A Descriptive study on Conservative Management of Subacute Intestinal Obstruction and Its Outcome in Tirupati

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ABSTRACT

BACKGROUND

Intestinal obstruction can be defined as the partial or complete blockage of either the small intestine or large intestine or both, causing failure of intestinal contents to pass beyond the point of obstruction. Subacute intestinal obstruction implies incomplete obstruction. It is characterized by continuous passage of flatus and /or feces beyond 6 -12 hours of the onset of symptoms. We wanted to study the conservative management of subacute intestinal obstruction and its outcome.

METHODS

Data was collected from patients presenting to outpatient Department of General Surgery, SVRRGGH, Tirupati and emergency with the features of subacute intestinal obstruction during the period of March 2019 to April 2020 were included in the study.

RESULTS

The incidence is high in patients of age group 41-50 years with Male: Female ratio is 2.1:1. The most common presenting symptom is pain abdomen (92 %), followed by vomiting (84 %). In our study, exaggerated bowel sounds (60 %) are the most common physical finding. The most common cause of obstruction is Postoperative adhesions (36 %), followed by obstructed hernias (22 %). Out of 50 cases, 72 % of cases were managed successfully by conservative management. In the patients who were managed conservatively, most of them are due to postoperative adhesions. In the patients who underwent emergency surgical intervention, 50 % of cases operated on the 2nd day of admission. Most commonly done Surgery include Adhesiolysis (28.6 %), Herniorrhaphy (28.6 %) and Resection and anastomosis (21.5 %).

CONCLUSIONS

Our study showed that conservative management is successful in about 72 % of patients with subacute intestinal obstruction. Not all the patients attending the emergency ward with features of intestinal obstruction need emergency surgical intervention. Conservative management can be tried in selective cases in patients with SAIO, thereby reducing the rate of negative laparotomies and morbidity and mortality.

KEYWORDS

Sub-Acute, Intestinal, Obstruction Conservative, Outcome

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BACKGROUND

Intestinal obstruction can be defined as an impairment to the passage of intestinal contents either due to mechanical obstruction or failure of normal intestinal motility in the absence of an obstructive lesion.[1]Intestinal obstruction is the most common surgical disorder of the small Intestine.[2,3]

Subacute intestinal obstruction implies incomplete obstruction.[4] It has been defined in many ways, and there are many gray zones in the treatment protocols. It is characterized by the continued passage of flatus or feces beyond 6-12 hrs after onset of symptoms, like colicky abdominal pain, vomiting, and abdominal distension.[3]It is one of the important causes of morbidity and mortality in surgical practice.

Subacute intestinal obstruction is one of the common surgical emergencies, and its etiology varies from place to place. The most common cause is postoperative adhesive obstructions. Other causes are intestinal tuberculosis, bands, adhesions, Intussusception, Volvulus, mass lesions such as neoplasms, Crohn's disease, and ischemia. The common symptoms are nausea, vomiting, abdominal pain with distension, and obstipation.

Subacute intestinal obstruction is usually applied to recurrent and intermittent Obstruction.[5] It may develop as acute obstruction, and it will get relieved within a few hours spontaneously or after conservative management. The episodes are recurrent; the patient is well in between. The intermittent nature of symptoms and signs delays diagnosis as well as definitive treatment.

Radiological investigations usually diagnose it, and in some cases, by diagnostic laparoscopy. The majority of patients are managed conservatively.

Objectives

1. To study the clinical profile and clinical features of patients with subacute intestinal obstruction.
2. To study the role of X-ray abdomen in erect and in the supine position in the diagnosis of Subacute intestinal obstruction
3. To follow-up the progress of patients and to find out the outcome of conservative management in patients with subacute intestinal obstruction.
4. To study the conservative management of subacute intestinal obstruction and its outcome.

METHODS

This descriptive study was conducted in the Department of General Surgery, SVRRGGH, Tirupati. The materials for the study are collected from patients presenting to surgery outpatient department and emergency with the features of subacute intestinal obstruction during the period of March 2019 to April 2020 were included in the study. The criteria of selection of cases were based on clinical history, physical findings, radiological and hematological investigations.

Inclusion Criteria

1. Patients with the age group of 18 to 70 years were included in the study who had given consent.
2. Patients who continue to pass feces/flatus beyond 12 hours of the onset of symptoms
3. Patients with mild abdominal distension
4. Plain X-ray abdomen showing distended bowel loops with air-fluid levels less than 4.

Exclusion Criteria

1. Patients presenting with acute intestinal obstruction, in which operative treatment was decided on the first instance following clinical and radiological evaluation.
2. Patients presenting with signs of bowel strangulation, malignancy.

Data Collection Methods

1. Clinical examination
2. Laboratory investigations
3. Radiological investigations(x-ray abdomen erect and supine position, USG abdomen, CT abdomen)

Detailed history including the presenting complaints, namely pain and its character, vomiting, abdominal distension, and constipation, History of any similar illness in the past, previous abdominal surgeries, and any known abdominal illness are inquired.

A detailed clinical examination was undertaken, the presence of tachycardia, fever, and abdominal signs like abdominal distension, tenderness, presence of visible bowel loops, presence of guarding, rigidity, presence of any surgical scars, nature of bowel sounds. Digital rectal examination was done for every patient noting its findings.

Laboratory investigations (haemogram, random blood sugar, serum electrolytes, blood urea and serum creatinine, urine routines, microscopy, etc.) are also recorded in the case sheet.

Plain x-ray of the abdomen in erect and supine posture was undertaken and noted for presence or absence of multiple air-fluid levels, dilated bowel loops, etc. In cases where there is a dilemma in diagnosis, USG abdomen and CT abdomen are done to detect the cause of obstruction.

Simultaneous with clinical assessment and investigations, patients were initially managed conservatively.

Conservative management includes:

- Patients are kept on nil per oral,
- Nasogastrictube inserted for aspiration of gastrointestinal secretions,
- Intravenous fluids were administered.
- Electrolyte imbalance, if present were corrected.

The patients were observed for features of the relief of obstruction like:

- Reduction in vomiting,
- Reduction in pain score,
- Reduction in abdominal tenderness,

- Reduction in abdominal girth,
- Passage of feces/flatus
- Disappearance of visible or palpable bowel loops
- Reduction in nasogastric tube output.

The patients were monitored for relief of obstruction by taking abdominal x rays 12th hourly, measuring abdominal girth 6th hourly, checking pulse hourly, and measuring nasogastric output.

The patients were monitored for the development of signs of strangulation like fever, increasing abdominal tenderness, tachycardia, etc.[6] If patients develop any signs of strangulation, patients are operated on an emergency basis. Patients who did not get relieved with conservative measures are taken to the surgery. Factors prompting surgical intervention include worsening abdominal pain and distension, high-grade fever, peritonitis, leucocytosis, failure to improve obstruction after 48 to 72 hours, or progression to complete obstruction. Patients who got relieved conservatively are discharged after they tolerated oral soft diet and passed feces. Patients were followed up for a period of minimum 2 months to a maximum period of 14 months.

Statistical Methods

Chi square test used for statistical analysis of results wherever applicable. The statistical software named SPSS software version 21.0 is used for the analysis of the data and Microsoft word and Excel sheet have been used to generate graphs, tables etc.

RESULTS

Age Group	Number of Cases	Percentage
21-30 years	4	8 %
31-40 years	8	16 %
41-50 years	14	28 %
51-60 years	13	26 %
61-70 years	11	22 %
Total (n =)	**50**	**100 %**

Table 1. Distribution of Cases by Age

In the present study, 28% of cases were in the age group of 41-50 years. 68% of the cases were males, and 32% were females. Male: Female ratio is 2.1:1.

		Number of Cases	%
Symptoms	Pain abdomen	46	92 %
	Vomiting	42	84 %
	Abdominal distension	38	76 %
	Constipation	18	36 %
Signs	Tenderness over abdomen	23	46 %
	Presence of surgical scar over abdomen	28	56 %
	Exaggerated bowel sounds	30	60 %
	Palpable/ visible bowel loops	14	28%
	Mass per abdomen	3	6%

Table 2. Distribution of Cases by Symptoms and Signs

In the present study, 76.3 % and 50 % of the cases with small bowel and large bowel obstruction underwent conservative management, respectively. In the present study, in X ray findings, Air fluid levels are seen in 44 cases, Dilated bowel loops seen in 37 cases. Bent inner tube appearance was seen in 8 cases, in that 8 cases, 21.4 % and 2.8 % of cases who underwent surgical and conservative management, respectively, and the difference was found to be statistically significant. In the present study, out of 50 cases, 18 patients of Sub acute obstruction are due to post operative adhesions.

	Type of Surgery	No. of Cases	%
Exploratory Laparotomy	Ruptured liver abscess drainage	1	5.5 %
	Penetrating injury abdomen (Ileal perforation closure	1	5.5 %
	D1 perforation closure	2	11.1 %
	Blunt injury abdomen	1	5.5 %
	Gastrojejunostomy for Gastric outlet obstruction	1	5.5 %
Hysterectomy		2	11.1 %
LSCS		1	5.5 %
Appendicectomy		3	16.7 %
Hernioplasty		4	22.2 %
Tubectomy		2	11.1 %
Total		**18**	**100 %**

Table 3. Distribution of Cases by Previous Abdominal Surgeries in Patients with Adhesions

Etiology of Obstruction	Conservative management (n = 36)	Surgical Management (n = 14)	Total (n = 50)
Post-operative adhesions	14 (77.8 %)	4 (22.2 %)	18 (100 %)
Paralytic ileus	5 (100 %)	0	5 (100 %)
Obstructed hernias	6 (54.5 %)	5 (45.5 %)	11 (100 %)
Tb abdomen	4 (100 %)	0	4 (100 %)
Sigmoid volvulus	1 (25 %)	3 (75 %)	4 (100 %)
Intussusception	0	2 (100 %)	2 (100 %)
Ogilvie's Syndrome	1 (100 %)	0	1 (100 %)
Blunt trauma abdomen	3 (100 %)	0	3 (100 %)
Pancreatitis	2 (100 %)	0	2 (100 %)

Table 4. Distribution of Cases who Underwent Surgical Management and Conservative Msanagement by Aetiology of Obstruction

$X^2 = 17.320$, df = 8, p = .027

In the present study, of total 50 cases, 36 cases i.e., 72% underwent conservative management and 14 cases i.e., 28% underwent surgical management.

Type of Surgery Done	Number	Percentage
Adhesiolysis	4	28.6 %
Herniorrhaphy	4	28.6 %
Hernioplasty	1	7.1 %
Resection and Anastomosis	3	21.5 %
Sigmoidopexy	1	7.1 %
Hartmann Procedure	1	7.1 %
Total	**14**	**100 %**

Table 5. Distribution of Cases by Type of Emergency Surgery Patients Underwent

In the present study, out of 14 cases who underwent surgical management, Adhesiolysis and Herniorrhaphy were the most commonly done surgeries. Out of that 14 operated patients, 50% of cases had an Admission-operation interval of 2 days, 28.6% had 1 day interval and 3 days in 21.4% of cases. Out of 14 cases who underwent emergency surgical intervention, 6 cases had Post operative complications. Of them, 3 cases had wound infection, 2 cases had respiratory complications, 2 had prolonged ileus and 1 pt had Burst abdomen.

DISCUSSION

Subacute intestinal obstruction is one of the most common surgical emergencies .Adhesions related to prior abdominal surgery account for most subacute obstruction cases. In our

study, 50 patients with subacute intestinal obstruction were included in the study.

Age Incidence

Intestinal obstruction can occur in all age groups. We had taken patients of age group 18 to 70 years in our study. This study showed peak incidence in patients of age group 41 to 50 years of 28 % followed by 26 % in 51 to 60 years age group. In Amit Ojha et al,[7] study, they included patients from the age group of 1 to 80 years in which peak incidence of 27 % is shown in 10 to 20 years age group followed by 22 % in 30 to 40 years age group. In Sasmitha Sethi et al,[8] study, the peak incidence of 33.14 % are seen in 40 to 60 years age group, followed by 29.5 % in 60 to 80 years age group. In Jain BK et al,[9] study, the mean age of the patients was 31.8+ or _16.6 years. In Patanaik SK et al[10] study, they had taken patients of age group 10 years and above. The peak incidence is shown in patients of age group51-60 years followed by 41-50 years age group.

Sex Incidence

In the present study, male: female ratio is 2.1**:**1. In Amit Ojha et al.[6] study male to female ratio is 1.9:1. In Sasmitha. Sethi et al.[7] study male to female ratio is 1.4:1. In Jain BK et al.[8] study male to female ratio is 1.5:1. In Patanaik SK et al.[9] study, male: female ratio is 1.7:1

Clinical Features

In our study, Pain abdomen present in 92 % of cases, vomiting present in 84 % of cases, abdominal distension present in 76 % of cases, constipation present in 36 % of cases. In Amit Ojha et al., study, pain abdomen is present in 100 % of cases, vomiting in 82 % of cases, non-passage of feces / flatus in 46 % of cases, abdominal distension in 44 % of cases. In Patanaik SK et al. study[9] et al. study, abdominal pain was the most common symptom seen in 89.4 % of patients, followed by the non-passage of feces/flatus in 78.9 % of patients and vomiting seen in 68.4 % of patients.

X-Ray Findings

The diagnostic evaluation should focus on the following objectives:

a) To distinguish mechanical obstruction from ileus.
b) To determine the etiology of obstruction.
c) Discriminate partial from complete obstruction.
d) Discriminate simple from strangulating obstruction.

The sensitivity of Plain X ray is about 70 to 80 % for small bowel obstruction.[11] The findings in X ray erect abdomen for small bowel obstruction is dilated small bowel loops (> 3 cm in diameter), multiple air fluid levels on erect films, and paucity of air in colon.[12]

In some patients where there is a dilemma in diagnosis, USG abdomen, CT abdomen are done to rule out the cause of obstruction.

In the present study, x-ray abdomen showed multiple air-fluid levels in 88 % of cases, dilated bowel loops in 74 % of cases, Bent inner tube appearance in 8 % of cases. In Amit Ojha e al study. 74.6 % of patients had multiple air-fluid levels in plain x-ray films. In Jain BK et al. study, plain X-rays of the abdomen showed multiple air-fluid levels in 74.6 % of patients. In Patanaik S.K et al. study, out of the plain X-ray films of 57 patients, a total of 41 showed positive findings. 63.1 % of patients had gaseous distension of bowel loops, 12.3 % of patients had dilated fluid-filled bowel loops.

Aetiology of Intestinal Obstruction

The most common cause of intestinal obstruction in developing countries is Postoperative adhesions. Once the adhesions developed, progression to obstruction is inevitable in a significant proportion.[13] About 20% of the obstruction occurs in the first year after laparotomy. Most of these occur during the first few weeks after surgery and termed as early postoperative obstructions and mostly resolved by conservative management.[14] In partial bowel obstruction, progression to strangulation is unlikely to occur, and a trial at non-operative resolution is the primary mode of management. Nonoperative management is successful in 40% to 70% of clinically stable patients with acute intestinal obstruction and is associated with shorter initial hospitalization, according to some studies.[15,16,17] According to Shackelford et al., most small bowel obstruction cases secondary to adhesions resolve when managed conservatively, with only 10 to 20% requiring operative intervention.[18] Therefore, most patients with partial obstruction whose symptoms do not improve within 48 hrs after initiation of conservative therapy should undergo surgery. A 2 day limit of watchful waiting before surgery is not associated with any increase in mortality or morbidity.[19]

A critical factor in managing these patients is to determine when to subject these patients to surgery. Patients undergoing non-operative therapy should be closely monitored for signs suggestive of peritonitis, the development of which will mandate surgery. Some studies suggest that the nature of the previous abdominal operation or the type of adhesions may influence the probability that the obstruction may respond to medical therapy.[20,21] Early postoperative obstruction is caused by adhesions in about 90% of patients.[22,23] When operative adhesiolysis is performed the mortality is 5% for all patients.[24] However it may be as high as 30% for patients with strangulation or necrotic bowel necessitating intestinal resection.[25]

In the present study, postoperative adhesions are the commonest (36 %) cause of subacute intestinal obstruction, which is comparable with the other study groups Amit Ojha et al., with 33 %, Sasmitha. Seth et al., study with 49.7 % (includes postoperative adhesions 36.2 %, Bands, and adhesions 13.5 %), Jain BK et al., study with 31.8 %.

In Patanaik S.K et al. study, Adhesions was found in about 52.5 % of patients, which constitutes the most common etiology of SAIO, followed by small intestinal strictures in about 15 % of patient.

Sl. No.	Type of Previous Abdominal Surgery	Amit Ojha et al., Study	Patanaik S.K et al Study	Jain B.K et al Study	Present Study
1.	Laparotomy for abdominal trauma	35 %	25 %	35 %	11.1 %
2.	Laparotomy for intestinal obstruction/intestinal perforation	20 %	14.3 %	20 %	11.1 %
3.	Gynaecological procedures	10 %	28.6 %	10 %	27.7 %
4.	Appendicectomy	5 %	10.7 %	5 %	16.7 %
5.	Hernia repair	5 %	_	5 %	22.22 %

Table 6. Comparison of the Distribution of Patients with a History of Previous Abdominal Surgery with Other Studies

Sl. No.	Etiology	Sasmitha Seth et al. Study		Present Study	
		Conservative	Surgical	Conservative	Surgical
1.	Post operative adhesions	89.9 %	10 %	77.8 %	22.2 %
2.	TB abdomen	60.2 %	39.8 %	100 %	0
3.	Intussusception	0	100 %	0	100 %
4.	Volvulus	15 %	85 %	25 %	75 %
5.	Hernias	_	_	54.5 %	45.45 %

Table 7. Comparison of Patients Who Underwent Successfully by Conservative Management and Who Underwent Emergency Surgical Intervention in Other Studies

In present study, the most commonly done surgery is Adhesiolysis (28.6% cases) and Herniorrhaphy (28.6%). In Amit Ojha, Jain BK et al, Patanaik SK et al studies, Adhesiolysis is the most commomly done procedure followed by Resection and Anastomosis.

In present study, wound infection (21.5%) is the most common post operative complication which is comparable with Sasmitha.sethi et al study, in which 18% 0f patients had wound infection.

Followup and Outcome

In the present study, all the patients were followed up for a period of minimum of 2 months to a maximum 14 months.Out of them,6 patients with hernias who were initially managed conservatively underwent hernioplasty electively ,remaining are asymptomatic and no recurrences were noted in the follow up period.

CONCLUSIONS

Our study showed that conservative management is successful in about 72 % of patients with sub acute intestinal obstruction. Particularly in patients with postoperative adhesions presenting with SAIO, conservative management yields good results. Partial intestinal obstruction can be managed successfully by conservative management. Factors prompting surgery depends upon individual cases and the cause of obstruction. Not all the patients attending the emergency ward with features of intestinal obstruction need emergency surgical intervention. Conservative management can be tried in selective cases in patients with SAIO, thereby reducing the rate of negative laparotomies and morbidity and mortality.

Data sharing statement provided by the authors is available with the full text of this article at jebmh.com.
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