

PROSPECTIVE EVALUATION OF AETIOPATHOGENESIS AND MANAGEMENT OF SMALL BOWEL OBSTRUCTION IN ADULTS

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ABSTRACT

INTRODUCTION

Small bowel obstruction is a common surgical emergency. The small bowel is involved in about 80 percent of cases of mechanical intestinal obstruction. Mode of presentation is same in all but underlying cause varies in each age group. The dictum of never let the sun set or rise in small bowel obstruction has made early surgical intervention for small intestinal obstruction. This in turn has reduced the incidence of strangulation of bowel, which was major cause of mortality in already ill patient. Success in treatment of patient with acute intestinal obstruction depends largely upon early diagnosis, skilful management and appreciation of importance of treating the pathological effects of obstruction just as much as the cause itself.

METHODS

This is a prospective study which was done on patient with small bowel obstruction between September 2013 to August 2015 in M.K.C.G. Medical College and Hospital, Brahmapur, Odisha. All the patients were subjected to questionnaires and clinical examination, routine and special investigations like abdominal X-ray in erect posture, treatment modality based on laparotomy findings and postoperative observation for any complications.

RESULT

In this study, it is observed that bands and adhesions followed by hernia were the commonest causes of small bowel obstruction in adults. Pain abdomen, vomiting, distention, constipation, tenderness over abdomen and increased bowel sounds are seen in majority of cases. Maximum incidence occurred in 3rd decade of life with M:F ratio of 1.73:1. Plain X-ray erect abdomen was almost conclusive in all cases. Resection and anastomosis followed by adhesiolysis were the two procedures which were commonly performed. Morbidity increased in old age patients and those whose presentation was late.

CONCLUSION

Small bowel obstruction remains a frequently encountered problem in abdominal surgery. The risk of strangulation with adhesive and neoplastic SBO is relatively low as compared with incarcerated hernia and that of due to bands. The timing of surgical intervention is very important in the initial evaluation of a patient with suspected SBO. The recent advances in surgery, the improvement in the techniques, aseptic and antiseptic measures, the rapid advances in anaesthesiology, better understanding of the fluid and electrolyte management, nasogastric tube decompression, antibiotics, and the basic and specific investigations make the patient safer for modern surgery and greatly reduce the mortality rate.

KEYWORDS

Small Bowel Obstruction, Hernias, Adhesions.

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INTRODUCTION: Small bowel obstruction is a common surgical emergency.^[1,2,3] The small bowel is involved in about 80 percent of cases of mechanical intestinal obstruction.^[4,5] Small bowel obstruction occurs when the normal flow of intraluminal contents is interrupted. Obstruction can be functional (due to abnormal intestinal physiology) or due to a mechanical obstruction, which can be acute or chronic.^[1,2]

Mode of presentation is same in all but underlying cause varies in each age group. In earlier part of century, mortality and morbidity was very high. Now with better understanding of pathophysiology, improvement in radiological techniques of diagnosis and high degree of refinement in correction of fluid and electrolyte imbalance, introduction of antibiotics to effective bacteriological control, introduction of techniques in gastrointestinal decompression, improvement in field of anaesthesia has all contributed to lowering the morbidity and mortality. The dictum of never let the sun set or rise in small bowel obstruction has made early surgical intervention for small intestinal obstruction.^[6] This in turn has reduced the incidence of strangulation of bowel, which was major cause of mortality in already ill patient.

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Success in treatment of patient with acute intestinal obstruction depends largely upon early diagnosis, skilful management and appreciation of importance of treating the pathological effects of obstruction just as much as the cause itself.

METHODS: All the patients admitted to surgical wards of M.K.C.G. Medical College & Hospital, Brahmapur as intestinal obstruction was the material for the study of this thesis. The time period of study was from September 2013 to August 2015. Out of all intestinal obstructions, 52 cases with only small bowel obstruction were recorded for comparison and conclusive study. The diagnosis was established on symptomatology, clinical manifestations supported by radiological evidences. The difficult suspected cases were finally diagnosed by laparotomy.

Detailed history taking and thorough clinical examinations were done for all patients admitted as intestinal obstruction. Patients were subjected to plain abdominal X-ray on erect posture. The clinical and radiological findings in support of small intestinal obstruction were recorded.

Laparotomy: The type of operative procedures were done according to laparotomy findings. Such as:

- Primary Resection and End-to-End Anastomosis: In gangrenous bowel segments.
- Cutting and Releasing: Bands, Adhesions.
- Reduction and Repair: Volvulus.

All the patients were followed up postoperatively. The final outcomes of the patients were recorded. The results were tabulated according to age, sex, symptoms, signs, probable causative factors, operative findings, operative procedure adopted and postoperative complications.

Inclusion Criteria:

- Patients diagnosed of having small bowel obstruction irrespective of sex.
- Patients diagnosed of having small bowel obstruction requiring emergency surgery.
- Patients diagnosed of having small bowel obstruction intraoperatively.

Exclusion Criteria:

- Patients below the age of 15 years.
- Patients those who refused admission/terminally ill cases.
- Patients with history of trauma/assault.
- Patients presented with features of large bowel obstruction.
- Pregnant patients.

OBSERVATIONS: A clinical study of 52 cases of small intestinal obstruction was studied during period of September 2013 to August 2015 at M.K.C.G. Medical College & Hospital, Brahmapur. Analysis is as follows:

Age Group	Male	Female	Total	Percentage
15-20 years	2	-	2	3.84
21-30 years	11	5	16	30.77
31-40 years	6	6	12	23.08
41-50 years	5	4	9	17.31
51-60 years	7	2	9	17.31
61-70 years	1	2	3	5.77
71-80 years	1	-	1	1.92
Total	33	19	52	100.0

Table 1: Age & Sex Distribution

The age range for the study was taken from 15 years to 80 years. 21-30 years of age was found to be more vulnerable (30.77%) for small gut obstruction and 31-40 years group was the second in order (23.08%). But in old age (70 +), incidence was very low (1.92%) and also in 15-20 years of age group it was only 3.84%. In 4th and 5th decade of life, the occurrence was 17.31% each.

Aetiology	No. of Cases	Percentage
Bands & adhesions	22	42.31
Hernia	17	32.69
Tuberculous stricture	5	9.61
Volvulus	3	5.77
Malignancy	3	5.77
Intussusception	2	3.85
Total	52	100.0

Table 2: Aetiological Factors

Bands and adhesions as a cause was the commonest (42.31%) whereas intussusception was the rarest detected in only 2 cases (3.85%). Hernia was seen to be the second common cause (32.69%) but others like tuberculosis, volvulus, malignancy were found in small numbers.

Clinical Features	No. of Cases	Percentage
Pain abdomen	46	88.46
Vomiting	45	86.53
Constipation	43	82.69
Distension of abdomen	48	92.31
Increased bowel sounds	45	86.53
Tenderness	38	73.08
Dehydration	36	69.23
Rigidity	20	38.46
Ballooning on D.R. Exam.	12	23.08
Visible peristalsis	11	21.15

Table 3: Presenting Symptoms and Signs

Distension of abdomen, pain abdomen, vomiting and increased bowel sounds were the common clinical features found in 92.31%, 88.46%, 86.53%, 86.53% of cases respectively. The less common clinical findings were visible peristalsis (21.15%) and ballooning on DRE (23.08%). Other features like constipation, tenderness, dehydration and

rigidity also found in more than half of the patients being 82.69%, 73.08%, 69.23%, 38.46% in order.

Duration of Time Period in hrs.	No. of Cases	Percentage
<6 hrs.	7	13.46
6-12 hrs.	26	50
12-24 hrs.	12	23.08
24-48 hrs.	4	7.69
> 48 hrs.	3	5.77
Total	52	100.0

Table 4: Analysis of Time Interval between Admission and Surgery

This shows 50% were operated in the 6-12 hrs. period and 63.46% underwent surgery in 12 hrs. 45 out of 52 patients underwent surgery in the first 24 hrs. of admission. There is a direct correlation between the length of time that a patient has obstruction and the probability of strangulation occurring. Early diagnosis and early surgery are the key for successful management of strangulated obstruction of the intestine. A delay in operation for small bowel obstruction as shown increased mortality and morbidity over operation immediately after fluid resuscitation.

Types of Operation	No. of Patients	Percentage
Resection & anastomosis	21	40.38
Release of adhesions & bands	12	23.08
Untwisting of volvulus	1	1.92
Hernia repair	10	19.23
Resection & Hernia repair	7	13.47
Ileotransverse anastomosis	1	1.92

Table 5: Types of Operation

Resection and end-to-end anastomosis was done in 21 cases, which included cases of adhesive obstruction, stricture, volvulus, growth, intussusception. In cases of hernia with strangulation and gangrene of bowel, resection and repair of hernia, depending upon the type, Bassini's repair in inguinal, Lotheissen's operation in femoral hernia. Ileotransverse anastomosis was done in one case of ileocaecal tuberculosis with multiple strictures in ileum.

Post-operative complications	No. of patients	Percentage
Wound infection ± wound dehiscence	12	23.08
Respiratory tract infection	2	3.85
Enterocutaneous fistula	2	3.85
Prolonged ileus	4	7.70
Deaths (Septicaemia)	5	9.62

Table 6: Post-Operative Complications

Out of 52 cases operated, the most common complication is wound infection seen in 12 patients (23.08%).

Morbidity can be reduced to very minimum with good aseptic precaution and preoperative antibiotics. 5(9.62%) patients died in the early postoperative period. Mortality can be decreased in early presentation with adequate preoperative resuscitation and early surgery.

DISCUSSION: Intestinal obstruction is one of the commonly encountered clinical entities. There is probably not a day that goes by, in which a clinical surgeon does not at least once come across the possible diagnosis of intestinal obstruction. The mortality has reduced significantly by instituting the treatment at the earliest period. 1-4% of mortality in emergency surgeries is contributed by acute intestinal obstruction.^[7]

Age Incidence: The intestinal obstruction occurs in all age groups. In this study, 53.85% belongs to 21-40 years age group. Study reported by C S Ramachandran.^[8] says that the maximum number of cases occur in the age group of 21-40 years. This study correlates with the present study.

Sex Incidence: In our study, the incidence of intestinal obstruction in males was 33(63%) and that of females was 20(37%). Male to female ratio is 1.6:1.0 (2:1). The male preponderance is consistent with series reported from other parts of world. Fuzan.^[9] and Lee.^[10] reported 2:1 male to female ratio.

Aetiology: A total of 42.31% and 32.69% of cases attributed to adhesions and hernias respectively. Jain and Prasad.^[11] found that adhesions contributed for intestinal obstruction up to 25.5%. Fuzan.^[9] study in 582 patients found that in 246(42.2%) patients the cause for intestinal obstruction was adhesions due to previous operations. This study correlates well with the present study.

Clinical Features: Maximum presenting symptoms in this study were

Symptoms	No. of Cases	Percentage
Pain Abdomen	46	88.0
Vomiting	45	87.0
Distention of abdomen	48	92.0
Constipation	43	83.0

Asbun.^[12] in their retrospective analysis of 105 cases of small bowel obstruction found that incidence of pain abdomen 82%, vomiting 88%, were common than constipation (28%) and distention of abdomen (56%). Budharaja.^[13] in his study reported that symptoms in order of frequency were pain abdomen 95%, distention of abdomen 82%, vomiting 75%, absolute constipation 50% constituting intestinal obstruction. These studies correlate with the present study.

Operations: All the cases of our study were subjected to surgery. Most common operation performed was resection and anastomosis of bowel 40.38%.

Release of adhesions and bands was done in 23.08% of cases, reduction and hernia repair in 19.23%, resection and hernia repair in 13.47%. Untwisting of volvulus in 1.92% and ileotransverse anastomosis in 1.92%. Postoperatively, IV fluids and nasogastric decompression and antibiotics were given on until the patients had good bowel movements.

Mortality: 5 cases died following surgery for intestinal obstruction (10%). The mortality in intestinal obstruction is high in individuals who develop strangulation and gangrene of the bowel, those who present beyond 72 hours and in those having pre-existing associated diseases and elderly people. Hence the predisposing causes like hernia should be promptly attempted early in elderly individuals before they go for complication. Though early treatment can reduce the mortality, advanced age and associated metabolic, cardiopulmonary diseases still lead to high rate of mortality. So, it is quite evident that the duration of symptoms, age, general condition of the patient and associated diseases and operative procedures adopted have a definite role on the prognosis and mortality.

CONCLUSION:

1. Small bowel obstruction remains a frequently encountered problem in abdominal surgery. Although modern day surgical management continues to focus appropriately on avoiding delayed operation, whatever surgery is indicated, not every patient is always best served by immediate operation.
2. Diagnosis of strangulation is still a challenge. Certain entities, such as SBO secondary to incarcerated abdominal wall hernia and patients with clinical signs and symptoms suggestive of strangulation do require prompt intervention. Other conditions; however, such as postoperative adhesions, particularly in patients with numerous previous abdominal procedures, concomitant medical problems or incomplete or partial obstruction, often justifiable benefit by a trial of conservative management. The risk of strangulation with adhesive and neoplastic SBO is relatively low as compared with incarcerated hernia.
3. Close and careful evaluation in conjunction with laboratory and radiologic studies will usually dictate the proper course of management in any given case. If any uncertainty exists, prompt operative intervention is indicated. The timing of surgical intervention is very important in the initial evaluation of a patient with suspected SBO.
4. Small gut obstruction is a common surgical problem in this institution.
5. The thorough understanding of the anatomy and physiology of abdomen are essential to properly

generate a differential diagnosis to formulate a treatment plan. While recent advances in technology can be extremely helpful in certain situations, they cannot replace a surgeon's clinical judgement based upon a good history, physical examination and radiograph of abdomen.

6. The recent advances in surgery, the improvement in the techniques, aseptic and antiseptic measures, the rapid advances in anaesthesiology, better understanding of the fluid and electrolyte management, nasogastric tube decompression, antibiotics, and the basic and specific investigations make the patient safer for modern surgery and greatly reduce the mortality rate.

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