Early Rectal Cancer: Local Excision or Radical Surgery?

Alexandre Jin Bok Audi Chang, MD, Caio Sergio Rizkallah Nahas, MD, Sergio E. Alonso Araujo, MD, Sergio C. Nahas, MD, Carlos F. Sparapan Marques, MD, Desiderio Roberto Kiss, MD, and Ivan Cecconello, MD

Department of Gastroenterology, Surgical Division, University of São Paulo, School of Medicine, São Paulo, Brazil

BACKGROUND: Sphincter preservation, disease control, and long-term survival are the main goals in the treatment of rectal cancer. Although transanal local excision is attractive because it is a sphincter sparing procedure, some contradictory data exist in the literature about its ability to locally control disease and provide overall survival comparable with radical procedures, even for patients with early stage tumor.

PURPOSE: To compare transanal local excision and radical surgery treatment results based on the appropriate data in literature.

METHODS: We reviewed the literature to identify the current recurrence and survival rates of both techniques as well as the salvage surgery success. A PubMed search of the last 10 years was performed, and a total of 10 nonrandomized studies were identified; only 1 study was prospective, 5 were comparative, and 5 were case reports.

RESULTS: Five-year overall survival rate varied from 69% to 83% in the local excision group versus 82% to 90% for the radical excision group. Local recurrence rates ranged from 9% to 20% for local excision and from 2% to 9% for radical surgery. Systemic recurrence rates ranged from 6% to 21% for local excision and from 2% to 9% for radical surgery.

CONCLUSION: Radical surgery is the more definitive cancer treatment; however, it does not eliminate local excision as a reasonable choice for many patients, who will have lesser procedure-related morbidity and will accept an increased risk of tumor recurrence, a prolonged period of postoperative cancer surveillance, and a decreased success rate by salvage surgery. (J Surg 65:67-72. © 2008 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: rectal cancer, local excision, surgery

COMPETENCY: Medical Knowledge, Patient Care, Systems Based Practice

Correspondence: Inquiries to Caio Sergio Rizkallah Nahas, MD, Rua Jabebira, 136, 05602-020, Sao Paulo, SP, Brazil; e-mail: caionahas@uol.com.br

INTRODUCTION

Rectal cancer is a major health concern in the United States with an estimated 40,000 new cases a year, and it accounts for nearly 11% of cancer mortality.[1] Age impacts colorectal cancer incidence more than any other demographic factor with a dramatic increase in incidence of sporadic colorectal cancer above the age of 50 years for all groups. Although decreases in age-standardized colorectal cancer incidence and mortality rates have been a tendency in the United States over the past 10 to 15 years, such trends may be counterbalanced by prolonged longevity. At the current time, an estimated worldwide 250,000 colorectal cancer–related hospitalizations occur per year at an associated cost of $5 billion annually.[1]

Four major goals exist in the treatment of a patient with rectal cancer: (1) disease control; (2) long-term survival; (3) preservation of anal sphincter, urinary, and sexual functions; and (4) maintenance or improvement in quality of life.

Although radical en bloc excision of the rectum and mesorectum by abdominoperineal or low anterior resection offer the advantages of complete tumor excision and clearance of regional lymph nodes,[2,3] it is associated with significant mortality and morbidity, which may include the need for permanent or temporary colostomy as well as complications such as anastomotic leak, sepsis, and long-term functional problems like urinary and/or sexual dysfunction.

On the other hand, local excision is suitable for patients for whom major surgery is contraindicated, and theoretically, it might be considered curative if some criteria are observed, such as whether the lesion is confined to the submucosa, has not spread to lymph nodes or distant organs, and the excised tumor has an adequate normal margin, size, and favorable histology. However, more recently, its role as a curative procedure has been questioned in the literature according to inferior outcome results in some long-term follow-up series.[4-7]

Preoperative staging is critical for proper patient selection and for the introduction of new imaging technology such as endorectal ultrasound (ERUS) and magnetic resonance imaging (MRI), both of which are capable of delineating the separate layers of the rectal

wall and of identifying enlarged mesorectal lymph nodes, which has increased interest in the local therapy of early rectal cancers. However, currently, preoperative imaging modalities cannot predict accurately the presence or absence of regional lymph node metastases. Moreover, no current clinical and/or pathological features can exclude completely the risk of occult regional lymph node metastasis after transanal local excision.[8,9]

Today, the criteria commonly used by surgeons for local excision of rectal cancer are stage T1N0M0, with histological grade G1 or G2 and with size no larger than 4 cm. However, even respecting those strict criteria, local excision carries the unavoidable risk of unresected regional disease and incomplete pathologic staging because regional lymph nodes are not removed and are therefore not assessed pathologically. In addition, because patient populations are heterogeneous and selection criteria vary among surgeons, the reported series may not be entirely comparable. Overall recurrence rates have been reported to be as low as 9%[10] and as high as 46%.[11]

The objective of this study is to present the long-term outcomes of patients with T1 adenocarcinoma of the rectum treated by transanal local excision and to compare them with the outcomes of those who underwent radical resection based on appropriate literature series.

PREOPERATIVE STAGING

Staging is of crucial importance to identify patients suitable for transanal local excision. A complete proctologic examination is important to assess tumor location, size, and depth of penetration in the rectal wall. However, the accuracy of digital rectal examination depends on the experience of the examiner. In 1 study of the clinical assessment of depth of invasion (T-stage) of rectal cancers by digital rectal examination before proctectomy, colorectal specialists had an accuracy rate of 67% to 83%, whereas the accuracy for trainees was 44% to 78%.[12] Although chest and abdominopelvic computed tomographies (CTs) are important for excluding distant metastatic disease in rectal cancer patients, the best imaging modalities currently used for preoperative locoregional staging of rectal cancer are ERUS and MRI. The role of CT in the preoperative locoregional staging of rectal cancer is much more limited. In fact, the accuracy of CT for T-stage (53% to 94%) and N-stage (54% to 70%) are substantially lower overall than that of ERUS.[13] Similarly, the use of positron emission tomography (PET) for local and regional staging is very limited, because it provides more functional rather than anatomical information. Its sensitivities to depict lymph node metastases were reported to range from 22% to 29%.[14,15] The authors attributed the low detection of lymph node metastases to the proximity of the lymph nodes to the primary tumor, which causes superimposed images.

The ERUS can delineate the rectal wall and identify enlarged mesorectal lymph nodes. In a previous study from the University of Minnesota,[16] the accuracy of assessing full-thickness rectal wall penetration was 86% and of determining the presence of lymph node metastases was 77%. Both T-staging and N-staging accuracy rates declined over time with the lowest rates reported in more recent literature, probably because of publication bias.[17] Although operator-dependent, it can be performed at the time as patient evaluation with minimal preparation or patient discomfort, and it is cheaper than MRI.

Newer techniques of endorectal coil MRI and phased-array MRI have been reported to be 66% to 92% accurate in determining T-stage, and they can determine reliably the extent of mesorectal tumor involvement in up to 90% of cases.[13,18,19]

SURGICAL APPROACHES FOR LOCAL EXCISION

Transanal Local Excision

Transanal excision is the most popular technique of local excision. A full-thickness excision with the designated margin is generally performed, respecting the vagina wall or prostate. After ensuring bleeding control, the defect is usually closed, but it may be left open if it is below the peritoneal reflection. Requirements for postoperative analgesia are minimal. Patients may be discharged as early as 24 hours postoperatively.

Transanal Endoscopic Microsurgery (TEM)

Transanal endoscopic microsurgery is a relatively new technique developed to allow excision of mid and upper rectum lesions not amenable for the traditional transanal local excision. It consists of the use of a 6-cm-diameter sigmoidoscope, available in lengths of 12 and 20 cm, a 40-degree or 50-degree telescope, laparoscopic atraumatic forceps, laparoscopic diathermy or vessel sealer, and laparoscopic irrigation-suction device. The above instruments are connected to a standard laparoscopic "stack" incorporating a gas source, a light source, and a high-resolution monitor.[7] The rectum is maintained dilated with constant-flow carbon-dioxide insufflation.

Once the rectoscope is inserted into the desired location within the rectum, it is attached to the operating room table with a double ball-and-socket supporting arm. During the dissection, the supporting arm is moved frequently to maintain direct visibility of the lesion. The base of the rectoscope is sealed with an airtight face piece that has 5 entry ports. These ports, in turn, are sealed by rubber caps and sleeves so that the various instruments necessary for the dissection can be inserted. The binocular stereoscopic eyepiece is inserted through 1 port, and it has an accessory scope for video hookup. The various instruments needed are a suction catheter, a needle-tipped high-frequency electrical knife, tissue graspers that are oriented to either the right or left, scissors, and a needle holder.[20] The suction catheter, tissue graspers, and needle-tipped knife can all be connected to the cautery unit, which greatly facilitates control of hemorrhage and coagulation of bleeding vessels.

Full bowel preparation is required preoperatively. The patient is put in the appropriate position according to the tumor location in the rectal wall, and the whole procedure is per-