Local Excision of Rectal Cancer

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KEYWORDS

• Rectal cancer • Local excision • TEM • TAMIS

KEY POINTS

- Several techniques are commonly used for local excision of early-stage rectal cancer, including conventional local excision, transanal endoscopic microsurgery (TEM), and transanal minimally invasive surgery (TAMIS).
- There are strict criteria for selecting patients for local excision of rectal cancer, all of which are calculated to minimize the likelihood of lymph node involvement.
- Local excision avoids the morbidity of radical surgery for rectal cancer, but for advanced tumors it is associated with a higher risk of local and distant tumor recurrence.
- Newer techniques, such as TEM and TAMIS, improve visualization and versatility, and may have superior oncologic outcomes to conventional local excision.
- The use of neoadjuvant and adjuvant therapy in conjunction with local excision is an active area of research and there is no current consensus regarding these multimodality treatments.

INTRODUCTION

The ideal surgical treatment for rectal cancer would have negligible morbidity, and would be curative while maintaining intestinal continuity and excellent function. In most cases, this is an unrealized standard. In terms of oncologic outcome, total mesorectal excision (TME) provides the best long-term prognosis for rectal cancer, with low rates of local recurrence and excellent long-term survival. Depending on tumor location and morphology, TME can be performed with restoration of intestinal continuity (low anterior resection) or with removal of the anus and creation of a permanent colostomy (abdominoperineal resection). This type of radical surgery removes the tumor and its organ of origin en bloc with associated perirectal lymph nodes.

Although it does provide the best oncologic outcomes, TME is associated with a panoply of complications, including urinary tract infections, nonhealing perineal

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wounds, functional disorders, anastomotic leaks, strictures, and perioperative death.[1–3] Moreover, the 5-year local recurrence rates for radical surgery, even in cases of early-stage rectal cancers, still range from 2% to 8%.[4,5] Therefore, physicians have often used less-invasive techniques when possible that could mitigate the morbidity of rectal resection while providing the patient with acceptable oncologic results, particularly for early-stage rectal cancer.

Local excision (LE) of rectal cancer involves removal of the tumor itself without proctectomy. Interest in LE for early distal rectal cancers began in earnest after Morson and colleagues[6] published their experience at St. Mark's Hospital in London in 1977 demonstrating a low rate of local recurrence after excision with negative margins. This suggested that early rectal cancer could be definitively treated with LE, thereby sparing patients many of the morbidities of radical surgery. As enthusiasm for LE has grown, so has its use in the United States for early-stage rectal cancer.[7]

LE involves full-thickness resection of the tumor and a margin of rectum, down to the perirectal fat, but not necessarily including any draining lymphatics. Several different approaches to local excision have been used, including older transsphincteric and transcoccygeal techniques. Currently, the most widely used technique for LE is transanal excision (TAE). Conventional techniques are somewhat limited due to poor visualization and confinement to the distal rectum. Transanal endoscopic microsurgery (TEM) and transanal minimally invasive surgery (TAMIS) are more recent additions to the surgeon's armamentarium, and allow for improved visualization and access to the more proximal rectum.

PATIENT SELECTION

Premalignant Polyps

Adenomatous polyps often develop within the rectum, but size and morphology may prevent them from being amenable to complete endoscopic removal. Full-thickness or partial-thickness excision of these lesions can be done successfully via LE, and can avoid the morbidity of major pelvic surgery in a patient without an invasive cancer.

Rectal Adenocarcinoma

In general, LE should be reserved for favorable T1 lesions without irregular or enlarged lymph nodes. Patients under consideration for LE of rectal cancer should undergo routine staging, including computed tomography (CT) imaging of the chest, abdomen, and pelvis and serum carcinoembryonic antigen (CEA) level, as well as digital rectal examination, proctoscopy, and dedicated rectal imaging with MRI or endorectal ultrasound[8] to assess the depth of local invasion. Because lymphatics are not reliably removed with LE, the goal is to select patients with early-stage tumors that have a low risk for lymphatic involvement at the time of operation. A combination of physical examination findings, preoperative imaging, and histopathologic characteristics are taken into account (**Table 1**).

On digital examination, the tumor should be freely mobile, as fixed tumors are predictive of advanced disease.[9,10] Proctoscopic examination should determine tumor size, extent of rectal circumference involvement, and distance from the anal verge. Tumors larger than 4 cm or involving more than 50% of the rectal circumference are often excluded from local excision for technical reasons,[11] although large tumors still can be removed via LE with a selective approach, and circumferential or near-circumferential resections have been described in models.[12] Conventional local excision is limited to distal tumors (usually within 6–8 cm of the anal verge), whereas TEM and TAMIS have allowed for successful resection of more proximal lesions (8–20 cm from the anal verge).