

## Study on Surgical Management in Dynamic Small Bowel Obstruction in Adult

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### Abstract:

**Background:** Intestinal obstruction is reported in ancient literature and is defined as, "Interference in the passage of food, liquids and contents of the intestine either due to mechanical or neurological cause". There are various etiologies for acute intestinal obstruction from more common causes like adhesions, hernia, malignancy to uncommon conditions like intussusception. The classical presentation is pain abdomen, vomiting, constipation and distension of abdomen, it needs a complete understanding of surgical anatomy, pathophysiology, symptoms and signs of obstruction and necessary investigations for diagnosis.

**Materials and Methods:** study was conducted for small bowel obstruction from 2020 to 2022. On 50 no of patient for requiring surgical intervention based on Cause, Anatomical & pathological nature, Age related factors, Mode of presentation, Investigation modalities, Surgical procedure done and Outcome after surgery and complications.

**Results:** In the present study the most common cause being adhesions & bands followed by hernia and In this study 56% of the cases belongs to 31-50 years age group, there are 25 male and 25 females. Male and female are in equal ratio.

**Conclusion:** Intestinal obstruction an important surgical emergency. demand vigorous correction of fluid and electrolyte Adhesions and bands are the common cause to produce intestinal obstruction. imaging techniques helped in early diagnosis and hence improved health care. Patients with intestinal obstruction due to adhesions and band are more likely to develop postoperative complications. Early operation is mandatory to avoid the development of peritonitis and systemic sepsis associated with multi-system organ failure.

**Keywords:** Intestinal Obstruction, Dynamic Small Bowel Obstruction.

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### Introduction

Acute Intestinal Obstruction is one of the common surgical emergencies encounter to surgeon. Intestinal obstruction is reported in ancient literature and is defined as, "Interference in the passage of food, liquids and contents of the intestine either due to mechanical or neurological cause". It is predisposed by various underlying conditions which are difficult to define preoperatively. There are various etiologies for acute intestinal obstruction from more common causes like adhesions, hernia, malignancy to uncommon conditions like intussusception. Though the classical presentation is pain abdomen, vomiting, constipation and distension of abdomen, it needs a complete

understanding of surgical anatomy, pathophysiology, symptoms and signs of obstruction and necessary investigations for diagnosis. In this study analysis of various causes, anatomical and pathological nature, mode of presentation, age factors, investigation modalities, and surgical management, various complications, mortality and outcome has been discussed.

### Aims and Objectives

To study 50 cases of dynamic small bowel obstruction in adult population, requiring surgical intervention based on:

- Cause

- Anatomical & pathological nature
- Age related factors
- Mode of presentation
- Investigation modalities
- Surgical procedure done.
- Outcome after surgery and complications.

### Material and Methods

The materials for the clinical study of Dynamic small bowel obstruction were collected from the cases admitted to various surgical wards in GMC Medical College Kota.

During the period from October 2020 to September 2022, fifty cases of dynamic small intestinal obstruction have been studied in a manner.

Paediatric age group is excluded in this study to avoid excessive stress on congenital anomalies. Patients who were having subacute intestinal obstruction treated conservatively, Paralytic ileus are excluded from the study. Case selection was done in the criteria of History, clinical examination and radiological examination. Soon after the admission, clinical data were recorded according to the Proforma. The diagnosis mainly based on clinical examination and often supported by radiological examination. All the cases studied subjected to surgery and the diagnosis was established.

The investigations done in the cases for study were:

**Blood:** Routine examination includes Haemoglobin percentage, blood grouping and typing, WBC count and differential count, ESR, blood urea, serum creatinine, serum electrolytes.

**Urine:** Routine examinations – albumin, sugar and microscopy.

**Radiology Imaging:** Plain x-ray erect abdomen to detect fluid gas levels. Ultrasound abdomen was done in all cases. CT scan abdomen done in selected cases. 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, Catheterization carried out and antibiotic prophylaxis started.

And close observation of all bedside parameters (like pulse rate, BP, RR, abdominal girth, bowel sounds and tenderness and guarding) was done.

Patients who showed reduction in abdominal distension and improvement in general condition especially in individuals with postoperative adhesions a chance of conservative management was taken (by extending the supportive treatment) for further

12 to 24 hours, those who showed improvement by moving bowels, reduction in pain/tenderness

following conservative treatment, such individuals are excluded in this study.

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 fourth 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 up to 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 with Complications noted.

### Statistical Methods

Descriptive statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean±SD (Min-Max) and results on categorical measurements are presented in Number (%).

Significance is assessed at 5% level of significance. The following assumptions on data is made, Assumptions: 1. Dependent variables should be normally distributed,

2. Samples drawn from the population should be random, Cases of the samples should be independent

Chi-square/Fisher Exact test has been used to find the significance of study parameters on categorical scale between two or more groups.

### Results

The study of 50 cases of Dynamic Small intestinal obstruction in adults during October 2020 to September 2022 at GMC Medical college kota studied is as follows:

### Study Design

A prospective surgical management single group study with 50 patients presented with dynamic Small Bowel Obstruction in adults is undertaken to study

the surgical management.

**Table 1: Age distribution of patients studied**

Age in years	Number of patients	%
18-20	4	8.0
21-30	5	10.0
31-40	15	30.0
41-50	13	26.0
51-60	9	18.0
61-70	3	6.0
71-80	1	2.0
Total	50	100.0

**Table 2: Gender distribution of patients studied**

Gender	Number of patients	%
Male	25	50.0
Female	25	50.0
Total	50	100.0

Equal sex incidence was in the present study with male: female ratio of 1:1.

**Table 3: Clinical characteristics of patients studied**

	Number of patients (n=50)	%
Pain	50	100.0
Vomiting	25	50.0
Distension	20	40.0
Constipation	18	36.0
Irreducible Hernia	5	10.0
Fever	10	20.0
Dehydration	14	28.0

**Table 4: Duration of symptoms**

Duration of symptoms	Number of patients (n=50)	%
1-2 days	12	24.0
2-5 days	34	68.0
6-14 days	2	4.0
15 & above	2	4.0

**Table 5: History of previous surgery**

H/O previous surgery	Number of patients (n=50)	%
Yes	20	40.0
No	30	60.0

In the present study, out of 50 cases of small bowel obstruction, 40% of patients had previous history of abdominal surgeries resulting in postoperative adhesions/bands.

**Table 6: Tender/Guarding/Rigidity/mass**

	Number of patients (n=50)	%
Tender	50	100.0
Guarding/Muscle hold	35	70.0
Rigidity	8	16.0
Mass	7	14.0

On examination of the abdomen, diffuse tenderness was present in all 50 cases, followed by (muscle hold) guarding in 35. Rigidity in 8 cases with mass abdomen includes 7 cases

**Table 7: Etiology**

Etiology	Number of patients (n=50)	%
Adhesions & Bands	34	68.0
Hernia	6	12.0
Tuberculosis	5	10.0
Malignancy	3	6.0
Intussusception	1	2.0
Volvulus	1	2.0
Total	50	100

**Table 8: Type of Operation**

Operation	Number of patients (n=50)	%
Laparotomy & Resection anastomosis	19	38.0
Laparotomy & Release of adhesions	14	28.0
Laparoscopic adhesiolysis	2	4.0
Laparotomy & ileostomy	8	16.0
Laparotomy & Hernioplasty/Reduction	6	12.0
Laparotomy & Untwisting of volvulus	1	2.0

**Table 9: Post-op Complications**

Post –op complications	Number of patients (n=50)	%
Nil	42	88.0
Yes	8	12.0
Wound Infection	5	6.0
Rec. ADH	2	4.0
Death	1	2.0

### Discussion

Intestinal obstruction continues to be a surgical emergency, which surgeons have to face.

In our hospital, 1200 cases of total abdominal surgeries were done from October 2020 to September 2022, of which 50 cases where intestinal obstruction comprising about 4.16%

Brewer et al analyzed 1000 consecutive abdominal surgeries in 1976 and reported an incidence of 2.5%. The involvement of small bowel in obstruction is much more common than that of large bowel. 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.

### Etiology

In the present study the most common cause being adhesions & bands followed by hernia. The comparative study of previous report is as follows:

In the present series 68% of the cases of obstruction are due to adhesions and bands, 44% are due to postoperative adhesions. In the present series 12% cases of obstruction are related to hernia.

Four cases of obstructed incisional hernia (female) and one case of obstructed inguinal hernia and obstructed incisional hernia (male) respectively.

The comparative analysis of incidence of various studies reported the incidence from 13-35%. But hernia related obstruction were higher in earlier period (60-70's) due to early surgical treatment for hernia the incidence is decreasing from 40-20%. Tuberculosis is one of the common health problems in developing countries. In the present series, tuberculosis found to be a causative factor in

10% of cases in the form of ilio-caecal tuberculosis with stricture and adhesions. Disparity with western literature is due to the increase in number of tuberculosis patients in developing countries like India. Brooks & Buttler et al reported an incidence of 5% of small bowel obstruction due to malignancy. In the present study 6% cases presented with acute small bowel obstruction from malignancy. 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.

Intussusception is generally regarded as a disease almost exclusively of infants and are rare in adults. In our study intussusception contributes about 2% of small bowel obstruction.

Total percentage of volvulus in our study is 2%. 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%.

### Management

All the cases of our study were subjected to surgery. Most common operation performed was Laparotomy & Resection anastomosis 38%. Release of adhesions and bands was done in 28% of cases. Reduction & hernia repair in 12% cases, Ileostomy in 16%, Untwisting of volvulus in 2%, and Laparoscopic adhesiolysis in 4% of cases,

Postoperatively IV fluids and nasogastric decompression and antibiotics were given till the good bowel movements appeared.

The incidence of postoperative complications in our study was wound infection (5 cases), Recurrent adhesions (2 cases), and 1 case of Death.

### Age incidence

Though intestinal obstruction occurs in all age

groups, here the youngest patient was 18 years and oldest patient was 80 years. In this study 56% of the cases belongs to 31-50 years age group. Studies by Gill Eggleston has reported 60% of the cases of intestinal obstruction occur in the age group of 30-60 years.

### Sex incidence

In present study, there are 25 male and 25 females. Male and female are in equal ratio.

### 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.
- Adhesions and bands are the common cause to produce intestinal obstruction.
- Advances in imaging techniques have helped us in early diagnosis and hence improved health care.
- Mechanical obstruction is not associated with any specific bio-chemical marker, which can help the surgeon to differentiate simple obstructions from ischemia or a closed loop obstruction with impending bowel infarction.
- Patients with intestinal obstruction due to adhesions and band are more likely to develop postoperative complications.
- Intussusception although rare in the adult population should be considered in cases of small bowel obstruction.
- Early operation is mandatory to avoid the development of peritonitis and systemic sepsis associated with multi-system organ failure.
- The reduction in postoperative morbidity associated with laparoscopic surgical techniques has led to their widespread use for adhesiolysis.

### Summary

- Most common etiological factor for intestinal obstruction is Adhesions & bands.
- Hernia related obstruction is second most common cause of intestinal obstruction, the incidence is decreasing due to early surgical treatment for hernia.
- Intestinal tuberculosis with stricture is the third common cause of intestinal obstruction.
- Malignant obstruction is relatively less common in small bowel causing intestinal obstruction.
- Intussusception & Volvulus is the next common cause of intestinal obstruction, small bowel volvulus is commoner than large bowel volvulus.
- Intestinal obstruction is more common in the age group of 31-50 years than in younger age group and occurs equally in both sexes.

- Pain abdomen, vomiting, distension and constipation are the four cardinal features of small bowel obstruction.
- Plain x-ray abdomen taken in erect posture is the single most important investigation required for the patients.
- Intravenous fluids and electrolytes, gastrointestinal aspiration, antibiotics and then appropriate surgery are still the main stay of the treatment.
- Early surgical intervention is mandatory to prevent sepsis.

Among the factors influencing the mortality and morbidity are age, state of hydration, nutritional status, viability of the bowel, etiology of obstruction, site of obstruction, delay in diagnosis and surgical intervention and associated medical illness.

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