

Research Article

Clinical Profile & Management of Patients of Carcinoma Anorectum: A Retrospective and Prospective Study

Dr. Puneet Jain¹, Dr. Hardeep Singh Gill², Dr. Anantbir Singh³, Dr. Satish Jain⁴

¹Assistant Professor, ²Associate Professor, ³Post Graduation Resident, Department of General Surgery, Gian Sagar Medical College and Hospital, Banur, Rajpura-140401, Punjab, India.

⁴Formerly Chief of Surgery and Surgical Oncology, Mohan Dai Oswal Cancer Treatment & Research Foundation, Ludhiana- 141001, Punjab, India.

***Corresponding author**

Dr. Hardeep Singh Gill

Email: hardeepgill77@gmail.com

Abstract: In the present study, we have done a retrospective as well as prospective study for the clinical profile of patients with carcinoma anorectum undergoing abdominoperineal resection, with special emphasis on clinical presentation and management of carcinoma anorectum. 75 patients operated for APR were studied retrospectively and 25 patients operated for the same were studied prospectively. It was concluded that colorectal cancer is the most common malignancy of the gastrointestinal tract. Rectum remains the most common site affected by it. Bleeding per rectum remains the most common presenting complaint. Abdomino-perineal resection remains the 'gold standard' for low lying (i.e. <5cm from anal verge) advanced carcinoma anorectum.

Keywords: Carcinoma Anorectum, Abdominoperineal Resection, Colon Cancer, Rectal Cancer, CEA.

INTRODUCTION

Cancer of colon and rectum is the most common cancer of the gastrointestinal tract. In women, colorectal cancer is second only to breast cancer as a cause of cancer related deaths. In men, it is the third most common lethal cancer, preceded by carcinoma of the lung and prostate. Approximately one half of these tumors are localized in recto-sigmoid region.

Rectal cancer is slightly more common in men, where as there is slight predominance of colon cancer in women. Most cases of colorectal cancer are diagnosed in patients over the age of 50 years and the incidence of the disease rises steadily after that age.

The surgical management of rectal cancer is very different from that of colon cancer because of the anatomical location and configuration of the rectum. Wide excision of the cancer and surrounding structures, possible with colon cancer, is impossible because the rectum resides within the confines of the pelvis. Local recurrence in pelvis is common because of this reason and is a source of severe misery and suffering for the patients.

The proximity of the anal sphincter mechanism to the rectum presents another difficult challenge to a successful surgical management. In attempting to achieve a curative distal margin beyond the cancer, the

surgeon must consider the function of the sphincter mechanism. If the risk for injury is so great that the sphincter will not function perfectly, it should be removed, which necessitates a colostomy.

Perhaps the most unique aspect of the anatomy of the rectum is its easy accessibility through the anus for several therapeutic and diagnostic modalities, including the physician's finger. This easy access has resulted in consideration of tumor treatment less than the radical resection procedures that often require removal of the rectum and anus, necessitating construction of a colostomy.

These unique features of the rectum must be considered for the screening, diagnosis and treatment of patients known to have, or suspected of having, rectal cancer. The next level of consideration involves the relationship of the cancer to the structures adjacent to the rectum, such as lymph nodes, sphincter mechanism and surrounding organs. The risk factors for colorectal cancer include:

- The hereditary colon cancer syndromes:
- Hereditary non polyposis colorectal cancer (HNPCC) [Lynch syndrome]
- Familial Adenomatous Polyposis (FAP)
- 15% of colorectal cancers occur in patients with a genetic predisposition
- Environmental factors.

- Diet with high amounts of fat: unsaturated animal fat and highly saturated vegetable oils and with low amount of vegetables (fibre) along with high alcohol consumption
- Premalignant conditions: Inflammatory bowel disease
- Ulcerative Colitis: The overall incidence of neoplasia in patients with pancolitis is 1% per year after 10 years, so that the cumulative risk of a cancer is 10% by 20 years of duration of disease.
- Crohn's Disease: The overall incidence of cancer occurring in patients who have Crohn's disease for >20 years is approximately 7%.

Symptoms

The most common presentation of rectal cancer is haematochezia or overt bleeding per rectum. Other symptoms of presentation are: mucus discharge, rectal pain, tenesmus and urgency; Mucus discharge by itself is not a poor prognostic indicator but all the other rectal symptoms are usually poor prognostic indicators because they tend to indicate invasion of the sphincteric mechanism or of branches of the pelvis plexus innervating the rectum. Vague abdominal discomfort, altered bowel habits, early morning bloody diarrhoea and sense of incomplete defecation are other common presenting symptoms.

Local digital rectal examination is mandatory to evaluate size, fixation and ulceration of the cancer as well as any suggestion of extension of cancer to para-rectal lymph nodes or adjacent organs. "If you don't put your finger in the rectum, you may put your foot in it" is a statement which underlines the immense significance of per-rectal examination. Local evaluation of a rectal cancer helps determine the proper modality of management and gives some insight into the prognosis of rectal cancer. In females, vaginal examination is important.

The rectal cancer needs to be visualized by the surgeon. Rigid proctosigmoidoscopy not only allows evaluation of size and degree of fixation to surrounding tissues but the distance from the distal edge of tumor to the dentate line can be measured and above all, adequate biopsy can be taken.

Newer imaging modalities include Positron Emission Tomography (PET) scanning, which is a minimally invasive metabolic imaging modality using radio-labelled ligands. FDG-PET scanning is superior to other scanning techniques for demonstrating multifocal liver metastasis & for presence of additional extra hepatic disease.

CEA (Carcino Embryonic Antigen) which was first described by Gold & Freedman has been widely used for colorectal cancer staging and for prediction of survival.

Most surgeons agree that carcinoma of the upper rectum should be treated by resection of proximal rectum through an abdominal incision, with reestablishment of intestinal continuity by colorectal anastomosis. This operation generally is referred to as Anterior Resection. Resection of rectosigmoid colon performed above the pelvic peritoneum is called a High Anterior Resection, whereas an operation in which it is necessary to open the pelvic peritoneum to resect the cancer is called a Low Anterior Resection. This is also called Sphincter preserving surgery in contrast to Abdominoperineal Resection (APR) where the sphincter is sacrificed and permanent colostomy is done to reach adequate continence after resection of the rectum.

APR remains the gold standard approach for rectal cancers involving lower or distal one third of rectum because in these cases after tumor resection, there is insufficient bowel left behind for reestablishment of intestinal continuity [1]. Generally APR is required for lesions with in 8 cm from anal verge. If lesion can be easily palpated on DRE, APR is indicated. For lesions above 12 cm, anterior resection can nearly always be done. The level of coloanal anastomosis with stapling techniques, however, can be as low as the dentate line (2 cm from anal verge).

However, cancers located less than 3 cm proximal to dentate line or 5 cm from anal verge are generally not amenable to restorative resection and APR is required.

APR classically implies removal of the entire anorectum together with the lower pelvic colon and establishment of a permanent colostomy. It is performed by mobilization of the left colon and rectum through a laprotomy with dissection of distal rectum from the perineum. It is usually performed by the synchronous combined method with two surgeons' operating from the abdominal and perineal approaches simultaneously. The abdominal portion of the procedure reaches the level of the levator ani muscles, with removal of the mesorectum and dissection to and along the parietal endopelvic fascia. The perineal portion of the operation removes the anorectal junction and distal rectum, as well as the anal sphincter mechanism.

The third surgical option for the treatment of rectal carcinoma in the lower and middle thirds rectum is local excision. Transanal excision is best confined to those rectal cancers that are within 6 cm of anal verge, less than 4 cm in diameter, involving less than 40% of the circumference of the rectal wall, exophytic rather than ulcerated and staged as being no greater than stage T2 by preoperative imaging techniques. Besides tumors of low histological grade (G1-G2) are suitable and not high grade tumors (G3- G4) because of the difficulty in

obtaining free margins with poorly differentiated lesions. [1].

Hartman's procedure, which entails excision of the middle or upper rectum in continuity with the sigmoid colon, closure of rectal stump with sutures or staples and creation of a descending colostomy, is a suitable operation for patients with impending obstruction as the result of rectal cancer in whom pelvic anastomosis can't be safely achieved. Elderly patients with rectal cancer who are incontinent may best be served by this procedure, rather than abdominoperineal resection, since it avoids the problems associated with a perineal wound [1].

Special Aspects of Surgery

Total Mesorectal Excision

The rectum and the peri rectal fat containing lymph nodes and blood vessels are surrounded by a distinct layer of fascia named the fascia propria recti (Chanuis, Bokev, Fahrer et al). [2] This fascia surrounds the rectum and peri-rectal fat as a distinct entity separating it from other structures in the pelvis. Posteriorly and laterally the fascia propria is separated from the parietal fascia lining the sacrum and side walls of the pelvis by an areolar tissue filled plane, called the retro-rectal plane. The identification of this blood less plane plays a key role in mobilizing the rectum without breaching the fascia propria or its contents. The retrorectal plane is identified by recognizing the hypogastric nerves. The correct plane is anterior and medial to these nerve trunks. [3]

The perirectal fat is now referred to as the mesorectum. The TME technique essentially involves mobilization of the rectum along the retrorectal plane (also called the "Holy Plane") without breaching the Fascia propria. Jannesco described TME, as a technique essentially to shell out the rectum out of the pelvis without breaking the egg shell i.e. its fascial envelope.

Carcinoma Anal Canal

Carcinoma of Anal Canal is about one tenth as common as rectal cancer and accounts for 1.5% of all the digestive systems cancer.

Epidermoid (Squamous Cell) carcinoma is the most common histological variant and represents about 75-80% of anal cancer cases; somewhat less common is Basaloid Transitional cell (Cloacogenic) carcinoma. The difference between the two is only histological as their treatment and survival is similar.

Rare types are adenocarcinoma (Originating from Anal glands) and melanoma. The etiology of anal carcinoma can be summed up as a multi-factorial interaction between environmental factors, Human Papilloma virus infection (HPV) and immune status. The risk factors for anal carcinoma include:

- HPV infection (anogenital warts)

- *H/O* sexually transmitted disease
- *H/O* cervical/ Vulvar/ Vaginal cancer
- *H/O* Immunosuppression after solid organ transplantation

Symptoms of anal cancer are usually nonspecific and are frequently attributed to benign conditions. Bleeding, which is the initial symptom is rarely substantial. The work up for anal cancer includes careful digital rectal examination and palpation of the inguinal lymph node area. The nature of a suspicious lesion should be confirmed by biopsy.

In the 1970's Norman Nigro pioneered preoperative combination chemoradiation therapy to convert un-resectable cases of anal cancer to resectable ones. His landmark study, consisting of regimen of preoperative 5-Fluorouracil (5FU) and mitomycin combined with an intermediate dose of 30 Gy of radiation therapy, led to the emergence of concept of definitive chemoradiation therapy for anal cancer without the need for on APR, 5 FU 1000 mg/m², delivered by continuous infusion on days 1-4 and days 29 - 32 combined on days 1 and 29 with mitomycin C 10 mg/m² bolus. Radiation therapy of 30 Gy was delivered to the pelvis at 209 rads/ day, 5 days per week starting on day 1. [4]

Abdominoperineal resection for rectal cancer was first described by Ernest Miles in 1908. Miles identified the potential pathways for lymphatic spread of rectal tumors and established the patho-physiological basis for APR as the preferred surgical approach to the treatment of patients with carcinoma of the rectum. The procedure of APR has been regarded as the gold standard for the treatment of rectal tumors for many years [5]. APR shares with mastectomy the honour of dominating surgical thoughts about a major malignancy for the last about hundred years of surgical practice. [6]

Miles devised his operation soon after Halsted described his radical operation for breast cancer. APR has remained the standard treatment for malignancies of distal one third of rectum since it was first described in 1908 by Miles. [7]

In 1908, Miles described the combined abdominal and-perineal approach for resection of the rectum for malignancy.

The technique he described involved a one team approach with repositioning of the patient to perform the perineal procedure. The coccyx was removed, the rectum was pulled through from below to complete the anterior dissection and the perineal wound was left open.

Lockhart-Mummery first described the perineal dissection performed with the patient in the lithotomy position.

Murrey and Veidenheimer have stated that APR is the gold standard to which all other operations must be compared for all cancers of the lower third of rectum and for bulky tumors of the middle third of rectum.

Rectal cancer is now believed to be a supralelevator compartment disease and Miles concept of cylindrical radicality has been replaced by concept of precision removal of rectum with its whole integral mesentery intact i.e. Total Mesorectal Excision (TME).

Recently there has been an increasing interest in the application of surgical procedures that adequately resect rectal cancers and preserve anal continence.

However these techniques have been largely overcome by the use of Circular Stapling devices which permit the performance of low anastomoses without disruption of pelvic floor muscles. The most frequently used technique of colo anal anastomosis today is the peranal procedure described by Parks. [5]

During the past two decades, low anterior resection (LAR) with colorectal or coloanal anastomosis has replaced APR as the primary surgical therapy for rectal cancer. Several studies have shown that outcome after LAR with deep anastomosis and APR is comparable concerning mortality, local recurrence rate and survival. Adequate clearance of the tumor, and not the surgical procedure performed, is the determinant factor influencing outcome.

Most tumors in the upper third and midrectum are amenable to a sphincter saving procedure (SSP), the lower thirds of rectum is of debate in this aspect. Low grade tumors with T₂/T₃ stage located above 3 cm from dentate line or 5 cm from anal verge are amenable to low anterior resection. APR is indicated in –

- Poorly differentiated (G₃) or T₃ lesions, lower thirds of rectum.
- In case of T₂ and T₃ lesions below 5 cm from anal verge, especially when sphincter is infiltrated.
- In patients with preoperative sphincter insufficiency.
- Tumor penetrating into the recto vaginal septum.

Advanced rectal cancers (T₄) may be best treated by APR even in cases of distant metastasis and lymph node involvement, as palliative resection may result in a better quality of life with less pain and morbidity than local palliative measures (e.g. laser) or single diversion colostomy.

Cancers located less than 3 cm proximal to dentate line or 5 cm from anal verge are generally not amenable to restorative resection and are best treated by APR or when sphincter preservation is not possible owing to unfavourable body habitus. [5]

Controversy exists about high v/s low ligation of the inferior mesenteric artery (IMA), the role of extended abdominal pelvic lymphadenectomy, total excision of mesorectum and the length of distal rectal clearance necessary to encompass submucosal lymphatic spread.⁵

The crucial factors in determining whether sphincter preservation is possible or not, are the length of distal rectal clearance and relation of the tumor to the sphincter complex. The traditional recommendation of 5 cm distal margin was first formalized by Goligher in the early 1950's. Williams et al demonstrated that distal spread beyond the lowest edge of a tumor is present in less than 5% patients. They conceded that a margin of 2.5 cm was adequate in 94% of patients. Based on current data, 2 cm distal margin appears to be acceptable for most patients. A margin of 3-4 cm may be desirable for advanced/aggressive tumors.

The principal goal of resection of a rectal carcinoma is to avoid a loco-regional recurrence. Hence it is important for a curative resection to avoid intra-operative dissemination of tumour cells by manipulation or perforation of the tumor. During the last decade, various techniques have been proposed for the construction of a neo sphincter. None of these techniques however have shown universal applicability and reliability despite initial optimism.

Heah and Eu et al, [8] compared the outcome in patients treated by APR v/s Hartmann's procedure for palliation of advanced low rectal cancer. The most appropriate resection for advanced low rectal cancer remains controversial. APR is faster and simpler to perform but leaves behind a perineal wound with its associated complications. Hartmann's procedure requires adequate mobilization below the tumor and may be more demanding technically but avoids a perineal wound. 54 symptomatic patients with advanced rectal adenocarcinoma arising within a median of 5 cm from anal verge were studied between 1989-95. 28 patients had Hartmann's procedure and 26 patients were treated by APR. They concluded that Hartmann's procedure offers superior palliation compared with APR because it provided good symptomatic control without any perineal wound complications and pain. 46% of patients had perineal wound sepsis and 38% had perineal wound pain in the APR group. These complications were absent in the Hartmann's procedure group.

Nevertheless, extremely low lying tumors which extensively involve anal sphincter are best managed by APR and further APR is technically easier since one can resect the tumor from below. Hartmann's procedure requires greater expertise to dissect down to the pelvic floor to get beneath the tumor and it is also not without its complications. These occur when

resecting a tumor below the peritoneal reflection and take the form of pelvic collections; which require post operative tube drainage.

AIMS AND OBJECTIVES

To study the clinical profile of patients with Carcinoma Anorectum and discuss their management.

MATERIAL AND METHODS

Period of study: 75 patients operated for APR in last 10 years were studied retrospectively and 25 patients operated for the same in two years were studied prospectively.

Inclusion Criteria:

- Histologically proven cases of carcinoma anorectum
- Patients who underwent surgery at our center and were subsequently treated at our centre.

Exclusion criteria

- Patients not surgically treated at our centre but outside.

Methodology: Information regarding the patients was collected from their record files and was arranged to determine the profile as follows.

- Age and Sex Distribution
- Clinical Presentation: Chief complaints
- Examination: Digital Rectal Examination
- Investigations: Mainly staging investigations
- Preoperative confirmation of the tumor by biopsy was obtained in all patients.
- Operative findings: Nature of growth
- Histopathology and Staging

Clinical Presentation

Clinical Presentation in terms of chief complaints like bleeding per rectum, altered bowel habits and loss of weight etc. were recorded.

Findings on per rectal examination like distance of growth from anal verge were recorded.

Investigations

Besides routine investigations, staging workup included

- Chest X-ray
- Ultrasonography Abdomen
- CT Scan Abdomen and Pelvis
- Other investigations done were
- Colonoscopy to exclude synchronous lesions (There is a 3.5% incidence of synchronous carcinomas in patients with single lesion of colorectal cancer).
- Tumor marker study: Carcinoembryonic antigen (CEA).

Preoperative preparation of the patient was done in all cases with combination of mechanical bowel

preparation (Polyethylene glycol solution) and antibiotics (combination of third generation cephalosporin and metronidazole). A formal consent for permanent colostomy was obtained in all cases after a complete discussion with the patients and family members.

Operative Approach

Abdomino Perineal Resection (APR) was carried out in the modified lithotomy Trendelenburg position under a combination of general anaesthesia, epidural or both. A Foley's self retaining catheter and a nasogastric tube were placed in the bladder and the stomach respectively before surgery.

The abdominal part of the resection was done through a vertical midline lower abdominal incision and the perineal part was done through a rhomboid incision made around the anal orifice after placing a purse string suture around the anus, following the synchronous combined approach.

Mobilization of the rectum was achieved through the abdominal incision after dividing its attachments all around. The ureters were identified and saved from injury. The inferior mesenteric artery was traced and its branches to the sigmoid colon and rectum were doubly ligated and divided.

The posterior vaginal wall was resected in females in cases with rectal tumors on the anterior wall. Colon was divided at the descending colon and sigmoid junction and with the constant guidance by the perineal surgeon, was delivered through the perineum.

The perineal wound was closed in layers and two closed suction drains were placed in the pelvis and brought out through the perineum. End colostomy was fashioned and the space lateral to the colon in the paracolic gutter was obliterated with sutures.

Closure of the pelvic floor was done with sutures or omentum was mobilized down to the pelvic floor. Abdomen was closed in layers and colostomy was matured.

RESULTS

RETROSPECTIVE GROUP:

Clinical Characteristics:

In our study, in the retrospective group of 75 patients, median age was 53 years. Age range was 30-80 years, with 38 males and 37 females. Male to female ratio was 1.02:1. The mean age is 52.45 year with Standard Deviation of 11.99 years. Median age was 53 years along with mode of 50 years.

Table 1: Retrospective Group

Age	Males	Females	Total
20 to 40	5	8	13
40 to 50	7	15	22
50-60	13	9	22
60-70	11	6	16
>70 years	2	0	2
	38	37	75

Clinical presentation

Carcinoma anorectum can be associated with a wide variety of symptoms. In our retrospective study group, bleeding per rectum, which was quite variable in amount and frequency, was by far the most common symptom present in 66 patients (88%).

Next common symptoms were Constipation alone in 20 (26.7%), Pain in rectal/ perineal region associated with defecation in 15 (20%), Constipation alternating with diarrhoea in 11 (14.6%), Diarrhoea alone in 7 (9.3%), Substantial loss of weight (>10% body weight) in 9 (12%), Mucus discharge per rectum - 8 (10.67%) and Pus discharge per rectum in 3 (4%).

Other symptoms which were also seen were Incontinence of stools, Perianal abscess associated with growth anorectum Colonic obstruction; all in one patient each, Comorbid illnesses. Preoperative comorbid illnesses greatly influence the outcome after surgery. In our retrospective group of 75 patients, Hypertension was noticed as the most common comorbid illness; seen in 5 of the patients (6.66%) followed by Bronchial asthma in 4 patients, COPD: (Emphysema or Bronchitis) in 3 patients, Diabetes mellitus in 2 patients, Ischemic heart disease in 2 Patients, Hyperthyroidism was seen in 1 Patient, Ulcerative colitis and Desmoid tumor of the abdominal wall were seen in one each.

Clinical Examination

P/R examination: Digital rectal examination remains the gold standard examination tool for diagnosis of carcinoma anorectum.

In digital rectal examination, distance of the growth from the anal verge remains critical criterion for deciding the nature of surgery for carcinoma anorectum: Sphincter preservation or not i.e. APR. 37 of our 75 patients in the retrospective group (49.3%) had the growth beginning 2 - 4 cm from anal verge. 20 patients had growth 0-2 cm from anal verge (26.67%) and 18 patients had growth >4 cm from anal verge (24%).

Investigations

Investigations done for accurate diagnosis and staging in our retrospective study group of 75 patients, included CT scan abdomen which was the most commonly used imaging tool for diagnosis and staging

and was utilized by 30 patients (40%) either done at our center or done outside.

Ultrasound abdomen was utilized by 24 (32%) patients preoperatively, largely owing to its lower cost and greater availability in our region.

Colonoscopy was utilized preoperatively by 4 patients (5.3%). Its main purpose in patients with carcinoma anorectum lies in detection of possible synchronous lesions in the proximal colon.

CEA was carried out as a baseline tumor marker in 6 patients (8%), preoperatively. Its main utility, however, remains in the post operative follow up to detect recurrence of the disease after potentially curative resection, for which it was used more frequently. Preoperative biopsy confirmation was obtained in all the patients.

Pre Operative Treatment

17 patients (22.6%) received pre APR radiotherapy with doses ranging between 28 to 60Gy. Nigro's regimen of preoperative 5 FU and Mitomycin along with local radiotherapy was used in 8 of our patients for tumor down staging. Pre APR loop colostomy for de-functioning of the bowel was done in 9 (12%) of our 75 patients. Two of our 75 patients analysed underwent local wide excision of the growth anorectum prior to APR and one even received local radiotherapy but had residual recurrent growth for which APR had to be ultimately done.

APR Performed Along With Additional Procedures

APR was combined with additional procedures in 21 patients (28%) out of the 75 in the retrospective group. Out of these, 13 patients (17.2%) underwent total abdominal hysterectomy and bilateral salpingoopherectomy (TAH with BSO). 3 patients (4%) underwent oophrectomy; 2 underwent unilateral oophrectomy and 1 patient underwent bilateral oophrectomy. 5 patients (6.5%) underwent inguinal Block Dissection; 2 underwent unilateral and 2 bilateral inguinal lymph node dissection. 1 patient underwent bilateral inguinopelvic lymph node dissection.

Post Operative Nature Of Growth

In retrospective group 22 patients (29.34%) had stricturous or stenosing growth anorectum. 21 patients (28%) had cauliflower or proliferative type of growth. 13 had (17.3%) had ulceroproliferative type of growth. 14 patients (18.6%) had ulcerative type of growth. 3 patients had nodular growth and one patient each had polypoidal and fungating growths.

HISTOPATHOLOGY

In the absence of obvious metastatic disease, the precise stage of colorectal cancer can be determined only after surgical resection and histopathological analysis. The factors that are most clearly related to

outcome are (1) depth of tumor penetration into the bowel wall. (2) Involvement of regional lymph nodes (3) Presence of distant metastases. In our retrospective group of 75 patients, Post operative histopathology report was consistent with Adenocarcinoma anorectum in 62 patients (82.46%). Squamous cell carcinoma anal canal in 8 patients (10.6%), Malignant melanoma in 3 patients (4%), Epidermoid carcinoma in 1 patients (1.3%), Leiomyosarcoma (smooth muscle tumor) in 1 patients.

Staging : The histopathology staging seen post operatively was Dukes' B in 43 patients (57%) , Dukes'

C in 24 patients (32%) and Dukes' D (Stage IV) in 1 patient (1.33%).

PROSPECTIVE GROUP:

In the perspective group of 25 patients, median age was 55 years. Age range was 30-90 years. There were 16 males (64%) and 9 females (36%). Male to female ratio was 1.77:1

Prospective group

The average age was 54.92 years with standard deviation of 14.16 years.

The median age was 55 years with mode of 40 years.

Table-2: Prospective group study

Age	Males	Females	Total
20-40 years	1	4	5
40-50 years	3	3	6
50-60 years	7	-	7
60-70	2	1	3
>70 years	3	1	4
	16 (48%)	9 (36%)	25

Clinical presentation

In our prospective group of 25 patients too, bleeding per rectum was the most common symptom present in 21 of these patients (84%) of some degree.

Next common symptoms were: Constipation alone in 9 patients (36%), Constipation + Diarrhoea in 4 patients (16%), Pain in rectal/perineal region with defecation in 4 patients (16%), Diarrhoea alone in 2 patients (8%), Substantial loss of weight (>10% of body weight) in 3 patients (12%), Mucus discharge per rectum in 2 patients (8%) – Feeling of incomplete evaluation – 2 patients (8%), Pus discharge per rectum in 2 patients (8%), Associated perianal abscess was seen in 1 patient , Perianal ulcer was seen in 1 patient , External mole and region was seen in 1 patient – faecal incontinence was seen in 1 patient and Tenesmus – 1 patient.

Comorbid illness: In our perspective group of 25 patients, Discharge mellitus was the most common Comorbid illness, seen in 3 patients (12%), Hypertension was seen in 1 patient, Bronchial asthma seen in 1 patient, COPD: Emphysema seen in 1 patient, Morbid obesity seen in 1 patient, Unstable angina in 1 patient, Incidental situs inversus and dextrocardia was seen in 1 patient (who underwent right sided sigmoid colostomy)

P/R Examination

In our prospective group, disease of growth from anal verge was analyzed and the following was observed.

Table-3: P/R Examination

Distance of growth from anal verge	No. of patients
0-2 cm	14
2-4 cm	6
>4 cm	5

Investigations

In our prospective group, CT scan abdomen was the most frequently performed investigation – done in 9 (36%) patients of the 25 patients. Ultrasound abdomen was done in 7 patients. 4 patients underwent preoperative colonoscopy and 12 underwent sigmoidoscopy. 4 patients underwent preoperative CEA

Pre operative treatment

3 (12%) patients received preoperative radiotherapy with doses ranging between 40-60 Gy with associated sorbo application and Iridium – 192 applications in one patient each. Nigro’s regimen of chemo-radiation was utilized in one patient.

Pre APR Procedure

I & D of a perineal abscess associated with growth anorectum was done in 1 patient.

APR Along With Other Procedures

APR was combined with other procedures in 6 patients (24%).

In our prospective group APR + Cholecystectomy (for Cholelithiasis) was done in 1 patient. Total abdominal hysterectomy with bilateral salpingoopherectomy was done in 4 (16%) patients

(TAH with BSO). Unilateral oophrectomy was done in 1 patient.

Post Operative Nature Of Growth

In prospective group 3 patients (12%) had stricturous or stenosing growth anorectum. 8 patients (32%) had cauliflower or proliferative type of growth. 5 had (20%) had ulceroproliferative type of growth. 8 patients (32%) had ulcerative type of growth. 1 patient had nodular growth.

Histopathology And Staging

In our prospective group of 25 patients, the postoperative histopathology was consistent with Adenocarcinoma anorectum in 19 patients (76%), Squamous cell carcinoma anorectum in 3 patients (12%), Basaloid carcinoma, anal canal was seen in 1 patient, Poorly differentiated carcinoma anal canal seen in 1 patient, Anaplastic malignancy and anorectum was seen in 1 patient.

Histopathological staging of our 25 patients is as follows Dukes' B 14 patients (56%), Dukes' C 8 patients (32%).

Table-4: Observation for both For Prospective Group And Retrospective Group

1. Sex Distribution	
Total males are	54 (54%)
Females are	46 (46%)
Male Female Ratio is	1.17: 1
2. Age Distribution	
Mean age was (in prospective group)	54.92 years
Median age was (in retrospective group)	52.45 years
3. Chief Complaints	
Bleeding per rectum seen in	87 patients (87%)
Constipation or diarrhea or both in	53 patients (53%)
Substantial loss of weight (>10% body wt.) in	12 patients (12%)
Pain in rectal/perineal region in	19 patients (19%)
4. Co morbid Illness	
Hypertension in	6 patients (6%)
Diabetes mellitus in	5 patients (5%)
Bronchial asthma in	5 patients (5%)
COPD in	4 patients (4%)
5. P/R Examination: Distance of Growth from anal verge	
0-2 cm	34 patients (34%)
2-4 cm	43 patients (43%)
>4 cm	23 patients (23%)
6. Post operative nature of growth	
Cauliflower type/proliferative type	29 patients (29%)
Ulcerative type	22 patients (22%)
Stricturous or stenosing type	25 patients (25%)
Ultero-proliferative type	15 patients (18%)
7. Pathology: Postoperative histopathology was consistent with	
Adenocarcinoma anorectum in	81 patients (81%)
Squamous cells carcinoma in	11 patients (11%)
Malignant melanoma in	3 patients (3%)
8. Stage – Histopathology stage was	
Dukes' B	57 patients (57%)
Dukes' C	32 patients (32%)
Dukes' D	1 patient (1%)

DISCUSSION

Colorectal cancer is the fourth most common variety of malignant tumor found in women and its frequency in men is surpassed only by carcinoma of bronchus. The rectum remains the most frequent site involved. Carcinoma of the rectum can occur early in life but the adult age of presentation is usually above 65 years.

Sex Distribution

In our study, the number of males were 38 (50.66%) and the number of females were 37 (49.34%) in the retrospective group. In the prospective group there were 16 males (64%) and 9 females 36% for a total of 54 male patients and 46 female patients.

Luna, Perez and Rodriguez *et al.*, [9] had 78 males (56.9%) and 59 females (43%) among their 137 patients, who underwent APR.

Petrelli, Nagel *et al.*, [10] found 38 males (68%) and 18 females (32%) among their 56 patients operated for APR.

Isenberg and Keller, [11] found 34 males (64.2%) and 19 females (35.8%) among their 53 patients operated for APR.

Age Distribution

In the retrospective group youngest patient was 28 years old and the oldest was 80 years old. In the prospective group youngest patient was 33 years and oldest was 89 years old.

The median age in the retrospective group was 53 years and mean age was 52.45 years. In the prospective group median age was 55 years and mean age was 54.9.

Rosen, Veidenheimer, Coller *et al.*, [12] found the median age, of their 230 patients, to be 62 years.

Zaheer, Pemberton *et al.*, [7] found median age of their 514 patients to be 67 years with age range of 23-99 years.

Petrelli, Nagel *et al.*, [10] found the mean age of their 56 patients operated for APR to be 59 years with age range of 37-80 years. Luna Perez *et al.* have quoted the mean age of their 137 patients to be 57.4 ± 14.6 years

Chief Complaints

Rectal Bleeding is the earliest and most common symptom of carcinoma rectum. There is nothing characteristic about the time nor is the colour or amount distinctive. Alteration in bowel habits, Sense of incomplete defecation, tenesmus, weight loss and pain in the rectal or perineal region and abdominal pain are other common symptoms.

In our study too, in the retrospective group bleeding per rectum was the most common complaint seen in 66 patients (88%).

Change in bowel habits (Constipation or diarrhoea or both) were seen in 38 (50.67%) patients. Substantial weight loss (> 10% body weight) was seen in 9 patients (12%). Pain in rectal or perineal region was seen in 15 patients (20%). One patient presented with intestinal obstruction.

And in the Prospective group bleeding per rectum was the most common complaint seen in 21 patients (84%).

Change in bowel habits (Constipation or diarrhea or both) were seen in 15 (60%) patients. Substantial weight loss (>10% body weight) was seen in 3 patients (12%). Pain in rectal or perineal region was seen in 4 patients (16%). One patient presented with intestinal obstruction.

Zaheer, Pemberton *et al.*, [7] also found bleeding per rectum as the most common symptom: 61 % of their 514 patients operated for APR. Change in bowel habits was seen in 33% patients. Weight loss was seen in 10% patients, pain in 13% patients and obstruction in 1 % of patients.

Comorbid Illnesses

In our study, in Retrospective group, comorbid illnesses included Diabetes mellitus in 2 patients (2.6%), Hypertension in 5 patients (6.66%), Bronchial Asthma in 4 pts (5.2%), COPD in 3 patients (3.9%) and Ischemic heart disease in 2 (2.6%) patient.

In prospective group comorbid illnesses included Diabetes mellitus in 3 patients (12%), Hypertension in 1 patients (4%), Bronchial Asthma in 1 pts (4%), COPD in 1 patients (4%) and Ischemic heart disease in 1 (4%) patient.

Nissan and Guillem, [13] have described the following comorbid illnesses in their 292 patients. Hypertension in 68 (23.2%) , Coronary artery disease in 25 (8.5%), Morbid obesity (BMI> 35) in 15 (5%), Diabetes Mellitus in 19 (6.5%), Bronchial Asthma in 3 (1.02%), and COPD in 16 (5.4%).

Digital Rectal examination

In retrospective group 37 patients (49.3%) had their growth 2-4 cm from anal verge. 20 patients (26.67%) had growth 0-2 cm from anal verge (26.67%) 18 patients (24%) had growth >4 cm from anal verge. In prospective group 6 patients (24%) had their growth 2-4 cm from anal verge. 14 patients (56%) had growth 0-2 cm from anal verge and 5 patients (20%) had growth >4 cm from anal verge.

Dixon and Maxwell, [14] have quoted distance of tumor from anal verge as < 5 cm in 61 patients (71.7%) and 5 to 10 cm (>5 cm) in 24 patients (28.23%).

Pathology

In retrospective group pathology was adenocarcinoma ano rectum in 62 patients (82.6%), Squamous cell carcinoma anal canal in 8 patients (10.66%) and malignant melanoma in 3 patients (3.9%). In prospective group pathology was adenocarcinoma ano rectum in 19 patients (76%), Squamous cell carcinoma anal canal in 3 patients (12%).

Fleshman and Wexner, [15] have quoted an incidence of adenocarcinoma anorectum of 92% (140

patients) and of Squamous cell carcinoma of 6.6% (10 patients) in their open APR group.

Histopathology Staging After APR

In retrospective group the histopathological stage was consistent with Dukes' B in 43 patients (57.34%), Dukes' C in 24 patients (32%) and Dukes' D in 1 patient (1.3%). T₃N₀M₀ was the stage in 27 patients (36%).

In prospective group the histo-pathological stage was consistent with Dukes' B in 14 patients (56%), Dukes' C in 8 patients (32%). T₃N₀M₀ was the stage in 8 patients (32%).

Slanetz *et al* [16] have quoted an incidence of Dukes' B of 34.7% and of Dukes' C of 29.2%. Isenberg *et al* [11] have quoted an incidence of Dukes' B of 45.3% and of Dukes' C of 39.6%. Petrelli *et al* [10] found an incidence of Dukes' B of 48.2% and Dukes' C of 34% in their 56 patients.

Dixon *et al* [14] found an incidence of Dukes' B of 44.7% and Dukes' C of 47% in their 85 patients.

CONCLUSION

Colorectal cancer is the most common malignancy of the gastrointestinal tract. Rectum remains the most common site affected by it. Carcinoma anal canal is about one tenth as common as rectal cancer. More commonly, carcinoma anorectum is seen in the middle age and the elderly with only a slight male preponderance. Bleeding per rectum remains the most common presenting complaint followed by altered bowel habits, pain in the rectal region and substantial weight loss. No single investigation can replace the role of Digital rectal examination in diagnosis of carcinoma anorectum as also in evaluation of local extent of the tumor.

CT scan abdomen remains the investigation of choice in assessment of involvement of adjacent structures and the resectability as well as operability.

Abdomino-perineal resection remains the 'gold standard' for low lying (<5cm from anal verge) advanced carcinoma anorectum.

APR is associated with a low mortality but high morbidity, both immediate and delayed with respect to abdominal and perineal wound complications, genitourinary complications, colostomy related complications and adhesive intestinal obstruction.

REFERENCES

1. Zinner MJ, Schwartz SI, Ellis H ; Maingot's Abdominal Operations. 10th edition, Vol.2, Prentice Hall International, New Jersey, 1997: 1455-1491.
2. Chapis P, Bokey L, Fahrer M, Sinclair G, Bogduk N; Mobilization of the rectum. Diseases of the colon & rectum, 2002; 45(1):1-8.
3. Heah SM, Eu KW, Ho YH, Leong AF, Seow Choen F; Hartmann's procedure v/s APR for palliation of advanced low rectal cancer. Dis Colon Rectum. 1997; 40(11): 1313-17.
4. Nigro ND; The force of change in the management of squamous cell cancer of the anal canal. Dis Colon Rectum. 1991; 34: 482-486.
5. Glatli A, Barras JP, Metzger U; Is there still a place for abdominoperineal resection of the rectum? European Journal of Surg Oncology. 1995; 21(I): 11-15.
6. Heald RJ, Smedh RK, Kald A, Sexton R, Moran BJ; Abdominoperineal excision of the rectum - an endangered operation. Dis Colon Rectum, 1997; 40(7): 47-51.
7. Zaheer S, Pemberton JH, Farouk R, Dozois RR, Wolff BG, Ilstrup, D; Surgical treatment of Adenocarcinoma of the rectum. Ann Surg. 1998; 227(6): 800-811.
8. Heah SM, Eu KW, Ho YH, Leong AF, Seow Choen F; Hartmann's procedure vs APR for palliation of advanced low rectal cancer. Dis Colon Rectum. 1997; 40(11): 1313-17.
9. Luna-Pérez P, Rodríguez-Ramírez S, Vega J, Sandoval E, Labastida S; Morbidity and mortality following abdominoperineal resection for low rectal adenocarcinoma. Revista de Investigacion Clinica. 2001; 53(5): 388-395.
10. Petrelli NJ, Nagel S, Rodriguez-Bigas M, Piedmonte M, Herrera L; Morbidity & mortality following abdominoperineal resection for rectal adenocarcinoma. American Surgeon. 1993; 59(7): 400-403.
11. Isenberg J, Keller HW, Pichlmaier H; Middle and lower third rectum carcinoma: Sphincter saving or abdominoperineal resection? European Journal of Surg Oncology. 1995; 21(3): 265 -268.
12. Rosen L, Veidenheimer MC, Collar JA, Corman ML; Mortality & Morbidity patterns of recurrence after abdominoperineal resection for cancer of rectum. Dis Colon Rectum. 1982; 25: 203.
13. Nissa A, Guillem JG, Paty PB, Wong WD, Minsky B, Saltz L, Cohen AM; Abdominoperineal resection for rectal cancer at a specialty centre. Dis Colon Rectum. 2001; 44: 27-36.
14. Dixon AR, Maxwell WA, Holmes JT; Carcinoma of the rectum: a 10- year experience. Br J Surg. 1991; 78(3): 308-311.
15. Fleshman JW, Wexner SD, Anvari M, LaTulippe JF, Birnbaum EH, Kodner IJ *et al.*; Laparoscopic vs open abdominoperineal resection for cancer. Dis Colon Rectum. 1999; 42(7); 930- 939.
16. Slanetz C, Herter F, Grinnell R; Anterior Resection vs Abdominoperineal Resection for cancer of the rectum and rectosigmoid. The American Journal of Surgery, 1972; 123: 110-115.