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ABOUT COVER

AIMS AND SCOPE

The primary aim of *World Journal of Gastrointestinal Oncology* (*WJGO*, *World J Gastrointest Oncol*) is to provide scholars and readers from various fields of gastrointestinal oncology with a platform to publish high-quality basic and clinical research articles and communicate their research findings online.

WJGO mainly publishes articles reporting research results and findings obtained in the field of gastrointestinal oncology and covering a wide range of topics including liver cell adenoma, gastric neoplasms, appendiceal neoplasms, biliary tract neoplasms, hepatocellular carcinoma, pancreatic carcinoma, cecal neoplasms, colonic neoplasms, colorectal neoplasms, duodenal neoplasms, esophageal neoplasms, gallbladder neoplasms, *etc*.

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ORIGINAL ARTICLE

Retrospective Cohort Study

Local excision for middle-low rectal cancer after neoadjuvant chemoradiation: A retrospective study from a single tertiary center

Nan Chen, Chang-Long Li, Lin Wang, Yun-Feng Yao, Yi-Fan Peng, Tian-Cheng Zhan, Jun Zhao, Ai-Wen Wu

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Abstract

BACKGROUND

Rectal cancer has become one of the leading malignancies threatening people's health. For locally advanced rectal cancer (LARC), the comprehensive strategy combining neoadjuvant chemoradiotherapy (NCRT), total mesorectal excision (TME), and adjuvant chemotherapy has emerged as a standard treatment regimen, leading to favorable local control and long-term survival. However, in recent years, an increasing attention has been paid on the exploration of organ preservation strategies, aiming to enhance quality of life while maintaining optimal oncological treatment outcomes. Local excision (LE), compared with low anterior resection (LAR) or abdominal-perineal resection (APR) was introduced dating back to 1970's. LE has historically been linked to a heightened risk of recurrence compared to TME, potentially due to occult lymph node metastasis and intraluminal recurrence. Recent evidence has demonstrated that LE might be an alternative approach, instead of LAR or APR, in cases with favorable tumor regression after NCRT with potentially better quality of life. Therefore, a retrospective analysis of clinicopathological data from mid-low LARC patients who underwent LE after NCRT was conducted, aiming to evaluate the treatment's efficacy, safety, and oncologic prognosis.

AIM

To explore the safety, efficacy, and long-term prognosis of LE in patients with mid-low rectal cancer who had a good response to NCRT.

METHODS

Patients with LE between 2012 to 2021 were retrospectively collected from the

rectal cancer database from Gastro-intestinal Ward III in Peking University Cancer Hospital. The clinicopathological features, postoperative complications, and long-term prognosis of these patients were analyzed. The Kaplan-Meier method was used to create cancer-specific survival curve, and the log-rank test was used to compare the differences regarding outcomes.

RESULTS

A total of 33 patients were included in this study. The median interval between NCRT and surgery was 25.4 (range: 8.7-164.4) weeks. The median operation time was 57 (20.0-137.0) minutes. The initial clinical T staging (cT): 9 (27.3%) patients were cT2, 19 (57.6%) patients were cT3, and 5 (15.2%) patients were cT4; The initial N staging (cN): 8 patients (24.2%) were cN negative, 25 patients (75.8%) were cN positive; The initial M stage (cM): 2 patients (6.1%) had distant metastasis (ycM1), 31 (93.9%) patients had no distant metastasis (cM0). The pathological results: 18 (54.5%) patients were pathological T0 stage (ypT0), 6 (18.2%) patients were ypT1, 7 (21.2%) patients were ypT2, and 2 (6.1%) patients were ypT3. For 9 cT2 patients, 5 (5/9, 55.6%) had a postoperative pathological result of ypT0. For 19 cT3 patients, 11 (57.9%) patients were ypT0, and 2 (40%) were ypT0 in 5 cT4 patients. The most common complication was chronic perineal pain (71.4%, 5/7), followed by bleeding (43%, 3/7), stenosis (14.3%, 1/7), and fecal incontinence (14.3%, 1/7). The median follow-up time was 42.0 (4.0-93.5) months. For 31 patients with cM0, the 5-year disease-free survival (DFS) rate, 5-year local recurrence-free survival (LRFS) rate, and 5-year overall survival (OS) rate were 88.4%, 96.7%, and 92.9%, respectively. There were significant differences between the ycT groups concerning either DFS (P = 0.042) or OS (P = 0.002) in the Kaplan-Meier analysis. The LRFS curve of ycT ≤ T1 patients was better than that of ycT ≥ T2 patients, and the P value was very close to 0.05 (P = 0.070). The DFS curve of patients with ypT ≤ T1 was better than that of patients with ypT ≥ T2, but the P value was not statistically significant (P = 0.560). There was a significant difference between the ypT groups concerning OS (P = 0.014) in the Kaplan-Meier analysis. The LRFS curve of ypT ≤ T1 patients was better than that of ypT ≥ T2 patients, and the P value was very close to 0.05 (P = 0.070). Two patients with initial cM1 were alive at the last follow-up.

CONCLUSION

LE for rectal cancer with significant tumor regression after NCRT can obtain better safety, efficiency, and oncological outcome. Minimally invasive or nonsurgical treatment with patient participation in decision-making can be performed for highly selected patients. Further investigation from multiple centers will bring better understanding of potential advantages regarding local resection.

Key Words: Rectal cancer; Neoadjuvant chemoradiotherapy; Local excision; Prognosis

Core Tip: This retrospective study explores the safety, efficacy, and long-term prognosis of local excision (LE) in patients with middle-low rectal cancer who responded well to neoadjuvant chemoradiotherapy. The findings demonstrate that LE can achieve high rates of organ preservation and favorable oncological outcomes, including a 5-year disease-free survival rate of 88.4% and overall survival rate of 92.9%. Complications were manageable and non-severe. This study supports the potential of minimally invasive treatments in selected patients, highlighting the importance of patient participation in treatment decisions.

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INTRODUCTION

Rectal cancer has attracted more and more attention as a tumor worldwide. Neoadjuvant chemoradiotherapy (NCRT) followed by total mesorectal excision (TME) and adjuvant chemotherapy has been widely used as a classic treatment strategy for patients with locally advanced rectal cancer (LARC), which has shown good local control rate and survival results[1,2]. However, for mid-low rectal cancer, the traditional low anterior resection (LAR) or abdominal-perineal resection (APR) treatment has a series of disadvantages, such as LAR syndrome or permanent stoma[3,4]. In recent years, organ preservation strategy has been recognized by more and more surgeons. Morson *et al*[5] introduced their experience of the traditional transanal approach and surgical criteria for local excision (LE) of early rectal cancer in 1977. Since then, the application of LE for early rectal cancer has gradually increased, and patients have high function preservation and prognosis results[6-8]. However, for more advanced tumors, LE has long been associated with a higher risk of recurrence than TME, which is considered to be related to occult lymph node metastasis and intraluminal recurrence[9,10]. For

LARC, strengthening the intensity of preoperative treatment, such as total neoadjuvant therapy treatment strategy or consolidation chemotherapy, brings better tumor treatment response, and some patients may achieve clinical complete response (cCR) or near-cCR status[11,12]. To date, LE, known as the total mesorectal neglect strategy, for these well-responding rectal cancer patients is still in the exploratory stage[13,14]. The ACOSOG Z6041 study showed that for patients with early rectal cancer, NCRT combined with LE can obtain a better oncologic prognosis and a higher quality of life and anal function[15]. However, some studies have also reported that LE after NCRT has a high incidence of complications and a variable recurrence rate[16,17]. A meta-analysis showed no difference in the risk of postoperative complications between radical surgery and transanal endoscopic microsurgery[18]. Based on these inconsistent results, we retrospectively analyzed the clinicopathological data of patients with mid-low LARC who underwent LE after NCRT in our center and explored the efficiency, safety, and oncological prognosis.

MATERIALS AND METHODS

Patients' selection

The study subjects were rectal cancer patients with a follow-up period of more than 3 years, therefore, databased was formed focusing patients with LE between 2012 to 2021 were retrospectively collected from the rectal cancer database at Peking University Cancer Hospital., and local resection was chosen as the surgical treatment. The exclusion criterion was total mesorectal resection. Screening criteria: (1) Patients with mid-low rectal cancer treated with intensity-modulated radiation therapy (IMRT); and (2) Patients who underwent transanal LE or transanal minimally invasive surgery (TAMIS). The study was approved by the medical ethics committee of the Peking University Cancer Hospital, and informed consent was waived (2015KT31/2017KT104).

IMRT

The IMRT regimen consisted of 22 fractions of 2.3 Gy (gross tumor volume, GTV) and 1.9 Gy (clinical target volume, CTV), which has been described in our previous report[19,20]: The total dose of 50.6 Gy (GTV)/41.8 Gy (CTV) was administered 5 times per week over a period of 30 days. IMRT was administered using the Varian Rapid Arc system. The GTV was defined as the primary tumor, including the mesorectum. The CTV was defined as the primary tumor, mesorectal region, presacral region, mesorectal lymph nodes, lateral lymph nodes, internal iliac lymph node chain, or pelvic wall area. Capecitabine treatment was administered concurrently with IMRT at a dose of 825 mg/m^2 orally, twice *per* day.

LE

The patient was given general anesthesia. According to the location of the tumor, the lithotomy position (the tumor was located in the posterior wall of the rectum) or the jackknife position (the tumor was located in the anterior wall of the rectum) was used. Transanal LE or TAMIS surgery was performed by a skilled surgeon. Local full-thickness resection was performed using an ultrasonic scalpel or electric scalpel at a distance of 1cm from the tumor. The surgical wound was closed by continuous suture with barbed suture or intermittent suture with 4-0 absorbable sutures to ensure complete suture and no active bleeding. After flattening, the surgical specimen was fixed on a soft plate with a pin and sent to the pathology department for paraffin pathological examination. Negative margins were defined as microscopically confirmed full-thickness resections with a circumferential resection margin of 1 mm or more.

Follow up

Patients were regularly followed up every 3 months for the first 2 years and every 6 months thereafter for 3 years. After 5 years, follow-up visits were performed once a year until death or loss of follow-up. Follow-up examinations included digital rectal examination, serum tumor markers, thoracoabdominal/pelvic computed tomography or magnetic resonance imaging, and enteroscopy. Local recurrence-free survival (LRFS) was defined as the time from surgery to the local recurrence, final follow-up, or death (without recurrence or metastasis). Disease-free survival (DFS) was defined as the time from surgery to the first recurrence (local or distant), final follow-up, or death (without recurrence or metastasis). Overall survival (OS) was defined as the time from surgery to death from any cause or final follow-up. The follow-up information was obtained through telephone communication or inquiry into outpatient medical records.

Statistical analysis

Statistical analyses were performed using R software (4.0.4, R Foundation for Statistical Computing, Vienna, Austria). The 'survival' and 'survminer' package were used for survival analysis, and the 'ggplot2' package was used for plotting. The clinicopathological characteristics of patients were descriptive. The measurement variables were expressed as means and standard deviations. Count variables were expressed as percentages. The Kaplan-Meier method was used to draw the tumor-specific survival curve. The Log-rank test was used to examine differences in outcomes. Differences with *P*-values < 0.05 were considered statistically significant.

RESULTS

Basic information of patients

A total of 33 patients were included in this study, and the basic information is shown in Table 1. There were 16 (48.5%) males and 17 (51.5%) females, aged 61.0 (28.0-75.0) years; The median distance between the lower edge of the tumor and the anal verge was 3 (1.0-10.0) cm. The median interval time between NCRT and surgery was 25.4 (8.7-164.4) weeks. The median operation time was 57 (20.0-137.0) min. Four patients underwent salvage APR surgery, and organ preservation was achieved in 29/33 (87.9%) patients. The initial clinical T staging (cT): 9 (27.3%) patients were cT2, 19 (57.6%) patients were cT3, and 5 (15.2%) patients were cT4; The initial N staging (cN): 8 patients (24.2%) were cN negative, 25 patients (75.8%) were cN positive; The initial M stage (cM): 2 patients (6.1%) had distant metastasis (cM1), 31 (93.9%) patients had no distant metastasis (cM0).

Treatment response of the patients

The pathological results: 18 (54.5%) patients were pathological T0 stage (ypT0), 6 (18.2%) patients were ypT1, 7 (21.2%) patients were ypT2, and 2 (6.1%) patients were ypT3. Table 2 shows the treatment response of the patients. For 9 cT2 patients, 5 (5/9, 55.6%) had a postoperative pathological result of ypT0. For 19 cT3 patients, 11 (57.9%) patients were ypT0, and 2 (40%) were ypT0 in 5 cT4 patients.

Perioperative complications of patients

Table 3 shows the perioperative complications of patients. The overall postoperative complication rate was 21.2% (7/33). The most common complication was bleeding (43%, 3/7), followed by chronic perineal pain and stenosis.

Long term of follow-up

The median follow-up time was 42.0 (4.0-93.5) months. For 31 patients with cM0, the 5-year DFS rate, 5-year LRFS rate, and 5-year OS rate were 88.4%, 96.7%, and 92.9%, respectively. Three patients (9.7%, 3/31) had disease progression, including 2 cases of distant metastasis (1 case of lung metastasis, 1 case of bone metastasis) and 1 case of local tumor recurrence and distant metastasis (sacrum and lung metastasis). After local recurrence or distant metastasis, patients received systemic combined local treatment, one patient achieved no evidence of disease status, and two patients died (Shown in Table 4). Figure 1, Figure 2, and Figure 3 show the survival of patients with different cT stages, ycT stages, and ypT stages. There were no significant differences between the cT groups concerning DFS, LRFS or OS in the Kaplan-Meier analysis. There were significant differences between the ycT groups (ycT ≤ T1 *vs* ycT ≥ T2) concerning either DFS (P = 0.042) or OS (P = 0.002) in the Kaplan-Meier analysis. The LRFS curve of ycT ≤ T1 patients was better than that of ycT ≥ T2 patients, and the P value was very close to 0.05 (P = 0.070). The DFS curve of patients with ypT ≤ T1 was better than that of patients with ypT ≥ T2, but the P value was not statistically significant (P = 0.560). There was a significant difference between the ypT groups (ypT ≤ T1 *vs* ypT ≥ T2) concerning OS (P = 0.014) in the Kaplan-Meier analysis. The LRFS curve of ypT ≤ T1 patients was better than that of ypT ≥ T2 patients, and the P value was very close to 0.05 (P = 0.070). Two patients with initial cM1 were alive at the last follow-up.

DISCUSSION

There are few studies on LE after NCRT for rectal cancer, and there are significant differences in surgical indications, technical and pathological reports, postoperative complications, and survival[13,21,22]. The efficacy of LE in patients with different stages is inconsistent[23-26]. This study retrospectively collected the data of patients who underwent LE in our center and clarified the good organ preservation rate, oncological outcomes, and the safety and efficacy of LE after NCRT for rectal cancer. In addition, we found that for patients with initial cM1 and significant local tumor regression after preoperative treatment, LE combined with late systemic treatment also seems to have better clinical results. We believe that for highly selected patients, under the guarantee of salvage surgery and complete postoperative follow-up, the treatment strategy of LE with patient participation in decision-making after NCRT can not only obtain organ preservation but also achieve good long-term survival outcomes.

Safety and efficiency

Our results show that LE is feasible and effective for rectal cancer with significant tumor regression after NCRT. LE was successfully performed in all patients with a median postoperative hospital stay of 4 days. The median operation time was 57.0 minutes, the median intraoperative blood loss was about 10 mL, and no intraoperative adverse events occurred. These results are better than those of conventional TME surgery, which is consistent with the results reported in the meta-analysis[18]. Four patients underwent salvage APR surgery, and organ preservation was achieved in all 29 patients. Previous studies have found that the incidence of complications of LE after NCRT is not low, mainly manifested as incision dehiscence, bleeding, and pain[15-17,27]. Gascon *et al*[28] reported the results of local full-thickness excision for 404 patients with rectal adenoma or rectal cancer, with a complication rate of 12.6%, among which postoperative bleeding was the most common early complication, with an incidence rate of 8%, but the patients in this study did not receive radio chemotherapy before surgery. Geubels *et al*[29] reported LE in patients with regeneration after watch and wait (WW) and the authors believed that LE after radiotherapy had higher surgical complications compared with patients who did not receive radiotherapy. In our study, all patients received preoperative IMRT, which caused intestinal edema,

Table 1 Clinicopathological characteristics of 33 patients

Variables	*n* (%) or median (range)
Age (years)	61.0 (28.0-75.0)
Gender	
Male	16 (48.5)
Female	17 (51.5)
Diameter of lesion (cm)	2.0 (1.0-3.0)
Distance from the anal verge (cm)	3.0 (1.0-10.0)
cT baseline	
1	0 (0.0)
2	9 (27.3)
3	19 (57.6)
4	5 (15.2)
cN baseline	
Negative	8 (24.2)
Positive	25 (75.8)
cM baseline	
M0	31 (93.9)
M1	2 (6.1)
ycT	
0	21 (63.6)
1	5 (15.2)
2	6 (18.2)
3	1 (3.0)
4	0 (0.0)
ypT	
0	18 (54.5)
1	6 (18.2)
2	7 (21.2)
3	2 (6.1)
4	0 (0.0)
Differentiation	
G1	3 (9.1)
G2	29 (87.9)
G3	1(3.0)
Baseline CEA	
Normal	32 (97.0)
Abnormal	1 (3.0)
Interval between NCRT and surgery (week)	25.4 (8.7-164.4)
Chemotherapy	
Cap	13 (39.4)
CapeOx	20 (60.6)
Surgical duration (minute)	57.0 (20.0-137.0)

Blood loss (mL)	10.0 (5.0-50.0)
Postoperative hospital stay (days)	4.0 (1.0-11.0)
Complication	
No complication	26 (78.8)
With complication	7 (21.2)
CD grade	
Grade I	1 (3)
Grade II	6 (18.2)
Grade III-IV	0 (0.0)
Recurrence	
No	31 (93.9)
Yes	2 (6.1)
Metastasis (cM0, *n* = 31)	
No	28 (90.3)
Yes	3 (9.7)
Follow-up time (month)	42.0 (4.0-93.5)

CEA: Carcinoembryonic antigen; NCRT: Neoadjuvant chemoradiotherapy; CD: Clavien dindo; Cap: Capecitabine; CapeOx: Capecitabine + oxaliplatin.

Table 2 Clinical-pathological response to neoadjuvant chemoradiation, *n* (%)

Pre-cT	ypT after local excision			
	ypT0	ypT1	ypT2	ypT3
cT2 (*n* = 9)	5 (55.6)	2 (22.2)	2 (22.2)	0 (0.0)
cT3 (*n* = 19)	11 (57.9)	3 (15.8)	4 (21.1)	1 (5.3)
cT4 (*n* = 5)	2 (40.0)	1 (20.0)	1 (20.0)	1 (20.0)

Table 3 Patients with perioperative complications

Gender	Age	Neoadjuvant	Interval from NCRT to local excision (week)	Type of complications	Clavien-Dindo grades
Male	74	NCRT	69	Bleeding	II
Male	68	NCRT	18	Bleeding	I
Female	59	NCRT	11	Perineal pain	II
Female	71	NCRT	11	Perineal pain	II
Male	40	NCRT + CapOx	24	Perineal pain + stricture	II
Male	56	NCRT + CapOx	59	Pain + fecal incontinence	II
Female	66	NCRT + CapOx	32	Bleeding + pain	II

NCRT: Neoadjuvant chemoradiotherapy; CapOx: Capecitabine + oxaliplatin.

fibrosis changes, and relatively poor intestinal quality, which could explain the high overall complication rate of 21.2% (7/33). The most common complication was chronic perineal pain (71.4%, 5/7), followed by bleeding (43%, 3/7), stenosis (14.3%, 1/7), and fecal incontinence (14.3%, 1/7). However, all complications were grade I-II and improved after the drug or conservative treatment, and no serious postoperative adverse events occurred. Therefore, we believe that LE has good safety for rectal cancer with a good response after NCRT. There is no unified standard for LE after chemoradiotherapy. The experience of our center is as follows: For residual tumors or scars after chemoradiotherapy, it is recommended to perform localized scar and full-thickness bowel wall resection followed by full-thickness suture. Because the defect of the intestinal wall after tumor resection, especially the significant retraction of the mucosa, will make the tension of the

Table 4 Patients with disease progression after local excision

Patient (sex/age)	Primary staging				NCRT	Interval time (week)	Response		Disease progression		Prognosis			
	cT	cN	cM	High-risk factor (s)			mrTRG	ypT	Local recurrence	Distant metastasis	Treatment	DFS (month)	OS (month)	Status
Male/74	T4	N1	cM0	cT4	NCRT	8.7	0	ypT0	Negative	Bone	C	9.3	64.6	Dead
Female/57	T3	N2	cM0	EMVI+	NCRT + CapOx2	9	0	ypT0	Negative	Lung	C+ resection	27.5	76.5	Alive (NED)
Female /61	T2	N2	cM0	N2	NCRT	101	3	ypT0	Positive	Sacrum and Lung	Resection	6.1	49.4	Dead
Female /36	T4	N1	cM1	cT4	CRT + CapOx2	19	2	ypT2	Negative	Lung	C+ resection		42.0	Alive (NED)
Female /30	T4	N2	cM1	cT4	CRT+CapOx1	36	1	ypT0	Positive	Liver	Resection		27.5	Alive (NED)

NCRT: Neoadjuvant chemoradiotherapy; EMVI: Extramural venous invasion; DFS: Disease-free survival; OS: Overall survival; NED: No evidence of disease; CapOx: Capecitabine + oxaliplatin.

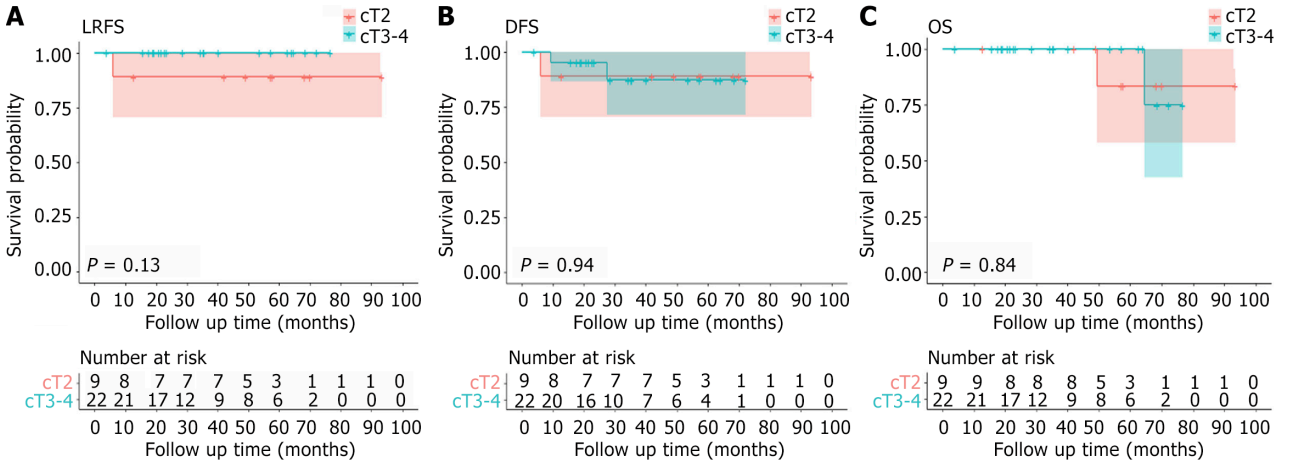

Figure 1 The prognosis analysis of 31 cM0 patients by Kaplan–Meier curves for cT stage groups. A: Local recurrence-free survival curves (P = 0.127); B: Disease-free survival curves (P = 0.945); C: Overall survival curves (P = 0.838). LRFS: Local recurrence-free survival; DFS: Disease-free survival; OS: Overall survival.

primary suture high. So the problems of incision dehiscence, dead space, and infection caused by large-scale mucosal resection and simple mucosal suture should be avoided. For the mass of the anterior wall, attention should be paid to the protection of the prostate or vagina with a rich blood supply during the suture, to avoid intraoperative or postoperative bleeding.

Prognosis

As a surgical treatment method that ignores the whole mesentery, LE breaks the long-standing principle of TME, but local recurrence is its Achilles heel, and patients with different T stages have different recurrence rates[30]. In a multicenter prospective study of LE in T1 patients and LE plus adjuvant chemoradiotherapy in T2 patients, the 7-year local recurrence rate was 8% in T1 patients and 18% in T2 patients[23]. A systematic review including 20 studies and 1068 patients showed that the local recurrence rate of ypT0 patients was 4%, and that of ypT1-3 patients was more than 21.9% [31]. In our study, the local recurrence rate was 0% (0/17) in patients with ypT0 and 7.1% (1/14) in patients with ypT1-3. No recurrence or metastasis events occurred in the 2 patients with ypT3. One of the patients with ypT3 underwent salvage surgery, and the other patient refused salvage surgery and took an observation strategy. Local recurrence occurred in only 1 (ycT2/ypT2) of 31 patients with cM0 rectal cancer and did not result in uncontrolled regional disease. Our study showed a very high local control rate, and the overall 5-year LRFS rate was 96.7%. The 5-year DFS rate was 88.4%, which is similar to CARTS Study[9], but our study had more clinical stage III patients and a better local recurrence rate. Although 3 patients (9.7%, 3/31) had disease progression (recurrence and/or metastasis), the OS of the patients after systemic therapy was up to 76.5 months, and the 5-year OS rate was 92.9%, showing a good survival result. Similar to our findings, ACOSOG Z6041 also showed favorable oncological outcomes. When the authors performed NCRT plus LE

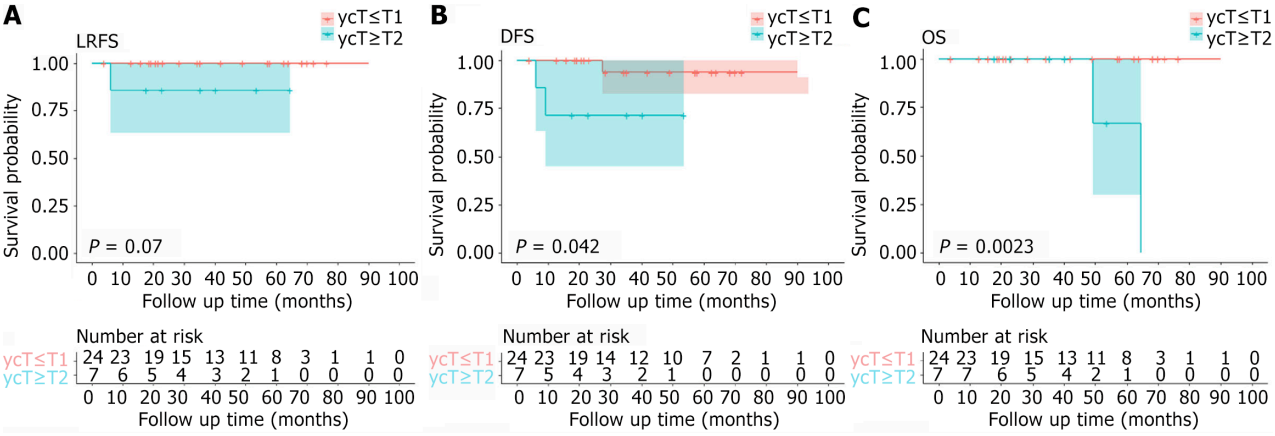

Figure 2 The prognosis analysis of 31 cM0 patients by Kaplan– Meier curves for ycT stage groups. A: Local recurrence-free survival curves (P = 0.070); B: Disease-free survival curves (P = 0.042); C: Overall survival curves (P = 0.002). LRFS: Local recurrence-free survival; DFS: Disease-free survival; OS: Overall survival.

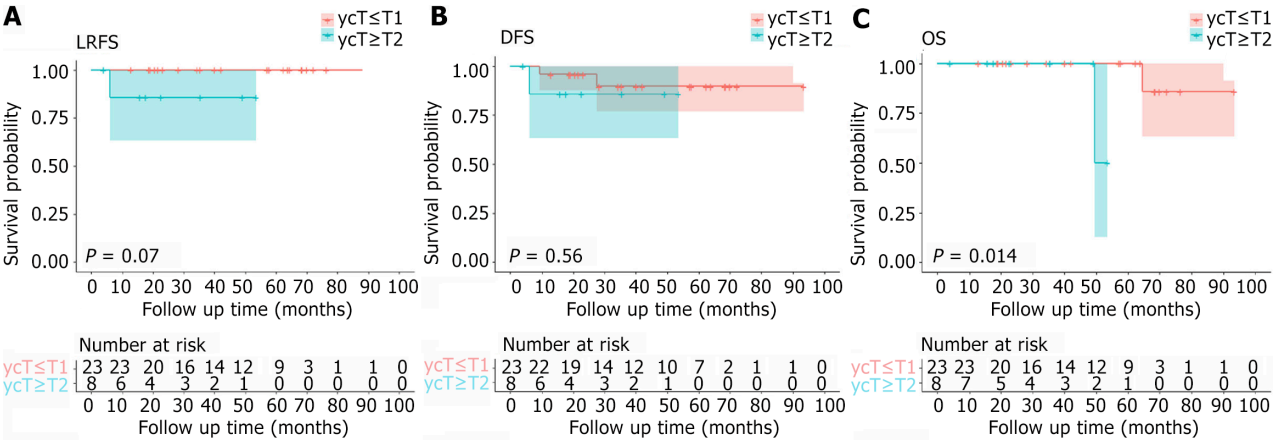

Figure 3 The prognosis analysis of 31 cM0 patients by Kaplan–Meier curves for ypT stage groups. A: Local recurrence-free survival curves (P = 0.070); B: Disease-free survival curves (P = 0.560); C: Overall survival curves (P = 0.014). LRFS: Local recurrence-free survival; DFS: Disease-free survival; OS: Overall survival.

surgery in T2N0 patients, distant recurrence occurred in 6% of patients and local recurrence occurred in 4% of patients, resulting in 3-year disease-free and OS rates of 88% and 95%, respectively[15]. We believe that this better prognosis result was due to patient screening. In our study, after intensive NCRT, most of the patients were the ypT0-2 stage, and only 2 were ypT3 stage. On the other hand, salvage surgery based on postoperative pathology ensures a good prognosis for patients. The 2 initial M1 patients were both alive at the last follow-up, and the OS was 27.5 months and 42.0 months, respectively, which achieved a good prognosis but needed more data support. We believe that for highly selected patients, under the guarantee of salvage surgery and complete postoperative follow-up, the treatment strategy of LE after NCRT can not only obtain organ preservation but also achieve good long-term survival outcomes.

Our study did not involve the analysis of predictive factors for tumor recurrence and metastasis. However, the KM survival curve showed that the LRFS, DFS, and OS curves of patients with earlier ycT and ypT stages (ycT ≤ T1 and ypT ≤ T1) were better than those of other patients. Previous reports have shown that the pT stage, sm stage, tumor grading, histological risk status, and local surgical resection technique are independent risk factors for local recurrence[6,32]. Other studies have also shown a large difference in the recurrence rate of different T stages. It has been reported that the 5-year LRFS after local resection is 28%, which is 18% in T1 patients and 47% in T2 patients[30]. In our study, the 5-year LRFS rates of patients with ycT0-1 and ypT0-1 were both 100%, so we should strengthen the follow-up of patients with ypT2 and more after LE.

Our study had some limitations. First, it was a retrospective study. High-quality prospective randomized controlled studies may be needed to verify our better results. Second, the number of patients is not large, and this limited our statistical analyses, and we may need to expand the sample size for further verification.

Prospect

For rectal cancer patients with near-cCR after NCRT, selective implementation of LE is a safe and effective treatment strategy. For patients judged as cCR or possible pCR, the non-surgical strategy of the WW strategy can be selected[11]. Even in the WW process, early local regeneration followed by LE is a safe and effective treatment strategy. So, we

emphasize the importance of predicting tumor response to NCRT, which is also described in our other article. Minimally invasive or nonsurgical treatment with patient participation in decision-making can be performed for highly selected patients.

CONCLUSION

LE for rectal cancer with significant tumor regression after NCRT can obtain better safety, efficiency, and oncological prognosis. Minimally invasive or nonsurgical treatment with patient participation in decision-making can be performed for highly selected patients. More studies are needed to verify this result.

FOOTNOTES

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