Original Article

Local Treatment First or Direct Surgery for T1 Colorectal Cancer? A Single Institutional Retrospective Cohort Study

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Key Words
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Local treatment

Purpose. The aim of this paper is to clarify the long-term survivals of patients with T1 colorectal carcinoma treated with local treatment alone, local treatment and subsequent surgery, and surgery alone.
Methods. 163 patients with T1 colorectal adenocarcinoma treated during 2014-2021 in a tertiary cancer center in Kaohsiung City, Taiwan, had been followed up for up to 7 years. Treatment methods were classified into three groups which were local treatment (LT) alone, radical surgery (RS) alone, and local treatment with additional radical surgery (LT + RS). Overall survival (OS), disease-specific survival (DSS), and relapse free survival (RPS) were calculated with Kaplan-Meier method and compared with log-rank test. Predictors of lymph node metastases (LNM) were analyzed; post-procedural complications were recorded and analyzed.
Results. In patients who received local treatment (LT) only (n = 15, 9.2%), the 3-year OS, DSS, and RFS was 100%, 100% and 100%, respectively; in patients who received radical surgery (RS) only (n = 39, 23.9%), the 3-year OS, DSS and RFS was 97.3%, 100% and 94.4%; in patients who received local treatment with additional surgery (LT + RS) (n = 109, 66.9%), the 3-year OS, DSS, and RFS was 95.3%, 100.0% and 95.3%. Positive lymphovascular invasion was independently related with LNM. Overall surgery-related severe complication (Dindo-Clavien's grade III-V) rate was 6.1%, and overall local-treatment-related severe complication rate was 3.2%. No significant difference for severe complications was found between three treatment method groups.
Conclusion. The long-term outcomes didn't differ whether pT1 colorectal cancer were treated with local treatment alone, local treatment with additional surgery, or surgery alone.

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Colorectal cancer has been one of the most commonly diagnosed cancers and one of the leading causes of cancer death in the world. In the year 2018, more than 1 million new cases were diagnosed of colorectal cancer, and over five hundred thousands patients died of colorectal cancers.[1] With the popularization of national colorectal cancer screening program in Taiwan since 2004, colorectal cancer has been detected at a much earlier stage in recent years with a considerable incidence. Current treatment options of

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early colorectal cancer (T1 lesions, malignant polyps) include local resection with colonoscopic/transanal polypectomy, endoscopic mucosal resection (EMR), endoscopic submucosal dissection (ESD), primary surgery or additional surgery following local resection. According to the Japanese Society for Cancer of the Colon and Rectum (JSCCR) guidelines 2019, patients with a clinical T1 lesion that is judged as "slightly invasive" by endoscopic findings should undergo endoscopic resection whenever *en bloc* resection is possible.[2] However, endoscopic resection does not provide lymph node metastases (LNM) status, therefore various predictors of LNM have been proposed and examined in numerous studies conducted in recent years with the attempt to identify more accurately the patients of "high risk" who require additional surgical bowel resection to avoid unnecessary surgery that accompanied with increased morbidity and mortality. Despite discrepancies between individual studies, it has been reported that patient age, mucinous carcinoma, tumor grade, primary tumor location, submucosal invasion, positive resection margins, lymphovascular invasion and invasion depth more than 1000 μm might be predictive for LNM in T1 colon cancers, thus patients with these "unfavorable" clinical or pathological features will be advised to receive additional surgery after local resection.[2-5] Doubts have been raised about performing local resection prior to surgery in patients whose tumors require surgical resection may in fact delay the time to surgical resection and further affect the outcomes of colorectal cancer. The aim of this study is to evaluate long-term outcomes including overall survival, disease-specific survival, and relapse-free survival in patients with pT1 colorectal cancer after treatment.

Methods

Patients

From January 1st, 2014 to June 1st, 2021, all consecutive patients who had been diagnosed with colorectal cancer and treated at a tertiary medical center, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan, were identified through the Cancer Registry Database of Kaohsiung Veterans General Hospital. Data were retrospectively retrieved from the electronic medical records. Patients who met following criteria were excluded: (I) pathological T2-T4 staging (based on definitive pathology) according to the American Joint Committee on Cancer TNM staging, (II) non-elective surgery, (III) patients with synchronous colorectal cancer, hereditary colorectal cancer, or inflammatory bowel disease, (IV) tumors with clinical distant metastases (clinical M1 staging) identified at the time of diagnosis, (V) tumors other than adenocarcinoma, and (VI) patients who underwent neoadjuvant treatment such as neoadjuvant chemoradiotherapy for rectal cancer. Eventually, a total of 163 cases were enrolled in our study. Follow-up was until June 1st, 2021. Patients with a hospital visit after April 1st, 2021 were listed as alive. For patients with a last hospital visit on records before April 1st 2021, the researchers contacted the patients by phone calls and verified whether the patient was still alive and whether they had cancer recurrence or other additional colorectal cancer treatments during follow-up in another institution. Three patients whose contact were failed were listed as "lost in follow-up". Blood tests including carcinoembryonic antigen and abdominal computed tomography were checked every 6 months during follow-up.

This study was approved by the Ethics Committee of Kaohsiung Veterans General Hospital (certification number: 220810-7). Individual consent was not required because of the retrospective nature of the study.

Treatments

Treatment methods were classified into three major groups for analyses as "local treatment (LT)", "local treatment and surgery (LT + RS)", and "radical surgery (RS)". The term "local treatment" referred to polypectomy carried out by either endoscopic method or transanal method, endoscopic mucosal resection (EMR), and endoscopic submucosal dissection (ESD). The group "radical surgery (RS)" included any kinds of colectomies either open or laparoscopic following diagnosis of colon cancers.

Outcomes

The primary outcome measures were overall survival, disease-specific survival, and relapse-free survival (no local recurrence and/or new metastasis within follow-up). Secondary outcomes were: (I) predictors of LNM, (II) post-procedural complications that were defined as occurring either within 90 days following local treatment and/or surgery and were classified according to the Clavien-Dindo classification.

Statistical analysis

Statistical analyses were carried out by using statistical package for social sciences (SPSS 26, Windows version, IBM) software. The overall survival, disease-specific survival and relapse-free survival were calculated by the Kaplan-Meier method and the survival rates were compared with log-rank test. Continuous variables for LNM were insignificant in Kolmogorov-Smirnov test for normal distribution and therefore were compared with Mann-Whitney U test. Categorial variables were compared with Pearson's chi-squared test and Fisher's exact test when appropriate. Post-procedural complications were analyzed with regard to treatment methods using Pearson's chi-squared test. Confidence intervals (CI) were set at 95% and p values of less than 0.05 were considered significant.

Results

Patient characteristics

After excluding patients who met our exclusion criteria, eventually a total of 163 patients were eligible for our analyses. Among these patients, 95 (58.3%) were male and 68 (41.7%) were female. Median age was 65 years old (ranging from 28 to 87).

Median follow-up time was 34 months (ranging from 0 to 87). Three patients were lost in follow-up due to missing contact information (two patients didn't answer the phone despite multiple attempts; the other one patient left a wrong phone number). Patient clinical characteristics are listed in Table 1.

Treatment procedures

A total of 15 (9.2%) patients received only local treatment (including polypectomy, EMR and ESD) for their malignant polyps; a total of 109 (66.9%) patients received additional colectomy surgery after prior local treatment; a total of 39 (23.9%) patients received only surgical resection after diagnosis of malignant polyps. In all the patients who ever received local treatment (n = 124), 91 patients (73.4%) received polypectomies, 25 patients (20.7%) received EMR, and 8 patients (6.5%) received ESD. As for the polyp morphology types, of all the treated malignant polyps, 117

Table 1. Patient characteristics grouped by treatment methods

	Overall	LT	LT + RS	RS	p value
No. of patients, n (%)	163	15 (9.2)	109 (66.9)	39 (23.9)	
Age (years), median [range]	65 [28-87]	66 [54-80]	63 [32-87]	65 [28-82]	0.200
Gender, n (%)					0.271
Male	95 (58.3)	6 (40.0)	64 (58.7)	25 (64.1)	
Female	68 (41.7)	9 (60.0)	45 (41.3)	14 (35.9)	
ASA score					0.879
1	15 (9.2)	2 (13.3)	9 (8.3)	4 (10.3)	
2	105 (64.4)	8 (53.3)	71 (65.1)	26 (66.7)	
3	43 (26.4)	5 (33.3)	29 (26.6)	9 (23.1)	
Tumor location, n (%)					0.313
Right side	25 (15.3)	1 (6.7)	17 (15.6)	7 (17.9)	
Left side	81 (49.7)	6 (40.0)	59 (54.1)	16 (41.0)	
Rectum	57 (35.0)	8 (53.3)	33 (30.3)	16 (41.0)	

LT = local treatment; RS = radical surgery.

(71.8%) polyps were classified as Paris type 0-I, 46 (28.2%) polyps were classified as Paris type 0-II. Types of local treatment methods and polyp types based on Paris classification were listed in Table 1-1.

Patient/histopathological characteristics and lymph node metastases

A total count of 15 (9.2%) patients who received local treatment only were excluded for the analysis for LNM due to lack of lymph nodes harvesting. Among those patients who had surgical pathology data with harvested lymph nodes for analysis, 19 (12.8%) patients had LNM. The median of the number of harvest lymph nodes was 17 (ranging from 2 to 51). High risk features thought to be related with a more invasive disease were identified in the initial local resection pathological specimen such as poorly differentiated histology (only 1 in all cases, 0.7%), lymphovascular invasion (20 patients, 12.4%), tumor budding (73 patients, 47.4%), and piecemeal resection (7 patients, 5.6%). Overall lymph nodes metastatic rate was 12.8%. When grouped by tumor location, the lymph node metastatic rate was as followings: right-side colon (from cecum to transverse colon) 0.0%, left-side colon (from splenic flexure to sigmoid colon) 16.0%, and rectum (from 0 to 18 cm above anal verge) 14.3%. Among all the "high risk" pathological features, a statistically significant difference was observed in patients with lymphovascular invasion ($p = 0.026$). The association of patients' clinical characteristics and histopathological features with LNM are listed in Table 2.

Procedures and complications

There were 32 complication events reported in the medical records, and they were listed in order of severity according to the Dindo-Clavien's grading system in Table 3. A total of 15 patients (9.2%) were reported as having severe (Dindo-Clavien's grade III to V) post-procedural complications, including one (0.6%) fatal complication (anastomotic leakage leading to intraabdominal abscess with septic shock and subsequent multiorgan failure) reported. Among these severe complications, anastomotic leakage events were the most frequently reported, which accounted for 4 cases (26.7% of all severe complications). Of all the patients who received only local resection, only one (6.7%) severe complication was reported; in patients who received local resection and then surgery, a total of 9 (8.2%) patients reported severe complications; in patients who received only surgery, a total count of 4 patients (10%) reported severe complications. No significance was found between treatment methods and severe complications using Pearson's chi-squared test. In patients who ever received local treatment regard-

Table 1-1. Local treatment and polyp types

	Overall	LT	LT + RS	RS	*p* value
No. of patients, *n* (%)	163	15 (9.2)	109 (66.9)	39 (23.9)	
Local treatment, *n* (%)	124	15 (12.1)	109 (87.9)	N/A	0.046*
Polypectomy	91 (73.4)	8 (53.3)	83 (76.1)		
EMR	25 (20.7)	4 (26.7)	21 (19.3)		
ESD	8 (6.5)	3 (20.0)	5 (4.6)		
Target polyp type, *n* (%)					0.092
Paris type 0-I	117 (71.8)	8 (53.3)	81 (74.3)	28 (71.8)	
Is		3 (20.0)	35 (32.1)	12 (30.8)	
Isp		2 (13.3)	20 (18.3)	8 (20.5)	
Ip		3 (20.0)	26 (23.9)	8 (20.5)	
Paris type 0-II	46 (28.2)	7 (46.7)	28 (25.7)	11 (28.2)	
IIa		7 (46.7)	20 (18.3)	7 (17.9)	
IIb		0 (0.0)	8 (6.6)	4 (10.3)	
IIc		0 (0.0)	0 (0.0)	0 (0.0)	
Paris type 0-III		0 (0.0)	0 (0.0)	0 (0.0)	

* $p < 0.05$.

Table 2. Patients' clinical and histopathological characteristics with LN metastases

	LN metastases		
	No, *n* = 129	Yes, *n* = 19	*p* value
Age (years)	64 [28-87]	62 [41-77]	0.750
Sex			0.465[a]
Male	76 (58.9)	13 (68.4)	
Female	53 (41.1)	6 (31.6)	
Tumor location			0.117
Right side	24 (18.6)	0 (0.0)	
Left side	63 (48.8)	12 (63.2)	
Rectum	42 (32.6)	7 (36.8)	
Treatment methods			0.584[a]
Local treatment and surgery	96 (74.4)	13 (68.4)	
Surgery	33 (25.6)	6 (31.6)	
Tumor size (mm)	17.0 [5.0-70.0]	16.0 [8.0-25.0]	0.424
Invasion depth (mm)	2.0 [0.5-6.0]	4.5 [1.0-10.0]	0.052
Histopathological features			
Local resection margin (mm)	1.3 [0.0-9.0]	1.0 [0.0-1.1]	0.290
Poorly differentiated	0 (0.0)	1 (5.9)	0.124[a]
Lymphovascular invasion	14 (11.0)	6 (31.6)	0.026[a]*
Tumor budding	57 (46.7)	11 (64.7)	0.200[a]
Piecemeal resection	5 (5.2)	1 (7.7)	0.542[a]

[a] Fisher's exact test; * $p < 0.05$.

Table 3. Complications classified with Dindo-Clavien's grading system

Postoperative complications	Number of patients (%)
Dindo-Clavien grade I	3 (1.8)
Atelectasis	2
Subcutaneous emphysema	1
Dindo-Clavien grade II	14 (8.6)
Ileus	7
Wound infection	4
Pneumonia	1
Acute urine retention	1
Lymph leakage	1
Dindo-Clavien grade III	8 (4.9)
Internal herniation of small bowel	1
Intraluminal bleeding	2
Intraabdominal bleeding	3
Bowel perforation	2
Dindo-Clavien grade IV	6 (3.7)
Anastomotic leakage	4
Pulmonary embolism	1
NSTEMI	1
Dindo-Clavien grade V	1 (0.6)
Death	1

NSTEMI, non-ST elevation myocardial infarction.

less of additional surgery (*n* = 124), 4 local treatment-related severe complications were reported (two post-EMR bleeding and two ESD-related bowel perforations) with a local treatment-related severe complication rate of 3.2%; in patients who ever received surgical resection regardless of prior local treatment (*n* = 148), 9 surgery-related severe complications (four anastomotic leakages, one internal herniation of small bowel necessitated surgical correction and three intra-abdominal bleeding) with a surgery-related severe complication rate of 6.1%. Median tumor size in patients with severe complications was 11 mm (ranging from 7 mm to 60 mm); median tumor invasion depth in patients with severe complications was 2.0 mm (ranging from 1.0 mm to 6.0 mm). Also, no association was discovered between tumor size and invasion depth and severe complications by Mann-Whitney U test. The association of treatment methods, tumor size and invasion depth with severe complications are listed in Table 4.

Survival analysis based on treatment methods

The three patients who lost to follow-up were included as censored data for survival analysis. A total of eight patients died during follow-up period with an

overall mortality of 5.0%, and three of them died because of colorectal cancer disease with a disease-related mortality rate of 1.9%. Among the three disease-related mortalities, two of them died of cancer recurrence and the other one of them died of a metachronous colorectal cancer. From the other five non-colorectal-cancer mortalities, three of them died of other cancers including lung cancer and prostate cancer, one died of car accident, and one die of postoperative anastomotic leakage which led to intraabdominal abscess formation and subsequent septic shock and multiorgan failures on postoperative day 58. For patients who received local treatment only, the observed 3-year overall survival (OS) rate was 100.0%, 3-year disease-specific survival (DSS) rate was 100.0%, and 3-year relapse-free survival (RFS) rate was 100.0%, and longer-term survival rate couldn't be assessed due to relatively short follow-up time in this group. For patients who received local treatment and surgery, the observed 3-year OS rate was 95.3%, 3-year DSS rate was 100.0%, 3-year RFS rate was 95.3%; for patients who received only surgery, the observed 3-year OS rate was 97.3%, 3-year DSS rate was 100%, and 3-year RFS rate was 94.4%. The comparisons for overall survival, disease-specific survival and relapse-free survival were accomplished by Kaplan-Meier method with log-rank test as depicted in Fig. 1, Fig. 2, and Fig. 3, respectively.

Table 4. Treatment methods and severe complications

	Overall (n = 163)	Severe complications		
		No, n = 148 (90.8)	Yes, n = 15 (9.2)	p
Treatment methods				0.843[a]
Local treatment only	15 (9.2)	14 (93.3)	1 (6.7)	
Local treatment and surgery	109 (66.9)	100 (91.7)	9 (8.3)	
Surgery only	39 (23.9)	34 (87.2)	4 (12.8)	
Tumor size (mm)	17 [5-80]	17 [5-80]	11 [7-60]	0.341[b]
Invasion depth (mm)	2 [1-10]	2.0 [0.5-10.0]	2.0 [1.0-6.0]	0.941[b]

Data are presented as numbers (%) or median [range].
EMR, endoscopic mucosal resection; ESD, endoscopic submucosal dissection.
[a] Pearson's Chi-Squared test. [b] Mann-Whitney U test.

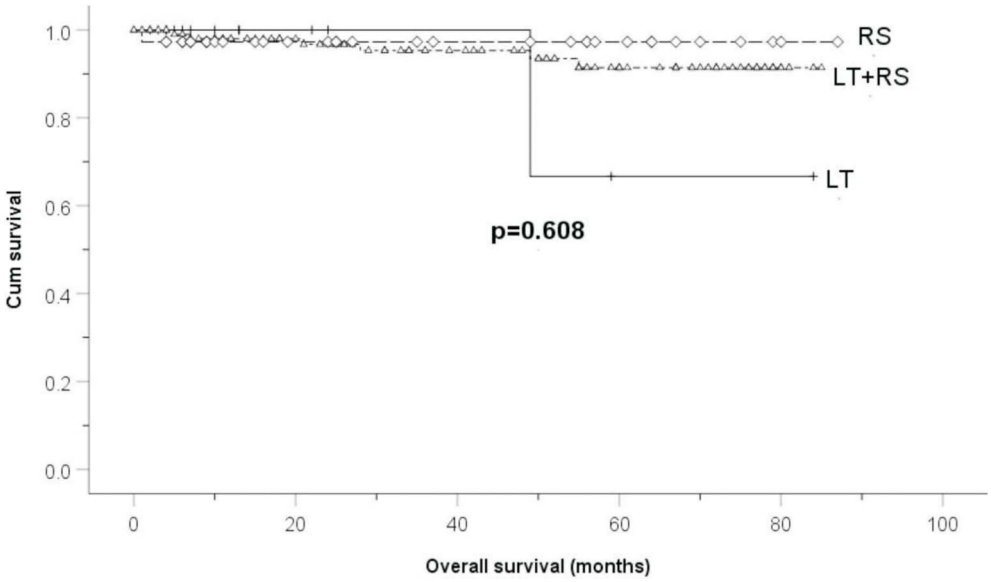

Fig. 1. Kaplan-Meier curves for overall survival with overall comparisons by log-rank test between treatment method groups.

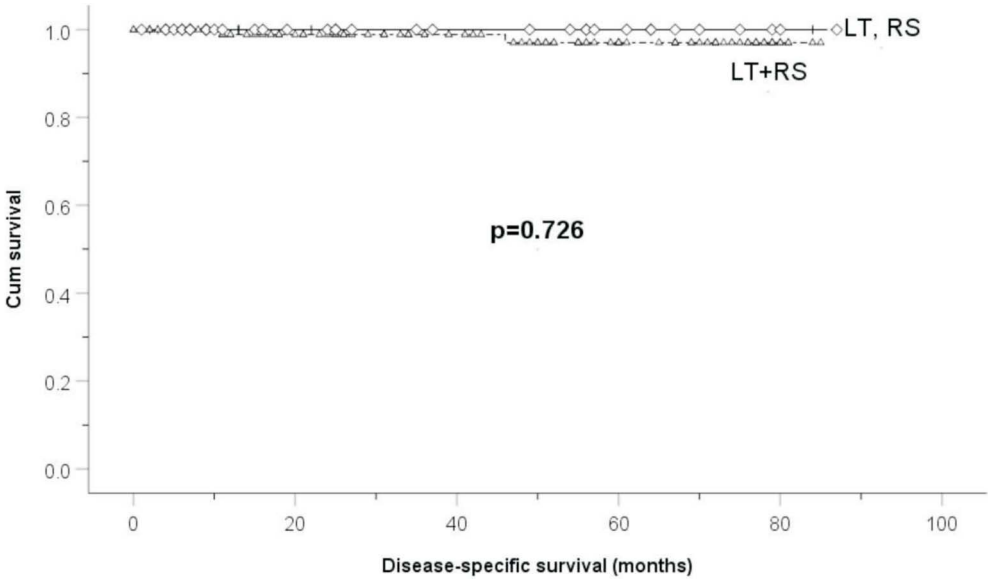

Fig. 2. Kaplan-Meier curves for disease-specific survival with overall comparisons by log-rank test between treatment method groups.

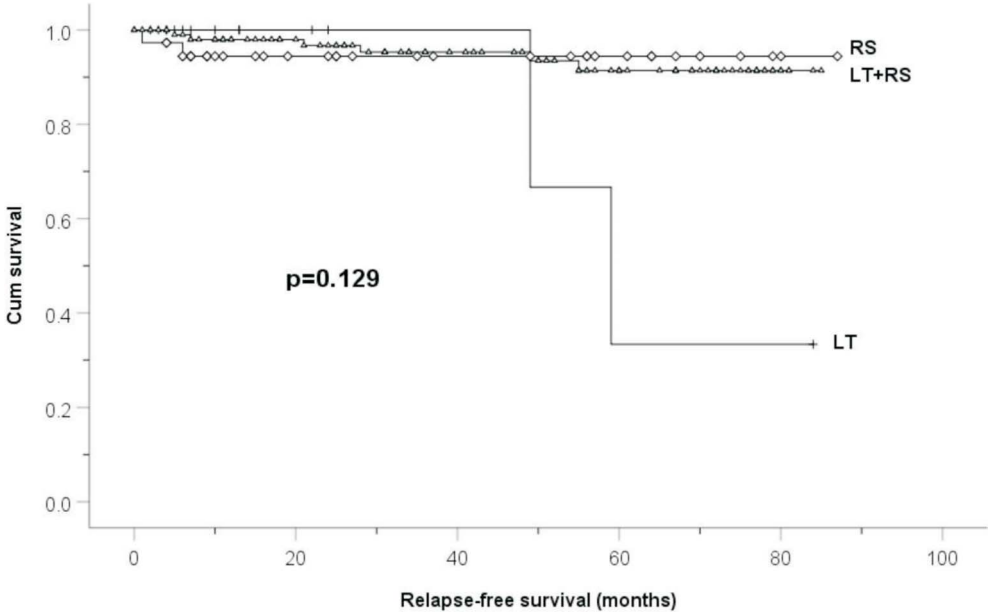

Fig. 3. Kaplan-Meier curves for relapse-free survival with overall comparisons by log-rank test between treatment method groups.

Discussion

This study included 163 consecutive patients with pT1 colorectal adenocarcinoma followed up in 7 years and provided evidence that long-term (up to 5-year) overall survival, disease-specific survival and relapse-free survival rate didn't differ among patients receiving only local treatment, local treatment with subsequent surgery, or only surgery. Our findings are compatible with previous similar studies in the literature.[6] Additionally, as reported in previous studies, there was no difference in metastasis and recurrence rates between the group who had surgery from the beginning and the group who had surgery after endoscopic

resection for pT1 carcinoma.[6,7] These findings basically eliminated the doubt that an endoscopic resection prior to surgery may delay surgery and worsen clinical outcomes of patients who required surgical resection. The choices of treatment methods should be considered on a case-by-case basis. In our current clinical practice for managing cT1 colorectal cancer, we initiate local treatment only when there is no evidence of LNM on an abdominal CT scan, and patients are well-informed about the potential risk of LNM. ESD is our preferred treatment approach whenever feasible, given its previously reported lower recurrence rate compared to EMR and polypectomy, particularly for large polyps exceeding 2 cm in size. If LNM is suspected, radical surgery is performed instead. Following local treatment, if histopathological examination reveals any "high-risk" features, we proceed with subsequent radical surgery. Conversely, if no "high-risk" features are identified, radical surgery is not pursued, and a surveillance strategy with annual colonoscopy follow-up is recommended. Additionally, for patients deemed unsuitable for radical surgery due to high risks associated with surgery or anesthesia, or strong aversion to surgery, local treatment is offered as an alternative option.

There were seven patients (of all fifteen) in the present study in the "local treatment only (LT)" group that have either submucosal invasion deeper than 1 mm or other associated "high-risk" histopathological features. According to current international guidelines, these patients were indicated for additional radical surgery. However, three of them have relatively severe comorbidities (ASA classification: 3) that made the risks of surgery outweighed the benefits. The other four of them refused surgery due to various reasons in consideration of old age, performance status, postoperative care or other personal reasons.

In the present study, a LNM rate of 12.8% (19/148) was reported, and this falls within the range previously reported in the literature of 0% to 17.3%.[8] In addition to our study, there were studies in the literature that evaluate tumor location as a predictor of LNM in T1 colorectal cancer. A higher rate of LNM in the rectum were reported in many studies with 14% or higher.[9-12] In the present study, LNM rate in rectum was reported as 14.3%, which was basically compatible with previous reports. Nonetheless, what is different in our study is that the LNM rate in the left colon was even higher than the rectum with a LNM rate of 16.0%. The inequal distribution of case numbers might account for this finding. In addition, the LNM rate in right side colon was reported 0% in the present study. This finding may be accounted for by following two reasons: first, the case numbers in the right-side colon were relatively smaller than the other two groups; second, not until the year 2016 did complete mesocolic excision (CME) become a routine procedure in right hemicolectomies in our institution. The decision of whether to perform a CME or not largely depended on surgeons' preference and thus the number of harvested lymph nodes were not guaranteed. Inadequate sampling of lymph nodes of right colon tumors might happen.

The univariate analysis revealed that lymphovascular invasion was significantly related with LNM ($p < 0.05$) and was the only one of the "high-risk" histopathological features found to be significantly related with LNM in the present study; this finding is compatible with previous similar studies.[13] In the present study, other "high-risk" histopathological features are not significantly related with LNM. Nonetheless, this may be due to small sample size in the LNM group. Notably, whether the patients received each kind of local treatment prior to surgical resection is not related with LNM.

EMR and ESD are currently two mainstay treatments for malignant polyps with numerous comparative studies been conducted. According to the literature, *en-bloc* resection rates of EMR for early colon cancers range from 8 to 78% have been reported, with higher rates for smaller lesions.[14] Nonetheless, for malignant polyps that are of large size (especially > 20 mm), piecemeal EMR may be needed for a successful resection at the cost of increasing residual tumor and local recurrence rate.[15-17] Therefore, ESD was favored over piecemeal EMR while dealing with large polyps by the Japan Gastroenterological Endoscopy Society guidelines for colorectal endoscopic submucosal dissection/endoscopic mucosal resection.[18] In a meta-analysis conducted by Wang et al., ESD has been re-

ported to have a higher *en-bloc* resection rate, a lower recurrence rate and a significantly longer procedural time when compared with EMR.[19] ESD has been carried out in our institution for colorectal polyps since 2019 and causes a significant reduction in the rate of patient receiving surgery for T1 carcinoma. This finding implied that ESD may have provided a feasible alternative to surgical resection for early T1 colorectal cancer that couldn't be dealt with EMR in our institution.

In the present study we reported a severe complication (Dindo-Clavien's grade III-V) rate of 6.7%, 8.3%, and 12.8% in patients receiving local treatment alone, local treatment and surgery, and surgery alone, respectively. The treatment groups are not significantly related with severe complication rates. However, this finding should be interpreted with caution, given that number of cases in the "local treatment only" group are markedly lesser than the other two groups. An overall surgery-related severe complication rate of 6% (9 cases in 148 patients who ever received surgery) and an overall local-treatment-related severe complication rate of 4.0% (5 cases in 124 patients who ever received local treatment) are reported in the present study. Being limited to the small sample size, a subgroup analysis with further subdivision of local treatment methods into polypectomy, EMR and ESD couldn't be carried out. It has been reported that perforation rates during endoscopic resection are 0%, 0-0.8% and 2.0-10.7% for polypectomy, EMR, and ESD, respectively.[20-23]

The present study has some limitations. First of all, it is a retrospective study based on medical records and is subject to information bias (missing data) and selection bias. Second, the sample size is small, and this makes the statistics less reliable and impossible to do more delicate subgroup analyses. Furthermore, the indications and timings for surgery may differ from surgeons in charge in our institution.

In conclusion, the long-term overall survival, disease-specific survival and relapse-free survival didn't differ whether pT1 colorectal cancer were treated with local treatment alone, local treatment with additional surgery, or surgery alone. Therefore, polypectomy, EMR and ESD should be attempted before surgical resection whenever possible while treating pT1 colorectal cancers because they are less invasive. Also, for patients that are not suitable for surgical interventions, especially those with severe comorbidities, local treatment may provide an alternative to radical surgery with comparable survivals and less procedure-related risks.

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原　著

T1 大腸直腸癌是先局部治療還是直接手術？— 單一機構的回溯性世代研究

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目的　本研究旨在釐清接受局部治療、局部治療後追加手術，以及單純手術治療的 T1 大腸直腸癌患者的長期生存情況。

方法　研究納入了 2014 至 2021 年間在台灣高雄市某三級癌症中心接受治療的 163 名 T1 期大腸直腸腺癌患者，追蹤期最長達 7 年。治療方法分為三組：單純局部治療 (LT)、單純根治手術 (RS)，以及局部治療後追加根治手術 (LT + RS)。使用 Kaplan-Meier 方法計算整體存活率 (OS)、疾病特定存活率 (DSS) 及無復發存活率 (RFS)，並以 log-rank 檢定比較不同組別的結果。同時分析淋巴結轉移 (LNM) 的預測因素，並記錄與分析術後併發症。

結果　在僅接受局部治療 (LT) 的患者中 (n = 15，占 9.2%)，3 年整體存活率、疾病特定存活率及無復發存活率均為 100%。接受單純根治手術 (RS) 的患者 (n = 39，占 23.9%) 中，3 年整體存活率為 97.3%，疾病特定存活率為 100%，無復發存活率為 94.4%。接受局部治療後追加手術 (LT + RS) 的患者 (n = 109，占 66.9%) 中，3 年整體存活率為 95.3%，疾病特定存活率為 100%，無復發存活率為 95.3%。研究發現，淋巴血管侵犯 (LVI) 與淋巴結轉移 (LNM) 獨立相關。手術相關嚴重併發症 (Dindo-Clavien 分級 III-V) 的整體發生率為 6.1%，局部治療相關的嚴重併發症率為 3.2%。三種治療方法間的嚴重併發症率無顯著差異。

結論　無論是單純局部治療、局部治療後追加手術，還是單純手術治療，T1 期大腸癌患者的長期存活率預後結果並無明顯差異。

關鍵詞　早期結直腸癌、存活率、淋巴結轉移、併發症、局部治療。