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Research Paper

Clinical Study and Surgical Management of Intestinal Obstruction in Adults

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Abstract
Background and Objectives*: Bowel obstruction remains one of the most common intra-abdominal problems faced by general surgeons in their practice, whether caused by hernia, neoplasm, adhesions or related to biochemical disturbances. Intestinal obstruction of either the small or large bowel continues to be a major cause of morbidity and mortality. The objectives are to study the various modes of presentation, various causes, importance of early recognition, diagnosis and management. Influence of various factors like age, sex, diet and socio-economic status in the pathogenesis of intestinal obstruction. Morbidity and mortality rates in intestinal obstruction.*
Materials and Methods*: The materials for the clinical study of intestinal obstruction were collected from cases admitted to various surgical wards. Fifty cases of intestinal obstruction have been studied. Patients belonged to the age groups ranging from 12 years to 85 years, paediatric age group is excluded from this study. The criteria for selection of cases was based on clinical history, physical findings, radiological and haematological investigations. The study was divided into Clinical study, Investigations and Treatment. Postoperative follow up after the discharge of patients was done in majority of the patientsupto six months. The results are tabulated stressing on following points age, sex, symptoms, examination findings, investigations, abnormalities, probable causative factors, operative findings and operative procedure adopted and complications if any.*
Results: *The study group consisted of 50 cases of intestinal obstruction in the adult age group from 12 years on wards to 85 years. The common age group was 51-60 age group with 26% in the total study. The commonest cause of intestinal obstruction in the adults in this study series was postoperative Adhesions & Volvulus 26% each followed by obstructed Hernia (16%).*
Conclusion: *Success in the treatment of acute intestinal obstruction depends largely upon early diagnosis, skillful management and treating the pathological effects of the obstruction just as much as the cause itself.*
Keywords:*intestinal obstruction; Computed tomography; Central venous pressure, Extra cellular fluid; Management.*

I. INTRODUCTION

Bowel obstruction remains one of the most common intra-abdominal problems faced by general surgeons in their practice whether caused by hernia, neoplasm, adhesions or related to biochemical disturbances, Intestinal obstruction of either the small or large bowel continues to be a major cause of morbidity and mortality [1]. They account for 12% to 16% of surgical admissions for acute abdominal complaints. Manifestations of acute intestinal obstruction can range from a fairly good appearance with only slight abdominal discomfort and distension to a state of hypovolemic or septic shock (or both) requiring an emergency operation. To identify and analyse the clinical presentation, management and outcome of patients with acute mechanical , obstruction along with the etiology of obstruction and the incidence and causes of bowel ischaemia, necrosis and perforation [2].

The death due to acute intestinal obstruction is decreasing with better understanding of pathophysiology, improvement in diagnostic techniques, fluid and electrolyte. Correction, much potent antimicrobials and knowledge of intensive care. Most of the mortalities occurs in elderly individuals who seek late treatment and who are having associated pre-existing diseases like, diabetes mellitus, cardiac diseases or respiratory disease. Early diagnosis of obstruction skillful operative management, proper technique during surgery and intensive postoperative treatment carries a grateful result and hence the study was undertaken to have details on the above mentioned subject

II. MATERIALS AND METHODS

The materials for the clinical study of intestinal obstruction were collected from cases admitted to various surgical wards in Rajendra Institute Of Medical Science, Ranchi, during the period from April 2015 to September 2016, fifty cases of intestinal obstruction have been studied. Patients belonged to the age groups ranging from 12 years to 85 years, paediatric age group is excluded from this study. The criteria for selection of cases was based on clinical history, physical findings, radiological and haematological investigations and written consent was taken from study subjects or their relatives.

Patients who were having Sub acute intestinal obstruction treated conservatively were excluded from the study, and only those cases of intestinal obstruction which were managed surgically were studied to establish the pathology of intestinal obstruction with an aim to know the mode of presentation, physical findings, radiological and haematological findings, operative findings and outcome of acute intestinal obstruction.

After the admission of the patient, clinical data were recorded as per Proforma. The diagnosis mainly based on clinical examination and often supported by haematological and radiological examinations.

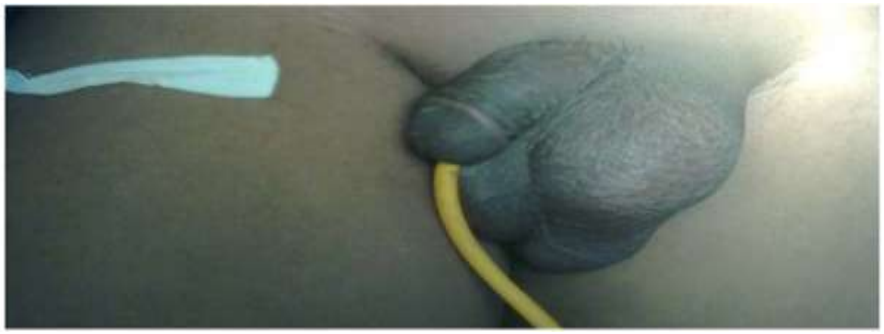
Study divided into Clinical study, Investigations and Treatment.

Surgical Management

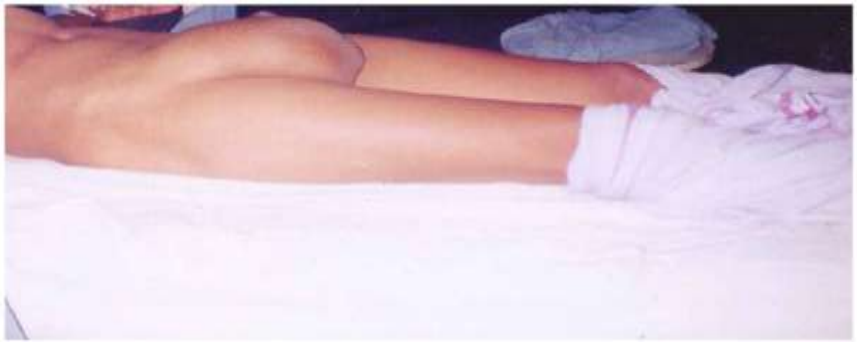
Immediately after the admission along with above procedure resuscitation with IV fluids especially ringer lactate and normal saline infusion started till the hydration and urine output become normal. Nasogastric decompression with Ryles tube carried out and antibiotic prophylaxis started. And close observation of all bedside parameters (like pulse rate, BP, RR, urine output, urine output, abdominal girth, bowel sounds and tenderness and guarding) was done. Blood transfusion was given in required cases. Patients who showed reduction in abdominal distension and improvement in general condition especially in individuals with postoperative adhesions conservative management was confined (by extending the supportive treatment) for next 24 hours, those who showed improvement by moving bowels, reduction in pain/tenderness were decided for conservative treatment, such individuals are excluded from 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, e.g. Release of a band or Adhesion, Reduction & Resection and Anastomosis for Intussusception, Resection and anastamosis for Gangrenous bowel and Release and Repair for Strangulated obstruction. 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. Postoperatively Ryle's tube aspiration, intravenous fluids and antibiotics were administered. Any complications noted and treated accordingly.



Obstructed and strangulated inguinal hernia

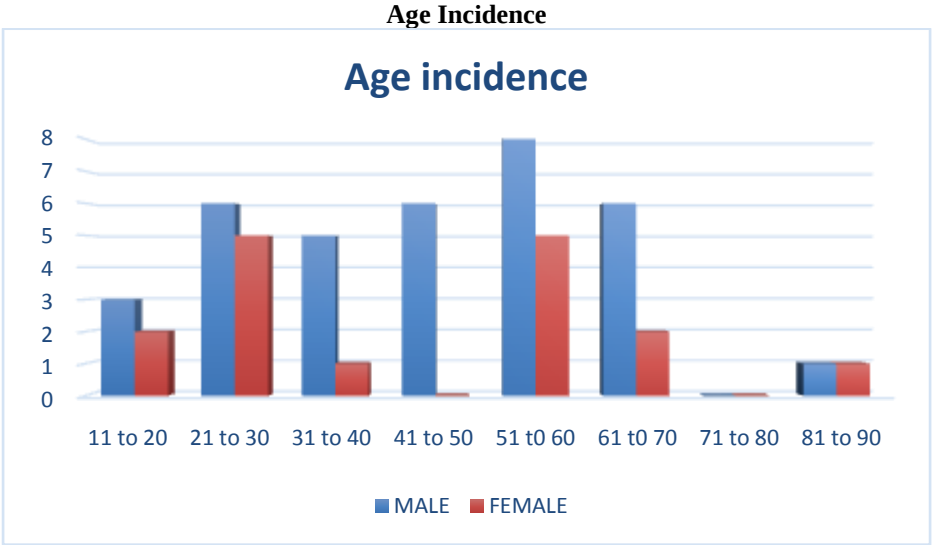


Erect Abdomen X-ray Showing Multiple Air Fluid Level

Operative Photograph Of Adhesive Gangenous Ileum

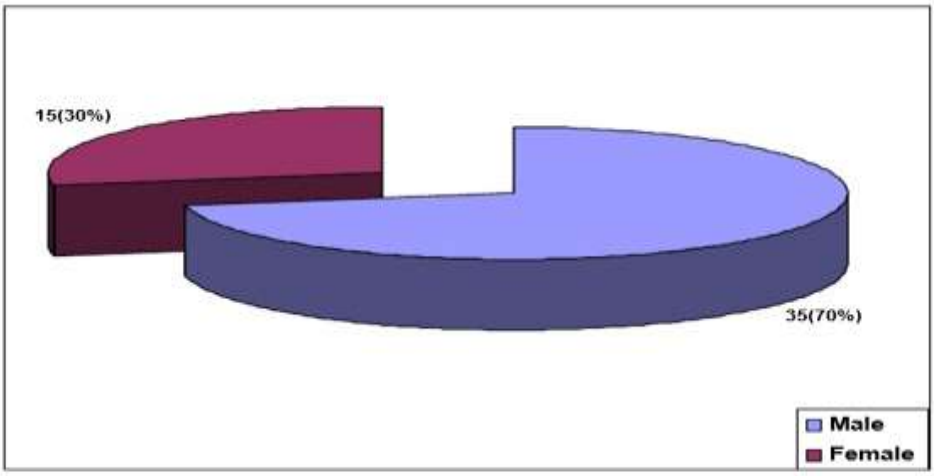
III. RESULTS

Age Incidence



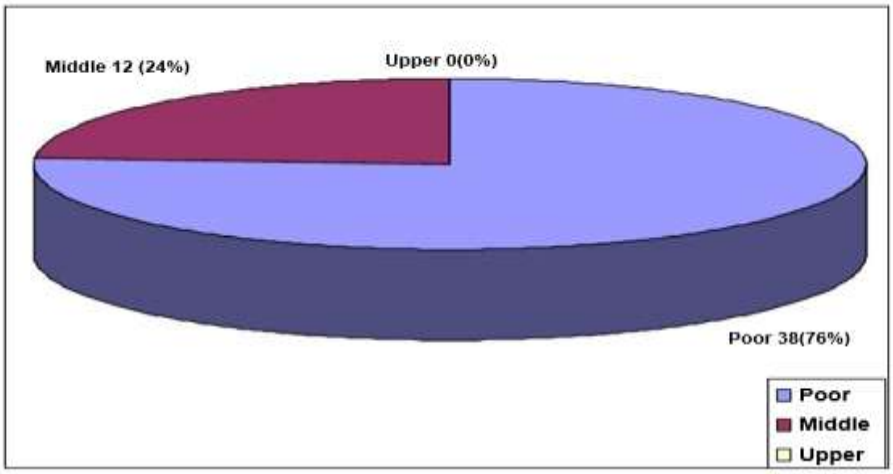
As per the above table and bar chart, the maximum incidence in the present study group is 51-60 with each 13 cases out of 50 cases.

Sex Incidence

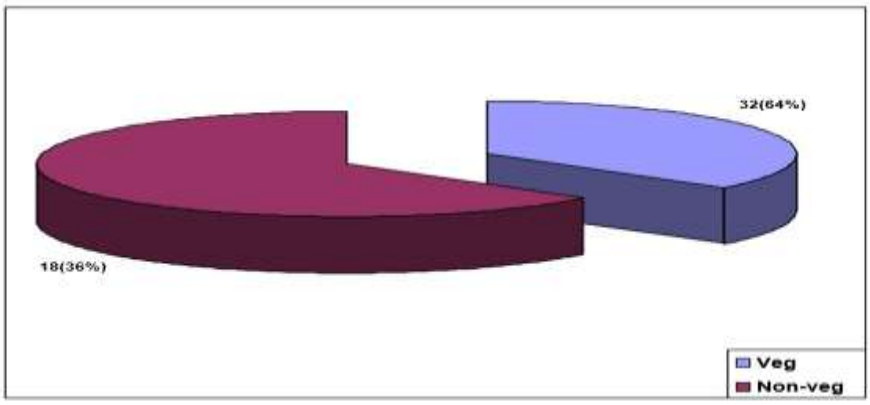


Male patients were more commonly affected when compared to females in the ratio of 3.33:1 in the above table.

Socio-Economic Status



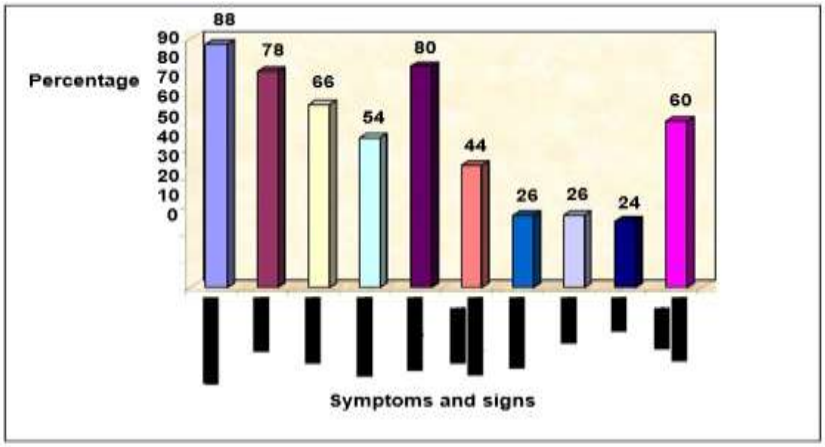
Diet



In the present study of 50 cases, 32 patients were taking non-vegetarian which contains more of fatty diets. The remaining 18 patients were vegetarian which oftenly

Symptoms And Sign

Symptoms and signs	Number of cases	Percentage
Pain abdomen	44	88
Vomiting	39	78
Distension	33	66
Constipation	27	54
Tachycardia	40	80
Previous surgical scar	22	44
Tenderness	13	26
Rigidity	13	26
Mass	12	24
Visible peristalsis	30	60



The present study the most common symptoms were pain abdomen (88%) and vomiting (78%), and the most common signs were tachycardia (80%) and visible intestinal peristalsis (60%).

Incidence Of Different Aetiology

Causes of intestinal obstruction in adults Clinical condition	Number of cases	Percentage
Postoperative adhesions	13	26
Volvulus	13	26
Obstructed hernia	8	16
TB abdomen	5	10
Malignancy	7	14
Intussusception	3	6
Mesenteric ischaemia	1	2
Total	50	100

The most common cause of intestinal obstruction in our study was volvulus & postoperative adhesions. The next common was obstructed hernia.
Other conditions include volvulus, intussusception, tuberculosis, malignancy, mesenteric ischaemia, in descending frequency.

Management

Management	Number of cases	Percentage
RA	16	32
Adhesiolysis	13	26
Adhesiolysis with stricturoplasty	3	6
Reduction	1	2
RA with ileostomy	5	10
Colostomy	2	4
Adhesiolysis and Herniorrhapy	5	10
Colectomy	1	2
Ileotransverse anastomosis	1	2
Adhesiolysis with hernioplasty	1	2
Adhesiolysis with ileostomy	2	4
TOTAL	50	100

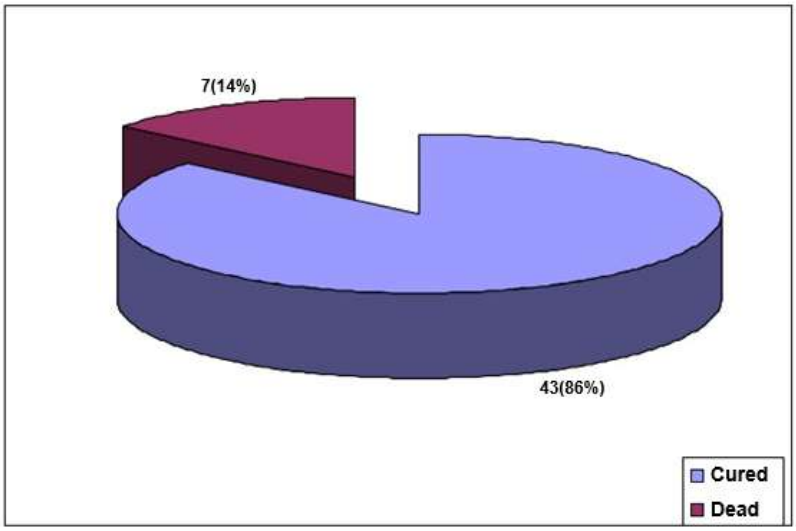
In our study of 50 cases as accordingly with the aetiology the management and the surgical procedure was done as shown in the table and pie diagram. Resection and anastomosis was done in 32% of cases, adhesiolysis in 26% of cases and adhesiolysis with herniography & RA with loop Ileostomy done in 10% of the each cases.

Postoperative complications

Postoperative complications	Number of cases
Wound infection	5
RTI	2
Wound dehiscence	1
Faecal fistula	-
Septicaemia	5

In the present study group there were 5 cases of septicemia, 2 cases of respiratory tract infection and 5 cases of wound infection.

Mortality



In the present study of 50 cases, about 7 patients died with the percentage of 14%. The majority of deaths due to complications, like, septicaemia, peritonitis,respiratory
infection.

IV. DISCUSSION

Acute intestinal obstruction continues to be the most common surgical emergency. In our study a total number of 18233 patients were admitted in the surgery department from April 2015 to September 2016. A total of 328 patients presentedwith features of intestinal obstruction. Among these 50 cases of operated cases were randomly selected for the present study.

V. DISEASE INCIDENCE

In our clinical study incidence of acute intestinal obstruction is 1.8% of totalsurgical cases. In Souvik Adhikari et al. series incidence was 9.87% of total surgicalcases. In Bhargava Anderson's series incidence was 3% of total surgical cases. Thecommonest cause was found to be postoperative adhesions followed by obstructed/strangulated inguinal hernia, malignancy, intussusception, volvulus, tuberculosis andmesenteric ischaemia. Although in developing countries like India, the commonestcause used to be obstructed/strangulated hernia, in our study commonest cause wasadhesions followed by obstructed/strangulated hernia as second cause. The decreasein the incidence of obstructed hernias indicate a changing trend towards earlyoperation before hernia gets complicated. The data of the present series is comparableto Souvik Adhikari series, Cole series and Jahangir-Sarwar Khan series.

SouvikAdhikari et al. (2010)44 reported an incidence of 9.87%, Bhargava and Anderson series reported an incidence of 3%. In our hospital 1569 cases of total emergency surgeries were done in April 2015 to September 2016, of which 328 cases of intestinal obstruction comprising of 20.9% incidence were present. Among these 50 cases were selected as random study group.

Age Incidence

Intestinal obstruction although occurs in all age groups, the age spectrum in our clinical study, with the spectrum age group of 13 years to 85 years. The study showed the peak incidence is in the age group 51-60 years of 26% which is comparable with the previous study groups Souvik Adhikari et al., Cole GJ et al. group, which are almost similar to our clinical study of intestinal obstruction.The mean age is our current study is 45 years where as Souvik Adhikari et al.44 shows mean age of 44 years, Jahangir Sarwar Khan45 series shows mean age is 33 years. These studies are almost comparable with our current study.

Age incidence of intestinal obstruction in different studies

Age group	Cole GJ[46]	Souvik Adhikari[44]	Harban Singh[47]	Present study
12-20	10%	9%	10%	10%
21-30	10%	11%	16%	22%
31-40	18%	15%	18%	12%
41-50	16%	24%	15%	12%
51-60	15%	13%	10%	26%
61-70	16%	20%	20%	16%
71-80	9%	8%	5%	0%
81-90	6%	4%	4%	2%

Comparison of etiology with other studies

Cause	Souvik Adhikari	Jahangir	Arshad Malik	1970 study	Cole GJ	Playforth[49]	Present
Adhesions	16%	49%	41%	10%	23%	54%	26%
Hernia	36%	34%	19%	35%	25%	23%	16%
Volvulus	6%	5%	4%	3%	1%	3%	26%
Tuberculosis	14%	1%	24%	3%	-	-	5%
Malignancy	17%	3%	2%	9%	5%	9%	14%
Intussusception	2%	6%	-	12%	18%	5%	6%
Mes.Ischaemia/ Miscellaneous	9%	2%	10%	-	-	6%	2%

Comparison of clinical features with other studies

Study group	Pain abdomen	Vomiting	Distension	Constipation
Present study	88%	78%	66%	64%
Souvik Adhikari[44]	72%	91%	93%	82%
Jahangir-Sarwar Khan[45]	100%	92	97	97

Laboratory investigation

Among the total study population 60% of the cases were having Anaemia otherwise the basic haematological investigation did not yield much statistical significance.

Radiology

The Erect abdomen X-ray helps us in the diagnosis of intestinal obstruction as well as in differentiating the small bowel with large bowel obstruction. Multiple our fluid level can be seen in small multiple intestinal obstruction where as only gas shadows seen in large bowel observation until the iceocaecal value is competent. Taneja et al. report shows 90% of cases with multiple air fluid level and Savage et al. reports 95% cases with significant findings. In the present study of the 50 cases 80% of X-ray shows multiple air blood levels. Contrast study of barium enema may help to locate the obstruction in the colon but in our study contrast study was not done.

Surgical Management

The surgical management for the present study group includes release of adhesions for postoperative adhesions 26%, resection of anastamosis for many of the cases of obstructed/strangulated hernia where the viability of the bowel was doubtful and also for ischaemic bowel 22%, release of constricting agents and herniorrhaphy was done in 18% of the obstructed/strangulated hernia cases. Resection &anastomosis was done in the cases of volvulus & 2 cases with ileostomy. Resection anastomosis and herniorraphy done in 8% of the cases.Reduction of intussusception in one case. One case was managed with Resection & anastomosis and one case with transverse loop colostomy.

Morality rate in various studies

Studies	Year	No. of cases studied	Mortality
Present study	2016	50	14%
Souvik Adhikari	2005	367	7.35%
Safian Matsu Moto	1975	171	19%
Jahangir-Sarwar Khan	2001	100	7%
Ramachandran CS	1982	417	12.7%

VI. CONCLUSION

- Acute intestinal obstruction remains an important surgical emergency in thesurgical field.
- Success in the treatment of acute intestinal obstruction depends largely upon early diagnosis skilful management and treating the pathological effects of theobstruction just as much as the cause itself.
- Erect abdomen X-ray is valuable investigation in the diagnosis of acute intestinalobstruction.
- Postoperative adhesions are the common cause to produce intestinal obstruction.Clinical radiological and operative findings put together can diagnose theintestinal obstruction.
- Mortality is still significantly high in undiagnosed case of malignancy which presented in emergency with intestinal obstruction.

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