

Malignant Large Bowel Obstruction: Our Experience at a Tertiary Care Centre

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ABSTRACT

Background: Colorectal cancer is commonly diagnosed malignancy presenting either in obstruction or without obstruction. Malignant Large Bowel obstruction (MLBO) is usually a complication of advanced colorectal cancers, greatly reducing quality of life. We aimed to study the clinicopathological characteristics and outcomes of this group of patients requiring emergency intervention.

Materials & Methods: In our Observational study, Patients with Colorectal carcinomas presenting as large bowel obstruction were included in our study and followed-up. These MLBO patients were divided into two groups on the basis of their presentation & site of lesion: the Colonic Group & Rectal Group and were studied.

Results: A total of 78 patients of MLBO with known modes of presentation between 2015 & 2019 were included; 44 Colonic, and 34 Rectal Carcinomas with 71 being completely obstructive ones and 7 presenting as perforation peritonitis. The clinicopathological and tumour characteristics were noted. Our study showed a higher incidence of recurrence in the Rectal group as compared to the Colonic group with local recurrence being more common. A higher proportion of R0 Resection with better lymph node retrieval was noted in the Colonic Group. Overall 5- 5-year survival rates were slightly better in the Colonic group but not statistically significant. Immediate Post-op Complications were comparable.

Conclusion: Our study highlighted the various clinicopathological characteristics and observed outcomes of colorectal carcinoma patients presenting with large bowel obstruction. We found that MLBO presents as a challenging complication of advanced colorectal carcinomas, significantly impacting patients' quality of life with slightly better outcomes in the colonic group of patients who had completed multi-modal therapy.

Keywords: Malignant Large Bowel Obstruction, Colorectal Cancers, Obstruction, Outcomes

JMS: 2024; 27(2): 8-14 DOI: <https://doi.org/10.33883/jms.v27i2.1373>

INTRODUCTION

Colorectal cancer is a widely diagnosed malignant tumour that ranks third among all cancers in terms of incidence and second in terms of mortality¹. It often presents with either obstruction or no obstruction. Large Bowel obstruction is a common consequence of advanced colorectal cancer that greatly reduces quality of life. These groups of patients need emergency intervention to prevent further deterioration. Cancer-directed therapy is delayed for these patients as the obstruction is to be relieved first. This group of patients will most likely have distinct surgical and oncological

outcomes. Our study intends to observe, and assess the clinicopathological characteristics and evaluate the outcomes of this Malignant Large Bowel Obstruction group of patients, necessitating emergency intervention, either in the form of pre-treatment diversion colostomy or even curative resection.

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Access this article online



Website:
www.jmsskims.org

DOI:
<https://doi.org/10.33883/jms.v27i2.1373>

How to cite this article: Haq MF, Malik A, Wani M, Bhat G, Wani R, Parray F, Banday I. Malignant Large Bowel Obstruction : Our Experience at A Tertiary Care Centre. JMS 2024; 27 (2)8-14

Received: 2024-05-07 Accepted: 2024-06-01



MATERIALS & METHODS

Our study was an observational prospective hospital-based study conducted by the Department of General & Minimal Invasive Surgery SKIMS, Srinagar. We included Colorectal Carcinoma patients who presented to our emergency section with features of Large Bowel Obstruction, to observe to observed clinicopathological characteristics and study the outcomes of this group of patients. Patients with Stage II and III Colorectal Carcinomas, including both obstructive or perforated lesions who underwent curative resection, were included in our study. Patients with additional Concomitant Malignancies, Metastatic Disease or Stage IV, and those with lost follow-up were excluded from the study. All the study patients were enrolled, and data on clinicopathological parameters such as age, gender, underlying disorders, presentation, site of lesion, biochemical parameters, and tumour characteristics were noted and their outcomes in terms of immediate, oncological and long-term were observed and recorded.

RESULTS & OBSERVATIONS

Our study included 78 patients with Malignant Large Bowel Obstruction (MLBO) who required emergency surgical intervention between 2015 and 2019. Of these, 44 were colonic malignancies and the remaining 34 were rectal carcinomas. Out of the total 78 research subjects, 71 were completely obstructive, and 7 patients presented with perforation secondary to colorectal malignancy. As per protocol, those with Colonic Malignancies were managed on an emergency basis and operated on within 24 hours of admission in emergency settings. For Rectal Carcinoma cases, patients were subjected to Diversion stoma followed by Neoadjuvant conventional long-course chemo-radiation therapy or intra-venous infusion of 5- 5-fluorouracil along with radiation therapy. After completion of Neoadjuvant Chemo radiotherapy, patients underwent curative surgical resection if the malignancy was deemed resectable. The study patients who underwent definitive surgery were then offered adjuvant therapy.

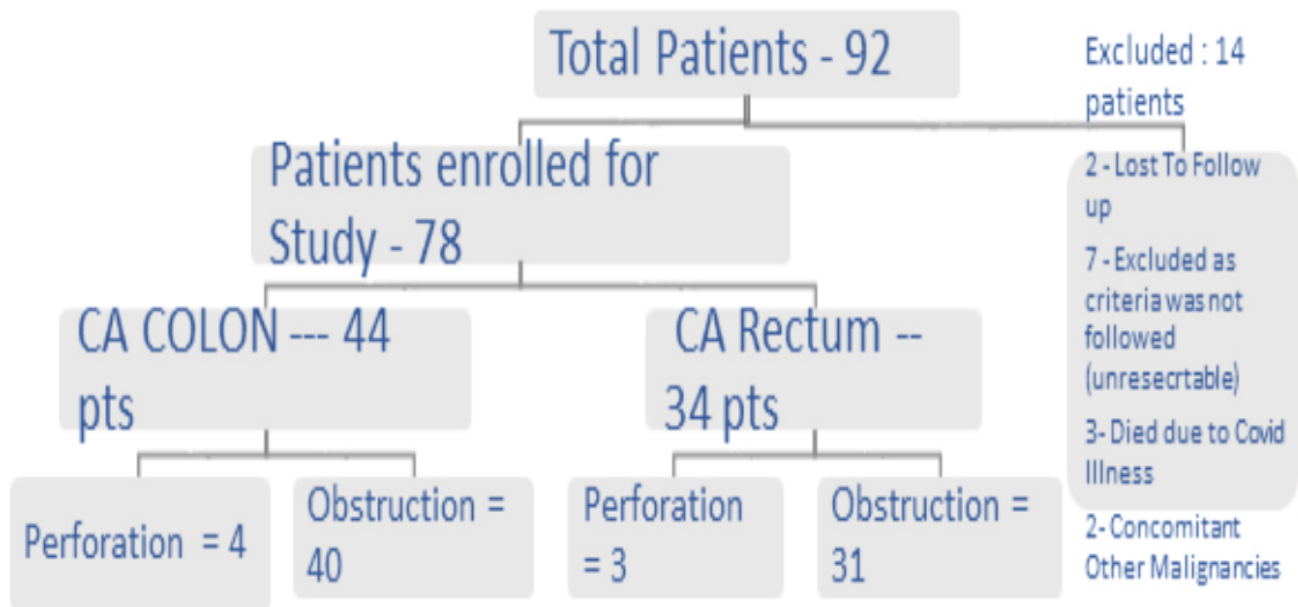


Table1 (a): Clinicopathological & Demographic characteristics of MLBO patients

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Variable			Colonic Group	Rectal Group	
Age Distribution in Years (Mean ± SD)			58.4±9.91	58.4 ± 9.91	
Gender		Male	25 (56.8%)	18 (52.9 %)	
		Female	19(43.1%)	16 (47.1%)	
Presentation		Obstruction	40(90.9%)	31(91.2%)	
		Perforation	4(9.1%)	3(8.8%)	
Medical-Comorbidities			13(29.5%)	11 (32.4%)	
Preoperative Albumin Levels (Mean ± SD) mg/dl			3.65 ± 0.458	3.04 ± 0.412	
Preoperative CEA Levels (Mean ± SD) ng/ml			7.78 ± 4.14	7.86 ± 3.57	
Site & Presentation Of Tumor		Obstruction	Ascending Colon	1 (2.3%)	Obstruction 31(91.2%)
			Descending Colon	15 (34.1%)	
			Sigmoid Colon	19 (43.1%)	
			Transverse colon	4 (9.1%)	
			caecum	1 (2.3%)	
		Perforation	Total	40(90.9%)	Perforation 3(8.8%)
			Ascending Colon	1 (2.3%)	
			Descending Colon	1 (2.3%)	
			Sigmoid Colon	2(4.5%)	
			Total	4(9.1%)	
Transmural Thickness /Size/ Width (cm) Mean ±SD			7.8 ± 0.817	7.1 ± 2.16	
TNM Stage		T3	34 (77.3 %)	23(67.6 %)	
		T4a	6 (13.6 %)	7 (20.6 %)	
		T4b	4(9.1%)	4 (11.8 %)	
		N0	17 (38.6 %)	12 (35.3 %)	
		N1	16 (36.4 %)	14 (41.2 %)	
		N2	11 (25.0 %)	8 (23.5%)	
		II	17 (38.6 %)	13 (38.2 %)	
		III	27 (61.4 %)	21 (61.8 %)	
Tumor Differentiation		Well differentiated	6(13.6 %)	3 (8.8 %)	
		Moderately differentiated	12 (27.3%)	11 (32.4%)	
		Poorly differentiated	26 (59.1 %)	20 (58.8%)	
Time Duration in Hours (Mean ± SD)			2.2 ± 0.61	2.6 ± 0.91	

Table 2 :Outcomes of two groups of MLBO patients

OUTCOMES			Colonic Group [n(%)]	Rectal Group [n(%)]
Immediate Outcomes	Surgical Site Infection		13 (29.5)	9 (26.5)
	Anastomotic Leak		3(6.8)	1(2.9)
	Post op Ileus		4 (9.1)	2(5.8)
	Respiratory Tract Infection		9 (20.4)	6 (17.6)
	Urinary retention		0	5 (14.7)
	Hospital Stay Mean ± SD (Days)		7.9 ± 2.65	5.4 ± 3.12
Oncological Outcome	Type of Resection	R0 Resection	34 (84.1 %)	28 (82.4 %)
		R1 Resection	7 (15.9 %)	6 (17.6 %)
	No of Lymph Nodes Harvested Mean ± SD		17.6 ± 4.26	15.1 ± 4.14
Long Term Outcome	Recurrence Rate		14 (31.8 %)	12 (35.3 %)
	Site Of Recurrence	Local	9 (64.3 %)	8 (66.7 %)
		Distant	5 (35.7 %)	4 (33.3 %)
	Duration for Recurrence in months (Mean ± SD)		20.4 ± 3.67	18.4 ± 3.45
	5 Year Overall Survival	Stage II	12 (70.5 %)	9 (69.3 %)
		Stage III	14 (51.8 %)	10 (47.6 %)
		Overall	26 (59.1 %)	19 (55.9 %)
	5-Year disease free survival	Stage II	7 (58.3 %)	5 (55.6 %)
		Stage III	5 (35.7 %)	3 (30.0 %)
		Overall	12 (46.1 %)	8 (42.1 %)

DISCUSSION

Colorectal cancer is a frequently diagnosed malignant neoplasm, presenting as an emergency or with chronic symptoms that are well recognized. In colorectal carcinoma patients, Large bowel obstruction is usually a complication of advanced cancer presenting as Abdominal distention, pain, obstipation or even perforation peritonitis and thus significantly impacts the patient's quality of life. Managing MLBO requires consideration of factors such as lesion location, presentation, disease stage, and patient's overall health status, with surgical intervention often being imperative. However, effectively handling these cases remains a challenge for surgeons. Our study aimed to evaluate clinicopathological characteristics and outcomes among MLBO patients undergoing curative resection. We analysed data from 78 patients with Malignant Bowel obstruction who underwent curative resection between 2015 and 2019, comprising 44 with colonic malignancies and 34 with rectal carcinomas. Most cases (71 out of 78) presented with complete obstruction, while the rest (7) had perforation peritonitis secondary to long-standing malignant large bowel obstruction. We observed that the mean age of presentation for MLBO patients was 58.4 ± 9.91 years for Colonic lesions, while it was 59.4 ± 9.28 years for Rectal lesions which were similar to the study published by MC Peedikayil et al² and higher than reported by Prachi S. Patil et al³. We observed a slight male predominance in both groups with a male-female ratio of 1.31: 1 in the Colonic group and 1.12: 1 in the Rectal group of patients. Several concomitant diseases were found in 13 patients in the colonic group & 11 patients in the rectal group which included Chronic pulmonary diseases, cardiovascular disorders, hypertension, insulin-dependent diabetes, and renal dysfunction without any significant difference between the groups. As far as the Performance score of study patients was concerned there was No significant difference between the groups. Our study showed slightly lower Pre-op Albumin levels in MLBO patients of colonic origin with pre-op Albumin levels of 3.65 ± 0.458 mg/dl as compared to 3.04 ± 0.412 mg/dl in the rectal Group possibly due to chronic subclinical obstruction-related decreased intake. In MLBO patients of the Colonic group, the mean CEA levels were 7.78 ± 4.14 mg/dl as compared to 7.86 ± 3.57 mg/dl in the Rectal Group which were statistically comparable. As Obstructing tumours tend to be bulky and

usually are of advanced stage, we observed Transmural Thickness or Transluminal Size of about 7.8 ± 0.817 cm in Colonic and 7.1 ± 2.16 cm in the rectal group. Most MLBO cases present as obstruction, with a small percentage manifesting as perforation. Similar findings were observed in our study with a maximum of MLBO patients presenting with obstruction and only 4 (9.1%) of the colonic group and 3 (8.8%) of rectal MLBO presenting as perforation in addition to obstructed growth. As we are all aware Malignant large bowel obstruction can involve any part of the large gut (Colon & Rectum), however, the risk varies according to the location. In our study there was a significant difference in the distribution of lesions with the majority of colonic lesions exhibiting a predilection for the left side with 34.1 % in the Descending Colon (n = 15) and 43.1 % in the Sigmoid Colon (n = 19) of total colonic obstructed patients (n = 40), Similar pattern was observed with perforated lesions with perforation also more common on Left side of Large bowel with Sigmoid and Descending colon accounting for 4.6 % (n=3) and Ascending colon (n=1: 2.3%)of total MLBO patients. This distribution was somewhat similar to that reported by Atsushi et al[4]. Obstructive lesions usually suggest more advanced disease. In our study with regards to TNM Staging, MLBO patients had a higher proportion of Stage III as compared to Stage II, with 61.4 % of colonic and 61.8% of rectal lesions in Stage III while it was 38.6% in Colonic and 38.2% in rectal group as far as Stage II lesions were concerned. These findings were consistent with those reported by Yang Zuli et al⁵.

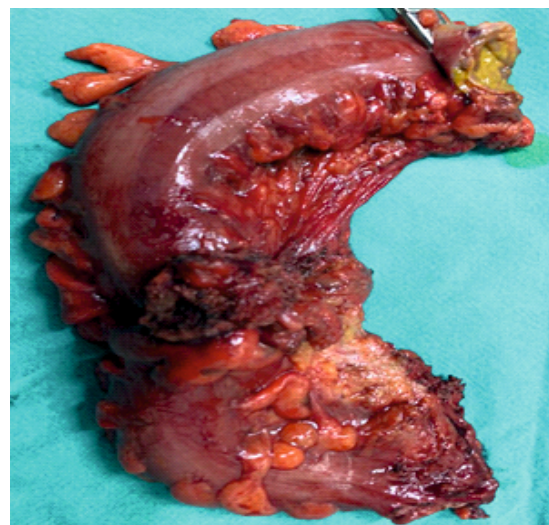


Fig. 1 : Post-Operative Image of Sigmoidectomy specimen in a patient of MLBO due to Obstructing Sigmoid Lesion



Fig. 2 : Post-Operative Image of Right Extended Hemicolectomy specimen in a patient of MLBO with perforation in Ascending Colon secondary to Obstructing Hepatic Flexure Growth

Short Term Outcomes

One of the objectives of our study was focused on observing Immediate complications developing in the postoperative period. As we all know immediate post-op complications after a colorectal procedure can be a significant cause of morbidity and mortality. So all attempts need to be made at all levels of research, technical modalities and optimization to decrease these complications.



Fig. 3 : Image of SSI in a patient of MLBO

Regarding Immediate Post op Complications both the groups had comparable outcomes. The incidence of SSI was higher in both groups with 29.5 % (n = 13) reported in the Colonic group and 26.5 % (n= 9) in the Rectal group. This can be attributed to the emergent nature of surgery in both groups where high possibilities of breach of sterility is present and low pre-op albumin levels in MLBO patients

which can further hamper normal wound healing. The other complications observed included Respiratory infections and post-op ileus, which were comparable in both the colonic and Rectal MLBO groups. Urinary retention was noted only in the rectal group of patients with about 14.7 % (n = 5) developing post-operative acute urinary retention. Our study was not able to correctly determine the anastomotic leaks in the two groups as most of the rectal cases had covering stomas. Anastomotic leak was seen in a very low proportion of patients n = 3 (6.8 %) in the Colonic group and n = 1 (2.9)% in the rectal group. The findings of our study were close to that reported by Sebastiano Biondo et al⁶ & Lee, C.H.A et al⁷ in their research. With regards to hospital stay, the Rectal group had less duration of stay at the hospital as compared with the colonic group. The average duration of hospital stay was 7.9 ± 2.65 days in the colonic and 5.4 ± 3.12 days in the rectal group which was statistically significant. This may be attributed to the presence of Diversion Stoma in Rectal Cases which had early return of bowel movements and thus early discharge from the hospital.

Oncological Outcome

As far as oncological outcome is concerned, R0 resection is one of the most important prognostic factors for any malignancy including colorectal malignancy. In our study, the Colonic group had a higher proportion of R0 Resection as compared with the Rectal group. R0 resection was found in 84.1. % (n=34) in the Colonic group vs 82.4 % (n=28) in the Rectal group which was not statistically significant. Our results were consistent with previously reported studies by Yang Zuli et al⁵ which reported similar proportions with regard to obstructing lesions. We observed a significant difference in several lymph nodes harvested during curative resection in both groups. Our study showed a better lymph node harvest in the Colonic Group compared to Rectal study patients. Our Study had Lymph node retrieval of 17.6 ± 4.26 nodes in the Colonic group as compared to 15.1 ± 4.14 nodes in the Rectal group. The same findings of lymph node retrievals were reflected in a retrospective study done by Azin A et al⁸ & Andrej Nikolovski et al⁹

Long Term Outcome

Long-term outcomes in Colorectal malignancies are determined in terms of recurrence, Overall 5-year Survival & Disease-Free Survival. In our study, the total recurrence

rate of patients with MLBO was 33.3 % (n = 26). We found Overall Recurrence rates of 31.8 % (n = 14) in the Colonic group and 35.3 % (n = 12) in the Rectal group. Our study showed a higher incidence of recurrence in the rectal group of patients as compared to Colonic with the results being not statistically significant.

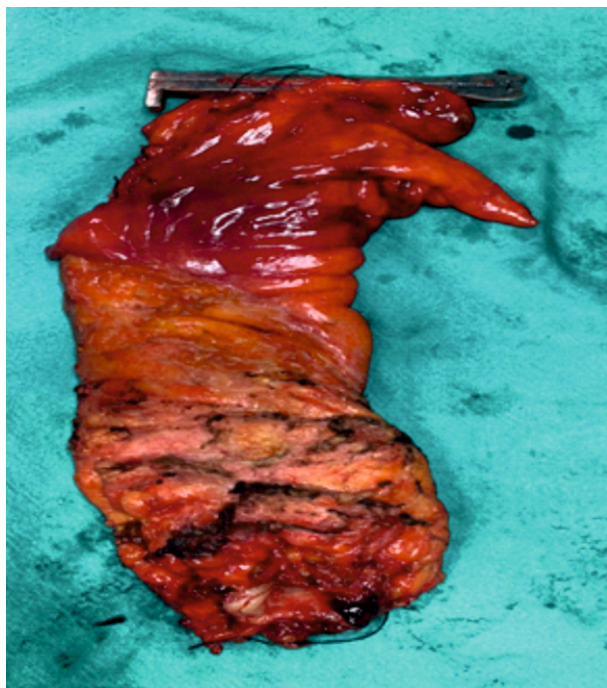


Fig. 4 : Post-Operative specimen of LAR in a Patient of Obstructing Rectal Malignancy

With regards to the site of recurrence, our study showed a significant difference in the pattern of recurrence, with more Local recurrence as compared to Distant recurrence. The colonic group had a local recurrence of 64.3 % (n = 9) as compared to Rectal cancers with local recurrence in 66.7 % (n = 8) of patients. Further, the results of our study showed that the median Interval for Recurrence was 20.4 ± 3.67 months in the Colonic group vs 18.4 ± 3.45 months in the Rectal group. Rectal cancers had an early time to recurrence as compared to colonic malignancies. This can be due to a slightly lower proportion of R0 Resections and lower Lymph node retrieval in the Rectal group of patients in comparison to the colonic group. Our study showed better outcomes with fewer Recurrence rates than reported by Yang Zuli et al⁵. CRC survival is principally a function of the stage of the disease at diagnosis, the earlier the stage at diagnosis, the better the survival. MLBO patients receiving

emergency procedures have significantly worse overall 5-year survival than non-MLBO patients receiving elective procedures. Our study showed Overall 5-year survival rates of 59.1 % and 55.9 % in the Colonic & Rectal groups, respectively. On stage-for-stage analysis for survival, our study found that overall 5-year survival rates for the Stage II Colonic group were 70.5% and 69.3 % in the Rectal group. With Regard to Stage III patients overall 5-year survival rates were 51.8 % in Colonic vs 47.6% % in the Rectal group. In our study compared to the Colonic group, the Rectal Malignancies had comparatively a worse 5-year overall survival rate. The results of our study also showed similar patterns in 5-year Disease Free survival rates with 46.1% of study patients having 5-year Disease Free survival in the Colonic groups while in the case of the rectal group, it was 42.1%. Compared to the Colonic group, the Rectal group had worse 5-year Disease survival rates also but the difference was not statistically significant. Further Stage II & Stage III 5 yr. Disease Free Survival was 58.3 % & 35.7 % respectively in the Colonic group compared to 55.6 % & 30.0 % in rectal carcinoma study patients. The results of our study were slightly better compared with the published results of a study done by Yang Zuli et al⁵, and Franklyn J et al¹⁰.

CONCLUSION

Our study underscores the multifaceted nature of malignant large bowel obstruction which significantly impacts patient's quality of life. Surgical intervention remains imperative in these cases, with factors such as lesion location, disease stage, and patient comorbidities influencing management decisions. Timely recognition and intervention are paramount for optimizing patient outcomes. Furthermore, our findings emphasise the need for ongoing research and optimization of surgical techniques to reduce postoperative complications and enhance long-term oncological outcomes in this patient population. Our study's constraints stem from our centre's status as a referral hospital within the state, resulting in patients often being referred at advanced stages of the disease, leading to a higher prevalence of MLBO cases. Consequently, extrapolating our findings may pose challenges. Implementing proactive patient follow-up strategies during the course can mitigate attrition, enhance treatment compliance and ultimately bolster cancer survival

rates in the long run.

Conflict of interest: None

Written informed consent: taken

Competting interest : None

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