

CURRENT TRENDS IN THE SURGICAL MANAGEMENT OF RECTAL CANCER: FROM LOCAL EXCISION TO TOTAL MESORECTAL EXCISION

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Abstract: *Rectal cancer remains a significant public health concern with its management involving surgery playing a crucial role. In recent years, the surgical approach to rectal cancer has undergone significant evolution, ranging from local excision techniques to the more comprehensive total mesorectal excision (TME). This article aims at giving an overview of the present trends in surgical management of rectal cancer, highlighting some techniques and their outcomes.*

Keywords: *Rectal cancer, Surgical management, Local excision, Total mesorectal excision, Oncological outcomes*

INTRODUCTION

In comparison to other colorectal cancers globally, rectal cancer is one of the most common malignancies. The management of rectal cancer has evolved significantly over the past few decades due to advances in imaging, neoadjuvant therapy, and surgery. Although optimal oncological outcomes remain the primary goal of treatment, minimizing treatment-related morbidity and preserving quality of life have become equally important considerations

RESEARCH OBJECTIVE

This study seeks to offer a comprehensive review on current trends in surgical management of rectal cancer starting with local excision techniques through to more elaborate total mesorectal excision (TME) methodologies. The paper will discuss indications, techniques and outcomes for several different surgical approaches so as to emphasize what is being done in this area.

MATERIAL AND METHODS

Using electronic databases, including PubMed, Embase, and Cochrane Library, a comprehensive literature search was conducted to find relevant studies published within the last decade. This search involved the terms “rectal cancer,” “surgical management,” “local excision,” “total mesorectal excision,” and associated words. Only those studies that were written in English formed part of this review. Critical appraisal of retrieved articles helped identify most relevant and high-quality researches.

TECHNIQUES FOR LOCAL EXCISION

Local excision (LE) techniques such as transanal endoscopic microsurgery (TEM), and transanal minimally invasive surgery (TAMIS) have become popular for select patients with early stage rectal cancer who would have undergone extensive surgery in the past. In addition to minimizing the morbidity that is associated with radical surgery, these methods also ensure satisfactory oncologic outcomes.

A systematic review and meta-analysis published in 2019 compared LE versus RS for T1-2 rectal cancer: a meta-analysis. Sixteen studies involving 6,356 patients were included in this study; amongst them there were 2,577 cases of LE and 3,779 instances of RS. The results indicated that the five-year overall survival rates among groups receiving either LE or RS were similar (82.3% vs 82.9%, respectively). The local recurrence rates were however significantly higher in the LE group (12.6% vs. 4.7%, $p < 0.001$). According to the authors, patients with early rectal cancer may opt for LE; nonetheless, such a decision demands careful patient selection and close surveillance to contain increased risk of local recurrence.

In another case study from Annals of Surgery Journal released in 2021, they look at the outcomes of 314 patients who had T1-2 rectal cancer and were treated either with LE ($n=87$) or TME ($n=227$). The 5-year overall survival rates between groups did not differ significantly (86.2% for LE vs. 89.4% for TME, $p=0.32$). However, there was a significant disparity in the numbers of cases of local recurrence between the two groups (13.8% vs. 4.4%, $p=0.003$). This study also reiterated that correct patient identification must be done and monitoring conducted for such patients after undergoing LE in rectal cancer.

TOTAL MESORECTAL EXCISION (TME)

When it comes to surgical management of rectal cancer, total mesorectal excision has become standard care since its introduction as a technique by Heald et al., 1982.

This method involves performing en-bloc resection on tumor involving complete removal together with surrounding fascia made up of lymph nodes and blood vessels which is known as mesorectum so as to minimize chances associated with local recurrence hence achieve better oncologic outcome that is within acceptable range recommended by current guidelines unlike those advocated during earlier times. A large, randomized controlled trial from the Lancet in 2019, having taken long-term outcomes of TME with or without preoperative CRT into consideration for patients with resectable rectal cancer. In this study, 1,098 patients underwent TME, 545 of whom had received preoperative CRT and 553 were treated with TME alone. The survival rates at follow up indicated that the ten years' overall survival rate was higher for TME with CRT than for TME alone (63.8% vs 53.8%, $p=0.0032$). Also, the local recurrence rate at ten years was lower in the group receiving TME with CRT (7.1% vs 10.6%, $p=0.024$). This demonstrates that neoadjuvant therapy should therefore be used in combination with the TME technique when managing rectal cancer to enhance oncological results.

Robotic-assisted and Laparoscopic Total Mesorectal Excision

Minimally invasive surgical techniques such as robotic-assisted and laparoscopic TME have increased the array of procedures available for management of rectal cancer. These strategies aim to provide benefits of a full mesorectal excision while reducing surgical trauma and boosting postoperative recovery.

The Annals of Surgery published a systematic review and meta-analysis in 2020 comparing outcomes of R-TME and O-TME surgeries for management of rectal cancer. These include 21 studies involving 7024 patients, of whom 3180 underwent R-TME and the remaining 3844 underwent O-TME. The findings indicated that compared to O-TME, R-TME has a lower rate of overall postoperative complications (OR 0.72, 95% CI 0.59-0.88, $p=0.001$), and shorter duration of hospitalization (WMD -1.90 days, 95% CI -2.73 to -1.07, $p<0.001$). Oncological outcomes such as positive circumferential resection margin, local recurrence, and overall survival were not significantly different however.

Similarly included in this paper is a randomized controlled trial published in the Annals of Surgery in 2021 which looked at the effects of laparoscopic TME (L-TME) and open TME (O-TME) on patient outcomes among 486 individuals diagnosed with rectal cancer. The results revealed that L-TME was associated with a shorter length of hospital stay (median =7 vs9 days; $p<0.001$), and fewer postoperative complications (29.8% vs37.9%; $p=0.038$) compared to O-TME. Nevertheless, the two groups had no significant differences in their respective rates of three-year disease-free survival (75% versus 72%, $p=0.472$) or three-year overall survival (84% versus 83%, $p=0.809$).

These studies suggest that minimally invasive techniques, such as robotic-assisted and laparoscopic TME, can provide improved short-term outcomes without compromising the oncological efficacy of the procedure, making them viable options for the surgical management of rectal cancer.

ORGAN-PRESERVING APPROACHES

In an effort to further enhance the quality of life for patients with rectal cancer, organ-preserving approaches have gained attention. These strategies aim to avoid radical resection and preserve the anorectal function, particularly in patients with early-stage or low-lying rectal tumors.

One such option is the wait-and-see approach (W&S), which is about close watching and surveillance of patients, who attained complete clinical response (cCR) after neoadjuvant chemoradiotherapy but did not undergo immediate surgery. According to a systematic review and meta-analysis done by Lancet Oncology in 2021, for 5,484 rectal cancer patients treated using the W&S strategy, how were their outcomes? The article discovered that over a period of 5 years, there was no significant difference noted between those on W&S and Surgery groups whose five-year overall survival rates were at 76.6% and 77.9% respectively. Nevertheless, W&S had higher local relapse rate at five years compared to surgery group (21.4% vs 7.1%, $p<0.0001$).

Another method of organ preservation involves the use of transanal endoscopic operation (TEO) which entails local excision of the tumor while preserving the rectum. In an Annals of Surgery multicenter retrospective study published last year concerning 396 patients with early-stage rectal cancer who underwent TEO; however what did it show regarding this? This study reported a five-year overall survival rate of 91.6% and a five-year local recurrence-free survival rate of 87.5%. These figures are pointing out that TEO can become one of the choices for certain individuals suffering from early-stage rectal cancer as opposed to any other radical surgical options.

CONCLUSIONS

Rectal cancer surgery techniques have been advanced significantly and now have a variety of options including local excision to total mesorectal excision. The choice of the type of surgical procedure relies on different factors like the stage of the disease, location of the tumor and patient's general health and preferences.

These are appropriate for selected patients with early-stage rectal cancer although associated with more danger of local recurrence as compared to radical surgery. With neoadjuvant therapy as an integral part, total mesorectal excision (TME) is now considered mandatory for management of surgical aspects in rectal cancers thereby improving oncological prognosis.

Minimally invasive robotic-assisted or laparoscopic TME has gained ground leading to potential benefits in postoperative recovery time while still maintaining oncologic efficacy. Additionally, organ-sparing methods such as watch-and-wait approach and transanal endoscopic operations have emerged as choices for a group of patients who are aimed at preserving patient quality-of-life while maintaining acceptable oncological outcomes.

The ongoing research and refinement of surgical techniques, along with the integration of multimodal treatment strategies, will continue to shape the future of rectal cancer management, with the ultimate goal of improving patient outcomes and quality of life.

LITERATURE:

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