



International Journal of Surgery Science

E-ISSN: 2616-3470
P-ISSN: 2616-3462
© Surgery Science
www.surgeryscience.com
2019; 3(2): 155-158
Received: 05-02-2019
Accepted: 15-03-2019

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A study of management of large bowel obstruction in a tertiary care centre

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DOI: <https://doi.org/10.33545/surgery.2019.v3.i2c.842>

Abstract

Background and Objectives: The challenges in managing this condition are distinguishing colonic obstruction from ileus and ruling out non surgical causes and determining the best surgical management. The morbidity and mortality often are related to the surgical procedure used to relieve the colonic obstruction and, in the long term, to the underlying disease that caused the obstruction. Large bowel obstruction is still a life threatening condition in spite of advances in surgical treatment and critically ill patients care. This study is intended to throw light upon the clinical features and surgical management of large bowel obstruction.

Objectives of the study: To study the effectiveness of early identification and surgical intervention in case of large bowel obstruction.

Methods: The present study was a prospective study, conducted on 30 inpatients with clinical features suggestive of large bowel obstruction at Victoria and Bowring and Lady Curzon Hospital attached to Bangalore Medical College and Research Institute, Bangalore. A thorough history was taken and examination was done as per proforma after admission.

Results: Resection and anastomosis were done in 22 cases, derotation of volvulus and sigmoidopexy in 4 cases, emergency colostomy in 2 cases and abdomino perineal resection in 2 cases. The postoperative complications included wound infection (13.33%), respiratory tract infection (6.66%) and anastomotic leak (3.33%). Overall mortality of this study was 3.33%. The result obtained in this study was comparable with various other studies.

Conclusion: Large bowel obstruction remains an important surgical emergency in the surgical field. Success in the treatment of LBO depends largely upon early diagnosis, skilful management and treating the pathological effects of the obstruction just as much as the cause itself. Erect x-ray abdomen is valuable investigation in the diagnosis of acute intestinal obstruction. Malignancy and volvulus are the common causes of LBO in our setup. Earlier the presentation, better the outcome was found. It can be concluded that early operations for dynamic LBO is mandatory to avoid the development of peritonitis and systemic sepsis associated with it.

Keywords: Large bowel obstruction, Causes, Management

Introduction

Large bowel obstruction has significant mortality and morbidity. Timely diagnosis and treatment will potentially improve patient prognosis. The high postoperative mortality and morbidity of large bowel obstruction compared with elective resection are explained by the multiple associated pathophysiologic changes of obstruction. Acute large bowel obstruction can be the result of mechanical causes or motility disturbances, the latter being termed colonic pseudo-obstruction. Whatever the aetiology, the pathophysiology of large bowel obstruction has clinical significance ^[1]. Large bowel obstruction is still a life threatening condition in spite of advances in surgical treatment and critically ill patients care ^[2]. Large bowel obstruction is an emergency condition that requires early identification and intervention. The etiology of this condition is age dependent and it can result from either mechanical interruption of the flow of intestinal contents or by dilatation of colon in the absence of an anatomic lesion. The challenges in managing this condition are distinguishing colonic obstruction from ileus and ruling out non surgical causes and determining the best surgical management. The morbidity and mortality often are related to the surgical procedure used to relieve the colonic obstruction and, in the long term, to the underlying disease that caused the obstruction ^[3]. It is disheartening to note that the great surgeon and teacher, Sir Hamilton Bailey had to succumb to acute large bowel obstruction due

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to carcinoma of colon. Obstruction of large bowel are contributed mainly by volvulus, malignancy and diverticulitis and is seen generally in adults and elderly. This study is intended to throw light upon the surgical management of large bowel obstruction.

Aims and Objectives

To study the effectiveness of early identification and surgical intervention in case of large bowel obstruction.

Materials and Methods

Methods of Collection of Data

Data collected by meticulous history taking, clinical examination, appropriate radiological investigations, The patients will be followed up postoperatively for 6 weeks.

A. Study Design: A Prospective study

B. Study Period: Nov 2016 to May 2018

C. Place of Study: Azeezia Institute of Medical Sciences and Research, Meeyannoor, Kollam, Kerala.

D. Sample Size: 30

E. Inclusion Criteria:

1. Patients presenting with features of large bowel obstruction
2. Patients who have given written informed consent

F. Exclusion Criteria:

1. Age less than 16 years
2. Previous abdominal surgeries
3. Immunocompromised status
4. Hypoalbuminaemia
5. Patients with pseudoobstruction

G. Methodology

During the study period, patients presenting with clinical features of large bowel obstruction were subjected to a thorough history and clinical examination as per proforma. The patients were evaluated by relevant investigations like

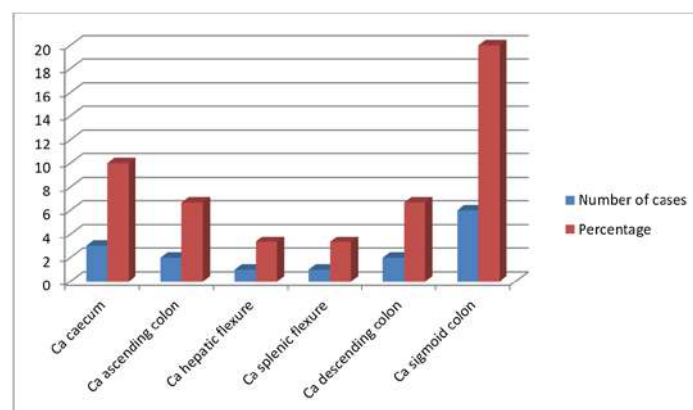
1. Complete haemogram
2. Random blood sugar
3. Blood grouping and cross typing
4. Renal function tests
5. Liver function tests
6. Serum electrolytes
7. Bleeding time and clotting time
8. HBsAg
9. HIV
10. Erect XRay Abdomen
11. Ultrasound of abdomen and pelvis
12. Contrast enhanced computerized tomography (in selected cases)

Surgical Management: Immediately after the admission along with the above procedures resuscitation with IV fluids especially ringer lactate and normal saline infusion started till the hydration and urine output was normal. Nasogastric decompression with ryle's tube carried out and antibiotic prophylaxis started and close observation of all bedside parameters like pulse rate, blood pressure, urine output, abdominal girth and bowel sounds done. Blood transfusion given in selected cases. The diagnosis of acute large bowel obstruction was made from a history of constipation, abdominal distention, abdominal pain, nausea, and radiographic features of large bowel obstruction. Sigmoid

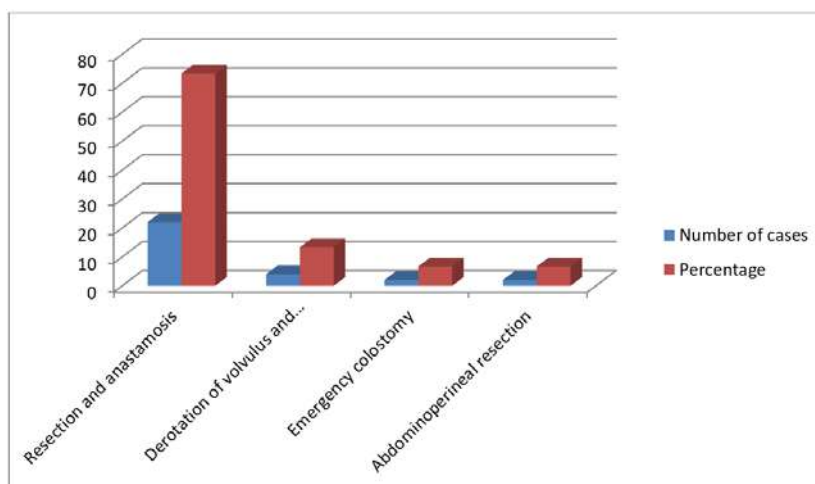
volvulus was likely when the above symptoms were recurrent and plain abdominal radiograph showed the cardinal features of the inverted 'coffee bean' or 'omega' sign of the distended, twisted colon. Common presenting complaints included abdominal pain, vomiting, nausea, distention, and constipation in large bowel tumours. Distention, change in bowel sound, and tenderness were the most common physical findings in the latter case. Patients with signs and symptoms of mechanical large bowel obstruction were managed by appropriate surgical procedure after resuscitation. Intraoperatively site and cause of obstruction noted. The site of obstruction was defined as being in the right side of the colon if the lesion involved the bowel upto but not involving the splenic flexure. Postoperatively ryle's tube aspiration, intravenous fluids and antibiotics were administered. The incidence of postoperative complications like wound infection, respiratory tract infection and anastomotic leak were studied. The patients were followed up for a period of 6 weeks. Wound infection was defined as the presence of pus either discharging spontaneously or requiring drainage. Samples of wound discharges were obtained for bacteriological culture. Anastomotic leak was defined as the presence of a faecal fistula or anastomotic breakdown seen either at sigmoidoscopy, laparotomy following peritonitis or at postmortem. Hospital stay was defined as the total time spent in the hospital for the present complaint and, if necessary, for a subsequent procedure; mortality was considered as death occurring in hospital. The results are tabulated stressing on following points: age, sex, symptoms, examination findings, investigations, intraoperative findings and operative procedure adopted and complications if any.

H. Statistical Analysis: Descriptive statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean (SD) and results on categorical measurements are presented in number (%). Significance is assessed at 5% level of significance. Chisquare test has been used to find significant proportion of postoperative complications in association with age, sex, duration of symptoms and etiology of LBO. Microsoft word and excel have been used to generate graphs, tables etc.

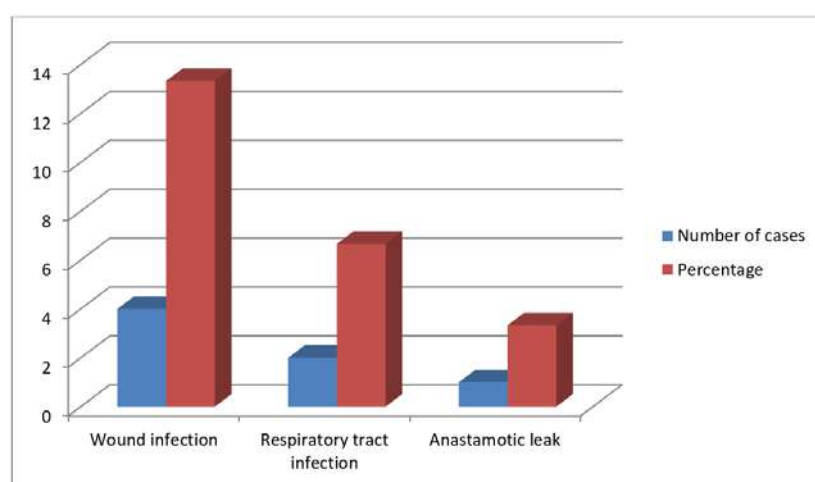
Results



Graph 1: Various causes of large bowel obstruction



Graph 2: Management of large bowel obstruction



Graph 3: Postoperative complications

Table 1: Mortality

Outcome	Number of cases	Percentage
Cured	29	96.66
Death	1	3.33

Table 2: Correlation of clinical variables with postop complications

Clinical Variables	Total number of patients	Post op complications		P Value
		Absent	Present	
Age in years				
<50years	9(29.99%)	9(37.5%)	0(0%)	0.675
51 to 65years	17(56.66%)	12(50%)	5(83.33%)	
>65years	4(13.33%)	3(12.5%)	1(16.66%)	
Gender				
Male	20(66.66%)	17(70.83%)	3(50%)	1.00
Female	10(33.33%)	7(29.16%)	3(50%)	
Duration of symptoms				
1 to 2	1(3.33%)	1(4.16%)	0(0%)	0.765
3 to 5	12(40%)	9(37.5%)	3(50%)	
6 to 10	17(56.66%)	14(58.3%)	3(50%)	
Etiology				
Malignancy	22(73.33%)	6(100%)	16(66.66%)	0.687
Volvulus	8(26.66%)	0(0%)	8(33.33%)	
Total	30(100%)	6(100%)	24(100%)	

Discussion

Ambrosius Pare (1510-1590) was first to observe intestinal obstruction as a pathological entity. For severe cases he used

mercury in water, lead bullets smeared with mercury. Franco (1561) did first surgery on strangulated hernia. Amsterdam in 1676 suggested opening of abdomen to treat intussusception and volvulus. Bonetos in 1679 treated intussusception surgically. Mery in 1701, removed several feet of gangrenous bowel and established artificial anus in woman suffering from strangulated hernia. La Peyronie in 1723, excised devitalised bowel and created artificial anus and mucous fistula. Planned caecostomy was first described by Pillore in 1776. 4 Duret performed first successful sigmoidoscopy for relief of obstruction in 1793. Volvulus of caecum was first described by Rokitansky in 1841. Thomas in 1886 described some methods of abdominal section for obstructed bowel.

1. Colostomy through extra peritoneal approach.
2. Dissection of anterior abdominal wall, exploration of abdominal cavity, correction of any abnormality & thus relieving symptoms.
3. Dissection of anterior abdominal wall, detection and excision of the lesion.
4. Section of abdominal wall in front & seizing the first portion of bowel & then suturing it to the previously made incision & incising the bowel so as to allow its contents to escape continuously permitting the original cause of obstruction run a chance of correction by natural process. Roentgen in 1893 discovered xray and Schwartz in 1911 pointed out virtue of scout film, Kloiber of Germany in 1919 emphasized the role of xray in locating the level of obstruction. How toxic substances get accumulated was

described by Whipple and Williams described influence of anaerobic infection as a cause of toxemia. In 1925 Gamble *et al.* proved that loss of solutes and fluid from the body into the bowel lumen was responsible for death. Rea and Writer (1930) gave definite proof that the source of gaseous distention in bowel obstruction was swallowed air. Wangenstein in his monograph, "The therapeutic problems in bowel obstruction mentioned the proper use of suction tubes to deflate the distended bowel

Various causes of large bowel obstruction: In our study there were 3 cases of carcinoma caecum, 2 cases of carcinoma ascending colon, 1 case of carcinoma hepatic flexure, 1 case of carcinoma splenic flexure, 2 cases of carcinoma descending colon, 6 cases of carcinoma sigmoid colon, 3 cases of carcinoma recto sigmoid junction, 4 cases of carcinoma rectum, 7 cases of sigmoid volvulus, 1 case of caecal volvulus. Malignancy of the large bowel contributes to obstruction more frequently in the western world, but in recent years even in the developing country like ours malignancy is becoming most common cause of large bowel obstruction. Nelson and Ellis (1983) had in their study 26% of cases were due to tumour obstruction of the large bowel. Singh J.P *et al.* (1984) had shown that 19.4% of the colorectal malignancies develop acute large bowel obstruction and also stated that colorectal malignancy affected old people but at an age earlier than what is reported in western studies. Boutron M.C *et al.* (1988) observed 9.2% of acute obstruction in the colorectal cancer patients, rectal carcinoma 3.8%, sigmoid 14.2% and caecum 12.2%. Yu B.M (1989) has observed in his 338 cases admitted for acute large bowel obstruction, 116 cases of right colon, 177 cases of left colon and 45 rectal cases. E.G Muir's statistics shows acute on chronic obstruction involving right colon in 8% cases, left colon 21% and sigmoid 29%. Fuzan ^[4] revealed the cause of malignant large bowel obstruction of which ascending colon constituted 3.38% and sigmoid colon constituted upto 27% which was nearer to our study. Ramachandran ^[5] found in his study that the sigmoid colon cancer accounted for 6.6% of intestinal obstruction in large bowel. Ti ^[6] noted that carcinoma of descending colon and rectum constituted 37.2%, ascending colon and caecum constituted 9.8%.

Management of large bowel obstruction: Out of 8 cases of volvulus, 4 cases had simple obstruction and underwent derotation of volvulus and sigmoidopexy, 4 cases had gangrene of the bowel and underwent resection and anastomosis. Out of 22 cases of malignancy, 6 cases underwent right hemicolectomy with primary ileocolic anastomosis, 3 cases underwent left hemicolectomy with primary colocolic anastomosis, 6 cases of carcinoma sigmoid colon underwent sigmoidectomy with primary colorectal anastomosis, 3 cases of carcinoma rectosigmoid junction underwent resection and anastomosis. Out of 4 cases of carcinoma rectum 2 cases underwent emergency colostomy and rest 2 underwent abdominoperineal resection. Bielecki K and Kaminski P² in their study performed primary resection of the lesion in 110 (84.6%) patients and operation was completed with intestinal anastomosis in (65.4%) of them and Hartmann's operation was the most common procedure in remaining 37 patients without bowel anastomosis performed. Sule AZ and Ajibade A ^[7] states that resection and primary anastomosis of the acute left-sided large bowel obstruction seems safe after antegrade on-table colonic lavage, provided bowel gangrene with peritonitis or any additional risk factor for anastomotic breakdown is not present.

Postoperative complications: In our study 4 cases had wound infection (13.33%), 2 cases had respiratory tract infection (6.66%) and 1 case had anastomotic leak (3.33%). Sule AZ and Ajibade A ^[7] in their study of 50 patients there was one clinical anastomotic leak with faecal peritonitis in a patient who had a low anterior resection and 10 superficial wound infections.

Mortality: In our study mortality is 3.33%. Farmer KC and Phillips RK² states that mortality and morbidity may be reduced by optimization of the patient's condition both before and after the operation using intensive care facilities and by careful timing of surgery. Buechter KJ *et al.* ^[8] in their study the overall mortality rate in patients with acute obstruction from all causes was 27 percent.

Conclusion

Success in the treatment of acute intestinal obstruction depends largely upon early diagnosis, skill full management and treating the pathological effects of the obstruction just as much as the cause itself. Erect abdomen xray is valuable in the diagnosis of acute intestinal obstruction. Advances in imaging techniques have helped us in early diagnosis and hence improved health care. Patient with clinical picture of obstruction of the bowel demands vigorous correction of fluids and electrolytes prior to surgery. Mechanical obstruction is not associated with any specific biochemical marker which can help the surgeon to differentiate simple obstruction from ischaemia or a closed loop obstruction with impending bowel infarction. Malignancy and volvulus are the most common causes of large bowel obstruction. Early operation is mandatory to avoid the development of peritonitis and systemic sepsis associated with multisystem organ failure. To conclude timely diagnosis and treatment will potentially improve patient prognosis and reduce morbidity, mortality associated with large bowel obstruction. Treating a patient with LBO requires a thoughtful assessment and comprehensive understanding of underlying pathology, assessment of patients comorbidities and upto date knowledge of modern options for treatment.

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