Original

Effect of Salvage Surgery on Locally Recurrent Rectal Cancer

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Key Words
Salvage surgery;
Local recurrence;
Rectal cancer

Purpose. Local recurrence in patients with rectal cancer has a dismal prognosis. Surgical salvage for such patients remains controversial. This study aimed to evaluate the effect of salvage surgery for patients with locally recurrent rectal cancer, focusing on survival time and relief of symptoms. This study also evaluated which patients were most likely to be benefit from salvage surgery.
Methods. Between February 1995 and September 1999, a total of 1744 patients received curative surgery for rectal cancer at CGMH, of them, 134 (7.7%) were found to have local recurrence of rectal cancer. The patients were divided into three groups: salvage surgery (23/134), CCRT (30/134), and chemotherapy only (81/134).
Results. No differences were found among the three groups in age, gender, histologic type, time to recurrence, differentiation, stage, tumor size, and resection margin, but the group of salvage surgery had better survival than the other two groups. No predictors were found for improving survival rates after salvage surgery.
Conclusions. Salvage surgery can significantly improve survival rates and relieve symptom in patients with locally recurrent rectal cancer.
[*J Soc Colon Rectal Surgeon (Taiwan) 2002;13:105-110*]

Local recurrence after curative surgery for rectal cancer remains as a serious problem. It could be presented as either isolated (recurrence at the anastomotic site or involvement of pelvic structure) or systemic (combined with distant metastasis). These patients may suffer from intractable pain, obstruction, perforation, bleeding and sepsis because recurrent cancer invades pelvic structure.[1,2,3,4] Treatment is usually a dilemma, although several modalities including surgery, chemotherapy, radiotherapy or combination therapy could be used. There is currently no standardized schedule to follow and the treatments usually depend on the type of first operation, the experience and expertise of the surgeon and extent of the recurrent disease. Surgery, though might provide good palliation of symptoms or even long-term survivals, should be weighed against difficulty in technique and extent of the residual tumor. Few data related to prognostic factors of surgery have been reported before. In this retrospective study, we therefore reviewed our experiences of surgical treatment of local recurrence, evaluated its role for recurrence and to determine which patients with local recurrence were most likely to be benefit from surgical treatment.

Materials and Methods

Between February 1995 and September 1999, a total of 1744 patients received curative surgery for

Received: August 19, 2002.
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primary rectal cancer at Chang Gung Memorial hospital (CGMH). Data for this study were retrieved from medical records and computer data bases in the division of colorectal surgery at CGMH. Age, gender, initial type of operation, histology, stage of primary tumor, differentiation, time to recurrence, tumor size, tumor location (distance from anal verge), and resection margin (distance between tumor and lower resection line) were collected for all patients. Among them, 134 (7.7%) patients were found with local recurrence during the follow-up period. Local recurrence was defined as recurrent tumor located in the pelvic cavity following surgery. Recurrence was proven by histological biopsy, physically palpable disease, radiographic image, or elevated level of carcinoembryonic antigen (CEA).

The patients were referred to different treatments according to the extent of recurrence, the condition of the patient and the experience of the surgeon. The patients were then classified into three groups: salvage surgery (23 patients), concurrent chemotherapy and radiation therapy (CCRT) (30 patients), and chemotherapy alone (81 patients). Some of these patients were presented with pain, obstruction, or bleeding. Among the 23 patients who received salvage surgery, we tried to evaluate which factors would have more favorable survival rates. The variables include symptoms (asymptomatic or symptomatic), CEA level (≤ 5 or >5), tumor diameter (≤ 3 or >3), tumor stage (Dukes B or Dukes C), tumor differentiation (well, moderate, or poor), type of salvage operation (with or without bowel resection).

Statistically, frequency was analyzed using Chi-square test, continuous variables were analyzed with one-way ANOVA, survival curve were calculated using the Kaplan-Meier method and were compared using the log-rank test. $p < 0.05$ was considered significant.

Results

Table 1 lists the basic characteristics of the 134 patients with locally recurrent rectal cancer. No statisti-

Table 1. Demographics of 134 Patients with Local Recurrent Rectal Cancer

	Total (134)	Salvage surgery (23)	CCRT (30)	Chemotherapy (81)
Age	60.5(± 13.4)	60.8(± 12.1)	59.4(± 11.4)	60.8(± 14.5)
Gender Male	78	14	19	45
Female	56	9	11	36
Histology				
Adenocarcinoma	115	19	25	71
mucinous	19	4	5	10
Tumor stage				
Dukes' B	45	12	13	20
Dukes' C	89	11	17	61
Differentiation				
well	13	3	2	8
moderate	105	18	26	61
poor	15	2	2	12
Type of first OP				
AR [a]	108	17	25	66
APR [b]	26	6	5	15
Tumor size at first OP (cm)	5.5 (± 1.8)	4.8 (± 1.9)	4.4 (± 1.3)	5.8 (± 1.9)
Away from anal verge(cm)	7.8 (± 4.2)	7.4 (± 4.0)	5.5 (± 2.7)	8.5 (± 4.3)
Resection Margin(cm)	3.1 (± 2.0)	2.5 (± 1.5)	2.3 (± 2.1)	3.4 (± 2.2)
Time to recurrence(M)	14.3 (± 9.7)	17.5 (± 10.3)	12.4 (± 8.8)	14.1 (± 9.7)

[a]AR = anterior resection; [b]APR = abdomino-perineal resection.

cally sig nif i cant dif fer ences were found among the three groups in terms of dif fer ent pa tients and tu mor characteristics.

A sig nif i cantly better sur vival was ob served for the group of pa tients with sal vage sur gery than CCRT group and chemotherapy alone group (p = 0.0001) (Fig. 1).

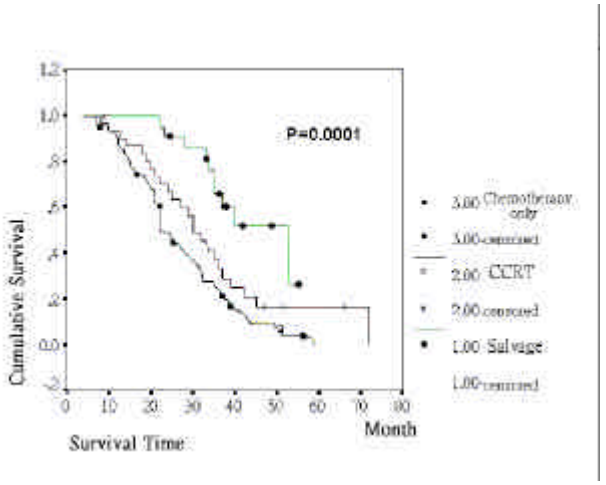

Fig. 1. Sur vival rates of 134 pa tients with lo cal re cur rent rec tal can cer ac cord ing to three groups.

Ta ble 2 lists the main symp toms of the 23 pa tients with sal vage sur gery. Nine pa tients had pain, 6 ex pe ri-enced ob struc tion, 3 had bleed ing, and the re main ing 5 were asymp tom atic. Mean while, 7 out of 9 pa tients ob tained pain re lief fol low ing sal vage sur gery. The mean du ra tion of pain re lief was 18.5 months. Ob-struc tion and bleed ing were re solved for all pa tients fol low ing sal vage sur gery.

For the pa tients who re ceived sal vage sur gery, no fac tors cor re lated sig nif i cantly with sur vival time (Ta-ble 3). Three pa tients whose tu mors were well dif fer-entiated died in the first 2 years, while two cases whose tu mors were poorly dif fer en ti ated lived more than 4 years. It may be due to the small number of cases, and thus no sta tis ti cal anal y sis was con ducted.

Table 2. The Symptoms of 23 Patients Receiving Salvage Surgery

	Total (23)	Improved	Duration (M)
Pain	9	7	18.5
Obstruction	6	6	-
Bleeding	3	3	-
Asymptomatic	5	-	-

Table 3. Survival Analysis for 23 Salvage Surgery Patients

		Cumulative survival rate					
	No. (23)	1 yr	2 yr	3 yr	4 yr	Median (Month)	p value
Symptoms of recurrence							
Asymptomatic	5	1.0	1.0	1.0	0.60	55.0	0.2176
Symptomatic	18	1.0	0.88	0.57	0.47	40.7	
CEA (pre-salvage op)							
≤ 5 ng/ml	9	1.0	1.0	0.74	0.74	49.0	0.3849
>5 ng/ml	14	1.0	0.86	0.62	0.42	40.3	
Tumor diameter							
≤ 3 cm	12	1.0	0.83	0.64	0.49	38.0	0.7512
>3 cm	11	1.0	1.0	0.70	0.53	53.3	
Tumor stage							
Dukes' B	12	1.0	0.91	0.73	0.61	53.2	0.5039
Dukes' C	11	1.0	0.91	0.58	0.44		
Differentiation							
Well	3	1.0	1.0	0.0	0.0	35.3	-
Moderate	18	1.0	0.89	0.77	0.57	53.3	
Poor	2	1.0	1.0	1.0	1.0	48.0	
Salvage op type							
With bowel resection	17	1.0	0.88	0.66	0.56	55.0	0.8121
Without bowel resection	6	1.0	1.0	0.67	0.44	40.8	

Discussion

Local recurrence in patients with rectal cancer has a dismal prognosis if no treatment is administered. Median survival periods ranged from 3.5 to 13 months, while five-year survival ranged from 0 to 5 percent.[5,6,12] Once local recurrence develops, radiotherapy and chemotherapy provide only short-term symptomatic relief without curative potential, and only few patients live long.[8] Complete excision of locally recurrent rectal cancer can achieve long-term survival for a significant number of patients, and can be accomplished safely in selected patients.[16,17] Meanwhile, five-year survival rates following salvage surgery range from 5 to 48 per cent,[4,5,9-12] and 23 per cent was noted in this study. Salvage surgery for local recurrent rectal cancer probably offers the best chance of a cure. Our study supported that salvage surgery can achieve better survival than CCRT group and chemotherapy alone group ($p = 0.0001$).

We didn't find any significant factor associated with a higher chance of receiving salvage surgery. None of age, gender, type of first operation, histology, stage, time to recurrence, differentiation, tumor size, location, and resection margin were related to the incidence of salvage surgery. These results are inconsistent with previous article. Lopez-Kostner found that three factors were associated with a higher incidence of salvage surgery, they are female gender, referral from another institution, and transanal local excision during the first operation.[4] However, there is some controversies in each article. Therefore, the indications of salvage surgery could be limited only in patients with no distant spread or metastases, patients with good general health, and the judgment of the surgeon. However, Maetani et al. have questioned the usefulness of extended surgery in obtaining disease-free survival.[13] They thus suggest that more extended surgery should not be performed in patients with extensive involvement of the lateral pelvic wall, or with signs of venous obstruction or bilateral sciatic pain.[6] The benefits of salvage surgery should thus be weighed against morbidity and mortality.

Some factors have been reported to predict favorable survival following salvage surgery of recurrent rectal cancer. St. Mark group found four factors associated with longer survival: radical nature of the operation, absence of severe symptoms, a recurrent tumor of under 5cm in diameter, and a CEA level less than 5 ng/mL.[11] Lopez-Kostner found a tendency for poorer prognosis in patients with recurrent tumors of over 3cm in diameter and with tumor fixation.[4] Reresection (mostly APR) can be curative for recurrences at the anastomosis site.[9] In this study, however, none of the factors analyzed (symptoms of recurrence, CEA level, tumor diameter, stage, differentiation, type of salvage surgery) were associated with better survival, meaning that no factors were found to predict the success of salvage surgery.

Reresection can be important in the palliation of symptoms induced by recurrent tumors, but may not influence overall survival.[7,14,15] Our study also finds that salvage surgery could provide a good palliation for obstruction, bleeding, and pain in most patients.

In summary, salvage surgery can provide significant survival benefits and symptom relief in selected patients with locally recurrent rectal cancer. However, we failed to find any significant factor to predict who will be benefited from salvage surgery preoperatively.

References

1. Mc Call JL, Cox MR, Wattchow DA. Analysis of local recurrence rates after surgery alone for rectal cancer. *Int J Colorectal Dis* 1995;10:126-32.
2. Michelassi F, Vannucci L, Ayala JJ, Chappel R, Goldberg R, Block GE. Local recurrence after curative colorectal adenocarcinoma. *Surgery* 1990;108:787-93.
3. Wanebo HJ, Gakker DL, Whitehill R, Morgan RF, Constable WC. Pelvic recurrence of rectal cancer: options for curative resection. *Ann Surg* 1987;205:482-95.
4. Lopez-Kostner F, Fazio VW, Vignali A, Rybicki LA, Lavery IC. Locally recurrent rectal cancer. Predictors and success of salvage surgery. *Dis Colon Rectum* 2001;44:173-78.
5. McDermott FT, Hughes ES, Pihl E, Johnson WR, Price AB. Local recurrence after potentially curative resection for rectal cancer in a series of 1008 patients. *Br J Surg* 1985;72:34-7.
6. Theo W, Mark R, Bernadette V.K Surgery for local recurrence of rectal carcinoma. *Dis Colon Rectum* 1996;39:323-8.
7. Temple WJ, Ketcham AS. Surgical palliation for recurrent rectal cancers ulcerating in the perineum. *Cancer* 1990;

65:1111-4.

8. Lybeert ML, Martijn H, de Neve W, Crommelin MA, Ribot JG. Ra dio ther apy for locoregional re lapses of rec tal car ci-noma af ter ini tial rad i cal sur gery: def i nite but lim ited in flu-ence on re lapse-free sur vival and sur vival. *Int J Radiat Oncol Biol Phys* 1992;24:241-6.
9. Segall MM, Goldberg SM, Nivatvongs S, et al. Abdomino-perineal re sec tion for re cur rent can cer fol low ing an te rior re-section. *Dis Co lon Rec tum* 1981;24:80-4.
10. Wanebo HJ, Marcove RC. Ab dom i nal sa cral re sec tion of lo-cally re cur rent rec tal can cer. *Ann Surg* 1981;194:458-71.
11. Gagliardi G, Haw ley PR, hershman MJ, Ar nott SJ. Prog nos-tic fac tors in sur gery for lo cal re cur rence of rec tal can cer. *Br J Surg* 1995;82:1041-5.
12. Giovanni BS, Giambattista R, Pierfrancesco B, Daniela G, Eleonora B, Milvia C, Romano F Prog nos tic in di ca tions of local recurrence in patients operated for rectal cancer. *Hepato-Gastroenterology* 2001;48:1346-50.
13. Maetani S, Nishikawa T, Iijima Y et al. Ex ten sive en bloc re-section of regionally re cur rent car ci noma of the rec tum. *Cancer* 1992;69:2876-83.
14. John D. Cunningham, War ren E, Al fred C. Sal vage ther apy for pel vic re cur rence fol low ing cu ra tive rec tal can cer re sec-tion. *Dis Co lon Rec tum* 1997;40:393-400.
15. John P, Gordon A. De tec tion and treat ment of re cur rent can cer of the co lon and rec tum. *Am J Surg* 1978;135:505-11.
16. Kimitaka S, Roger RD, Rich ard MD, Heidi N, Amy LW, Leon ard LG, Duane MI. Cu ra tive reoperations for lo cally re-cur rent rec tal can cer. *Dis Co lon Rec tum* 1996; 39:730-6.
17. Armando S, John PM, Carol N, Brenda SS, Donn Y, Ed ward WM. Mul ti ple reoperations in re cur rent colorectal car ci-noma: an anal y sis of mor bid ity, mor tal ity, and sur vival. *Can-cer* 1988;61:1913-19.