

## Large Bowel Obstruction in Adults

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### I. Introduction:

Intestinal obstruction can be defined as interference with the normal progression of the intestinal luminal contents distally. The site of obstruction can be anywhere from duodenum to rectum distally.

Large Bowel Obstruction (LBO) accounts for around 60% of all intestinal obstruction<sup>1</sup>. Acute LBO can be the result of mechanical causes such as colorectal cancer, volvulus, diverticulitis, etc. or motility disturbances, latter being termed as colonic pseudo-obstruction. LBO from all causes appears to affect males and females with equal frequency<sup>2</sup>.

In the earlier days management of intestinal obstruction was predominantly surgical. But now-a-days with the advent of newer and competent nonsurgical techniques for preventive and curative management and palliative management of advanced cases, the management of intestinal obstruction has been revolutionized.

But still, in the developing countries the mortality associated with acute intestinal obstruction is more and varies from 8-12% in the recent times with the rate increasing to 16% with strangulation.

This prospective study was carried out to identify and analyse the epidemiology of patients with Large Bowel Obstruction presenting to Goa Medical College, with stress on etiology, management and outcome of these patients.

### II. Materials And Methods:

All the patients of age group 18 years and above who were admitted to Goa Medical College with diagnosis of large bowel obstruction during the period from 1<sup>st</sup> January 2012 to 30<sup>th</sup> June 2013 were included in the study. This study was conducted after obtaining approval of ethics committee of GMC and written informed consent of all patients was taken.

This was a prospective observational study and data collection was done on admission to the hospital and on regular basis thereafter. Detailed history was taken and variables noted were age, gender, duration of symptoms. On clinical examination vitals were recorded and per abdominal findings were noted. Investigations included routine blood counts, serum electrolytes, RFT's, etc. Plain x-ray abdomen erect, chest and abdomen sonography was done. CT scan abdomen whenever indicated was taken. Contrast studies like Barium meal follow through and Barium enema whenever indicated was done. Thereafter all adult patients with clinical and radiological evidence of large bowel obstruction were included in the study.

Preliminary measures were initiated like fluid resuscitation, nasogastric aspiration, antibiotic therapy. The management of these cases was decided on two fronts- **Conservative and Surgical**.

Immediate surgery was done in cases wherein gangrene or perforation of bowel was suspected. And also those cases which failed to respond to medical or conservative line of management. Intraoperative and postoperative findings were noted. I.C.U. care was provided whenever indicated.

### III. Results:

#### Demography

A total of 32 cases were studied above the age of 18 years with LBO in Goa Medical College during a time period of 18 months (1<sup>st</sup> January 2012 to 30<sup>th</sup> June 2013).

LBO accounts for a significant cause of surgical emergency involving all the age groups with average age of  $56.25 \pm 14$  years, with peak in 6<sup>th</sup> and 7<sup>th</sup> decade of life (28% and 18.75% resp.)

Both sexes were almost equally affected in the ratio of 17:15. Most of the patients presented with constipation, colicky pain followed by abdominal distension. *Table 1 shows the demography and symptoms.*

Table 1:

Age in years:	N (%)
18-20	0
21-30	1 (3.12)
31-40	5 (15.6)

41-50	5 (15.6)
51-60	9 (28.12)
61-70	5 (15.6)
71-80	7 (21.8)
Sex:	
Males	17 (56.66)
Females	15 (46.87)

**ETIOLOGY**

Malignancy had a higher incidence in age group of 51-60 years (28.12%) with almost equal incidence in both sexes (11: 10 male ratio). Majority of the colonic malignancies were left sided- descending colon 33.3%, sigmoid and rectum (19% each), transverse colon 14% and caecum 9.5%.

Majority of the cases were left sided lesions i.e. 15 patients out of 21 cases of malignancy (71.4%), out of which 14 patients underwent emergency transverse colostomies and 9 patients (64.2%) were subsequently subjected to chemotherapy and/or radiotherapy depending on the stage of the disease; 3 cases out of 14 underwent staged tumor resection (21.4%); 1 was lost in follow up and 1 patient expired one month post surgery. 1 patient did not give consent for the surgery and expired within 5 days of hospital stay.

There were a total 6 patients with right sided lesion, 5 of which underwent right hemicolectomy and had a good outcome. 1 patient did not give consent for the surgery and expired within 4 days of hospital stay.

1 patient of Ca transverse colon underwent extended right hemicolectomy at emergency level and subsequently received adjuvant chemotherapy.

There were 3 patients of **sigmoid volvulus** causing LBO (9.3%) all were males and in age group of 30 to 55 years, 2 out of 3 cases were treated at emergency level and

1 elective surgery was done following tube decompression. All had a good outcome.

There were 2 cases of TB stricture (6.25%), 1 ascending colon stricture and 1 patient with HIV infection with descending colon stricture. Both were operated. One with HIV infection expired and the other one had a good outcome following right hemicolectomy and AKT.

Other causes included fecal impaction (6.25%) and colonic pseudo-obstruction (6.25%) and were managed conservatively. 1 case each of obstructed sliding hernia (3.1%) and adhesions (3.1%) were managed surgically.

Thus 81.25% of the patients were operated and 18.75% managed conservatively (including 2 patients who did not give consent for surgery).

Table 2 shows the etiological factors and management of large bowel obstruction.

**Table 2:**

Etiology	No. of cases	%	Management	
			Conservative	Surgical
Malignancy	21	65.63	2	19
Volvulus	3	9.3	0	3
Impacted faeces	2	6.25	2	0
Stricture	2	6.25	0	2
Hernia	1	3.1	0	1
Adhesions	1	3.1	0	1
Pseudoobstruction	2	6.25	2	0
Total	32	100%	81.5%	18.75%

**PRESENTATION:**

32 patients of LBO were studied over a period of 18 months. The most common mode of presentation was constipation (100%), then pain in the abdomen (96.87%) followed by abdominal distension (71.87%), vomiting (40.62%) and bleeding PR (25%).

**OUTCOME OF SURGERY**

Of all the operated cases 34.61% of the patients had post op complications, with **wound infection** being the commonest (33%) and p value of 0.015 being significant. Table 3 shows post op complications.

**Table 3:**

Complications	No. of cases (%)	P value	significance
Wound infection	3(33.3)	0.015	Sig
Wound dehiscence or burst	1(11.1)	0.343	Not sig
Pulmonary infection	2(22.2)	0.076	Not sig
Cardiac complications	1(11.1)	0.343	Not sig
Sepsis	2(22.2)	0.076	Not sig

p value < 0.05 significant p value >0.05 insignificant

**MORTALITY:**

There were 6 deaths due to LBO with overall mortality rate of 18.75% and p value of 0.0001 being significant. A high mortality above the age group of 70 years (50%) was found with a significant p value of 0.024. Advanced colonic malignancy was the major cause of death i.e. 5 out of 6 cases (23.8% of total LBO patients). Table 4 shows mortality variables.

**Table 4:**

	Total deaths (%)	P value	Significance
Total no. of cases 32	6 (18.75)	0.0001	Sig
Age in years:	Total deaths (%)		
<50	1(9)	0.35	Not Sig
50-70	2 (14)	0.063	Not Sig
>70	3(50)	0.024	Sig
Management:	Total deaths (%)		
6 Conserved	2 (33.33)	0.092	Not Sig
26 Operated	4 (15.38)	0.0005	Sig

p value < 0.05 significant p value >0.05 insignificant

Major factors leading to the morbidity and mortality were old age and advanced nature of the disease along with several co-morbid conditions like COPD, IHD, DM, anemia and hypoalbuminemia.

**IV. Discusson:**

**AGE INCIDENCE**

In this study, among the adult population that was studied, the predominant age group was 51- 60 years followed by age group of 61- 70 and then > 70 years. Study by Gill and Egglesten<sup>3</sup> has reported 60 % of the cases in age group of 40 to 60years so the present study co relates with the above study.

**SEX INCIDENCE**

In our study, out of 32 cases studied, 17 were seen in males and 15 in females, ratio being almost equal. In a study conducted by Col. K.P. Rao et al<sup>4</sup>, the male to female ratio was 3.7: 1.

**ETIOLOGICAL FACTORS:**

**MALIGNANCY**

Out of total 32 cases LBO, 21 cases were of malignancy. Thus malignancy contributed to around 65 % of total cases of LBO.

According to J Palliat<sup>5</sup>, obstruction is a major complication of malignancy, most notably colorectal and gynecological.

There is a rise in the reported cases of large bowel malignancy now in developing countries, earlier believed to be a disease of western world. Nelson and Ellis<sup>6</sup> in their studies showed 26% of the cause of LBO was due to colorectal malignancies. Singh J. P. et al<sup>7</sup> showed 19.45% of the cases of large bowel malignancies develop obstruction.

**Site of malignancy:**

In our study, there were 2 cases of carcinoma of the caecum, 1 of ascending colon, 3 of transverse colon, 7 of descending colon, 4 sigmoid colon and 4 rectal carcinomas. Singh J. P. et al<sup>7</sup> also found more cases of descending colon and rectal cancers.

Thus left sided lesions are more obstructive than the right side as the lesions on the left side are constrictive in nature besides the fecal matter being semisolid in comparison to the right side where it's more fluidic. Our study showed 11 cases of left colonic malignancies in addition to 4 rectal malignancies presenting with obstruction.

Yu BM<sup>8</sup> in his series of 338 cases, of LBO, 116 cases were right side and 177 cases left sided, rectal 45 cases.

**Age and Sex:**

Among the cases of colorectal malignancies our study showed predominance in the age group of 51-60 having 8 of the 21 cases, 5 patients less than 40 years and no cases below 30 years. Albert et al<sup>9</sup> in their study found mean age of 61 years for malignant bowel obstruction.

Eisenberg et al<sup>10</sup> noted a male:female ratio of 5:6 in colorectal cancers. Smiddy and Goligher<sup>11</sup> had found equal incidence of colonic cancers in both males and females, and 5:3 ratio of females in rectal cancer.

In our study the ratio of males to females was 11: 10 thus, almost equal in both the sexes and thus keeping with the above studies.

**Symptoms of malignancy:**

Clinically most of the patients presented with constipation, colicky pain and abdominal distension. In case of left side colorectal malignancies, in some patients there was history of increasing constipation and passing mucus per rectum and many patients had history of bleeding per rectum. These features are consistent with the description given in study by Goligher.<sup>12</sup>

In cases of carcinoma caecum, patients had mass in the right iliac fossa and in cases of carcinoma rectum patients on PR examination had growth in the rectum.

**Treatment in malignancy:**

In our study, in cases of malignancy most of the patients were operated and underwent emergency colostomies in cases of left sided involvement followed either by palliative chemotherapy and /or radiotherapy or staged resection of the tumor. Thus out of 21 cases of malignancies, there were 15 cases of left sided lesions amongst which 13 underwent emergency colostomies and 2 patients did not give consent for surgery and thus expired in the ward and also had co morbidities.

Out of 13 emergency colostomies 10 cases were locally advanced and unresectable, thus only 2 patients underwent staged tumor resection surgeries and had a good outcome. Rest of the patients received palliative chemotherapy and /or radiotherapy. 1 patient expired even before the palliative treatment and expired following colostomy having advanced lesion.

Few patients did not follow up once started on palliative chemotherapy and were believed to have a poor outcome.

In cases of carcinoma caecum and right sided malignancies, most patients underwent right hemicolectomy or extended right hemicolectomy and had a good outcome.

Stephenson BM et al<sup>13</sup> concluded that subtotal or total colectomy is acceptable means of managing patients with obstructive carcinoma of left side and is associated with low mortality.

In series by Kulah Bet al<sup>14</sup> potentially curative resection was performed in 60% of the cases and palliative treatment in 34% of the cases. Post operative morbidity was 31 %.

**VOLVULUS**

**Incidence:**

In our study 3 patients had volvulus of the 32 cases of LBO (9.3%). Anderson<sup>15</sup> reported 19 cases of volvulus in his 161 cases of obstruction (11%).

**Age and Sex:**

In our study all the patients of sigmoid volvulus lied in the age group of 30-55 years with all 3 being males.

According to Anderson and Lee<sup>16</sup> there was equal incidences in both the sexes and patients were over 60 years.

**Site:**

Volvulus of the caecum and transverse colon is quite rare in India. According to Grover et al<sup>17</sup> they account for less than 1% of the cases of LBO.

Anderson and Lee<sup>16</sup> study showed volvulus of caecum 22%, sigmoid 74% and transverse colon 4 %.

In our study all 3 patients had a sigmoid volvulus.

### Treatment:

In our study 1 patient underwent conservative treatment with flatus tube decompression and IV fluids followed by definitive surgery 2 days later. Two of three patients underwent emergency sigmoid colectomy due to gangrenous sigmoid with end to end anastomosis and transverse colostomy.

Sinha<sup>18</sup> had done immediate resection in 70% of the cases and had anastomotic leak of 5 %.

According to Orian D et al<sup>19</sup> the initial treatment of sigmoid volvulus should be tube decompression followed by definitive surgery, the best being resection and primary colorectal anastomosis which coincides with our management.

### OTHER CAUSES

Various other causes of LBO include tuberculosis (abdominal kochs), obstructed hernia (sliding), dense adhesions, fecal impaction, colonic pseudo-obstruction, Hirschsprung's disease, etc.

Tuberculosis has been one of the major diseases in developing tropical countries and particularly having a very high incidence in India. With the presence of HIV viral infection, it has gained even more significance as the cases of pulmonary TB are on the rise and so do the cases of abdominal TB.

Per se, abdominal TB presenting with LBO is rare.

In the study by Sircar et al<sup>20</sup> there were 55 cases of abdominal TB with obstruction. In our study we had 2 cases of abdominal TB presenting with LBO, 1 in caecum and ascending colon for whom right hemicolectomy was done and started on AKT and had good outcome and the other was a case of HIV with stricture in descending colon and pulmonary kochs for whom total colectomy with ileostomy and sigmoid colostomy was done (mucus fistula). This patient however had a poor post op period and expired on 4<sup>th</sup> post op day.

We had 2 cases of fecal impaction and both treated conservatively with evacuation of the feces and enema.

Adhesions is more common a cause of small bowel obstruction and however a number of series show that it can lead to LBO in 0.5 % to 8.3% of the cases as per Holt RW et al<sup>21</sup>. In our case the mobile portion of the transverse colon was kinked by a band and thus released. Patient was previously operated for LSCS.

In our study we had a case of obstructed sliding inguinal hernia containing sigmoid colon which underwent emergency herniorrhaphy. External hernias rarely cause LBO. Only 3 cases of obstructed sliding hernias were reported by Welch J P et al<sup>22</sup> in their study.

Our study also showed 2 cases of colonic pseudo-obstruction, both the patients underwent radiological investigations to rule out a pathological cause and thus were treated conservatively.

### COMPLICATIONS AND MORTALITY

The major complication in our study was **wound infection** which was present in about 10 % of the patients. However many of these patients had other co morbid conditions as well and were operated in emergency setting.

Burst abdomen was seen in 1 patient who underwent anterior resection of sigmoid growth following emergency colostomy. This patient was also a known case of IHD and DM, further developed cardiac complication and expired.

Two patients had pulmonary complications following surgery and 2 patients developed sepsis (one post op and one conserved) and both expired.

Anemia, hypoalbuminemia, CRF, CCF, COPD, HTN, DM and HIV infection were other co-morbid conditions.

Malignancy was the major cause of death (particularly advanced cases) and accounted for 23.8 % of the deaths.

### V. Conclusion:

The study revealed that colonic malignancy and sigmoid volvulus were the major causes of LBO. Morbidity and mortality rates are still high and the most regular complication was wound infection. Advanced age, advanced stage of disease and co morbidities were associated with higher mortalities. Depending on these results we believe, early diagnosis, precise and timely surgical intervention, along with the nature and the stage of the disease with various co-morbid conditions determines the outcome of the cases of LBO in adults.

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**ABBREVIATIONS:**

- LBO- Large bowel obstruction
- HIV-human immunodeficiency virus
- TB- tuberculosis
- IHD-ischemic heart disease
- COPD- chronic obstructive pulmonary disease
- HTN –hypertension
- DM- diabetes mellitus
- USG- ultrasound
- CT- computed tomography
- AKT-anti kochs treatment
- ICU-intensive care unit
- CRF-chronic renal failure
- CCF-congestive cardiac failure
- RFT-renal function test

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