

INCIDENCE AND MANAGEMENT OF ACUTE SMALL BOWEL OBSTRUCTION IN A TERTIARY CARE HOSPITAL: A COHORT STUDY.

Surgery

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ABSTRACT

Background: The incidence of acute small bowel obstruction presenting itself as an emergency is high, owing to its rapid onset and brisk progress. It is one of the most common abdominal emergencies. The need to understand the pathophysiological changes that occur during the disease process is of utmost importance to decrease the morbidity and mortality post small bowel obstruction. **Aim and Objectives:** In this study, we aim to define the causes, their incidence, the diagnostics and the management of acute small bowel obstruction due to both, medical and surgical causes. **Materials and Methods:** We conducted a prospective cohort study, of 100 patients presenting with obstipation, between January 2019 and January 2022. All patients were subjected to a battery of biochemical tests and a set of radiological investigations for a complete clinical diagnosis. **Results:** Out of the 100 patients presenting with obstipation, 76 patients had dynamic obstruction, with pathology either in the wall, in the lumen, or outside the wall; while the rest (24 patients) had obstruction due to medical causes. The gold standard investigation was a contrast enhanced CT of the abdomen. The most common cause of dynamic obstruction encountered in our practice was adhesion, followed by inflammatory and infective pathologies. **Conclusion:** An early diagnosis followed by prompt management, either medical, or surgical, or both is of paramount importance whilst dealing with a case of small bowel obstruction. This consequently leads to a faster decision of surgery vs. conservative management, while avoiding complications such as perforation and peritonitis, thereby decreasing the mortality and morbidity due to sepsis and MODS.

KEYWORDS

Obstruction, small bowel, adhesions, laparotomy, dynamic obstruction.

INTRODUCTION:

The incidence of acute small bowel obstruction (SBO) presenting itself as an emergency is high, owing to its rapid onset and brisk progress. Acute SBO is one of the most common abdominal emergencies. The need to understand the pathophysiological changes that occur during the disease process is of utmost importance to decrease the morbidity and mortality post small bowel obstruction.

Obstruction is defined as limitation in the forward propulsion of intestinal contents either due to a dynamic (mechanical), adynamic or neurological causes. [1]

The overall incidence of bowel obstruction, if compared between small and large bowel, the former accounts to about 80%, while the latter accounts for only 20% [2-4]. The mortality in patients with small bowel obstruction is around 2 to 8%, although, if persistent bowel ischemia is present, the mortality rate may rise to about 25%. [5-8]

The etiologies commonly associated with intestinal obstruction are adhesions, obstructed hernias, malignancy, to conditions such as intussusceptions and volvulus. About 20% of causes of acute abdomen are secondary to small bowel obstruction. Patients usually present with pain in abdomen, distention, vomiting and constipation, depending upon the level of obstruction.

As medical professionals, we need a thorough understanding of the concerned anatomy, physiology, etiopathogenesis and clinical features for necessary investigations and diagnosis.

The overall mortality which attributed to acute intestinal obstruction is decreasing, owing to superior understanding of the pathophysiological processes, better diagnostic modalities, faster onset of treatment with correction of metabolic abnormalities. The introduction of microbe specific antimicrobials has greatly increased the management of these patients.

The motto of never letting the sun rise and set on a patient with SBO has been fruitful to reduce the frequency of strangulation, and promote early surgical intervention. This in turn, has decreased the mortality of patients presenting with SBO.

Routine imaging modality include a flat plate X-Ray Abdomen and/or ultrasound abdomen. Although, the gold standard, still, in stable cases is a contrast enhanced computed tomography (CECT) of the abdomen. It aids in determining the cause, location, extent and degree of the obstruction. A study concluded by Stewardson and Bombeck concluded that approximately 20% of surgical admissions of SBO are due to secondary causes.

Causes of dynamic obstruction can broadly be classified based on whether the focal point arises from inside the lumen (intraluminal), from the wall of the lumen (luminal) or outside the lumen (extraluminal). Etiologically classified into extrinsic or intrinsic causes, examples include adhesions, hernias, peritonitis and obstruction due to malignancy, all included in extrinsic causes, while foreign body, inflammatory bowel disease (IBD), gall stone ileus and intussusception included in intrinsic causes.

OBJECTIVES:

A cohort study of 100 cases of SBO to determine the cause, nature, factors influencing, investigation findings, interventions and outcome.

MATERIALS AND METHODS

We conducted a prospective cohort study, of 100 patients presenting with obstipation, between January 2019 and January 2022. Included age group as in inclusion criteria ranged from 18 years onwards; paediatric age group was excluded owing to the cause attributed to congenital anomalies. Patients underwent biochemical and radiological investigations to determine the aforementioned objectives. A written, well-informed consent was taken from the patients before their enrolment into the study. A performa having the demographic profile, intraoperative variables according to the aforementioned headings was restructured and recorded. All data was entered retrospectively in a computerised database.

Statistical analysis:

The data that was collected was analysed with the IBM SPSS v.23 software. To find significance in categorical data, Chi-square test was used, and similarly, if the expected cell frequency was less than 5 in 2x2 tables, then Fisher's-exact test was used. To find significance in continuous data, independent t-test was used.

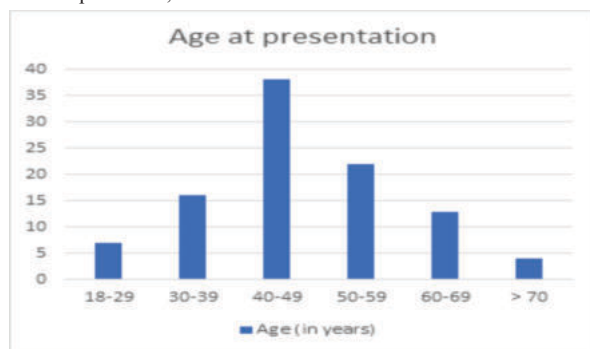
OBSERVATION AND RESULTS:

The study design incorporated a total of 100 patients of obstipation from January 2019 to January 2022, at Mahatma Gandhi Hospital, Jaipur.

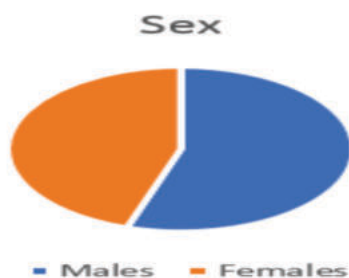
Sr. No.	Age (Years)	Number of patients / Percentage
1	18-29	7
2	30-39	16
3	40-49	38
4	50-59	22
5	60-69	13
6	> 70	4

Mean: 47.27 ± 12.69 years.

With respect to sex, there were a total of 55 males vis-à-vis 45 females.

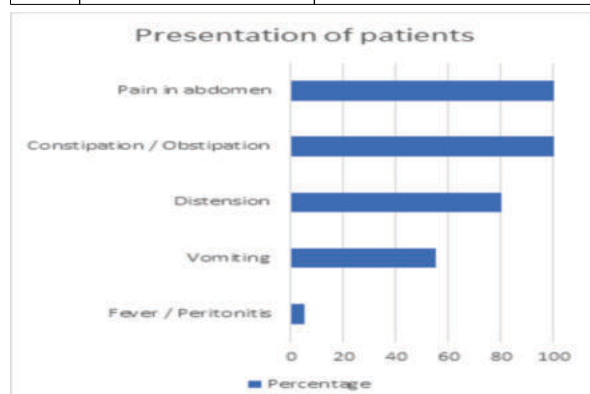


Sex	Number of patients / Percentage
Males	55
Females	45



Clinical characteristic profile of patients included most patients with pain in abdomen (100%), constipation / obstipation (100%) distension of abdomen (80%), dehydration (60%), vomiting (55%), fever / peritonitis (5%)

Sr. No.	Sign / Symptom	Number of patients / Percentage
1	Pain in abdomen	100
2	Constipation / Obstipation	100
3	Distension	80
4	Dehydration	60
5	Vomiting	55
6	Fever / Peritonitis	5



An erect X-Ray abdomen was done in all 100 patients, while a contrast enhanced CT was done in 76 patients. Not all patients with obstructed inguinal hernia underwent a CT abdomen as it was a clinical diagnosis rather than a radiological diagnosis.

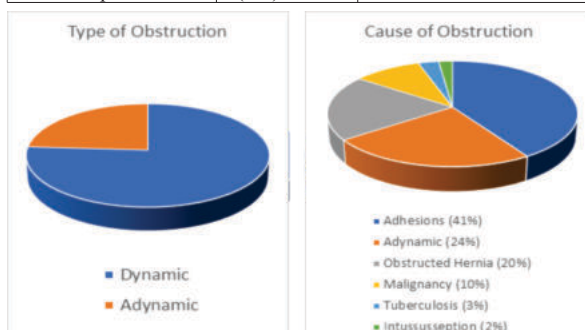
Erect X Ray Findings	Number of patients / Percentage
Normal	8
Multiple Air Fluid Levels	60
Distended Small Bowel	32

CT Findings	No. of Patients
No Significant Finding	20
Adhesions	34
Hernia, obstructed	8
Malignancy	4
Tuberculous	8
Intussusception	2

Patients diagnosed to have adynamic obstruction on CT (no significant finding) were subjected to a routine protocol of correction of dehydration, antibiotics, correction of electrolytes. Patients who had positive CT findings such as adhesions, malignancy, hernia, tuberculosis and intussusception underwent laparotomy and proceeded with definitive surgery for the same, ranging from adhesiolysis and band division, hernia repair, resection anastomosis.

Causes of small bowel obstruction after clinical history, examination, biochemical and radiological investigations and/or laparotomy, classified into dynamic and adynamic obstruction as below:

Cause of SBO	No. of Patients	Percentage of total SBO
Adynamic Obstruction	24	24 %
Adhesions	41 (53%)	76%
Hernia, obstructed	20 (27%)	
Malignancy	4 (5%)	
Tuberculous	8 (11%)	
Intussusception	3 (4%)	

**DISCUSSION:**

Intestinal obstruction is still, the most commonly encountered surgical emergency in a tertiary care setting. An analysis of 1000 consecutive surgeries by Brewer et.al. in 1976 has reported an overall incidence of 2.5%. [9] Incidence of small bowel obstruction was higher vis-à-vis large bowel as reported by Sufian and Mostsumoto. [10]

A study by Gill Eggleston has reported an age incidence of 60% in an age group between 30 and 60 years. Studies by Gill Eggleston has reported 60% of the cases of intestinal obstruction occur in the age group of 30-60 years. [11] Compared to the study results by Gill, Eggleston, we reported a 72% number of patients in the same age group.]

A study reported by Harban Singh [12] and C. S. Ramachandran [13] had mentioned that the most common presentation of cases was between 21-40 years, with obstructed hernia being the most common etiological factor. We, in our study report that irrespective of the age group, the most common aetiology was that of adhesions.

CONCLUSION

Dynamic Intestinal obstruction is an surgical emergency, irrespective of its cause. Correction of fluids, electrolytes, decompression of the bowel are the most important initial management steps which improve the outcome. Dynamic obstruction due to adhesions are the most common cause of small bowel obstruction.

CECT Whole abdomen is the gold standard for evaluating a stable patient with SBO. Dynamic obstruction due to compression of the lumen does not have a biochemical marker, hence, can aid in differentiating ischemic from non-ischemic bowel.

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