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Original Research Article

# A STUDY OF SURGICAL MANAGEMENT OF ACUTE INTESTINAL OBSTRUCTION IN A TERTIARY CARE CENTRE

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**ABSTRACT**

**Background:** The diagnosis and management of the patient with intestinal obstruction is one of the more challenging emergency that a general surgeon can come across. Early diagnosis of obstruction, skillful operative management, proper technique during surgery and intensive postoperative treatment carries grateful results.

**Objectives:** • To study the various causes of intestinal obstruction.• To study the various clinical features of intestinal obstruction. •To study the various surgical procedures and its outcome in relation to etiological factors in intestinal obstruction patients.• Modalities of treatment required.

**Materials and Methods:** In the present study included total number of cases 30. After admission to Narayana Medical College, Nellore, investigations and operative procedures performed were collected from the inpatients, were interpreted.

**Results:** Intestinal obstruction is more common in the age group of 30-60 years than in younger age group. Male and female are in equal ratio. Small bowel obstruction is more common than large bowel obstruction. Four cardinal features of intestinal obstruction are pain abdomen, vomiting, distension and constipation. Plain X-ray abdomen in erect and is most important investigation. Most common etiological factor is postoperative adhesions and next is intestinal tuberculosis with stricture. Malignant obstruction is more common in large bowel than small bowel. Small bowel volvulus is common than large bowel volvulus. Incidence of hernia related to obstruction is decreasing. Intravenous fluids and electrolytes, gastrointestinal aspiration, antibiotics and then appropriate surgery are still the mainstay of the treatment.

**Conclusion:** The present study concluded that Intestinal obstruction with tuberculosis intestine have 9 times more likely to develop postoperative complications, proper anti-tubercular management is necessary to prevent mortality and morbidity. Early operations are mandatory to avoid the development of peritonitis and systemic sepsis associated with multisystem organ failure.

**Keywords:** Small intestine; Large intestine; Bands; Adhesions; Stricture; Malignancy; Hernia, Volvulus; Intussusception; Ultrasonography; CT scan; Colonoscopy; Serum electrolyte; Strangulated internal hernia.

## INTRODUCTION

Intestinal obstruction is a common surgical emergency all over the world. It is defined as obstruction in forward propulsion of the contents as obstruction in the intestine either due to mechanical or neurological cause. It is predisposed by varying underlying anomalies and diseases, which are difficult to define preoperatively.[1,2]

Though intestinal obstruction can be diagnosed easily, the underlying cause except postoperative

adhesions and external hernias are difficult to be diagnosed preoperatively.

Although the mortality due to acute intestinal obstruction is decreasing with better understanding of pathophysiology, improvement in diagnostic techniques, fluid and electrolyte. Correction, much potent anti-microbials and knowledge of intensive care, but still the mortality ranges from 10-15% and more so in developing countries. Various studies in India report about 8-12% in recent times. Most of the mortalities occurs in elderly individuals who seek late treatment and who are having associated pre-existing diseases like, diabetes mellitus, COPD and cardiac diseases.[3-5]

Early diagnosis of obstruction skillful operative management, proper technique during surgery and intensive postoperative treatment carries a grateful result.

**Aims 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 aims and objectives.

- To study the various causes of intestinal obstruction.
- To study the various clinical features of intestinal obstruction.
- To study the various surgical procedures and its outcome in relation to etiological factors in intestinal obstruction patients.

## MATERIALS AND METHODS

The materials for the clinical study of intestinal obstruction were collected from cases admitted to various surgical wards in Narayana Medical College, Nellore. During the period from November 2023 to October 2024, thirty cases of intestinal obstruction have been studies. Patients belonged to the age groups ranging from 12 years to 70 years, paediatric age group is excluded in this study to avoid excessive stress on congenital anomalies.

Patients who were having sub acute intestinal obstruction treated conservatively are excluded from the study. 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.

Patients with clear-cut signs and symptoms of acute obstruction were managed by appropriate surgical procedure after resuscitation. I attended operative procedures in majority of the cases and findings were recorded and photographs were taken. 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.

Postoperative follow up after the discharge of patients was done in majority of the patients upto 6 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.

Soon after the admission, clinical data were recorded according to the Proforma. The diagnosis mainly based on clinical examination and often supported by radiological examinations.

**Statistical Methods:** Chi-square and Fisher Exact test has been used to find thesignificant of proportion of Postoperative complications in association with etiology of Intestinal Obstruction.

## RESULTS

The study of 30 cases of intestinal obstruction during November 2023 to October 2024 at Narayana Medical College, Nellore, AP, India.

**Table 1: Age distribution with sex**

| Age in years | Male | Female | Total |
|---|---|---|---|
| 12-20 | 2(13.3) | 1(6.7) | 3(10.0) |
| 21-30 | 2(13.3) | 4 (26.7) | 6 (20.0) |
| 31-40 | 1(6.7) | 2 (13.3) | 3 (10.0) |
| 41-50 | 1(6.7) | 3 (20.0) | 4(13.3) |
| 51-60 | 4(26.7) | 2 (13.3) | 6(20.0) |
| 61-70 | 2(13.3) | 3 (20.0) | 5(16.7) |
| >70 | 3(20.0) | - | 3(10.0) |
| Total | 15(100.00) | 15(100.0) | 30(100.0) |

There were 15 male and 15 female in present study cases. The male and females are in equal ratio.

**Table 2: Presenting symptoms and signs**

| Symptoms/Signs | Number of Patients (n=30) | Percentage |
|---|---|---|
| A. Distension of abdomen | 30 | 100.0 |
| B. Pain abdomen | 30 | 100.0 |
| C. Vomiting | 23 | 76.67 |
| D. Constipation | 19 | 63.33 |
| E. Fever | 6 | 20.00 |
| F. Dehydration | 16 | 53.33 |
| G. Tenderness over the abdomen | 23 | 76.67 |
| H. Guarding | 11 | 36.67 |
| I. Rigidity - - | - | - |
| J. Palpable mass | 8 | 26.67 |
| K. Increased bowel sounds | 23 | 76.67 |
| L. Absent bowel sounds | 7 | 23.33 |
| M. Shock | 2 | 6.67 |

**Table 3: Etiology of intestinal obstruction**

| Etiology of Intestinal Obstruction | Number of Patients (n=30) | Percentage |
|---|---|---|
| A. Adhesion and bands | 9 | 30.0 |
| B. T.B Stricture | 7 | 23.3 |
| C. Malignancy | 6 | 20.0 |
| D. Volvulus | 4 | 13.3 |
| E. Hernia | 2 | 6.7 |
| F. Intussusceptions | 1 | 3.3 |
| G. Small bowel obstruction with mucinous cystadenoma appendix | 1 | 3.3 |

**Table 4: Types of operation**

| Types of operation | Number of Patients (n=30) | Percentage |
|---|---|---|
| A. Resection and end to end anastomosis | 14 | 46.7 |
| B. Release of adhesions and bands | 7 | 23.3 |
| C. Untwisting of volvulus | 1 | 3.3 |
| D. Herniorrhaphy | 2 | 6.7 |
| E. Hemicolectomy | 5 | 16.7 |
| F. Ileo-Transverse anastomosis | 1 | 3.3 |

**Table 5: Postoperative complications**

| Postoperative Complications | Number of patients (n=30) | Percentage |
|---|---|---|
| A. Wound infection | 3 | 10.0 |
| B. Respiratory infection | 1 | 3.3 |
| C. Enterocutaneous fistula | 1 | 3.3 |
| D. Prolonged ileus | 2 | 6.7 |
| E. Deaths (Septicaemia) | 3 | 10.0 |

Moderate to high degree of fever noticed in case of ileocaecal tuberculosis,
colonic growth patients.
In 3 of our patients wound infection was present, ranging from stitch abscess to superficial gaping. Enterocutaneous fistula was developed in one case for that re-
exploration and resection of unhealthy segment and re-anastomasis was done. Prolonged
ileus in the two patients, 3 patients had septicemia and died.

**Table 6: Association of etiology with postoperative complications**

| Etiology of Instetinal Obstuction | Postoperative Complications | | Total |
|---|---|---|---|
| | Present | Absent | |
| A. Adhesion and bands | 2(22.2) | 7(77.8) | 9 |
| B. T.B stricture | 5(71.4) | 2(28.6) | 7 |
| C. Malignancy | 1(16.7) | 5(83.3) | 6 |
| D. Volvulus | 1(25.0) | 3(75.0) | 4 |
| E. Hernia | 1(50.0) | 1(50.0) | 2 |
| F. Intussusceptions | - | 1(100.0) | 1 |
| G. Small bowel obstruction with mucinous cystadenoma Appendix | - | 1(100.0) | 1 |
| Patients presented with T.B stricture are 9 times more Inference likely to develop post-operative complications with P=0.026. | | | |

**Table 7: Mortality**

| Age and sex | Symptoms prior to admission | Operative findings | Operative procedure | Cause of death |
|---|---|---|---|---|
| 43/F(case No.5) | 3days | Obstructed incisional hernia | Release and repair | Septicaemic shock |
| 78/F(case No.20 | 8days | Growth in the sigmoid colon | Segmental resection and end-to-end anastomosis | Septicaemic shock |
| 58/M(case No.22) | 3 months | Stricture of Splenic flexure | Colo- colostomy | Septicaemic shock |

**Table 8: Follow up status**

| Follow-up complications | Follow-up status | | |
|---|---|---|---|
| | One month | 3rd month | 6th Month |
| A. Wound infection | 1 | Nill | Nill |
| B. Septicemia | Nill | Nill | Nill |
| C. Enterocutaneous Fistula | Nill | Nill | Nill |
| D. Prolonged Ileus | Nill | Nill | Nill |
| E. Fever | 4 | 2 | Nill |
| F. Respiratory Infection | 4 | 1 | Nill |
| G. Death | Nill | Nill | Nill |

## DISCUSSIONS

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%.6 Jain et al in 1973 reported an incidence of 3.2%.7 In our hospital 1068 cases of total abdominal surgeries were done in November 2003 to December 2005, of which 30 cases where intestinal obstruction comprising about 2.6%. The involvement of small bowel in obstruction is much more common than that of large bowel (Sufian and Mostsumoto).[8] The delay in the treatment will lead to high mortality. Since the advancement in understanding the anatomy/physiology fluid and electrolyte management along with modern antibiotics and intensive care unit. The mortality has been decreasing consistently the associated medical problems (like respiratory cardiac or metabolic diseases) and advanced age carries a considerable contribution in adding the mortality.

**Age incidence**

Though intestinal obstruction occurs in all age groups, here the youngest patient was 17 years and oldest patient was 78 years. In this study 63.3% belongs to 21-60 years age group, previous study by Shakeeb, who noticed age distribution from birth to 85 years with an average of 50.7 years. Studies by Gill Eggleston9 has reported 17% of cases in the age group of 50-54 years and 60% of the cases of intestinal obstruction occur in the age group of 30-60 years.

**Sex incidence**

In present study, there are 15 male and 15 females. Male and female are in equal ratio.

Among previous studies, Budharaja et al,[10] reported 4:1 and Shakeed11 found equal incidence.

**Etiology**

The etiology of intestinal obstruction varies from one country to other and from one part of the country to another party. The comparative study of previous report is as follows.

| Cause | Present Study | S.S. Gill and Egglestion[9] 1965 | G. J. Cole[12] 1965 | Playforth[13] 1970 | Brooks and Buttler[14] 1996 | Biarj et al[15] 1999 |
|---|---|---|---|---|---|---|
| Adhesion | 30% | 15% | 10% | 54% | 23% | 53% |
| Hernia | 6.7% | 27% | 35% | 23% | 25% | 26% |
| Volvulus | 13.3% | 25% | 4% | 3% | 1% | 3% |
| Tuberculosis | 23% | 3.5% | 3% | - | - | - |
| Malignancy | 20% | 3.4% | 4% | 9% | 5% | - |
| Intussusception | 3.3% | 12% | 12% | 4.5% | 18% | - |

The most common etiological factor in the present study is adhesion which included postoperative, nonspecific and congenital bands, postoperative adhesion occurs in 93% of cases of previous abdominal surgery,[16] of these every third patient will be having one of the other clinical signs and symptoms related to adhesion.[17] Among 93% of the postoperative adhesions 5% of the cases can develop

acute intestinal obstructions, most of them will be within first year (39-60%).

In the present series 30% of the cases, of obstruction are due to adhesion and bands, 44.4% are due to post operative adhesions, post abdominal trauma 11.1%, congenital bands, 11.1% ileal and caecal perforation peritonitis with adhesion – 22.2% and 11.1% are non-specific adhesion.

**Tuberculosis**

Tuberculosis is one of the common health problems in developing countries. In the present series, tuberculosis found to be a causative factor in 7 cases (23.3%) in the form of ilio-caecal tuberculosis with stricture and adhesions.

**Malignancy**

Harbans et al reported an incidence of 14% large bowel obstruction. In the present study 6 cases (20%) presented with acute large bowel obstruction. Two at the caecum, two at the sigmoid colon. One at the ascending colon, one at the rectosigmoid junction. All the six cases had annular types of growths occluding lumen totally. The incidence is higher in western countries due to various factors, which includes increased aged population, consumption of high animal fat and lack of fibre diet.

**Volvulus**

Colon volvulus is the common cause of large bowel obstruction of this sigmoid colon is involved commonly. In our study we had one case of sigmoid volvulus and three cases of small bowel volvulus. Total percentage of volvulus in our study is 13.3%. Small bowel volvulus is a rare but life threatening surgical emergency.

The etiology may be primary where cause is not known and secondary due to adhesions, bands, Iwuagwu et al 1999, reported incidence of 3.5% to 6.2%. Out study had 10% of small bowel volvulus. This corresponds to the study done by Iwuagwu et al.[18]

**Mucinous cystadenoma of appendix causing intestinal obstruction**

In our study, we found one rare cause of intestinal obstruction i. e., mucinous cystadenoma of appendix pressing at the ileo-caecal junction resulting in the distension of small bowel. This contributes 3.3%. Operative procedure done was appendicectomy with decompression of bowel with ileo-transverse anastomosis (side-to-side). Reference "Mucinous cystadenoma of appendix, unusual cause of intestinal obstruction.[19]

**Operations**

All the cases of our study were subjected to surgery. Most common operation performed was resection and anastomasis of bowel 46.7%. Release of adhesions and bands was done in 23.3% of cases. Hemicolectomy in 16.7% cases, reduction and hernia repair in 6.7%. Untwisting of volvulus in 3.3% and ileo-transverse anastomosis in 3.3% and colostomy in one case, postoperatively IV fluids and nasogastric decompression and antibiotics were given till the good bowel movements appeared.

**Mortality**

3 cases died following surgery for acute intestinal obstruction (10%). Among the patients who died the precipitating causes were

1. Obstructed incisional hernia – 1
2. Growth in the sigmoid colon – 1
3. Stricture of splenic flexure –1

In our study we had mortality rate of 10%. The decrease in overall mortality is due to better understanding of pathophysiology of obstruction, improvement in resuscitative and supportive treatment, aggressive surgical therapy in combination with improved technique in anaesthesia.

## CONCLUSION

Intestinal obstruction remains still an important surgical emergency. Patients with a clinical picture of obstruction of the bowel demand vigorous correction of fluid and electrolyte, which can be severe, and life threatening. Postoperative adhesions are the common cause to produce intestinal obstruction. Clinical radiological 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, which can help the surgeon for differentiate simple obstructions from ischemia or a closed loop obstruction with impending bowel infarction. Diagnosis of strangulation is still a challenge. Intestinal obstruction with tuberculosis intestine have 9 times more likely to develop postoperative complications, proper anti-tubercular management is necessary to prevent mortality and morbidity. Early operation is mandatory to avoid the development of peritonitis and systemic sepsis associated with multi-system organ failure.

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## REFERENCES

1. Owen H. Wangensteen. Historical aspect of the management of the acute intestinal obstruction. Surgery 1969; 63: 363-383.
2. Kloiber H. Die. Roentgen diagnose Des Ileus Ohne Kontrastmittel. Arch F Klin Chir 1919; 112: 513.
3. Akgun Y. Mesosigmoidoplasty as a definitive operation in treatment of acute sigmoid volvulus. Dis Colon Rectum 1990; 39: 579-581.
4. Decker GAG. Lee McGregor's Synopsis of Surgical Anatomy. 12th ed, Reprint 1999; 22-61.
5. Charles V. Mann. Intestinal Obstruction. Bailey and Love – Short Practice of Surgery, ELBS 20th ed, 1989; 1065-1089.
6. Richard JB, Gerald TG, David CH, Leslie ER, Wangensteen SL. Abdominal pain. Am J Surg 1976; 131: 219-223.
7. Gilroy P. Bevan. Adhesive obstruction. Ann Roy Call Surg Eng 1983; 164-170.
8. Sufian S, Matsumoto T. Intestinal obstruction. Am J Surg 1975; 130: PP 9-14.
9. Gill SS, Eggleston FC. Acute Intestinal Obstruction. Arch Surg 1965 Oct; 91: 389-392.
10. Budharaja et al. Acute intestinal obstruction in Pondicherry. IJS 1976 March; 38 (3): 111.
11. Sufian, Sharkeed et al. Intestinal obstruction. Am J Surg 1975; 130 (1).

12. Cole GJ. A review of 436 cases of intestinal obstruction in Ibanan. Gut 1965; 6: 151-162.
13. Playforth RH et al. Mechanical small bowel obstruction and plea for the earlier surgical intervention. Ann Surg 1970; 171: 783-788.
14. Brooks VLH, Butler A. Acute intestinal obstruction in Jamaica. Surg Gynaec Obstet 1996; 122: 261-264.
15. Biarj Tiddle et al. Complications and death after surgical treatment of small bowel obstruction. Ann Surg 1999; 231 (4): 297-306.
16. Menzies D, Harold Ellis. Intestinal obstruction from adhesion. How big is the problem? Ann Royal Col Surg (Eng) 1990; 72: 60-63.
17. Ellis H et al. Adhesion related hospital admissions after abdominal and pelvic surgery. Lancet 1999 May; 353: 1476-1480.
18. Iwvagwu O, Deans GT. Small bowel volvulus. J Coll Surg EDINS 1999; 44: 150-55.
19. Mucinous cystadenoma of the appendix. Unusual cause of intestinal obstruction. Ann Acad Med Singapore 2001; 30: 206-207.