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Intestinal Obstruction - A Retrospective Study

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Abstract:
Aim: *To identify and analyze the frequency and etiology of intestinal obstruction that might be helpful in suggesting the measures for prevention and treatment of the condition.*
Methods: *This is a retrospective observational study of patients admitted due to acute intestinal obstruction. The period of this retrospective study is 13 years (2000-2013)*
Results: *Of the 411 patients included in the study from the archives, 306 patients underwent operative procedure. Sex distribution of ratio of 1:1.3 and mean age of 47 yrs in males and 49 years in females were noted. 52% of the patients showed intrinsic causes that include 4% inflammatory, 32% infectiou(Kochs), 9% neoplastic and intussception,2% radiation and vascular causes and 5% traumatic. Extrinsic causes of 44% were noted out of which adhesions and bands were seen in majority of cases accounting to 64%, hernia in 16%, and 17% neoplastic and 3% intra abdominal abscess. Only 4% of cases showed intra luminal cause.*
Conclusion: *The present study showed the changing trend in the presentation of intestinal obstruction where adhesions were the commonest cause in many of the studies. In addition to it, our study showed abdominal tuberculosis as the commonest cause in developing country like India*
Keywords: *Abdominal Tuberculosis, Adhesions, Etiology, Intestinal Obstruction.*

I. Introduction

Intestinal obstruction refers to a situation when the intestinal contents cannot be forced further in aboral direction. Transit of intestinal content depends not only on an intact state of intestinal lumen, but also on peristalsis[1]. Intestinal obstruction is one of the most common surgical emergency and frequently encountered problem in abdominal surgery that requires immediate admission. Manifestations of Intestinal obstruction can range from a fairly good appearance with only slight abdominal discomfort and distention to a state of hypovolemic or septic shock (or both) requiring an emergency operation. The diagnostic and therapeutic approach to small-bowel obstruction should be systematic and lends itself to classification into 4phases:

1) Recognizing mechanical obstruction,
2) Distinguishing partial from complete obstruction,
3) Distinguishing simple from strangulating obstruction, and
4) Identifying the underlying cause.

This illustrates that the initial approach to bowel obstruction is generic, and attention to the underlying cause is usually a secondary consideration[2]. In contrast to the statement above, our study focuses on etiology and frequency and many more investigation that might be helpful in near future to prevent and treat the patients in a better way as the identification of the cause of intestinal obstruction is not always simple.

Owing to the fact that the main etiology of obstruction is of varied ranging from Adhesions which account for 75% of cases of small bowel obstruction ,the other causes include hernias ,malignant bowel obstruction , inflammatory bowel disease, internal hernias, volvulus and strictures[3].

This paper highlights the commonest cause, frequency and the diagnostic modality for intestinal obstruction in the present geographical location of the study which might be helpful in taking measures to prevent and treat the dreadful condition.

II. Material And Methods

This is a retrospective observational study in which patients admitted in the department of General Surgery, Deccan College of Medical sciences, Hyderabad with a diagnosis of acute intestinal obstruction were taken between January 2000 to June 2013. Patients who were managed conservatively were excluded in this study as it can cause errors for the study.

Data collection included- a detailed record of the patient`s history, physical examination, and necessary investigations like baseline, X-Ray abdomen erect and supine in all cases, ultrasound abdomen, barium studies, CT Scan, endoscopy and colonoscopy were recorded based on the requirement for each case. A proforma was recorded of each patient with age, sex , symptom duration ,past surgical & medical history,diagnostic workup,

etiology of obstruction , time between arrival and operation, operative information, comorbid factors, morbidity and mortality, length of hospital stay, and the final outcome of the patients.

III. Results

During the 12 year study period, archives of 411 consecutive adult patients with intestinal obstruction, of which 306 underwent operative procedure and the rest were excluded as they were treated conservatively **(Table 1)**

Table 2 shows age and **table 3** shows sex distribution in the ratio 1:1.3 and the age distribution showing the mean age 47 years for males and 49 for females.

Table 4 and 5 shows symptom duration with 72% of patients with acute onset and 28% with chronic repeated symptoms and symptoms with less than 10 days were noted in 71% of patients.
Etiology of intestinal obstruction is studied in depth with intrinsic causes, extrinsic causes and intraluminal causes in 306 patients.

Table 6 shows etiology of obstruction in 306 patients of which 135 patients (44%) showed extrinsic causes and 160 patients (52%) showed intrinsic causes and 11 patients (4%) showed Intraluminal cause.

Table 7 shows the distribution of 135 patients with extrinsic causes of obstruction, where 87 patients (64%) showed adhesions and bands, 16% showed hernias, 17% showed neoplasms and 3% showed intra abdominal abscess.

Table 8 shows the distribution of 160 patients with intrinsic causes, where 2% showed congenital cause, 24% strictures, 9% inflammatory, 32% infectious, 9% neoplastic, 11% traumatic, 2% radiation and vascular causes and 9% intusseption or volvulus.

Table 9 shows intraluminal causes of obstruction in 11 patients, 3 patients showed fecolith and 8 patients showed other causes.
Various diagnostic modalitites have been used to diagnose intestinal obstruction in 306 patients; In addition endoscopy and colonoscopy were used in the cases that required.

Table 10 shows the detail diagnostic modality which includes 24% x ray abdomen, 42% x ray and CT abdomen, 17% X ray and barium studies, 9% x ray and colonoscopy and 8% x ray and USG abdomen. Our study reveals X ray and CT scan as the most common diagnostic used so far for diagnosing intestinal obstruction.

Table 11 shows the history of past surgery, of which the highest cases showed 41% of colon and rectal surgery, 25% shows small bowel surgery, 9% stomach, 9% hepatobiliary and pancreatic, 8% appendectomy, 8% hysterectomy, 1% transplant.

Table 12 shows the history of past medication, of which 13% shows ATT, 4% chemotherapy and radiotherapy, 2% radiotherapy alone, 4% steroids and other medication and 73% without any history of medication.

Table 13 shows the duration from the time of admission till surgery, our study reveals a mean duration of 3 days.

Table 14 shows the surgical procedure where adhesiolysis was done in majority of the patients accounting to 28% followed by right hemicolectomy 17%, stricturoplasty 13%, large bowel resection and colostomy 12%, hernia repair 7% and other procedures 23%.

Table 15 shows 25% of patients with co morbid factors and 75% without co morbid factors..

Table -1 Case Distribution

S. No	Total number of cases	Number	Percentage
1	Total number of operated cases	306	74
2	Total number of patients managed conservatively	105	26

Table -2 Sex Distribution

S. No		Number n=306	Percentage
1	Male	178	58
2	Female	128	42

Table -3 Age Disribution

S. No	Age at presentation	Male	Female	Percentage
1	1-10	2	0	2
2	11-20	13	10	23
3	21-30	21	13	34
4	31-40	26	19	45
5	41-50	39	24	63
6	51-60	28	23	51
7	61-70	24	19	43
8	71-80	22	14	36
9	81-90	2	6	8
10	91-100	1	0	1
	TOTAL	178	128	306

Table -4 Symptom Duration

S. No	Symptom	Number n=306	Percentage
1	Patients with acute onset of symptom	220	72%
2	Patients with chronic repeated symptoms	86	28%

Table -5 Distribution Of Acute Duration Of Symptoms

S. No	Duration	Number n=220	Percentage %
1	< 10 days	156	71%
2	10-20 days	38	17%
3	21-30 days	26	12%

Table -6 Distribution Based On Etiology Of Obstruction

S. No	Etiology	Number of patients n=306	Percentage %
1	Extrinic	135	44%
2	Intrinic	160	52%
3	Intraluminal	11	4%

Table -7 Distribution Of Extrinsic Cause Of Obstruction

Extrinic cause	Number of male	Number of female	Total number	Percentage
Adhesions & bands	52	35	87	64%
Hernias	7	14	21	16%
Neoplastic	11	12	23	17%
Intrabdominal abscess	2	2	4	3%
	TOTAL n =72	TOTAL n=63	135	

Table -8 Distribution Of Intrinsic Cause Of Obstruction

Intrinic cause	Number of male	Number of female	Total number of cases	Percentage
Congenital (gut mal rotati	1	3	4	2%
Strictures	19	20	39	24%
Inflammatory	11	4	15	9%
Infectious (kochs)	31	21	52	32%
Neoplastic	10	4	14	9%
Traumatic	14	4	18	11%
Radiation	2	2	4	2%
Intussception/volvus	9	6	15	9%
Vascular	3	0	3	2%

Table -9 Distribution Of Intraluminal Cause Of Obstruction

Intraluminal cause	Male	Female	Total number
Gall stone	0	0	0
Bezor	0	0	0
Foreign body	0	0	0
Fecolith	2	1	3
Others	4	4	8
Total	N=6	N=5	11

Table -10 Diagnostic Modality

Modality	Number n=306	Percentage
X-ray abdomen	73	24%
X-ray + ct abdomen	129	42%
X-ray + barium studies	52	17%
X-ray + colonoscopy/endoscopy	27	9%
X-ray + usg abdomen	25	8%

Table -11 Previous Surgery The Patients Had Undergone

S. No	Surgery	Male	Female	Total number n=104	Percentage
1	Colon & rectal surgery	33	13	43	41%
2	Small bowel surgery	15	11	26	25%
3	Stomach	7	2	9	9%
4	Hepatobiliary & pancreatic	7	2	9	9%
5	Appendectomy	5	3	8	8%
6	Hysterectomy	0	8	8	8%
7	Transplant	1	0	1	1%

Table-12 Showing Previous Treatment

S. No	Treatment	Number of patients n=306	Percentage
1	Att	39	13%
2	Chemotherapy	13	4%
3	Chemo & radiotherapy	11	4%
4	Radiotherapy	5	2%
5	Steroids and other medication	14	4.%
6	No medication	224	73%

Table -13 Showing Duration from Admission to Surgery

S. No	Days	Number
1	<1	43
2	1-5	190
3	5-10	48
4	10-15	12
5	15-20	2
6	>20	11

Table -14 Showing Surgical Procedure

S. No	Procedure	Male	Female	N=306	Percentage
1	Adhesiolysis & bands	52	35	87	28%
2	Right hemicolectomy	31	21	52	17%
3	Stricturoplasty	19	20	39	13 %
4	Large bowel resection & Colostomy	21	16	37	12%
5	Hernia repair	7	14	21	7%
6	Other procedures	48	22	70	23%

Table-15 showing patients with co- morbid factors

S. No	Co-morbid factors	Number of patients n= 306	Percentage
1	Present	77	25%
2	Absent	229	75%

IV. Discussion

Acute intestinal obstruction is one of the most common causes that requires admission in the hospital emergency surgical departments. Intestinal obstruction accounts for 15% of all emergency department visits for acute abdominal pain.[4] Complication of intestinal obstruction includes bowel ischaemia and perforation. Morbidity and mortality associated with intestinal obstruction have declined since the advent of most sophisticated diagnostic methods but the condition remains a challenging surgical diagnosis.[5]

In a study done by Adhikari S in 2010 which comprises of 367 cases showed post operative adhesions as the most common cause of obstruction[6].

Sinha S in 2002 studied 97 cases in Chandigarh and revealed adhesions as the cause of obstruction[7]. In a retrospective study done by Madziga AG in 2008 on 372 patients in north eastern Nigeria revealed strangulated hernias as the main cause of obstruction[8]. In an another study by Chen XZ observed post operative adhesions as the most common cause[9].

In contrast to the studies mentioned above, our study reveals 32% of patients with abdominal tuberculosis as the intrinsic cause of obstruction followed by post operative adhesions, hernias and neoplasms as the secondary causes. Arshad M Malik in 2010 studied 229 patients and revealed the same cause of intestinal tuberculosis as the emerging cause of obstruction similar to our study[10].

Abdominal tuberculosis is a most common type of extra-pulmonary tuberculosis, comprising of gastrointestinal tuberculosis, peritoneum, omentum, mysentry and its lymph nodes and other abdominal organs such as liver, spleen and pancreas. The extra pulmonary tuberculosis involves 11-16% of all patients of tuberculosis of which 3-4% belongs to abdominal tuberculosis[11].

Gastrointestinal tuberculosis constitutes of 70-78% cases of abdominal tuberculosis. Ileoceacal area is the most commonly involved site due to the abundance of lymphoid tissue (Peyer`s patch) followed by the colon and jejunum[12,13]. Rarely tuberculosis may also involve stomach, duodenum and esophagus. The three characteristic intestinal lesions produced in tuberculosis include (i) ulcerative, (ii) hypertrophic and (iii) stricturous or constrictive [13]. A combination of these three morphological forms can also occur such as ulcero-constrictive ulcerohypertrophic.

The diagnosis of abdominal tuberculosis has been made either on the histological evidence of TB in the tissue (e.g. evidence of tubercles with caseation or demonstration of AFB in a lesion) or typical operative findings suggestive of TB or animal inoculation or tissue culture yielding the growth of M. tuberculosis.

Now with the advent of better radio-imaging procedures, new criteria for the diagnosis were suggested by Lingenfelser [14] as follows:

i. Clinical manifestations suggestive of TB
ii. Imaging evidence indicative of abdominal TB
iii. Histopathological or microbiological evidence of TB
iv. Therapeutic response to treatment

Abdominal tuberculosis can be managed on the same lines as for pulmonary tuberculosis. Conventional antitubercular therapy for at least 6 months including initial 2 months of HREZ (e.g. isoniazid, rifampicin, ethambutol andpyrazinamide) followed by 4 month HR is recommended in all patients with abdominal tuberculosis [12].

Recent studies show that even obstructing intestinal lesions can be successfully treated with antitubercular drugs without the need for surgery and complete resolution of radiological abnormalities may occur. Therapeutic surgery is indicated for complications like intestinal obstruction (acute, acute-on-chronic, and chronic), perforation and peritonitis.

In the present study, the right hemicolectomy with ileo-transverse anastomosis, followed by segmental bowel resection with end to end anastomosis, release of adhesions, bypass surgery, ileostomy and stricturoplasty were the procedures performed.

The recent surge in cases of Abdominal tuberculosis could be attributed to increase in number of cases of HIV infection in Andhra Pradesh, India which is evident from the survey undertaken by govt agency. Principles of ATT in the setting of HIV positive TB are identical to those for HIV-negative cases with two exceptions.

In HIV-infected patients with TB, DOTS should be initiated with isoniazid, rifampicin, ethambutol and pyrazinamide (HREZ) for first two months followed by isoniazid and rifampicin (HR) for subsequent 7 months. Since rifampicin resistance is common in HIV patients if CD4 count is <100/mm3, therefore, first exception, is that treatment regimen should be daily or thrice a week instead of twice a week DOTS during the continuation phase. Second exception is that the continuation phase should be extended to 7 months, so as to make it a regimen of 9 month duration for HIV-TB patients .[15]

Author	Year	Location	Total cases	Most common cause
Present study	**2014**	**South India**	**306**	**Intestinal tuberculosis**
Sinha .S	2002	Chandigarh, India	97	Mechanical obstruction (Adhesions)
Arshad M	2010	Pakistan	229	Intestinal tuberculosis
Souvik Adhakari	2010	Kolkota,India	367	Mechanical obstruction (Adhesions)
Madziga AG	2008	Nigeria	376	Obstructed Hernia

V. Conclusion

In conclusion, the present study observed a changing trend in the presentation of intestinal obstruction. As previous studies stated adhesions to be the major cause of intestinal obstruction worldwide in contrast to it our study shows abdominal tuberculosis to be the major cause in intestinal obstruction and it has been supported by many studies from other developing countries. The present observation can be attributed to the increasing number of HIV cases and reduced immune status that results in most commonest co infection tuberculosis

associated with HIV. Moreover, great caution should be taken for the treatment of patients with acute bowel onbstruction since the incidence of tuberculosis is higher in our region and suggests the patients have to be diagnosed and treated both for HIV and tuberculosis to prevent the complication of tuberculosis

Further studies are necessary in order to determine the appropriate etiology, management and treatment of intestinal obstruction. However, it is important to screen the intestinal tuberculosis patients for HIV to prevent further complications.

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