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Clinical Profile of Carcinoma Rectum and Treatment Modalities with Outcome– An Observational Study

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Abstract

Aim :

To determine the incidence of age, sex, clinical manifestations, site, stages of carcinoma rectum and morbidities, mortality following surgery. To evaluate surgical modalities and neoadjuvant chemoradiation in carcinoma rectum.

Materials and Methods:

This study has been conducted in the Department of Surgery, Govt. Rajaji Hospital, Madurai during 2009-2011. All patients underwent clinical examination and appropriate investigations to confirm and stage the disease. Patients who were included in neo adjuvant therapy, chemo radiation and surgery were followed. Postoperative adjuvant chemotherapy was also given. Patients were followed up for 1 year.

Results:

Out of 50, majority of carcinoma rectum cases occurs in 5th decade (28%) with male:female ratio 2:1. The predominant symptoms were bleeding per rectum(76%),constipation(58%) and pain(24%). Commonest site was lower 1/3rd of rectum(54%). Majority of the patients were in stage III(48%),stage I and II(36%)and stageIV(8%). 20 patients underwent abdomino perineal resection(44%), 10 patients underwent laproscopic assisted abdomino perineal resection(22%), 7 patients underwent anterior resection(16%),8 patients underwent emergency colostomy and 5 patients were inoperable for whom palliative chemotherapy / radiotherapy was given. Neo adjuvant chemoradiation was given in 5 patients with stage III. Out of which anterior resection was done in 3 patients(60%) and APR was done in 2 (40%). The most common post operative morbidity was perineal wound infection(16.6%),Perineal wound gaping(3.3%), Abdominal wound infection(2.2%). Retention of urine in 2 patients and impotence in 1 patient. Less postoperative complications were noted with inceasing age of the patients($P<0.05$).The overall morbidity rate was 28.7%. We had 2 mortalities.

Conclusion:

The peak incidence was in 5th decade with equal distribution of cases before and after 50 years of age with male predominance. Most cases presented with stage III which emphasizes the importance of the role of screening programmes and to create awareness among general population. Abdomino perineal resection was most frequently done. Perineal wound infection was the commonest post operative morbidity which emphasizes the need for improvement in pre-,intra-,post operative care. Neoadjuvant chemoradiation improves resectabilty and sphincter sparing rate but there is an increased incidence of perineal wound infection and wound gaping.

Keywords: Carcinoma Rectum, Clinical Profile, Surgery, Complications

1. Introduction

Rectal cancer has considerable geographical variation and the incidence is high in western countries. High intake of fat and calories, use of alcohol and tobacco is associated with increased risk. High intake of diet

rich in fiber is associated with decreased risk. Incidence in males is more common than females. Incidence is rising steadily after the age of 50. More than 90% of cases diagnosed are in people older than 50 years of age. However individuals at any age can develop. Prognosis for rectal carcinoma has improved since the 1960s, and this is probably due to early diagnosis, better preoperative tumor staging, improved intra-operative care, improved surgical technique and improved adjuvant treatments such as radiation and chemotherapy[1-3].

Incidence of colorectal cancers tends to be higher in western than in Asian and Africans. Approximate incidence per 1,00,000 people were Africa-2, Asia -15, South America-15, West Europe-40 and USA-35. Although the incidence of colon and rectal cancer varies considerably by country, an estimated 944,717 cases identified worldwide in 2000. Incidence in males is slightly higher than in female. In males - 65 cases per 100000 population and in females- 47 cases per 100000 population. The male female ratio is 1.37%. The incidence starts to increase after the age of 35 and rises rapidly after the age of 50, peaking in seventh decade. This shows that prolonged exposure to weak environmental carcinogens is necessary to induce tumors and that most, possibly all, pass through the benign phase before turning into malignant [4].

2. **Materials and Methods**

This study has been conducted in the Department of Surgery, Govt. Rajaji Hospital, Madurai, which is a tertiary referral Centre in southern Tamilnadu. The study was conducted during the period of 2009-2011. Patients admitted in general surgery units, surgical gastroenterology and surgical oncology department were selected. All patients were subjected to detailed history, thorough clinical examination of the abdomen, digital rectal examination, proctoscopy, Biochemical investigations, ultrasonography, double contrast barium enema when warranted, CT abdomen and pelvis contrast, Magnetic Resonance Imaging when feasible and biopsy was taken for histopathological examination.

All patients were counseled with regards to treatment side effects, possible outcome with and without the preoperative chemoradiotherapy, the side effects during the course. The patients were counseled with regard to colostomy.

Patients were staged according to the TNM classification system using clinical and radiological data by using ultrasound abdomen pelvis, CT abdomen and pelvis and MRI if feasible.

Patients with stage III were included in neo adjuvant chemoradiation when available, investigated thoroughly and underwent radiotherapy 45-60 Gy in 150-200 cGy fractions for 5 days a week and concurrent 5-FU 10mg/kg and leucovorin 30mg infusion every 21 days for 6 cycles was given. They were again restaged clinically and radiologically.

Postoperative adjuvant chemotherapy was given to most of the patients with 5-FU 500mg given for the first 3 days of every fortnight for 6 months along with leucovorin. Majority of the patients were regularly followed up for one year.

3. Results

Out of 50 cases in our study number of male patients are 34(68%) and females are 16(32%), the male to female ratio is 2:1. Most number of the carcinoma rectum cases occurs in 5th decade (28%). Incidence started to increase from 3rd decade reaches the peak at 5thdecade, then again fall after 6th decade. Among males maximum number of cases occurs between 4th and 6th decade, and in females between 3rd and 5th decade i.e. in females carcinoma rectum occurs one decade earlier than males in our study[Figure.1]. Mean age of incidence is 50.4 in our study.

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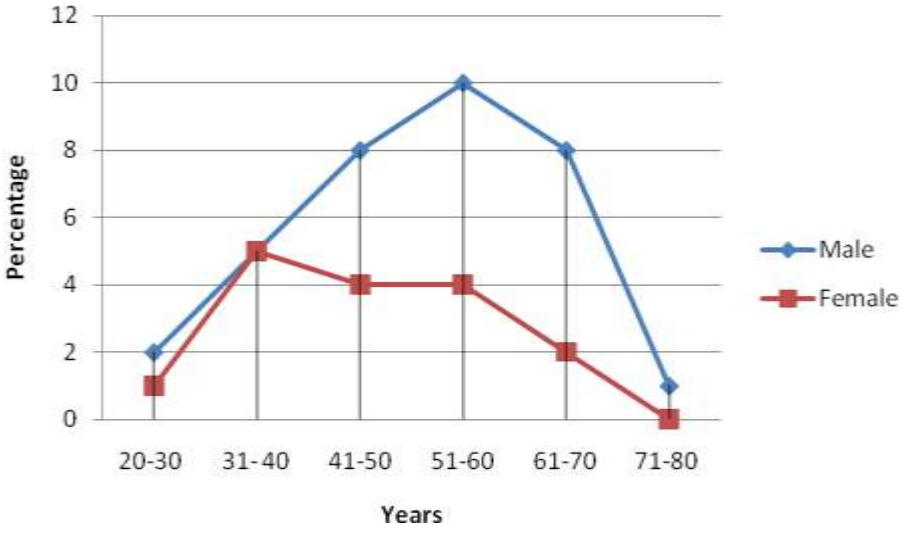

Figure.1. Age distribution in Males & Females

Site of lesion is in the upper 1/3rd of rectum in 12%, middle 1/3rd in 34% and lower 1/3rd in 54% of patients. The proportion of people with cancer in lower one third of rectum gradually decreases from 20-40 years to more than 60 years of age. Whereas proportion of people with cancer in upper third of rectum increases as the age group category increases from 20-40 to more than 60 years. But this difference was not statistically significant as p value was 0.30. Site of tumour is not associated with Gender or postoperative complications[Table.1].

Table-1: Association between site of tumour with age, gender and post-operative complications.

Sl.no	Characteristic	Site			X^2 value, df	p value
		Lower $1/3^{rd}$	Middle $1/3^{rd}$	Upper $1/3^{rd}$		
1	**Age group**					
	20-40	9 (69.2)	4 (30.8)	0		
	41-60	13 (50)	10 (38.5)	3 (11.5)	4.82, 4	0.30
	> 60	5 (45.5)	3 (27.3)	3 (27.3)		
2	**Gender**					
	Male	16 (47.1)	13 (38.2)	5 (14.7)	2.15, 2	0.34
	Female	11 (68.8)	4 (25)	1 (6.3)		
3	**Post-operative complication**					
	Present	6 (50)	5 (41.7)	1 (8.3)	0.48,2	0.78
	Absent	17 (51.5)	11 (33.3)	5 (15.2)		

NOTE: X^2-chi-square, df-degrees of freedom, * p value <0.05 (statistically significant)

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Common presenting symptoms are Bleeding per rectum(76%), Constipation(58%), Tenesmus(28%), Pain(24%), Acute intestinal obstruction(16%) and Diarrhoea(12%)[Figure.2].

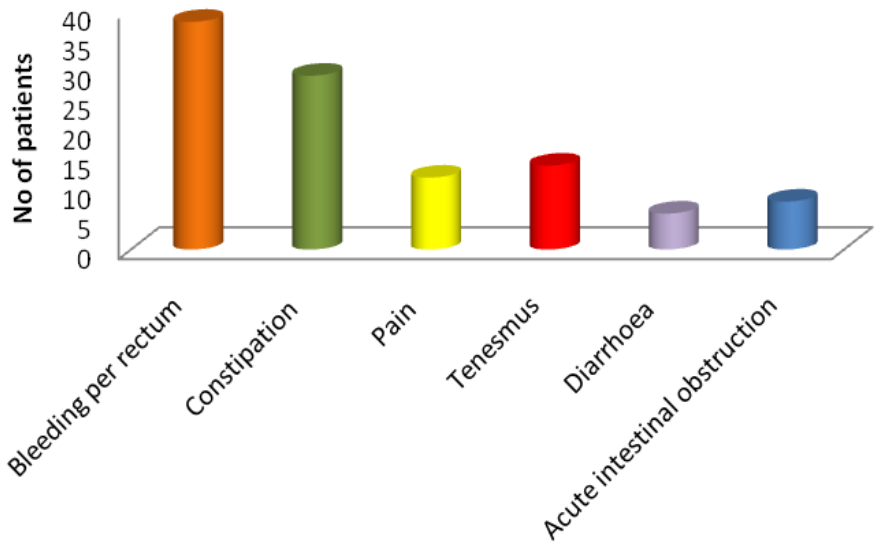

Figure.2. Symptom

TNM staging at the time of presentation as follows, 36% in stage I & II, 48% in stage III, 8% in stage IV and the remaining 8% were not staged.

The proportion of cancer stage I & II, stage III patients increase from 20-40 years to 41-60 years and the same decrease from 41-60 years to more than 60 years. Stage IV patients raise from 20-40 years to more than 60 years (P=0.04).

Surgeries done are Abdomino Perineal Resection(APR)(44%), Laprascopic APR(LAPR)(22%), Anterior Resection(AR)(16%) and Loop colostomy(18%) among the 45 operated patients. Inoperable cases during presentation are 5(10%)[Figure.3].

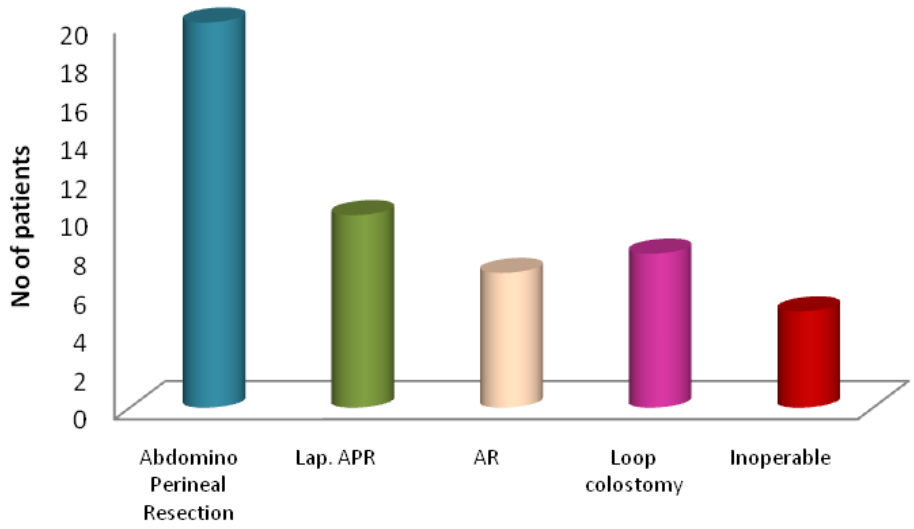

Figure.3. Surgeries

Postoperative morbidity observed are Perineal wound infection in 5/30 (16.6%), Perineal wound gaping in 1/30(3.3%), Abdominal wall infection in 1/45(2.2%) of the patients, Urinary retention in 2/45(4.4%) and impotence in 1/45(2.2%) patients[Figure.4].

Neo adjuvant chemoradiation therapy was given for five stage III diseases. Among the 5 cases, anterior resection was done for three cases and APR was done for two cases. Out of the 5 patients, one patient developed perineal wound gaping and two patients developed perineal wound infection.

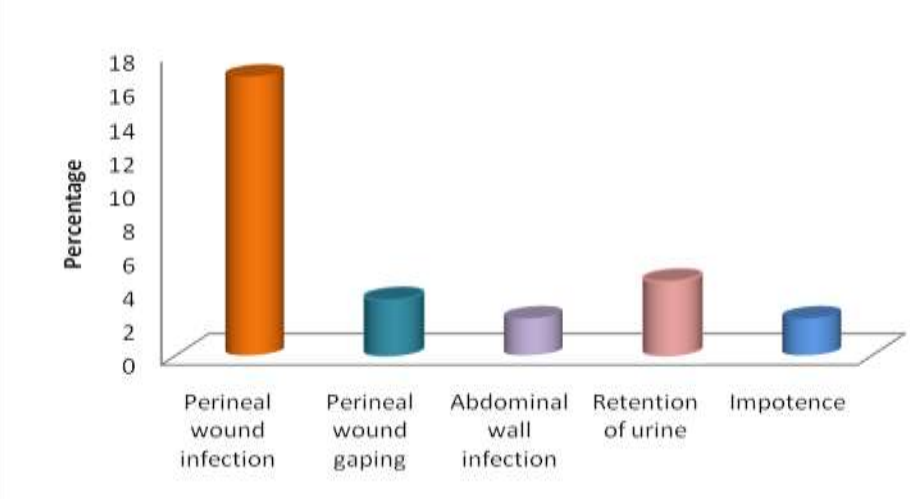

Figure.4. Postoperative morbidity

Postoperative mortality observed during study period is1/45(2.2%).
Stag I & II disease represented more in age group 20-40 years and stage IV disease in more than 60 years group (P=0.04), but stage of the disease not influencing sex of the patients or postoperative complications.
Table-2: Association between stage of tumour with age, gender and post-operative complications.

Sl.no	Characteristic	Stage			X^2 value, df	p value
		I & II 18 (39.1)	III 24 (52.1)	IV 4 (8.8)		
1	**Age group**					
	20-40	7 (53.8)	6 (46.2)	0		
	41-60	9 (37.5)	14 (58.3)	1 (4.2)	9.74, 4	0.04*
	> 60	2 (22.2)	4 (44.4)	3 (33.3)		
2	**Gender**					
	Male	11 (36.7)	17 (56.7)	2 (6.7)	0.87, 2	0.65
	Female	7 (43.8)	7 (43.8)	2 (12.5)		
3	**Post-operative complication**					
	Present	6 (54.5)	4 (36.4)	1 (9.1)	1.58, 2	0.45
	Absent	12 (40)	17 (56.7)	1 (9.1)		

Adjacent organ infiltration by the tumor are Bladder infiltration (4%), Sacral infiltration(2%), Vaginal infiltration(2%) and Prostate & bladder infiltration(2%). Liver metastasis alone noticed in 6% and liver metastasis with ascites in 2% of patients.

Among operated people, those who were in the age group of 41-60 years had developed lesser post-operative complication (16.7%) compared to those who were in the age group of 20-40 years (54.5%) and more than 60 years (20%). This difference was statistically significant (p value <0.05).

Table-3: Association between post-operative complications with age and gender

Sl.No.	Characteristic	Post-operative complication		X^2 value, df	p value
		Yes	No		
1	**Age group in years**				
	20-40	6 (54.5)	5 (45.5)		
	41-60	4 (16.7)	20 (83.3)	5.93, 2	0.05*
	> 60	2 (20)	8 (80)		
2	**Gender**				
	Male	8 (23.5)	26 (76.5)	0.700, 1	0.40
	Female	4 (36.4)	7 (63.3)		

NOTE: X^2-chi-square, df-degrees of freedom, * p value <0.05 (statistically significant)

When mean age of the patients increased postoperative complication decreased (P value 0.03*)[Table.4] [Figure.5].

The mean duration of symptom was higher among those who developed post-operative complication compared to those who had not developed. But this difference was not statistically significant (P value 0.10)[Table.4] [Figure-6].

Table-4: Association between post-operative complications with mean age and mean duration of symptoms.

Post-operative complication	Yes	No	t value, df	p value#
Mean duration of symptom (SD)	75.8 (18.1)	65.1 (20.8)	1.58, 43	0.10
Mean age (SD)	43 (15)	53 (11)	2.23, 43	0.03*

NOTE: SD-standard deviation, df-degrees of freedom, # p value based on independent t test,
* p value <0.05 (statistically significant)

Figure-5: Association between post-operative complications with mean age of patients

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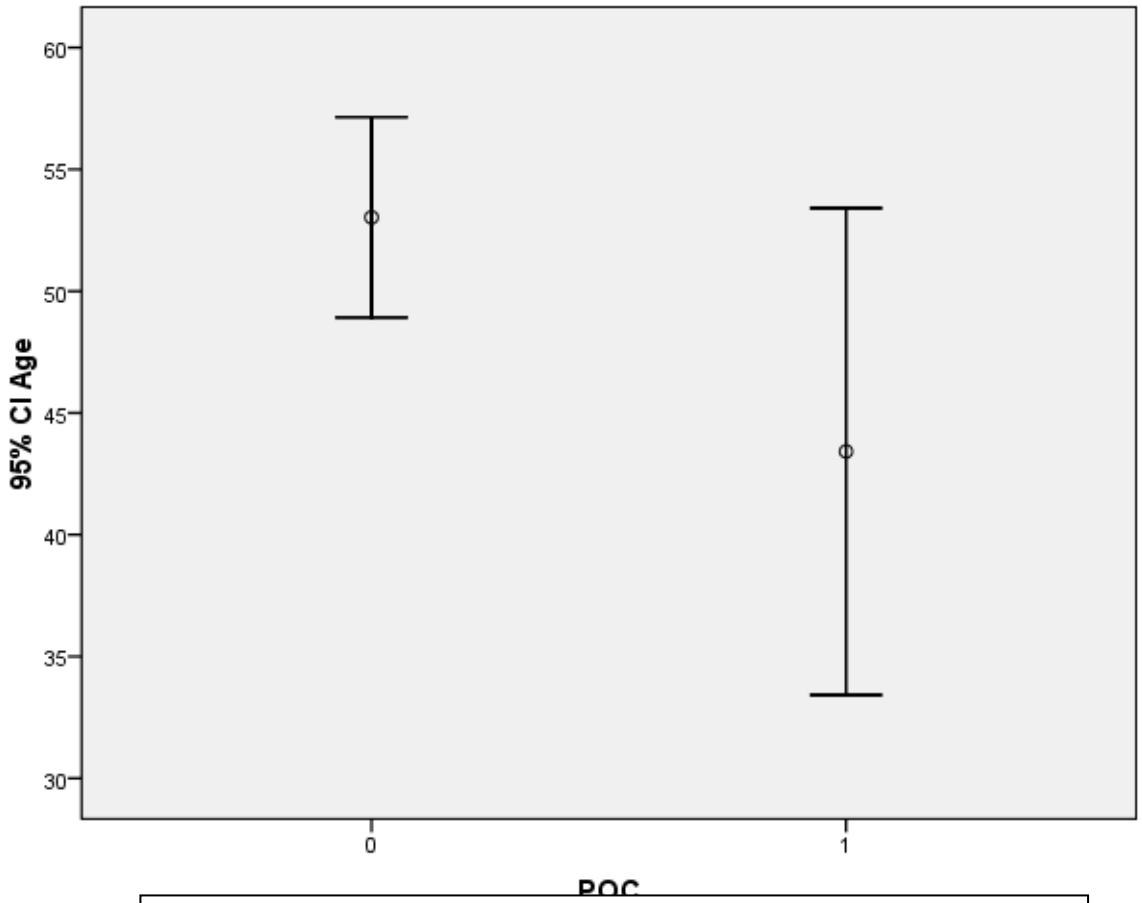
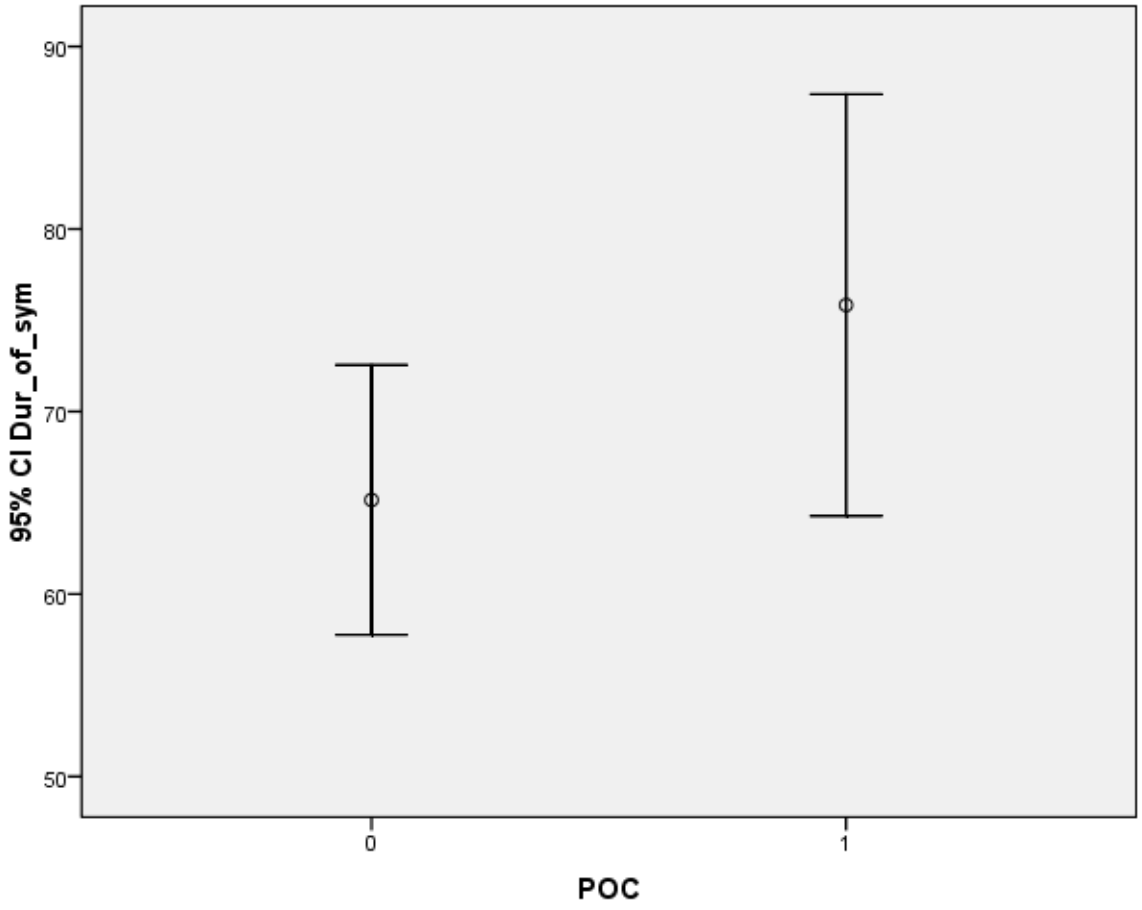


NOTE:

X-axis: POC-Post-operative complication. 0 – Absent, 1 – Present

Y-axis: Age of patients in years

Figure-6: Association between post-operative complications with mean duration of symptom.



NOTE:

X-axis: POC-Post-operative complication. 0 – Absent, 1 – Present

Y-axis: Duration of symptoms

4. Discussion

In our study most number of carcinoma rectum cases occurs in 5th decade (28%). Incidence started to increase from 3rd decade, reaches peak at 5th decade, then again fall after 6th decade. Usually the incidence is rising steadily after the age of 50 and more than 90% of cases diagnosed are in people older than 50 years of age [1].

In our study equal distribution of cases observed before and after 50 years of age and incidence started to rise after 30 years of age. Among males maximum number of cases occurs between 4th and 6th decade, and in females between 3rd and 5th decade- i.e. in females carcinoma rectum occurs one decade earlier than males in our study. The mean age of incidence in our study is 50.4. Deo S Kumar et al reported the mean age of incidence as 45.4 years in their study [5].

The incidence of rectal cancer in young patients i.e. between 20-30 years is usually rare. In our study the incidence of carcinoma rectum in patients aged between 20-30 years is 6% which coincided with an incidence of 5% in Ashutosh Mukerji et al study [6].

Sex Distribution in our study as follows, 34 patients (68%) were male and 16 patients (32%) were female with male predominance with the ratio of 2:1. But Stein W et al reported the incidence of colorectal cancers in females as 53% [7]. This huge variation in sex distribution pattern may be due to geographical variation and inclusion of other colonic malignancies in their study.

The most predominant symptom in our study was bleeding per rectum which constitutes 76%. The next predominant symptom was constipation in 58% of patients. Pain was present in 24% of cases. This pattern of symptomatology coincided with Kyle SM et al study. In our study, 16% of patients presented with acute intestinal obstruction in contrast with Kyle SM et al study which showed a 23% occurrence. The median duration of symptoms prior to the diagnosis was 70 days in our study. Kyle SM et al reported the same as 90 days [8]. There is no correlation existing between tumor stage and duration of symptoms in our study.

Commonest site of cancer involvement was lower 1/3rd of rectum of about 54%. Involvement in middle 1/3rd of rectum was 34%. Involvement in the upper 1/3rd was the least with 12%. Deo S Kumar et al also reported a similar distribution of site of involvement [5].

In our study, most of the patients were in stage III (T1-4 N1-3 M0) which constitutes 48%. 36% of patients were in stage I and stage II. 8% of patients came under stage IV because of their metastatic involvement in liver. In our study staging could not be done in 4 cases. Because two cases presented as acute intestinal obstruction did not turn up after loop colostomy. One case expired during post operative period following loop colostomy in the 4th post operative day and another case could not afford investigations. Stein W et al reported Stage I and II (Duke's A &B) in 52% of cases, Stage III and IV (Duke's C & D) in 48% of cases [7]. In our study, patients under stage I and II was 36% as against 52% in their study. Patients under Stage III and IV were 56% as against 48%. This difference may be due to lack of screening program and lack of awareness of disease symptoms among patients.

Surgery underwent by patients are abdomino perineal resection in 20(44%), laproscopic assisted abdomino perineal resection in 10(22%), anterior resection in 7 (16%) and 8 patients were presented with acute intestinal obstruction and they underwent emergency loop colostomy. Palliative chemotherapy / radiotherapy was given for 5 inoperable patients. Deo S Kumar et al reported 75% of the patients underwent curative resection with abdominoperineal resection in contrast with 66% in our study [5]. They did not mention about sphincter preserving surgeries. We did anterior resection in 16% of patients. Totally 82% of patients with carcinoma rectum underwent curative resection in our study. In all sphincter sparing surgery done patients, follow up sigmoidoscopy was done and found to be normal.

The most common post operative morbidity in our study was perineal wound infection in 16.6% of patients. Perineal wound gaping was present in 3.3% of cases. Abdominal wound infection was present in 2.2% cases. Both perineal wound infection and abdominal wound infection was treated with appropriate antibiotics and dressing after obtaining pus culture and sensitivity. Perineal wound gaping healed by proper wound care. Retention of urine was present in 2 patients and impotence was reported 1 patient. The overall morbidity rate was 28.7%. Both Deo S Kumar et al and Bogdan C Paun et al reported the overall morbidity rate in their studies as 23% and 20% respectively[5,9]. The slight increase in morbidity rate in our study emphasized to focus on quality improvement in pre-, intra-, and post operative efforts.

Neo adjuvant chemoradiation was given in 5 stage III patients. After administration of neo adjuvant chemoradiation, anterior resection was done in 3 patients(60%) and APR was done in 2 patients(40%). This leads to the conclusion that the preoperative neo adjuvant chemoradiaton is important in improving resectability and sphincter preservation rate, but there is increased post operative morbidity like perineal wound gaping and perineal wound infection. Janjan NA et al reported almost the same 59% of sphincter preserving procedures and 41% of abdominoperinal resection in their study after neoadjuvant chemoradiation [10]. Less postoperative complications noted with increasing age can not be explained effectively contrary to the study by Singh et al disproved the fact that increasing postoperative complication due to increasing age[11].

Mortality during the study period is 2 cases. One which presented with liver metastases with liver failure expired before starting any palliative therapy. Another patient was admitted with acute intestinal obstruction with perforation. Emergency loop colostomy was done. He expired on IVth postoperative day due to multi organ failure and septicemia. Both Deo S Kumar et al and Bogdan C Paun et al reported the post operative mortality in their study as 2% which coincides with our study (2.2%) [5,9].

During follow up period, 1 patient developed pelvic recurrence and 1 patient developed liver secondaries. Both patients were Stage III patients and neo adjuvant chemoradiation was not available for both of them. This shows the role of neoadjuvant chemoradiation in reducing the incidence of local recurrence and distant metastasis.

5. Conclusion

In our study, the peak incidence was in the 5th decade. The incidence started to rise after 30 years of age and equal distribution of cases observed before and after 50 years of age with male: female ratio 2:1. In females, carcinoma rectum occurs one decade earlier than males. Bleeding per rectum was the most common presentation and lower 1/3rd of rectum was the commonest site of involvement. Most cases presented with stage III which emphasizes the importance of the role of screening program and to create awareness of disease among general population. Perineal wound infection was the commonest post operative morbidity which emphasizes the need for improvement in pre-,intra-and post-operative care. Neoadjuvant chemoradiation improves resectabilty and sphincter sparing rate but however there is an increased incidence of perineal wound infection and wound gaping.

References:-

1. Schwartz – Principles of Surgery; 9th Edition.
2. Bailey & Love's : Short practice of surgery – 25th Edition.
3. Giovannvcci E, WUK, Cancers of the colon and rectum. In : Schottenfold D, Fraumeni J, eds. Cancer, Epidemiology and prevention. 3rd Edition. Oxford University Press;2006.
4. American Cancer Society. Cancer Facts & Figures, 2010.
5. Deo S, Kumar S, Shukla NK, Kar M, Mohanti BK, Sharma A, Raina V, Rath GK. Patient profile and treatment outcome of rectal cancer patients treated with multimodality therapy at a regional cancer center. Indian J Cancer. 2004 Jul-Sep;41(3):120-4.
6. Ashutosh Mukherji, A.K. Rathi, kanika Sharma, Vikash Kumar, Kishore Singh, A.K. Bahadur: A study on presentation and behavior of colorectal carcinoma in young Indian patients. Tropical Gastroenterology 2011;32(2):122–127.
7. Stein W, Farina A, Gaffney K, Lundeen C, Wagner K, Wachtel T: Characterestics of Colon and rectal Cancer at the time of presentation. Fam Pract Res J. 1993 Dec 13(4): 355-63.

8. Kyle Sm, Isbister WH, Yeong ML: Presentation, Duration of symptoms and staging of colorectal carcinoma; The Australian and New Zealand Journal Of Surgery, (1991 Feb) Vol.61, No.2, PP. 137-40.
9. Bogdan C, Paun, Scott Cassie, Anthony R, Maclean, Elijah Dixon, W. Donald Buie: postoperative complications following surgery for rectal cancer: Annals of surgery 2010; 251(15):807-18.
10. Janjan NA, Khoo VS, Abbruzzese J, Pazdur R, Dubrow R, Cleary KR, Allen PK, Lynch PM, Glober G, Wolff R, Rich TA, Skibber J: Tumour downstaging and sphincter preservation with preoperative chemoradiation in locally advanced rectal cancer: The M.D. Anderson Cancer center experience: Int J Radiat Oncol Biol Phys. 1999 jul 15; 44(5): 1027-38.
11. Singh J, Stift A, Brus S, Kosma K, Mittlböck M, Riss S. Rectal cancer surgery in older people does not increase postoperative complications--a retrospective analysis. World J Surg Oncol. 2014 Nov 23;12:355. doi: 10.1186/1477-7819-12-355.