

THE MANAGEMENT OF ADENOCARCINOMA OF THE RECTUM

William H. Isbister, MD; Mohamed Manji, MD

Patients with rectal cancer are referred to the King Faisal Specialist Hospital and Research Centre (KFSH&RC) either for definitive treatment, or the need for a low anastomosis in order to avoid a stoma, or for a second opinion and persuasion with regard to the need for a stoma. Patients are also referred to the hospital following definitive surgery at another hospital for adjuvant chemotherapy or radiotherapy. All patients are seen in a combined clinic prior to treatment, and we have observed that many of our patients are referred with inadequate documentation and sometimes following inadequate and inappropriate surgery.

It is important to highlight the contemporary management of rectal cancer, and in particular, the information needed at referral, in order to provide the best and most appropriate treatment for the individual patient.

Primary Management

The most important component of the primary management of rectal cancer is surgical resection with or without anastomosis, depending on the size of the tumor and the distance of the tumor from the anal verge. Generally, it is better to have a cured patient with a stoma than a patient with local recurrence without a stoma. The cell doubling time for rectal cancer cells is in excess of 300 days,¹ and between 25 and 35 doublings are necessary before a mass of tumor cells becomes large enough to be symptomatic.² Patients would have thus had their tumors for many years before they become symptomatic, and, therefore, there is no biological need to rush to surgery as soon as the diagnosis is made. Rectal cancers rarely present per primum with intestinal obstruction, although preoperative irradiation of a tumor may precipitate obstruction in a patient with an already very narrowed rectal lumen.

It is useful to determine whether any other members of a family in addition to the patient have had colorectal cancer, because this may signify, particularly in a young patient, one of the rare inherited forms of the disease, and allow asymptomatic members of the family to be investigated.³ A history of abdominal distension after

eating may indicate impending obstruction and the need for a stoma prior to adjuvant radiotherapy.

In addition to investigations to ensure the patient's fitness for surgery, some specific information relating to the tumor itself must be documented. The site of the tumor, its distance from the anal verge and its fixity, must be assessed by digital rectal examination and rigid sigmoidoscopy. Biopsies of the tumor must be taken and an assessment made of the size of the lumen. Usually, if a rigid sigmoidoscope can be passed through the tumor, it can be assumed that the lumen is adequate. Total colonoscopy should be performed in the perioperative period in those patients found to have curable tumors. It is of little clinical value to identify an adenomatous polyp in the colon of a patient who has an incurable index rectal cancer. Often it is impossible to negotiate the primary tumor, and we have tended to opt for a postoperative colonoscopy to identify small synchronous lesions, and rely on intraoperative examination of the colon to identify those few patients that may have synchronous second cancers.⁴ Intravenous pyelography is no longer recommended.⁵

Spiral CT scanning with contrast seems to be the most sensitive method for determining the presence of liver metastases at the present time. Since the best palliation for rectal cancer is removal of the primary tumor, and since it has been found that preoperative CT scanning in patients with colorectal cancer alters the management in less than 1% of patients, the role of CT scanning in these patients may be questioned.⁶ A CT evaluation is important, however, in those patients who may be offered adjuvant therapy. Patients with very low tumors should have fine-needle aspiration (FNA) of any hard or enlarged inguinal lymph nodes. Carcinoembryonic antigen (CEA) measurements are made at KFSH&RC, although their value remains in doubt.⁷ A postoperative rise in CEA level from a normal result following surgery may signify recurrence in some patients.

Restoration of bowel continuity is not possible in all patients who present with rectal cancer, and it is important not to compromise the best oncological surgical principals for the sake of continuity. Whether or not the patient has a permanent stoma depends primarily upon the distance of the tumor from the anal verge, the length of bowel needed

to obtain proper clearance of the tumor distal to the tumor, and the length of the anal canal and sphincter complex necessary to maintain continence. Occasionally, it may be necessary to perform an abdominoperineal resection of the rectum for technical reasons, in obese patients with narrow pelvises and large tumors. In these patients, restoration of continuity could be difficult and life-threatening. Patients die from leaking anastomoses, not surgery.

It has been traditional to advocate the need for removing 5 cm of normal bowel proximal and distal to the tumor in order to obtain adequate tumor clearance. In the 1980s, it was shown, following serial sectioning of resected rectal cancers,⁸ that intramural spread of the tumor did not exceed 2 cm below the tumor in all but the most advanced patients, and a 2 cm rule was applied. The finding of tumor cells, however, in the distal mesorectum⁹ has not only resulted in the quest for total mesorectal excision (TME) in all patients undergoing low resection and anastomosis but, perhaps more importantly, the reinstatement of the 5 cm rule.¹⁰ If these data are accepted, and it is agreed that the length of the anal canal is 4 cm, then no tumors in the rectum below 8-9 cm from the anal verge can be safely resected with adequate clearance and a good prospect of continence. Clearly, compromises with regard to continence and distal clearance are being made worldwide, but we question whether this is "best practice." From a practical standpoint, these criteria mean that unless a tumor has intussuscepted, any palpable rectal tumor must be resected and a permanent stoma fashioned. Anything less than this will compromise survival and tumor recurrence.

Intraoperatively, the site of the tumor in relation to the peritoneal reflection and the sacral promontory should be noted, the presence of any intraperitoneal metastases or nodal metastases documented, and a careful search should be made for other synchronous tumors. The main vascular pedicle (inferior mesenteric vessels) should be ligated and divided first, although there is no evidence to support the technique of high ligation,¹¹ which is more likely to compromise left colonic blood flow and endanger the stoma or any anastomosis fashioned. Double-stapling techniques allow the construction of very low anastomoses, but may not be in the best interest of the patient, either from the standpoint of tumor recurrence or anal continence. These same arguments apply to endoanal coloanal anastomoses if tumors are low and clearance is inadequate. We like to protect against the effects of anastomotic dehiscence in patients, following radiotherapy with a temporary colostomy or ileostomy. In patients with low tumors in whom re-anastomosis is possible, rectal compliance can be increased by fashioning a colonic J-pouch, and this too should be covered with a stoma.¹² When considering re-anastomosis, it is important to ensure that the proximal bowel being anastomosed has been

outside of the radiotherapy field and, therefore, has not been irradiated.

Both chemotherapy and radiotherapy are used in the adjuvant setting in patients with rectal cancer. Radiation therapy has been used either pre-^{13,14} or postoperatively,^{15,16} and chemotherapy postoperatively,¹⁷ in addition to surgery, in order to attempt to reduce the frequency of local recurrence and increase survival. In patients with operable disease, postoperative radiotherapy has been preferred by many because surgery itself is not delayed, favorable cases (Dukes' stage A-T₁-T₂, N₀, M₀) are not irradiated, and patients with metastatic disease may be spared further intervention. In recent years, especially in Europe, preoperative radiation therapy has gained wider acceptance. Radiation enteritis is less common because the small bowel is not usually adherent in the pelvis. The primary tumor may become smaller, and nodal metastases may be sterilized prior to resection. The tumor itself may be more responsive to radiotherapy because normally oxygenated cancer cells are more sensitive to radiation than hypoxic cells in tissues following surgery in which the vascularity has been altered. Concerns relating to the radiation of either early-stage or disseminated disease prior to surgery appear less important now since the advent of CT and endoanal ultrasound imaging techniques.

Adjuvant therapy, according to the NIH (National Institutes of Health) consensus statement, reduces local recurrence and increases survival,¹⁷ but it has been pointed out that many patients need to be treated before one patient can expect to gain a benefit.¹⁸

At KFSH&RC, we offer adjuvant radiotherapy prior to surgery to all our patients with rectal cancer. As most patients have locally advanced disease, they undergo a protracted course of preoperative radiotherapy, in which they receive 5400 cGy (a four-field technique of 4500 cGy in 25 fractions, plus a 900 cGy posterior three-field boost in five fractions) over a time period of six weeks.¹⁹ They then have a four- to six-week "rest" time before proceeding to surgery. If patients have small (less than 4 cm in diameter), mobile, mid or lower third rectal tumors, a shorter course of radiotherapy is used.²⁰ A dose of 2500 cGy in five fractions is delivered, using a posterior three-field technique to treat the tumor and the pararectal tissues. Patients undergo surgery within two weeks of radiation in this protocol. It could be argued that some of our patients might receive radiotherapy unnecessarily. Early-stage tumors are rare in our practice, as the majority of patients seen at KFSH&RC have fairly advanced tumors at presentation. The number of unnecessary treatments could be reduced by endoanal ultrasonographic staging,²¹ and this technique is about to be implemented at our institution.

Postoperatively, if these patients are found to have Dukes' stage B or C tumors (T₃-T₄, N₀, M₀, or T₁-T₄, N₁-

N₃, M₀) when the resected specimen is examined histologically, they are referred for adjuvant chemotherapy.

If a patient has not received radiotherapy pre-operatively, for example, because of anxiety that he/she will not present for surgery following the completion of radiotherapy, it is important to ensure that at surgery, the small bowel is held out of the pelvis either by retroverting the uterus, mobilizing the omentum to fill the pelvis, or inserting Dexon mesh (Davis and Geck) in order to optimize the patient for postoperative adjuvant therapy.

If these patients are found, following surgery, to have Dukes' stage B or C tumors (T₃-T₄, N₀, M₀, or T₁-T₄, N₁-N₃, M₀), they are offered adjuvant postoperative radiation and chemotherapy. They receive 5040 cGy (4500 cGy in 25 fractions to the pelvis, using a four-field technique, followed by a boost treatment dose of 540 cGy in three fractions to the posterior pelvis using a posterior three-field technique). Patients receive concurrent 5-FU by intravenous bolus on the first three and last three days of the radiation treatment. A five-week rest period follows before a further six five-day courses of 5-FU are given at monthly intervals.

Secondary Management

Patients may be referred to KFSH&RC for the secondary management of rectal cancer following surgery at another hospital. In order to determine the need for adjuvant therapy and the type of therapy to be given, it is essential to have detailed information regarding the preoperative clinical findings, in particular the site, fixity, and distance of the tumor from the anal verge, details of the surgery performed, including operative findings, the site of the tumor in relation to the peritoneal reflection and sacral promontory, whether the tumor had perforated or whether the tumor was perforated intraoperatively, whether there was spillage of bowel contents during the operation, the state of the liver, and whether mesh was used to keep the small bowel out of the pelvis. A pathology report detailing the grade and type of tumor, the length of the bowel margins distal and proximal to the tumor, the number of lymph nodes examined and their involvement with tumor, must also be submitted when the patient is referred. It is important to know what the patient has been told with regard to the disease and the surgery that has been performed for it. When the above information has been obtained, the most appropriate adjuvant therapy can be provided.

Conclusion

We have attempted to document those aspects of the management of rectal cancer which we believe to be important. We are concerned that patients managed

outside of KFSH&RC are not receiving contemporary surgical care, and that following surgery, the documentation at referral is usually inadequate, which makes logical decision-making with regard to further therapy difficult. Often, it is necessary to make empirical decisions based on the little data provided. This situation is clearly not optimal for the patients, and it is hoped that by documenting the problems in a qualitative way as we see them at this hospital, an improvement in patient care may result. We propose to undertake a quantitative analysis of the problems we have outlined in the near future.

Dr. William H. Isbister, MD

Colorectal Surgeon

Department of Surgery, MBC-40

Dr. Mohamed Manji, MD

Consultant, Department of Oncology

Section of Radiation Oncology, MBC-64

King Faisal Specialist Hospital and Research Centre

P.O. Box 3354

Riyadh 11211, Saudi Arabia

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