

Study on Surgical Management of Acute Intestinal Obstruction in Adults

P. Vanathi¹, B. Aquinas², V. Meenakshi Sundaram³

ABSTRACT

Introduction: Bowel obstruction is the most common intra-abdominal problem faced by general surgeons in their practice. It accounts for 12-16% of surgical admissions for acute abdomen.¹ The clinical presentation varies from slight discomfort, abdominal distension to the state of sepsis or hypovolemic shock or both requiring an emergency intervention which all depends on the age of the patient, comorbidities, nutritional and hydration status, level of obstruction, the presence of contamination in the peritoneal cavity. Hence timely diagnosis, prompt resuscitation and proper intervention with skilful technique in surgery are needed for an optimal outcome and to reduce the mortality rate.^{1,6} Aim: To study the various ways of presentation, various etiologies, importance of early recognition, Diagnosis and management. To study the various influencing factors like age, sex, diet and socio-economic status in the pathogenesis of acute intestinal obstruction. To study the morbidity and mortality rates in acute intestinal obstruction.

Material and Methods: The incidence of acute bowel obstruction in adult age group was studied from the cases admitted in Department of Surgery of Thanjavur Medical College Hospital attached to the thanjavur Medical College, Thanjavur during the period 1st March 2015 to 31st December 2016.

Results: The study showed maximum incidence is in the age group of 31 to 40 years. Males are commonly affected. Post Operative adhesions are the most common cause of Intestinal obstruction.

Conclusion: Acute intestinal obstruction remains to be an important surgical emergency in the surgical field. Success in the management of acute intestinal obstruction depends largely upon the early diagnosis, skilful management and treating the pathological effects of the obstruction as much as the cause itself.

Keywords: Surgical Management, Acute Intestinal Obstruction

The death due to acute intestinal obstruction is decreasing with better understanding of pathophysiology. Improvement in diagnostic techniques, fluid and electrolytes correction, much potent anti-microbials and knowledge of intensive care.^{3,7} Most of the mortalities occur 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, skilful operative management, proper technique during surgery and intensive postoperative treatment carries a good result.

Study aimed to study the various ways of presentation, various etiologies, importance of early recognition, Diagnosis and management, to study the various influencing factors like age, sex, diet and socio-economic status in the pathogenesis of acute intestinal obstruction and to study the morbidity and mortality rates in acute intestinal obstruction.

MATERIAL AND METHODS

The materials for this clinical study on intestinal obstruction were collected from cases admitted to various surgical wards in Thanjavur medical college Hospital attached to Thanjavur Medical College, Thanjavur, during the period from 1st March 2015 to 31st December 2016. fifty cases of intestinal obstruction have been studied. Patients belonged to the age group ranging from 12 years to 85 years, paediatric age group being excluded from this study. The criteria for selection of cases were based on the clinical history, physical examination findings, radiological and haematological investigations. Informed consent was obtained from the patient.

Patients who had sub acute Intestinal obstruction, who were treated conservatively were excluded from the study, and only those patients of acute intestinal obstruction who were managed surgically have been studied to establish the pathology of intestinal obstruction with an aim to identify the mode of presentation, physical findings, radiological and haematological findings, operative findings and outcome

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.^{1,2} 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.³⁻¹⁰

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of acute bowel obstruction.⁴ After admission of the patient, clinical data were recorded according to the proforma. The diagnosis was mainly based on clinical examination and often supported by haematological and radiological examinations.¹¹⁻¹⁷

Methods

Study has been divided into

- a. Clinical study
- b. Investigations
- c. Treatment

Study has been conducted under the following headings:

- a. History taking
- b. Physical examination
- c. Laboratory examination
- d. Radiological examination – Plain X-ray abdomen – erect view.
- e. Ultrasound examination in selected cases
- f. Surgical treatment and results
- g. Follow-up
- i. History taking

History taking

complete detailed history was obtained from the patient and the complaints were entered in the proforma in a chronological order. Each complaint in the history of presenting illness has been documented in detailed enquiry.

Physical examination

- (i) General physical examination – evidence of dehydration and its severity were looked into and vital parameters were recorded.
- (ii) Local examination – Abdominal examination was done under the standard headings inspection, palpation, percussion and auscultation. Per rectal examination was done and findings were noted.
- (iii) Systemic examination – All other systems were examined carefully to rule out any associated anomalies and to assess the fitness for surgery.

Laboratory examination

- (i) Haemoglobin
- (ii) TC and DC
- (iii) Bleeding and clotting time
- (iv) Blood grouping and Rh typing
- (v) Urine for albumin estimation and microscopy

Radiological examination

Erect abdomen X-ray is done in all cases, barium enema and ultrasound examination is done in selected cases.

Surgical management

Immediately after the admission along with above procedure, resuscitation with IV fluids especially ringer lactate and normal saline infusion were started till the hydration and urine output become normal. Nasogastric decompression with rylestube insertion was carried out and antibiotic prophylaxis initiated. A close observation of all bedside parameters (like pulse rate, BP, RR, urine output, abdominal girth, bowel sounds and tenderness and guarding) were done. Emergency Blood transfusion was given in required cases.

Patients who showed a reduction in the abdominal distension and improvement in the general condition especially in those with postoperative adhesions,^{8,9} conservative treatment was confined (by extending the supportive treatment) for next 24 hours, those who showed improvement by moving bowels or reduction in pain/tenderness were considered for further conservative treatment and such individuals were excluded from this study. Patients with clear-cut signs and symptoms of acute obstruction had been managed by appropriate surgical procedure after initial resuscitation. Surgery adopted and the criteria for deciding the procedure were noted, e.g. release of a band or an adhesion,²⁰ reduction and caecopexy for intussusception, resection and anastomosis for gangrenous intestine and release and repair for strangulated obstruction. Histopathological examination of the specimen of resection/biopsy was undertaken whenever necessary.

The postoperative period had been monitored carefully and all the parameters were recorded hourly or fourth hourly basis depending on the patient's general condition and toxemia. Postoperatively Nasogastric tube aspiration, intravenous fluids and antibiotics were administered. Any complications were noted and treated accordingly.

Postoperative follow-up after the discharge of patients was done in majority of the patients till 6 months. Most of the patients did not turn up for follow up after one or two visits. The results are tabulated stressing on the following points like age, sex, symptoms, examination findings, investigations, abnormalities, possible causative factors, operative findings and operative procedure that is adopted and complications if any.¹⁸⁻²³

Statistical Methods

Chi-square and Fisher Exact test has been used to find the significance of proportion of postoperative complications in association with etiology of acute Intestinal Obstruction. The Statistical software namely SPSS 11.0 and Systat 8.0 had been used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables, etc.

RESULTS

The incidence of acute bowel obstruction in adult age group was studied from the cases admitted in Department of Surgery of Thanjavur Medical College Hospital attached to the thanjavur Medical College, Thanjavur during the period 1st March 2015 to 31st December 2016. The data on the symptoms and the signs and laboratory investigations has been adopted in 50 cases during this study period. During the period of 20 months, the total number of admissions in surgery were 12, 233 patients. Of which 228 cases with acute intestinal obstruction were treated during this period which comprise 1.9% of the total admissions. Among these surgically managed cases, 50 cases were randomly selected for the present study. Table 1 and 2 shows the age distribution of the patient and gender percentage of the sample. Socioeconomic status, Diet and Symptoms and Signs are represented in table 3, 4 and 5 respectively. Causes of Intestinal Obstruction in Adults are depicted in table 5. Post operative Complications including mortality is shown

in the tables 6 and 7. Frequency of mortality in this study is 14% i.e. 7 cases out of 50 cases. Among these, 6 cases were because of malignancy and one due to mesenteric ischaemia. Mortality that occurred during various studies have been tabulated as follows (Table 8). Cause of death are outlined in table-9.

Age (years)	Male	female	Total
11 -20	5	1	6
21-30	5	3	8
31-40	7	3	10
41-50	3	1	4
51-60	8	2	10
61-70	5	3	8
71-80	2	1	3
81-90	1	0	1
Total	36	14	50

Table-1: Age distribution of the patient

Sex	No. of Patients	Percentage
Male	36	72
Female	14	28

Table-2: Sex incidence

Socio economic status	No. of. Patients	Percentage
Poor	38	76
Middle	12	24
Upper	0	0
Total	50	100

Table-3: Socioeconomic status

Diet	No. of Patients	Percentage
Vegetarian	18	36
Non Vegetarian	32	64
Total	50	100

Table-4: Diet

Symptoms	Signs
Abdominal pain	Tachycardia
Vomiting	Previous surgical scar
Abdominal distension	Tenderness
Constipation	Rigidity
	Mass
	Visible peristalsis

Table-5: Symptoms and Signs

Clinical Condition	No. of. cases
Postoperative adhesions	20
Obstructed Hernia	15
Volvulus	2
TB Abdomen	2
Malignancy	7
Intussusception	3
Mesentric ischemia	1
Total	50

Table-6: Causes of intestinal obstruction in adults

DISCUSSION

Disease Incidence

In our clinical study, the incidence of acute intestinal obstruction is 1.9% of the total surgical cases. In other studies the incidence was 9.87% of total surgical cases. In one series incidence was 3% of total number of surgical cases. The most common cause was found to be the postoperative adhesions followed by obstructed/ strangulated^{10,11,15} inguinal hernia, carcinoma, intussusception, volvulus, tuberculosis and mesenteric ischaemia. Although in the developing countries like India, the commonest cause used to be obstructed / strangulated hernia,⁸ in our study, commonest cause was adhesions⁸ followed by obstructed/strangulated hernia as the second cause. The decrease in the incidence of obstructed hernia indicate the changing trend towards early surgery before hernia gets complicated.

Age Incidence

Acute Intestinal obstruction although occurs in all age groups, the age spectrum in our study is 15 years to 85 years.¹⁰ The study showed the maximum incidence is in the age group 31-40 of 20% and 51-60 years of 20% which is comparable to the previous study groups SouvikAdhikari et al.,¹⁰ Cole GJ et al. group, which are nearly similar to our clinical study of acute intestinal obstruction. The mean age is our current study is 45 years where as Souvik Adhikari et al. shows mean age of 44 years, Jahangir Sarwar Khan series shows a mean age of 33 years. These studies are almost comparable with our current clinical study.¹⁰⁻¹²

Etiology

The cause of acute intestinal obstruction differs from different geographical locations. In the present clinical study, about 76% of the patients were of poor socio-economic class and the remaining 24% were of middle class which does not yield much statistical significance. But our hospital being a government set-up, which is serving mostly the poor socio-economic status. Hence the percentage of poor socio-economic status is high. The diet pattern in this study showed 64% to be non-vegetarians and 36% to be vegetarians which did not show any significance in relation to the disease (Table 4). In the present clinical study of 50 cases of acute intestinal obstruction, 40% of the cases occurred due to post operative adhesions who has undergone previous surgeries. In the present study, postoperative adhesions are the most

Post Operative Complication	Number of cases
Wound infection	2
Respiratory Tract Infection	2
Wound Dehiscence	-
Faecal fistula	-
Septicaemia	5

Table-7: Post operative complications

Mortality	No.of Patients	Percentage
Cured	43	86
Dead	7	14

Table-8: Mortality

common cause of intestinal obstruction, which can be comparable with the other study groups Playforth et al. with 54%. Although the incidence of obstructed/strangulated hernia is more in developing countries, in this study group, it is the second most common aetiology for the intestinal obstruction. It may be because of the awareness of public, the availability of good surgical facilities in the periphery for the hernia repair, the hernias are managed early (table-10).¹⁰⁻¹⁵

Clinical features

The clinical feature of intestinal obstruction like abdominal pain, vomiting, abdominal distension and constipation were not present in all cases.² Pain abdomen was present in 88% of the patients in the present study, where as vomiting was present in 78% of the patients. Abdominal distension was present in 66% and constipation was present in 54% of the cases.

In the present study, the clinical features of abdominal pain was 88%, vomiting was 78%, which comparable with the other study groups (SouvikAdhikari et al. and Jahangir Sarwar Khan et al). Only about 66% of the patients in the present study group had Abdominal distension. It may be due to an early approach to the hospital by patients in the present study. The abdominal mass on palpation is present in 24% of the total study, more in Malignancy and ileocaecal tuberculosis. Visible peristalsis is present in only 60% of the intestinal obstruction patients. The rectal examination did not reveal any abnormality except in four patients of intussusception (8%) and 2 cases of malignancy (4%) where in red currant Jelly and rectal growth were the rectal examination findings respectively.¹⁰⁻¹²

Surgical Management

The surgical management in the present study group includes release of adhesions for postoperative adhesions 22%,

resection and anastomosis for many of the cases of obstructed/strangulated hernia where the viability of the intestine was doubtful and also for ischaemic bowel 22%, release of the constricting agents and herniorrhaphy was done in 18% of the obstructed/strangulated hernia cases. Derotation of the volvulus and sigmoidopexy was done in around 4% of the cases.^{5,2} Resection and anastomosis and herniorrhaphy was done in 8% of the cases. Reduction of intussusception was done in one case. Two cases were managed with Hartman’s procedure and one patient with a transverse loop colostomy.

Complications

In the present group out of the 50 cases, complications like septicemia occurred in 5 cases, respiratory tract infection in 2 cases, wound infection occurred in two cases. The complication of septicemia was more in the patients with malignancy and one case with mesenteric ischaemia wherein there was already sepsis at the time of admission. Bowel surgeries were done in unprepared bowel in such cases. In Two cases – one with obstructed inguinal hernia and one with carcinoma rectum, the patients already had prior co-morbid conditions of COPD, and they suffered from respiratory tract infection.

CONCLUSION

Acute intestinal obstruction remains to be an important surgical emergency in the surgical field. Success in the management of acute intestinal obstruction depends largely upon the early Diagnosis, killful management and treating the pathological effects of the obstruction as much as the cause itself. Erect abdomen X-ray is a valuable investigation in the diagnosis of acute intestinal obstruction.

Post-operative adhesions are the common cause to produce intestinal obstruction. Clinical, radiological and operative

Age and Sex	Symptoms prior to admission	Operative Findings	Operative Procedure	Cause of Death
75/F (Cases no. 8)	3 days	Carcinoma sigmoid colon	Resection and anastomosis	Septicemic shock
72/M (Cases no. 11)	8 days	Carcinoma rectum	Hartman’s procedure	Respiratory Tract Infection (RTI)
65/M (Cases no. 21)	5 days	Mesenteric ischemia	Resection anastomosis	Septicemic shock
45/M (Case no. 36)	3 days	Carcinoma caecum	Resection and anastomosis	RTI
38/F (Case no. 37)	5 days	Carcinoma ovary with sigmoid colon infiltration	Transverseloop colostomy	Septicemic shock
63/M (Case no. 39)	3 days	Carcinoma rectum	Hartman’s procedure	Septicaemia
55/M (Case no. 43)	4 days	Carcinoma colon	Resection and anastomosis	septicaemia

Table-9: Cause of death

Causes	Souvik Adhikari	Jahangir	Brooks Arshad	Playfroth	Cole and m.	Present study
Adhesions	16%	34%		54%	5%	40%
Hernia	36%	5%	4%	9%	18%	30%
Volvulus	6%	1%	24%	12%	-	4%
Tuberculosis	14%	3%	2%	-	54%	4%
Malignancy	17%	6%	-	23%	23%	14%
Intussusception	2%	2%	10%	25%	3%	6%
Mes.ischaemia	9%	41%	10%	1%	-	2%

Table-10: Comparison of etiology with other studies

findings when put together can diagnose the intestinal obstruction. Mortality is still significantly high in case of acute intestinal obstruction.

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