RESEARCH ARTICLE

Outcomes of Local Excision for Early Rectal Cancer: a 6-year Experience from the Largest University Hospital in Thailand

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Abstract

Background: This study aimed to determine clinical outcomes of local excision for early rectal cancer from a University Hospital in Thailand. Materials and Methods: We performed a retrospective review of 22 consecutive patients undergoing local excision for early rectal cancer (clinical and radiological T1/T2) from 2005-2010 at the Faculty of Medicine, Siriraj Hospital, Mahidol University, Bangkok. Data were collected from patients' medical records, including demographic and clinical characteristics, pathological report and surgical outcomes. Results: This study included 10 males and 12 females, with average age of 68 years. Nineteen patients (86%) underwent transanal excision and the others had trans-sacral excision. Median operative time was 45 minutes. Postoperative complications occurred in 2 patients (9%); 1 fecal fistula and 1 wound infection following trans-sacral excision. There was no 30-day postoperative mortality. Median hospital stay was 5 days. Pathological reports revealed T1 lesion in 12 cases (55%), T2 lesion in 8 cases (36%) and T3 lesion in 2 cases (9%). Eight patients received additional treatment; one re-do transanal excision, two proctectomies, and five adjuvant chemoradiation. During the median follow-up period of 25 months, local recurrence was detected in 4 patients (18%); two cases of T2 lesions with close or positive margins, and two cases of T3 lesions. Three patients with local recurrence underwent salvage abdominoperineal resection. No local recurrence was found in T1/T2 lesions with free surgical margins. Conclusions: Local excision is a feasible and acceptable alternative to radical resection only in early rectal cancer with free resection margins and favorable histopathology.

Keywords: Rectal cancer - local excision - recurrence - outcomes - Thailand

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Introduction

The standard oncological treatment of rectal cancer is trans-abdominal radical surgery; namely sphincter-preservation surgery (anterior resection and low anterior resection) and non-sphincter-preservation surgery (abdominoperineal resection; APR). Both open surgery and laparoscopic-assisted surgery are capable of removing the rectum containing tumor and node-bearing mesorectum, thus resulting in a low rate of local recurrence and good long-term oncological outcomes (Schmoll et al., 2012; Monson et al., 2013). However, the radical surgery could be associated with a considerably high rate of postoperative complication, functional disorder (defecation, voiding and sexual dysfunction), and even perioperative death (Lohsiriwat et al., 2008).

Compared to radical surgery, local excision offered a lower incidence of postoperative morbidity and better functional results with an acceptable oncological outcomes (Heintz et al., 1998; Chang et al., 2008). Hence, local excision is now being an alternative treatment of early rectal cancers (Monson et al., 2013). To the best of our knowledge, there have been a relatively few reports regarding the outcomes of local excision of rectal cancer from Asian countries (Qiu et al., 2008; Jeong et al., 2009; Peng et al., 2011; Han et al., 2012), and most of them were from East Asia. The aim of this study was to assess the short-term and long-term outcomes of local excision for early rectal cancer in a university hospital in Thailand, a country located in the Southeast Asia.

Materials and Methods

We performed a retrospective chart review of 22 consecutive patients who had local excision for early rectal adenocarcinoma, defined as clinical or radiological T1/T2 lesion, from 2005-2010 in the Department of Surgery, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand. Local excision could be either transanal excision or trans-sacral excision (Kraske's operation). Of note, the choice of surgical technique was based on tumor location, and surgeon's preference.

Practically, patients had various kind of preoperative imaging to determine local and distant metastasis such

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as computerized tomography scan of the abdomen and pelvis, ultrasonography of abdomen, and endorectal ultrasonography. Perioperative intravenous antibiotics were given to every patient. The operation was performed under local, regional or general anesthesia. In all cases a full thickness excision was performed with primary wound closure. Patients were discharged from the hospital if they had no fever and good recovery of gastrointestinal function. Additional treatment, e.g. radical surgery or chemoradiation, was offered to all patients with unfavorable histopathology of the rectal lesions including T3 lesion, evidence of angiolymphatic involvement, close margin (<2mm of free margin), and positive resection margin. However, the further management depended on patients' decision.

Although surveillance program could vary from patient to patient and highly dependent on the preference of each consultant surgeon, postoperative follow-up of patients generally included physical examination and the measurement of carcinoembryonic antigen (CEA) in an outpatient clinic 4-6 weeks after surgery, and then every 3-4 months during the first 2-3 years and every 6 months thereafter. Colonoscopy was scheduled at the first and the fourth years after the operation. CT scan of the chest, abdomen, and pelvis was performed if there was a clinical suspicion of tumor recurrence (Lohsiriwat et al., 2009).

Data collected from medical records included demographic and clinical characteristics, location of the tumor, techniques of preoperative radiological evaluation, surgical procedure, pathological results, postoperative course, adjuvant therapy (if any), follow-up time and oncological outcomes. Clinical and demographic data were entered into an Excel database using Microsoft Office software (Microsoft, WA). Continuous parameters were presented as mean±standard deviation, or median and range, or number (percentage).

Results

There were 866 patients with rectal cancer undergoing surgical treatment over the study period of 6 years. Of these, only 22 patients (2.5%) had local excision. This patient group was 10 males and 12 females, with an average age of 68±12 years. Thirteen patients (59%) had co-morbidities such as coronary artery disease, diabetes mellitus, and hypertension. The average size of tumor was 2.9±1.8 cm (range 1-7cm). The average distance of tumor from the anal verge was 4.5±1.9 cm (range 2-8cm). All patients underwent work up for hepatic and pulmonary metastasis, and no distant metastasis was found. Pre-operative radiological staging of rectal lesion was performed in 18 patients (81%); suggesting of T1 lesion in 15 patients and T2 in 3 patients. The remaining four patients had mobile lesion (clinical T1/T2); therefore, the radiological staging of local disease was omitted.

Nineteen patients (86%) underwent transanal excision and the other (3 cases, 14%) had trans-sacral excision. Median operative time was 45 minutes (range 15-150 minutes). Median intra-operative blood loss was 30ml (range 0-300ml). Two patients (9%) had postoperative complications; 1 fecal fistula following trans-sacral excision requiring a temporary loop sigmoid colostomy, and 1 superficial surgical site infection following trans-sacral excision. There was no 30-day postoperative mortality. Median hospital stay was 5 days (range 0-25 days).

Table 1. Patients' Characteristics and Oncological Outcomes

Age/ Gender	Tumor depth	Unfavorable histology	Further treatment	Follow-up period (months)	Recurrence/time to recurrence (months)/salvage treatment
78/M	T1	-	-	Loss F/U	-
74/M	T1	-	-	2	No
56/M	T1	-	-	17	No
76/F	T1	-	-	20	No
64/F	T1	-	-	31	No
73/M	T1	-	-	39	No
73/M	T1	-	-	55	No
41/F	T1	Positive margin	-	Loss F/U	-
84/M	T1	Lymphatic involvement	CRT	14	No
65/F	T1	Mucin-producing	CRT	54	No
48/F	T1	Close margin	LAR	52	No
65/F	T1	Close margin	Excision	52	No
78/M	T2	-	-	3	No
48/F	T2	-	-	35	No
73/F	T2	-	-	44	No
69/F	T2	-	CRT	24	No
67/F	T2	-	CRT	45	No
84/M	T2	Positive margin	APR	16	No
81/M	T2	Close margin	-	11	Yes/11/none
62/F	T2	Close margin	-	26	Yes/19/APR
74/M	T3	Close margin	-	6	Yes/6/APR
66/F	T3	Perineural invasion	CRT	31	Yes/29/APR

*APR=abdominoperineal resection, CRT=chemoradiation, LAR=low anterior resection

Pathological reports revealed T1 lesion in 12 cases (55%), T2 lesion in 8 cases (36%) and T3 lesion in 2 cases (9%). According to patients' decision, eight patients received additional treatment; one re-do transanal excision, two radical proctectomies, and five adjuvant chemoradiation. This study had a complete follow up rate of 95%, with a median follow up period of 25 months (range 2-55 months). During the follow-up period, local recurrence was detected in 4 patients (18%); two with T2 lesion with positive or close margin (recurrence at 11 and 19 months, respectively) and two with T3 lesion (recurrence at 6 and 29 months postoperatively). Three patients with local recurrence underwent salvage APR, whereas the other denied any further treatment. No local recurrence was found in T1/T2 patients with free surgical margin. Patients' characteristics and oncological outcomes are summarized in Table 1.

Discussion

During the last few decades, local excision of early rectal cancer has been increasingly performed (You et al., 2007). The methods of local excision include transanal excision, trans-sacral excision, transanal endoscopic microsurgery (TEM), and transanal minimally invasive surgery (TAMIS). Surgeons need to balance the reduction in morbidity and mortality following local excision and the risk of oncological disaster. In the present study, local excision of rectal cancer is a relatively safe procedure although there was a relatively high complication rate following trans-sacral excision. Of note, local excision for distal and middle rectal cancer via trans-sacral approach could be replaced nowadays by TEM and

TAMIS techniques (Albert et al., 2013). Nevertheless, tumor recurrence remains a major problem following local excision, especially in patients with T2/T3 lesions and those with unfavorable histology.

The most common pattern of recurrence following local excision of rectal cancer is recurrence involved the rectal wall and regional nodal metastasis, followed by local and distant recurrence, with a median time to recurrence of approximately 2 years (Bentrem et al., 2005). The stage of the recurrent tumor is often more advanced than the primary tumor (Friel et al., 2002). Alarmingly, patients with early rectal cancer treated by local excision could have a 3- to 5-fold higher risk of tumor recurrence compared with patients treated by radical surgery (Bentrem et al., 2005). Since local excision cannot adequately remove node-bearing mesorectum and most resected specimens hardly contain lymph nodes, the possibility of retaining metastatic lymph nodes in the pelvis still remain. Preoperative radiological imaging of the pelvis (such as endorectal ultrasonography, computerized tomography scan, and magnetic resonance imaging) is very useful to assess tumor depth and to predict lymph node metastasis.

A recent systematic review demonstrated that the incidence of lymph node involvement was depended on the depth of tumor invasion; approximately 10% nodal metastasis in T1 lesions and 24% in T2 lesion (Carrara et al., 2012). The risk of lymph node metastasis was also higher in low rectal cancer, poorly differentiated cancer, mucin-producing cancer, and cancer with lymphovascular invasion (Nascimbeni et al., 2002; Carrara et al., 2012). While tumor recurrence within the rectal wall is very common in cases of close or positive resection margin, the risk of recurrence could be reduced by means of extensive surgery or adjuvant therapy (Christoforidis et al., 2009). Thus, it is recommended that patient with early rectal cancer featuring the aforementioned unfavorable histology should be offered a radical operation, or at least adjuvant chemoradiation (Monson et al., 2013). This statement is highlighted again by our results, in which local recurrence was commonly found in T2/T3 lesions. Of note, local recurrence was also found in patients receiving postoperative chemoradiation. As a result, adjuvant therapy is not a reliable method for preventing and controlling local recurrence.

When feasible, local recurrence after failed local excision is amenable to radical salvage surgery with acceptable long-term survival rate. However, the results may be inferior to those of initial radical treatment (Friel et al., 2002). Selected cases of local recurrence can be treated with transanal re-excision (Stipa et al., 2012). Since locoregional failure and distant metastasis could occur following local excision of early rectal cancer, postoperative surveillance in this group of patient is crucial and definitely required. Proper surveillance protocol, including digital rectal examination and interval imaging of the abdomen and pelvis, could help detecting curable recurrence as soon as possible and resulting in good long-term survival of the patients. Ten-year survival rates for T1/T2 lesions were reported to be as high as 72-74% following local excision and close surveillance for early rectal cancer (Paty et al., 2002).

Although the present study has a very high rate of complete follow-up, some limitations of the study should be addressed. Firstly, the number of patients is relatively small and the median follow-up time is just over 2 years. A larger number of cases and longer follow-up period is required to make a robust conclusion on the role and safety of local excision for early rectal cancer. Secondly, it is inherent to the nature of retrospective study, in which the reason why some patients had additional operation and other received adjuvant chemoradiation was unclear.

In conclusion, local excision is a feasible and acceptable alternative to radical resection in only early rectal cancer with free resection margin and favorable histopathology. Hence, case selection, the quality of resection, judicious use of adjuvant therapy, and optimal postoperative surveillance are of great importance for the successful management of early rectal cancer by local excision.

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