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The clinical study and management of operated cases of acute intestinal obstruction in adults

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Abstract

Introduction: Bowel obstruction remains one of the most common intra-abdominal problems faced by general surgeons in their practice. Intestinal obstruction of either the small or large bowel continues to be a major cause of morbidity and mortality¹. These patients account for 12% to 16% of surgical admissions for acute abdominal complaints. It is caused by hernia, neoplasm, tuberculosis, adhesions, intussusception or volvulus. Manifestations of acute intestinal obstruction can range from only slight abdominal discomfort and distension to a state of hypovolemic or septic shock (or both) requiring an emergency operation. The death due to acute intestinal obstruction is decreasing with better understanding of pathophysiology, improvement in diagnostic techniques, fluid and electrolyte correction, anti-microbials and knowledge of intensive care.

The present study title: "The clinical study and management of operated cases of acute intestinal obstruction in adults".

Material and Methods: In present study, Data collected on 50 sample included male and female patients of an adult age group (12 to 85 years) from rural and urban areas. Patients admitted with acute intestinal obstruction in which surgical intervention was done during study period were selected randomly. Nature of study is prospective. Data analysis was done mainly using descriptive statistics.

Result: Maximum age incidence was in age group of 31 to 40 (years) and 51 to 60 (years). Male to female sex incidence was in the ratio of 4:1. Most common symptoms were pain in abdomen (88%) and vomiting (78%). Most common signs were tachycardia (80%) and visible intestinal peristalsis (60%). Most common cause of intestinal obstruction was postoperative adhesions. Most common surgical procedures performed were adhesiolysis (40%), resection and anastomosis (22%). Mortality was 14%. Majority deaths were due to complication like septicemia and late presentation (> 5days).

Conclusion: Acute intestinal obstruction remains common surgical emergency. Success in the treatment of acute intestinal obstruction depends on early diagnosis, skillful management, treating the pathological effects of the obstruction and the cause itself. Erect abdominal X-ray is the most valuable investigation in the diagnosis of acute intestinal obstruction. Postoperative adhesions is the common cause of intestinal obstruction. Clinical, radiological and operative findings put together can diagnose the intestinal obstruction. Mortality in acute intestinal obstruction depends on the time of presentation, general condition of the patient at the time of admission and the nature of operative procedure.

Keywords: Clinical study, management, operated cases, acute intestinal obstruction, adults

Introduction

Bowel obstruction remains one of the most common intra-abdominal problems faced by general surgeons in their practice. Intestinal obstruction of either the small or large bowel continues to be a major cause of morbidity and mortality¹. These patients account for 12% to 16% of surgical admissions for acute abdominal complaints. It is caused by hernia, neoplasm, tuberculosis, adhesions, intussusception or volvulus. Manifestations of acute intestinal obstruction can range from only slight abdominal discomfort and distension to a state of hypovolemic or septic shock (or both) requiring an emergency operation. The death due to acute intestinal obstruction is decreasing with better understanding of pathophysiology, improvement in diagnostic techniques, fluid and electrolyte correction, anti-microbials 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 or respiratory disease. Early diagnosis of obstruction, skilful operative management and intensive postoperative treatment result in good outcome.

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Need of the Study

The attempts to treat acute intestinal obstruction can be dated back to centuries. In 6th century BC Sushruta wrote oldest known descriptions of bowel surgery. Forms of intestinal obstruction like strangulated hernia and intussusception were known to the ancient Egyptians.

Intestinal obstruction was observed by Hippocrates (460-370 BC).

The earliest operation recorded was performed by Proxogorous (350 BC), who created enterocutaneous fistula to relieve obstruction.

John Arderence (1306-1390) was the first surgeon who wrote the book on "Passio Iliaca" (Appendicitis or intestinal obstruction).

Ambrois Pare' (1510-1590) was first to recognize intestinal obstruction as a pathological entity. For severe cases he used mercury in water or lead bullets smeared with mercury 2.

Franco (1561) did first Surgery on strangulated hernia. Bonetos in 1679 treated intussusception surgically.

Amsterdam in 1676 suggested opening of abdomen to treat intussusception and volvulus.

Mery in 1701, removed several feet of gangrenous bowel and established an artificial anus in a woman suffering from strangulated hernia.

- Mensching in 1756 used repeated intestinal puncture to treat obstructed bowels.
- Planned Caecostomy was first described by Pillore (1776).
- Duret performed the first successful sigmoid ostomy for the relief of obstruction in 1793.
- Dupuytren in 1800 established enterostomy for obstruction.

- Lipperance in 1826 resected the lower rectum and anus and created colostomy.
- Rokintansky first described volvulus of caecum in 1841 as an autopsy finding.

Aim of the Study

To study the various causes and modes of presentation of acute intestinal obstruction.

To study importance of early recognition, diagnosis and management of acute intestinal obstruction.

To study the morbidity and mortality rates in acute intestinal obstruction.

Methodology

In present study, Data collected on 50 sample included male and female pateints of an adult age group (12 to 85 years) from rural and urban areas. Patients admitted with acute intestinal obstruction in which surgical intervention was done during study period were selected randomly. Nature of study is prospective. Data analysis was done mainly using descriptive statistics.

Result

Age Incidence

The age spectrum in present study is 11 to 85 years. Study showed the peak incidence in the age group 31-40 years and 51-60 years which is 20%. It is comparable with the previous study groups like Souvik Adhikari study²⁴ and Cole GJ study²⁶. The mean age in present study is 45 years whereas in Souvik Adhikari, *et al.* study²⁴ it is 44 years, in Jahangir Sarwar Khan²⁵ study it is 33 years.

Table 1: Age incidence (%) of intestinal obstruction in different studies

Age group	Cole GJ ²⁶	Souvik Adhikari ²⁴	Harbhajan Singh ²⁷	Present study
12-20	10	9	10	12
21- 30	10	11	16	16
31-40	18	15	18	20
41-50	16	24	15	8
51-60	15	13	10	10
61-70	16	20	20	16
71-80	9	8	5	6
81-90	6	4	4	2

Sex Incidence

In Souvik Adhikari, *et al.* study²⁴ male to female radio was 4:1. In Osuigwe AN, *et al.* study²⁸ male to female ratio was 2:1. In the present study male to female ratio is 4:1.

Etiology

In the present study, 40% of the cases are due to postoperative adhesions.

Table 2: Comparison of etiology (%) with other studies

Studies / Causes	Souvik Adhikari ²⁴	Jahangir ²⁵	Arshad Malik ²⁹	Cole GJ ²⁶	Brooks and Butler ³⁰	Play forth ³¹	Present study
Adhesions	16	49	41	10	23	54	40
Hernia	36	34	19	35	25	23	30
Volvulus	6	5	4	3	1	3	4
Tuberculosis	14	1	24	3	-	-	4
Malignancy	17	3	2	9	5	9	14
Intussusception	2	6	-	12	18	5	6
Mes. Ischaemia/miscellaneous	9	2	10	-	-	6	2

The present study is comparable with the other study groups like Playforth, *et al.* ^[31] (54%) and Arshad Malik, *et al.* ^[29] (41%).

Clinical features

The clinical features of intestinal obstruction are pain in

abdomen, vomiting, distension of abdomen and constipation. In the present study, pain in abdomen was present in 88%, vomiting in 78%, distension in 66% and constipation in 54% of the cases. The comparative table showing percentage of clinical features by various other study groups is as follows

Table 3: Comparison of clinical features with other studies (%)

Study Group	Pain in abdomen	Vomiting	Distension	Constipation
Present study	88	78	66	64
Souvik Adhikari ²⁴	72	91	93	82
Jahangir– Sarwar khan ²⁵	100	92	97	97

In the present study, the clinical features of pain in abdomen and vomiting are comparable with the other study groups like Souvik Adhikari, *et al.* ^[24] and Jahangir Sarwar Khan, *et al.* ^[25]. In the present study group, 66% patients had distension of the abdomen. It is comparatively less than other studies which may be due to early approach of the patients to the hospital in the present study. A mass in the abdomen was present in 24% of the cases. Visible peristalsis was present in 60% of the cases. The rectal examination in four cases of intussusception (8%) and 2 cases of malignancy (4%) revealed red current jelly and rectal growth respectively.

Radiology

The Erect abdomen X-ray helps us in the diagnosis of intestinal obstruction as well as in differentiating small bowel from large bowel obstruction. Multiple air fluid levels can be seen in small bowel obstruction whereas only gas shadows are seen in large bowel obstruction unless the iceocaecal valve is incompetent. Taneja, *et al.* ^[32] reported 90% of cases with multiple air fluid levels and Savage, *et al.* ^[33] reported 95% cases with significant findings. In the present study in 60% patients X-rays showed multiple air fluid levels.

Surgical Management

The surgical management for the present study group includes release of adhesions for postoperative adhesions in 40% of cases, resection and anastomosis for many of the cases of

obstructed/strangulated hernia where the viability of the bowel was doubtful and also for ischaemic bowel in 22% of cases. Release of constricting agents and hernia repair was done in 18% of the obstructed/strangulated hernias. Derotation of volvulus was done in 4% of the cases. Reduction of intussusception was done in one case. Two cases were managed with Hartman's procedure and one case with transverse colostomy.

Complications

In the present study group, out of 50 cases, complications like septicaemia (5 cases), respiratory tract infection (2 cases), wound infection (2 cases) were seen. The incidence of septicaemia was more in the cases of malignancy and in one case of mesenteric ischaemia, where patients were already in sepsis at the time of admission. In these cases bowel was unprepared. Two cases, one with obstructed inguinal hernia and one with the case of carcinoma rectum, patients had prior comorbid condition due to COPD developed respiratory tract infection in postoperative period.

Mortality

Mortality in present study was 14%: 7 cases out of 50 cases. Among these, 6 patients had malignancy and one had mesenteric ischaemia. Mortality in other studies is tabulated as follows
Mortality rate in various studies

Table 4: Studies, year, no. of cases studied and Mortality

Studies	Year	No. of cases studied	Mortality
Present study	2012	50	14%
Souvik Adhikari ²⁴	2005	367	7.35%
Sufian Matsu Moto ³⁴	1975	171	19%
Jahangir–Sarwar khan ²⁵	2001	100	7%
Ramchandran CS ³⁵	1982	417	12.7%

The mortality rate in the present study is comparable to Ramchandran CS, *et al.* ^[35] but it is more compared to Souvik Adhikari, *et al.* ^[24], Jahangir, *et al.* ^[25] studies. Out of 7 deaths, 6 cases were due to malignancy. Patients with malignancy were mostly in the old age group with the unprepared bowel during surgery. It contributed to septicemic condition and resulted in death. Two patients were chronic smokers who developed respiratory tract infection and died. Hence most of the deaths were due to malignancy which played significant role in the outcome of the disease. The mortality in intestinal obstruction is more in patients with strangulation and gangrene of the bowel and also who presented late. Along with these, general condition of the patient, duration of symptoms, and nature of operative procedure has important role in prognosis.

The prognosis is directly proportional to the duration of the disease i.e. longer the duration higher the mortality.

Discussion

Acute intestinal obstruction continues to be one of the most common surgical emergencies. In present study, 8533 patients were admitted in the surgery department from February 2010 to February 2012. A total of 162 patients presented with features of acute intestinal obstruction. Among these 50 cases of operated cases were randomly selected for the present study.

Incidence of acute intestinal obstruction in present study is 1.9% of total surgical cases. In other studies like Souvik Adhikari, *et al.* (2010) ^[24] study, incidence was 9.87%. The commonest cause was found to be postoperative adhesions followed by obstructed/strangulated inguinal hernia, malignancy, intussusception, volvulus, tuberculosis and mesenteric ischaemia. Although in developing countries like India, the commonest cause used to be obstructed/strangulated hernia, in our study commonest cause was adhesions followed by obstructed/strangulated hernia as second cause. The decrease in incidence of obstructed hernias indicates the changing trend towards early operation before hernia gets complicated. The data

Table 5: Comparison of mortality in relation to duration of symptoms

Duration of symptoms before hospitalization	No. of cases	Death
1-2 days	18	2
3-4 days	17	2
> 5 days	15	3
Total	50	7

of the present study is comparable to Souvik Adhikari study [24], Cole study [26] and Jahangir-Sarwar Khan study. The mortality rate in the present study is comparable to Ramachandran CS, *et al.* [35] but it is more compared to Souvik Adhikari, *et al.* [24], Jahangir, *et al.* [25] studies. Out of 7 deaths, 6 cases were due to malignancy. Patients with malignancy were mostly in the old age group with the unprepared bowel during surgery. It contributed to septicemic condition and resulted in death. Two patients were chronic smokers who developed respiratory tract infection and died. Hence most of the deaths were due to malignancy which played significant role in the outcome of the disease. The mortality in intestinal obstruction is more in patients with strangulation and gangrene of the bowel and also who presented late. Along with these, general condition of the patient, duration of symptoms, and nature of operative procedure has important role in prognosis.

Conclusion

Acute intestinal obstruction remains common surgical emergency. Success in the treatment of acute intestinal obstruction depends on early diagnosis, skilful management, treating the pathological effects of the obstruction and the cause itself. Erect abdominal x-ray is the most valuable investigation in the diagnosis of acute intestinal obstruction. Postoperative adhesions is the common cause of intestinal obstruction. Clinical, radiological and operative findings put together can diagnose the intestinal obstruction.

Recommendation:

- Proper history, clinical examination and early diagnosis will improve the outcome of acute intestinal obstruction.
- Erect abdominal x-ray has important role in confirmation of diagnosis in acute intestinal obstruction.

Conflict of Interest

The authors certify that they have no involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this paper.

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