarding, absent bowel sounds, fever and palpable mass was seen in fewer number of subjects. In around 70 % patients, pain persist for one or two days. patients (81.37%) had a vomiting for one day. Bilious vomiting were occurred in majority of patients (77.45%) followed by faeculent (18.63%). Abdominal distention was present in 94.12% of patients while it was absent in 5.88% patients. Constipation was present in 93.14% of patients.

Similar findings were observed by other authors. In a study by *Rehman*, the commonest symptoms were abdominal pain 54 (100%), abdominal distension 49 (90%), vomiting 42 (78%), absolute constipation 37 (68.5%), dehydration 33 (61%), fever 16 (29.6%), mass right iliac fossa 8 (15%), inguinoscrotal swelling 10 (18%).^[6] In a study by *Madziga*,

Abdominal pain 88.7%, vomiting 84.8%, and constipation 78.8% were the main symptoms while tenderness and abdominal masses were common signs.^[7] A prospective study by *Haridimos M et al* in 150 patients, absence of passage of flatus (90%) and/or feces (80.6%) and abdominal distension (65.3%) were the most common symptoms and physical finding, respectively.^[8] The above findings indicate that the clinical profile of Indian patients with intestinal obstruction is same as that of others.

Etiology

In the present study, other main causes of intestinal obstruction were hernia and tuberculous obstruction in 18.63 % patients, volvulus in 14.71% patients, malignancy in 9.80% patients, meckel's diverticulum in 3.92%, intusseption in 2.94% patients and other causes in 1.96% patients. Sigmoid volvulus as a cause of intestinal obstruction occurs in 80% patients while ileal volvulus as a cause of volvulus occurs in 20% of patients. Right sided inguinal hernia obstruction was responsible in 63.16% patients. Left sided inguinal hernia obstruction was responsible in 26.32% patients while incisional and umbilical hernia was seen in 5.26% of patients. Malignancy was a cause of obstruction in only 10 patients. Similar findings were observed by other authors. In a study by *Rehman*, the commonest etiology were adhesions and bands 23 (42.5%), intestinal tuberculous 13 (24.07%), stricture + ileocecal mass, hernias 10 (18.51%), tumours 03 (5.5%), worm infestations 03 (5.5%), intussusception 02 (3.7%).^[20] In a study by *Pal et al* in peripheral district of eastern India in 150 episodes of mechanical intestinal obstruction, external hernia accounts for the largest number of cases followed by volvulus.^[9]

MANAGEMENT

In our study, adhesion was the main cause of intestinal obstruction. Thus, we need to pay adequate attention to this prevalent emergency, because sometimes, adhesion obstruction is potentially lethal. A crucial problem in management is how to differentiate whether there is actual, or impending, small bowel ischaemia and whether there is a need for emergency surgery.^[10]

Operative management was done in all patients. Out of them 24.51% patients underwent adhesiolysis, 19.61% underwent resection anastomosis, 16.67% patients were treated with herniorraphy and same number of patients underwent ilio transverse anastomosis. 12.75% patients were managed with hemicolectomy, 11.76% with derotation of volvulus and 9.80 were managed with sigmoidectomy. The pattern of operative treatment in our study reflects the standard approach to the management of patients with intestinal obstruction.

In a study by *Rehman*, the commonest etiology were

managed by adhesiolysis + band division 27 (50%), resection and end to end anastomosis 13(24 %), Right hemicolectomy 9 (17%), simple reduction & defect repair 5 (9%), enterotomy 3 (5.5%).^[6]

In a study by *Mohamed et al* in Saudi Arabia, surgical intervention was necessary in 61 patients (73%) while 23 patients (27%) responded to conservative treatment.^[63] *In a study by Oltene Y et al*, 581 patients were operated upon and nearly half 242 required bowel resections with an overall mortality of 12%.^[11]

The time interval before operation is a critical factor for acute intestinal obstruction, because prolonged conservative therapy might be harmful and potentially lethal and on the other hand, too radical option of operation will aggravate the burden of the patients.

The present study indicates that all the patients with acute intestinal obstruction can be cured with operation. The period of conservative therapy is better to be limited within one week after the onset of symptoms, and then conversion to surgery should be considered.^[12]

Mortality

In our study, mortality was 6.86%, of them 3 patients had tuberculous obstruction, 3 had malignancy and 1 had volvulus. All of them died due to septicemia. In a study by *Pal et al* in 150 episodes of mechanical intestinal obstruction, operative mortality was 28%. The highest mortality rate (41.3%) was found in volvulus.^[9] In a retrospective study by *Mohamed et al*, the mortality rate was 3.5%. *In a study by Madziga*, mortality rate was 9.14%.^[13] *In a study by Cliaib E et al*, the overall operative mortality was 9.09%.^[14] **Our study shows that the mortality in our study is less as compared to mortality reported by the other studies.**

Complications

In our study, most of the patients (43.14%) had no complications however fever occurred as a postoperative complication in 17.65% of patients, wound gaping in 16.67% of patients, prolonged ileus was seen in 9.80% of patients, burst abdomen was seen in 4.90% patients, faecal fistula in 2.94% patients and short bowel syndrome in 98% patients. It was found that incidence of postoperative complications was more in tuberculous obstruction and malignancy. In a study by *Pa! et al* /he major adverse factors were gangrenous bowel and large bowel obstruction.^[9] In a retrospective study by *Mohamed et al*, the main complications were wound infection, chest infection, prolonged ileus and intestinal fistulae.^[14] *In a study by Madziga*, common postoperative complications included wound infection 57 (15.3%) and pneumonia 35 (9.4%).^[65],

In a study by Cltaib E et al, complications occurred in 15.7% of patients following operative intervention; wound infection was the most common postoperative complication.^[14] A prospective study by *Haridintos M et al, bowe* ischemia was found in 14%, necrosis in 9.3%, and perforation in 5.3%.^[8]

CONCLUSION

- Intestinal obstruction remains an important surgical emergency. Patients with a clinical picture of obstruction of the bowel demand vigorous resuscitation, correction of fluid and electrolyte, which can be severe, and life threatening.
- Postoperative adhesions is the common cause to produce intestinal obstruction. Clinicoradiological and operative findings put together can bring about the best and accurate diagnosis of intestinal obstruction.
- Mechanical obstruction is not associated with any specific bio-chemical marker, or radiological marker which can help the surgeon to differentiate simple obstructions from ischemia or closed loop obstruction with impending bowel infarction. Only timely surgical intervention can be helpful to avert complications eg- ischaemia, gangrene
- Diagnosis of strangulation is still a challenge.
- Intestinal obstruction with tuberculous stricture are more likely to develop postoperative complications, Early diagnosis of tuberculosis and proper antitubercular treatment can reduce morbidity and mortality.
- Elective operative treatment for hernia can reduce the morbidity caused by obstruction and strangulation.
- Similarly intestinal obstruction due to malignancy are more likely to develop postoperative complications, as the malignancy is more common in older age group-. Early diagnosis and operative treatment followed by proper postoperative management is necessary to prevent mortality and morbidity.^[12]
- Early operation is mandatory to avoid the development of peritonitis and systemic sepsis associated with multi-system organ failure.

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