

## Rectal Cancer: a guide for patients and family members

Rectal cancer is the uncontrolled growth of abnormal cells in the rectal wall. There are several theories to explain cancer although the exact cause and an effective prevention are not yet defined. We do know that many genes control the growth and death of cells in the body; if some of these genes work in excess or others do not work well enough, cells can grow and multiply out of control. Some families carry a gene mutation that predisposes them to cancer of the colon and rectum, but these genetic cancers are in the minority of cases. Based on the geographic distribution of many of these cancers in the world it is clear that a diet high in fat and low in fiber may have made people more predisposed to cancer of the colon and rectum over several generations.

Whatever the cause may be, the good news is that we tend to diagnose cancers earlier and treatments are more successful in either eradicating cancer or putting it to rest.

### Receiving the Diagnosis: the visit with the surgeon

More and more patients receive the diagnosis of cancer as the result of a surveillance colonoscopy. Unfortunately, not everyone starts having colonoscopies within recommended timelines so they seek medical attention only after experiencing rectal bleeding, a sense of urgency to defecate or incomplete evacuation. One common deterrent to the diagnosis of rectal cancer is that symptoms may be attributed to hemorrhoids, which is a very common problem in the general population including those with rectal cancer.

Most cancers “below the waist” create immediate distress. Feelings of embarrassment, anxiety over the loss of organ functions, or even fears of possible death are overwhelming. Processing information about the diagnosis and what the next steps may be is often difficult. Under these circumstances some of the information can often be misinterpreted or missed altogether. Therefore it is very important to come to the surgeon’s office with a trusted companion, ideally one who can help you absorb this important information.

Even though a rectal tumor has been diagnosed, the surgeon will perform a rectal exam to gather more information for treatment. If possible, a simple enema (Fleets) the evening before and again on the morning of the visit will be very helpful to better assess the situation. This exam is not painful and therefore it does not require anesthesia or sedation. A nurse will always be present in the room when the surgeon does the exam. The purpose of the exam is to determine the location of the lesion in relation to the anus. Low lying rectal cancer is within 5 centimeters (cm) and can be reached with the finger. Tumors in the mid-rectum, between 5 and 10 cm from the anus, and the upper rectum, between 10 and 15 cm, are seen via rigid proctoscopy which is a visual scope using a lighted tube about  $\frac{3}{4}$  inch in diameter. During your visit with the surgeon, other features of the tumor will be assessed including the size, consistency, extension and fixation. A biopsy will grade any penetration through the rectal wall, from the inner layer (mucosa) into the muscle layer as well as the degree of abnormal architecture of the cells. Cancer cells that are mildly abnormal are defined as “well differentiated,” the very abnormal are “poorly differentiated,” and those of intermediate structure are classified as “moderately differentiated.” When combining all these features, the surgeon can define rectal cancers as “favorable

tumors,” for which less radical treatments are possible, and “unfavorable tumors” for which a more radical approach is necessary.

### Designing the treatment plan

The treatment plan is based on the location and features of the tumor. For instance, low lying tumors with favorable features can be treated with a transanal local excision which is a relatively simple operation done in the hospital setting but requiring no overnight stay and a few days to recover at home.

Tumors that have reached the muscle layer and are located between 5 and 12 cm from the anus require treatment with radiation and chemotherapy (neoadjuvant therapy) before surgery. The treatment for tumors below 5 cm with unfavorable features and tumors above 12 cm depends on other variables such as gender and body height, weight and frame, as well as previous surgeries and overall health. Today, every effort is made to preserve the anus and restore defecation through the anus; however, cure of cancer takes priority over the preservation of the anus. Restoring defecation through the anus often still requires a temporary ileostomy which means bringing the intestine through the abdominal wall to pass stool into a plastic pouch. In many cases once the anus has completely healed, the temporary ileostomy can be reversed and defecation through the anus can be restored. The word “pouch” may also be used to indicate a way of enlarging the intestine that is to be connected to the anus; this is called an ileal pouch if it is done with the end of the small intestine, and colonic pouch if it is done with the end of the colon.

Discussion of cancer treatment involves “staging” which means an assessment of the degree of the progression of the cancer cells. Studies done before surgery can give an approximate stage; only surgery can provide the definite stage. This is because pathologists can analyze all the removed tissues and determine the most accurate level of penetration and extension into lymph nodes. However, several imaging modalities such as transrectal ultrasound (TRUS), MRI, and CT scan provide a good estimate of the stage of a rectal tumor. For more information on cancer staging guidelines, visit:

Staging (<http://www.cancer.gov/cancertopics/pdq/treatment/rectal/Patient>)

Stage 0 (Carcinoma in Situ) is when cancer cells are seen only in the mucosa (innermost layer) of the rectal wall, typically in a small polyp.

Stage I is when cancer cells have spread from the mucosa to the submucosa (the layer of tissue immediately above the mucosa). Cancer cells may have spread into, but not across, the muscle layer of the rectum wall.

Stage II is when the cancer cells have passed beyond the muscle layer but not to the lymph nodes. It is divided into stage IIA, stage IIB, and stage IIC. In stage IIA, cancer has spread through the muscle layer of the rectum wall to the serosa (outer layer of the rectal wall). In stage IIB, cancer has spread through the serosa but has not spread to nearby organs. In stage IIC, cancer has spread through the serosa to nearby organs.

Stage III is when cancer cells have reached the lymph nodes. It is divided into stage IIIA, stage IIIB, and stage IIIC, depending on the depth of tumor penetration and number of lymph nodes affected. Stage IV is when cancer cells have reached other organs and is divided into stage IVA and stage IVB. In stage IVA cancer has spread to one organ that is not near the rectum, such as the liver, lung, or ovary, or to a distant lymph node. In stage IVB cancer has spread to more than one organ that is not near the rectum or into the lining of the abdominal wall.

### Prognosis

The main use of staging is to conduct studies across many hospitals allowing the results of the various treatments to be compared among large groups of patients. As a general rule cancer studies are carried on for many years to investigate whether cancer has truly been cured in the first treatment. Most studies follow patients for 5 years and some up to 10 years. When one adds the years of data collection, analysis, presentation at scientific meetings and publication in scientific journals, the data used for prognosis today can be 15-20 years old! Since cancer treatment is constantly improving, survival data is always too old and not very reliable.

Prognosis of cancer is reported in “survival rates” which is the percent of people alive over a period of time since diagnosis, for colorectal cancer survival is calculated at 5 years of diagnosis. 5-year survival rates of colorectal cancer published to this date are: 80-95 percent for stage I, 55-80 percent for stage II tumors, 40 percent for stage III tumors and about 10 percent for stage IV tumors. Again, these figures are already outdated and only useful for population studies. There are cures of rectal cancer at **every** stage and there is no way of predicting which patients will fall into those percentages. One example is presidential candidate Herman Cain who publicly revealed that he is a survivor of stage IV rectal cancer after having 70% of his liver and 30% of his colon removed. Furthermore, the immune system can be the determining factor in triggering a cure of cancer and it is known to become impaired by stress and mental attitude. Those who maintain a positive attitude can fight cancer more effectively than those who fall into despair and “give up.”

### Procedures:

One truth of rectal cancer treatment is that it will involve multiple procedures and multiple encounters with a variety of health care professionals. Another truth is that stage II and III rectal cancers have developed over a minimum of 5 years (usually 8-9 years when they reach about 5 cm in size); hence, beginning treatment 2-3 weeks after the diagnosis is not a real delay in treatment and has no impact on the final outcome. It is much more important to collect all the information and take the proper steps than rushing through them for fear of further tumor growth. As much as we strive to coordinate this treatment as perfectly as possible there will be some conflicts of information or timing of procedures. The following timetable lists the events and procedures that will take place in the majority of patients with rectal cancer (stage II and III between 5 and 12 cm from the anus), which will include preoperative neoadjuvant therapy (radiation and chemotherapy).

1. Medical Consultation

2. Colonoscopy
3. Biopsy results
4. Surgical Consultation Day 0
5. Preoperative clearance Day 1-6
6. Port placement Day 1-7
7. Transrectal Ultrasound Day 1-14
- OR -
8. MRI Day 1-14
9. CT Day 1-14

“Low lying” rectal cancer with favorable features

10. Transanal excision of rectal cancer Day 7-14

Stage II and III Rectal cancer between 5 and 12 cm: Preoperative Neoadjuvant Therapy

11. Radiation Oncology Consult Day 1-14
12. Medical Oncology Consult Day 1-14
13. Radiation & Chemo- therapy Day 14 through 56
14. Break Day 56 through 98
15. Repeat MRI Day 84-96
16. Repeat Colonoscopy (tattoo) Day 84-96

Surgical procedure to remove the rectum and lymph nodes

17. Low anterior resection with Temporary Ileostomy Day 98-105
18. Pouchogram/Limited Barium Enema Day 140-157
19. Postoperative chemotherapy Day 140-320
20. Ileostomy Reversal Day 154-171
21. Follow up CT Day 334-351

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|---------------------------|-------------|
| 22. Follow up MRI         | Day 334-351 |
| 23. Follow up Colonoscopy | Day 334-351 |
| 24. Removal of port       | Day 351-365 |

#### Transanal Excision of Rectal Tumor:

This operation is done through the anus and requires that the tumor meets some criteria: 1) location in the low to mid rectum (up to an 8 cm distance from the anus), 2) small size: less than  $\frac{1}{4}$  of the circumference of the rectum and less than 6.25 square cm (1 inch by 1 inch), 3) superficial, not ulcerated, 4) stage I by ultrasound or MRI, and 5) has favorable features on biopsy such as well to moderately differentiated cells and no lymphatic invasion. Transanal excision is now being considered for some stage II tumors after preoperative chemotherapy.

The operation consists of gaining good exposure to the inside of the rectum through retractors and removing the wall of the rectum along with a small margin of healthy rectum where the tumor lies. The challenge for the surgeon is twofold: 1) to control bleeding with such limited exposure, and 2) realigning the edges of rectal wall. This becomes more difficult when the tumor lays in the anterior rectum where women have a thin wall separating the rectum from the vagina and where men have the prostate immediately in front of the rectum. Fortunately, even if the suturing does not keep the wall entirely together, the rectum still heals without major side effects. Potential side effects of the operation are a temporary weakness of the anal sphincter due to the retraction and the occurrence of infection in the tissues surrounding the rectum, which if severe can require a temporary colostomy though this very rarely occurs. Potential sequelae (long term problem) are the recurrence of either the tumor or polyp tissue in the wound in which case more surgery would be needed.

#### Neoadjuvant therapy:

The main goal of this therapy is to deliver radiation to the rectum so that the cancer is shrunken and the tissues immediately around it are “sterilized” of cancer cells. This allows the surgeon to take a smaller margin of healthy rectum when the tumors are close to the anus, and as a result, the anus can be preserved and the patient can eventually have bowel movements through the anus. In order to get the most benefit from the radiation effect, chemotherapy is delivered at the same time to “prime” the cancer cells and render them more vulnerable to the effects of radiation. This dose is much smaller than the dosage that would be used if chemotherapy were the sole treatment being planned.

Our radiation oncology department at Morristown Medical Center has expertise in the treatment of rectal cancer using both 3-dimensional conformal and intensity modulated radiation therapy (IMRT). In addition, Morristown is one of the few institutions using CT-based image-guided radiation therapy (IGRT) equipment, which increases precision and accuracy.

<sup>1</sup>Your first visit with our radiation oncology department will be a consultation with your treating physician. At this consultation, the physician will review your medical history with you and decide the appropriate course of treatment. At the consultation visit, you will receive an appointment for a simulation, which is the mapping and planning session for radiation therapy. The simulation will last approximately one hour. During the simulation, you will lie either on your stomach or on your back on a specialized radiation treatment board. Contrast may be inserted into the rectum and a wire marker may be placed over the anus. You should then stay still for a quick CT scan in the same position. Pinpoint tattoos or ink marks reinforced by tape will be placed at the end of the simulation to allow for daily alignment on the radiation treatment table. You need to be careful not to wash off your ink radiation marks if you choose not to have tattoos.

Immediately after the simulation, you will meet with the chief therapist to schedule all your radiation treatments. If you will also receive chemotherapy during the radiation, you must notify your medical oncology office of your radiation treatment schedule, so that they can schedule you to begin chemotherapy on the first day of radiation. Radiation treatments normally begin about 4-5 business days after the simulation. Treatments are given once daily, Monday through Friday. You will have 25-28 radiation treatments for rectal cancer plus 1-3 days when you will have a “dry run” or technical measurements instead of receiving a treatment, for a total of 5-6 weeks of radiation treatment.

During your daily treatment, you will spend 10-15 minutes in the radiation treatment room. Most of this time is spent setting you up and aligning you correctly for the treatment. The radiation beam is only on for a few minutes. The radiation beam is a high energy x ray and you will not feel any discomfort when the beam is being administered.

Many patients experience fatigue starting during the second or third week, which can progress as the treatment progresses. This typically subsides gradually over 2 to 6 weeks following the radiation treatment. The fatigue is not normally debilitating and in itself should not affect your daily activities or ability to drive. However, you may wish to go to bed earlier or take a nap during the afternoon. Fatigue and weakness are worse in patients who lose weight. Accordingly, our dieticians strongly encourage you to supplement your diet with high calorie foods or commercially available nutritional supplements (for example, Ensure Plus, Boost), if necessary to maintain your weight.

Your blood counts may require monitoring periodically during treatment, especially if you also receive chemotherapy.

Discomfort such as gas or frequent soft stools, diarrhea or constipation may be an issue toward the middle to end of treatment. These symptoms are typically improved through avoidance of fiber in the diet and appropriate medications such as Imodium. Our dieticians will consult with you regularly during your treatment regarding any dietary alterations.

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<sup>1</sup> This section was provided by Dr. Mona Karim from the Department of Radiation Oncology, Morristown Medical Center

The bladder and urethra may also become irritated such that urination becomes more frequent, especially at night, causing you to arise multiple times, occasionally with mild burning discomfort as well. Again, appropriate medications may be given to decrease this problem.

The skin within the treated area may become red with temporary itching, peeling and discomfort. There are a variety of topical measures used to alleviate this condition.

Some helpful tips for skin care during radiation therapy are:

- Allow the treated area to be exposed to as much air as possible by wearing light loose cotton clothing, boxer shorts or pajamas when at home.
- Doing sitz baths (or sitting in a tub of warm water with no soap) to heal and soothe skin. Your nurse can assist you with an actual sitz bath apparatus for the toilet at home with instructions. Warm water baths should be done at least 3 times a day for good relief. Hand held shower heads are useful to spray warm water to the rectal area during a shower.
- The use of skin healing products such as Desitin, Aquaphor or Proshield (available from your Radiation Nurse) to help soothe irritated rectal skin. These skin products should be smeared around the rectal area to help avoid skin breakdown, but should not be on the rectal site up to 4 hours prior to daily radiation treatments.
- The use of non-fragranced baby wipes instead of toilet paper is gentler to the rectal skin.

When on treatment, you will meet on a once-weekly basis with your physician, nurse and dietician and any issues or side effects from the treatment will be reviewed and addressed. On the days when you are not scheduled to meet with your physician, nurse or dietician, please do not hesitate to contact them regarding any of your issues or concerns.

Radiation therapy can produce some skin irritation around the anus, bladder irritation, and diarrhea during the course of the treatment. In the long term, radiation can produce diarrhea, sexual dysfunction and infertility. In some patients radiation has resulted in persistent bone pain, typically in the tail bone.

Radiation is delivered over a short period of time each day of the week, Monday through Friday, for 6 weeks.

### Chemotherapy<sup>2</sup>

Treatment with chemotherapy involves several drugs given at the same time. The backbone of treatment is 5-fluorouracil given in two ways: one is as an IV bolus (push) and the second as a 2 day continuous infusion through a small portable pump. This regimen is called modified FOLFOX-6. Leucovorin is also given with the 5-fluorouracil and the final drug is oxaliplatin. The first day of treatment you will be given all three drugs IV bolus (short infusion) 5-fluorouracil, bolus leucovorin,

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<sup>2</sup> This section was provided by Dr. Ellen Early of the Hematology Oncology Division at Morristown Medical Center

oxaliplatin and the nurse will connect the portable pump to the portacath. The pump is programmed to give the full dose. The nurse will instruct you about the pump and two days later the pump will be disconnected. This treatment is given every two weeks and will continue for 4 to 6 months.

The side effects of treatment include fatigue, diarrhea, numbness and tingling of the hands/feet, cold sensitivity in the oral cavity and lowering of the blood counts. Sometimes mouth sores, altered taste and skin irritation to the palms of the hands and soles of the feet may also occur. The side effects vary for each person and tend to improve during the rest week.

In some cases Xeloda, the oral prodrug of 5-fluorouracil, may be given in combination with oxaliplatin. This regimen is called Xelox. The side effects of the Xeloda are similar to 5-fluorouracil including diarrhea and mouth sores, the oxaliplatin can cause numbness in the hands/feet, cold sensitivity and in rare cases an infusion reaction.

Neoadjuvant therapy is the use of chemotherapy in conjunction with radiation therapy before surgery.

In order to proceed with neoadjuvant therapy two procedures are needed: 1) mapping of the tumor with a special CT scan with skin tattooing to guide the radiation treatments, and 2) placement of a "port" for intravenous delivery of chemotherapy.

#### Port placement:

The "port" or Portacath™ is a small drum (1 inch in diameter and ½ inch in height) that is placed under the skin and below the clavicle on either side of the chest. The drum is connected to silastic tubing that is threaded into a large vein. In this way chemotherapy can be infused into the drum, through the skin, and carried into the bloodstream at a point where the rapid flow dilutes the drugs very quickly without damaging the walls of the veins. In the past chemotherapy was injected into arm veins, and after a few treatments the veins would close down from chemical irritation.

The procedure is done in the hospital but does not require stay in the hospital. Complications of the procedure are rare but include pneumothorax (air leaking out of the lung requiring a chest tube), bleeding and hematoma formation, and infection. As the port is being used there is always a possibility of clotting of the port or the tubing, infection and malfunctioning of the port requiring revision or replacement.

#### Preoperative imaging (US, MRI and CT)

The stage of the tumor within the rectal wall can be assessed with either a Transrectal Ultrasound (TRUS) or a rectal MRI.

TRUS: This study is done using a probe that can be either incorporated into a flexible endoscope (such as the instrument used for colonoscopy) or one used specifically designed for this purpose.

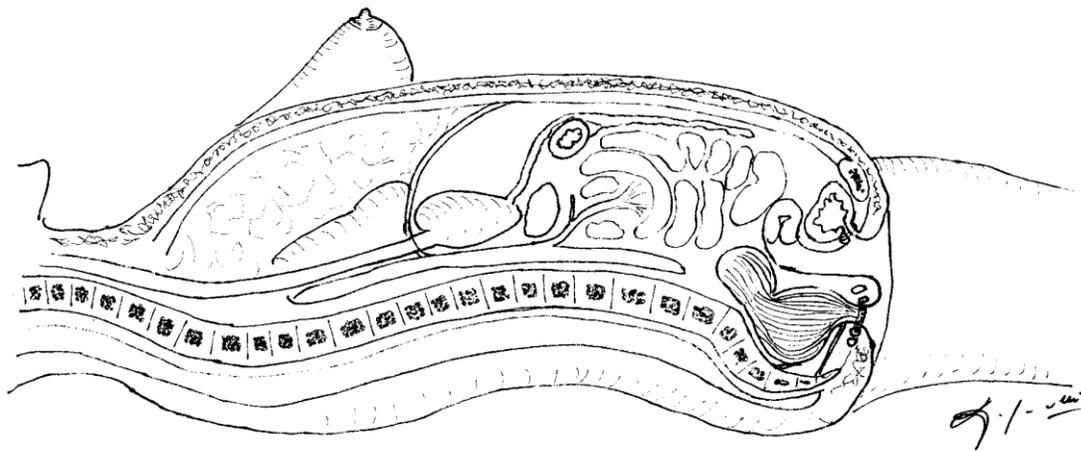
MRI: Depending on the size and location of the tumor an MRI can be more accurate and less uncomfortable than the TRUS. As in any other MRI, this study involves staying still within a magnetic field. Some people find the experience too claustrophobic. Individuals with some metal implants cannot be studied with MRI because of the magnetism involved in the study.

CT scans are obtained to rule out any extension of tumor around the rectum and metastasis into the liver. There are a number of structures in close proximity to the rectum (such as seminal vesicles and prostate, vagina and uterus, ureters and bladder) that are better delineated with CT scan.

Positron emission tomographic (PET) scanning can be performed to look for cancer that has spread beyond the rectum.

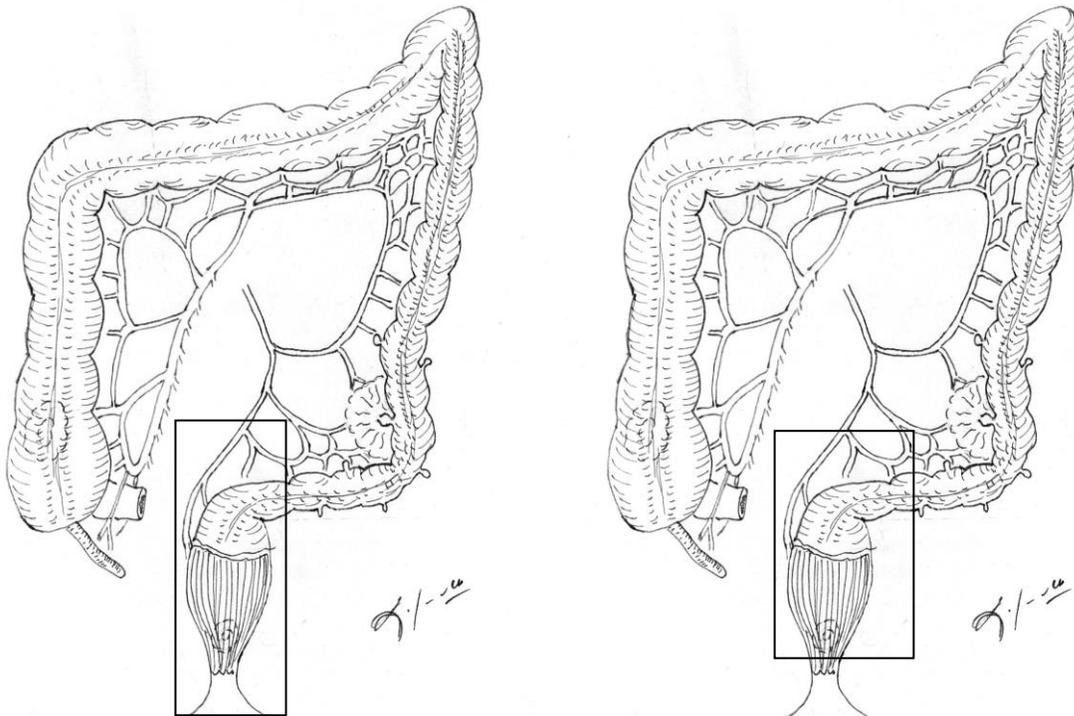
### Surgical removal of the rectum

The rectum is encased in the bony structure of the pelvis. The upper part of the rectum is easily reachable through the abdomen and the lower part is easily reachable through the perineum, the region below the pelvic diaphragm and in between the legs. In individuals with a long a narrow pelvis (most men) there is a portion of rectum that is in “no man’s land.” Newer instrumentation has extended the ability of surgeons to reach deeper through the abdomen and higher through the perineum, therefore reducing the “no man’s land.”



In surgical nomenclature a low anterior resection (LAR) refers to the removal of the rectum through the abdomen while an abdominal perineal resection (APR) of the rectum is when the rectum is disconnected in the abdomen and then removed along with the anus through the perineum. The goal of the LAR is to preserve the anus and restore defecation. In most cases the LAR is done in conjunction with a temporary ileostomy that is later removed (3 months). The APR results in a permanent colostomy. The APR can be a planned procedure or it can be the fall back of an unsuccessful attempt at performing an LAR when the tumor ends up being so close to the anus that a margin clear of cancer cannot be obtained. LAR and APR require similar preparation, positioning, operating time (4-5 hours) and

postoperative recovery (5-7 days in the hospital). While the loss of the anus is a big downside with the APR the upside is that there is no need for more surgery, such as the reversal of the ileostomy, and there is no uncertainty of how well the colon to anus connection will work. Also the APR gives more assurance of not having the cancer come back in the pelvic area. With LAR the smaller the margin the greater the chance of leaving cancer cells behind that may develop on more tumor. In this cases the LAR is transformed into an APR in a later surgery.



Either LAR or APR can be done laparoscopically (closed abdomen inflated with gas and long instruments introduced through small air-tight ports) or through a laparotomy (open abdomen). The decision between laparoscopy and open abdomen is made based on the type and number of previous open surgeries and the gender and body habitus (obesity makes laparoscopy much more difficult, especially in men). Both surgeries are done in the lithotomy position; in lithotomy the patient lies on his back with the legs elevated and separated. This is achieved by detaching the bottom part of the OR table and placing the legs in stirrup holders.

Aside from removing the area of rectum containing the tumor along with a good margin of rectum that is clear of tumor, the goal of an LAR or APR is to do a complete removal of lymph nodes draining the rectum; this is called total mesorectal excision (TME). These lymph nodes are found behind and to the sides of the rectum along blood vessels and are covered with fatty tissue; they are not readily visible so the entire packet of fatty tissue is removed along a plane that separates it from the sacrum. Other important structures in the pelvis that are to be avoided during the surgery are nerves supplying the bladder and sexual organs and the ureters connecting the kidneys to the bladder.

These surgeries can be long, 4 to 5 hours, and even longer. Many patients and family members often express concern about the length of surgery. The reality is that outcomes are better with meticulous, long surgeries than with fast surgeries that can result in more bleeding. The only factor during surgery that correlates with complications and poor outcome is blood loss. The greatest risks of anesthesia are on induction, the very beginning, and extubation, the very end. Whatever length of time is used in between does not add to the risk of surgery as long as there is no excessive loss of blood or body temperature, and the body is properly padded to avoid pressure ulcers.

#### Postoperative recovery:

Once the surgery is finished, patients are transported to the post-anesthesia care unit (P.A.C.U). There is a period while patients are waking up that requires a very delicate dosing of pain medications so that they can remain comfortable while they also generate good respiratory effort. The PACU nurses require about an hour to an hour and a half to establish patients' comfort. Once the patient is more awake and comfortable the family is invited into the PACU. Aside from all the unfamiliar bells and whistles of these units, family members need to be prepared to see their loved one looking different from before surgery. A very noticeable change is facial swelling that is due to the position in the OR (feet up/head down). This fluid buildup in the head leaves the body in a day or two. As part of the routine most patients will be receiving some supplemental oxygen, either through plastic tubing passing by the nostrils or a face mask. Patients have a wide spectrum of reactions while they recover from anesthesia: some are happy, some are sad, some feel pain and some do not. Something that is quite consistent is that the majority of patients never remember being in PACU. Therefore, don't put too much effort on exchanging important information with your loved one at that moment.

In two to four hours patients will be moved from PACU to a surgical unit. Our goal is to get all patients to a private room. However, that is not always possible and expert nursing care overrules hotel type amenities in this phase of recovery. It is also very common to switch rooms in the ensuing days. In the immediate period after surgery the number one goal is working on breathing: oxygen is the key to good healing and expansion of the lungs prevents collapse and infection. We encourage patients to sit up and walk around with assistance. There will be one or two intravenous catheters in the arms and a catheter in the bladder, but neither one is an obstacle to moving around.

Pain is not as much of an issue as most people anticipate. These days we operate through smaller incisions and surgery is less invasive on the body. We now have analgesics and anti-inflammatories that are given intravenously in a continuous manner. We use a system called patient controlled analgesia (PCA) where patients give themselves doses of pain killers by pressing a button; there is no fear of overdosing as the pump is programmed to lock out above a certain dose. Other medicines used throughout the postoperative period are a blood thinner injected twice a day, antibiotics for the initial 24 hours, and nausea and sleep medication as needed.

After surgery the bowel ceases to work for 2-3 days. The best indicator of bowel function is the passage of gas (flatus). Once this occurs, patients begin a liquid diet. If liquids are well tolerated the diet is

advanced to solids. There is really no need to keep patients in the hospital waiting for a bowel movement. Usually patients who have a laparoscopic LAR or APR remain in the hospital for 4-5 days while patients having open LAR or APR remain for 5-7 days.

Possible side effects of either surgery include fluid discharge from any of the incisions, bleeding, infection, urine leak from injury to the bladder or ureters, clots in the legs (deep vein thrombosis) and migration of the clots to the lungs (pulmonary embolism). Possible long term effects of either surgery are hernias of the incision or around the colostomy, muscle weaknesses in the legs from nerve injuries, bladder dysfunction, and sexual dysfunction such as retrograde ejaculation or erectile dysfunction. More than 90% of patients undergo rectal surgery without complications. Contributing factors for the development of these problems are obesity, the size of the tumor, the degree of local invasion and the extent of irradiation to the area.

Patients who have a very low LAR and lose most of the rectum can have frequent and small stools. This is usually temporary until the intestine connected to the anus stretches and adapts to the absence of the rectum. Conversely, other patients experience some difficulty expelling stool. Eventually, a reasonable bowel function is achieved in most patients but it can take as long as 9 months to see the best results.

#### Ostomies: permanent colostomy (in conjunction with APR) and temporary ileostomy (in conjunction with LAR)

An ostomy is the exteriorization of an organ to the body surface. When that organ is the colon it is called a colostomy. In APR the end of the remaining colon (descending or left colon) is brought out through the abdominal wall in the left lower area of the abdomen. When the organ is the end of the small bowel or ileum, the ostomy is called an ileostomy. In the context of rectal cancer surgery, ileostomies tend to be temporary so that the newly created connection of colon to anus can heal. Typically, a period of 3 months is allowed for healing and then the ileostomy is reversed after confirming with an xray that the initial surgery has healed well. Reversal of an ileostomy is a much smaller operation that is done through an incision right around the stoma itself.

The prospect of having a stoma creates significant anxiety and worries. People fear sudden leakage of stool from around the stoma, limitations in physical activities (such as sports and sex), loss of love from a partner, and the need to change their line of work. While these fears are totally understandable they are not well founded. Modern appliances used to collect stool are very safe and effective. There is a period of learning during which specialized nurses (enterostomal therapists) provide all necessary knowledge and skills to patients and family members so they can feel confident when caring for ostomies. There is a wide variety of appliances for use in different activities; for instance, there is a small pouch (caps) to wear while swimming. Bowel function ceases with physical activity so there is no need for a large pouch. People with ostomies or ostomates, have engaged in all forms of work and sport activities. Men and women with ileostomies have had children and parents have led children with ostomies through the various stages of life. The United Ostomy Association (UOA) ([www.ostomy.org](http://www.ostomy.org)) offers plenty of support to patients with new ostomies. There are over 320 support group spread out

throughout the country with a very active one at Morristown. These groups hold meetings where the more experienced ostomates can pass on their knowledge to the new ostomates.

### Adjuvant Chemotherapy

Adjuvant chemotherapy is the use of chemotherapy drugs given following surgery to eliminate any remaining cancer cells and to reduce the risk of cancer recurrence.

All patients with stage III and IV and most patients with stage II rectal cancer continue with chemotherapy after surgery. The regimens of drugs vary depending on the findings at surgery and will be determined by the treating medical oncologist. Following surgery, adjuvant chemotherapy for stage II and III rectal cancer will typically take place over an approximately 6 month period of time. Typical chemotherapy drugs can include 5-fluorouracil (5-FU) or capecitabine (xeloda; Leucovorin; and Oxaliplatin. Your specific drug regimen and potential side effects should be discussed with your medical oncologist.

### Follow up after treatment of rectal cancer

([http://www.fascrs.org/patients/treatments\\_and\\_screenings/colorectal\\_cancer\\_surgery\\_follow\\_up\\_evaluation/](http://www.fascrs.org/patients/treatments_and_screenings/colorectal_cancer_surgery_follow_up_evaluation/)):

After completing treatment of rectal cancer, patients need close follow up for two reasons: 1) it is always possible that some cells escaped treatment which if identified early can be eliminated, and 2) patients who had one form of cancer in the colon or rectum have a “fertile” bowel to grow new polyps and cancers. Follow up is usually at 3 month intervals for the first 2 years and involve physical exam, blood work, endoscopy (rigid proctosigmoidoscopy and/or colonoscopy), MRI of the pelvis and CT scan of the abdomen.

### Conclusions:

In order to achieve the cure of rectal cancer multiple treatment modalities are combined and delivered in a plan designed for each patient’s particular situation. This plan unfolds over a long period of time, the most intense part in the first 6 months, but checkups continue for 5 years. There are so many variables involved in the presentation and management of patients with rectal cancer that changes in the initial plan are almost guaranteed in every case. There will be many instances when this process becomes frustrating for patients and family members. In those instances it is good to remember that everyone involved in the management of patients with rectal cancer has only one goal in mind: the cure of the patient.