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Prognostic Assessment after Local Resection for the Treatment of Small Carcinoma in Lower Rectum

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ABSTRACT

Local resection of the lower rectum was performed for the treatment of malignant polypoid lesions in 22 patients.

The clinical outcomes of the procedure are summarized as follows;

1. For IIa + IIc type malignant polyp, transanal wedge resection of the entire rectal wall or a transsacral tube resection of the rectum should be performed; as a minimal preventive measure against local recurrence.
2. Early invasive carcinoma (sm) has a metastatic potential on distant organs.
3. In the case of polypoid carcinoma invading the muscle layer (pm), local resection was conducted only in the patients with distant metastasis or with serious complications and in aged patients.
4. When postoperative histological examination reveals a mistake in operative strategy, the patient should be reoperated immediately.

Key words: *Local resection, Prognosis, Lower rectal carcinoma*

In treatment of small carcinomatous lesions in the lower rectum, colostomy is unavoidable whilst the possibility of recurrence is high when local resection is employed. The choice of operative procedure should be determined according to the clinical characteristics of each case, such as the validity of colostomy, age and general condition of the patient. We performed local resection in 22 patients with primary malignant polypoid tumors in the lower rectum (resulting from various causes). Operative results were analyzed to assess the adequacy of local resection.

MATERIALS AND METHODS

From Jan. 1977 to Mar. 1989, we performed local resection on 22 patients for malignant polypoid tumors in the lower rectum (for which low anterior resection was difficult), via the transanal or transsacral approach.

The operative procedure was a spindle-shaped local resection of mucosa (including muscle layers (Fig.1 ← − − − − → line), or a transsacral wedge resection of the entire rectal wall (Fig.1 ← - - - - → line, Table 1, marked with △). The procedure described above was carried out on 19 patients who were diagnosed as having: (1) cancers confined to mucosa (hereinafter abbreviated as m carcinoma) or (2) cancers invading the submucosa (hereinafter abbreviated as sm carcinoma). Of the three patients, in whom advanced cancer was suspected from the initial diagnosis (Table 3, Nos. 3, 4 and 5), a wedge resection of the entire wall (including areas 1 cm or more away from the tumor margin), was conducted via the transanal root. Of these 22 patients were two in whom local resection was carried out after polypectomy (Table 2, marked with ◎). Follow-up observation was also carried out in this study. Survivors underwent chest plain roentgenography, proctoscopy, colorectal barium enemas, assay of blood CEA and abdominal CT (lower abdomen and liver). Patients showing no abnormalities in the examinations described above were regarded as "patients without recurrence".

Histological specimens of resected tissues from all patients were reexamined by the same pathologist. The presence of cancer cell angioinvasion was determined by concomitant use of HE staining and elastica Van Gieson staining.

RESULTS

The 22 patients were divided into three groups according to the depth of cancer invasion, m, sm and pm (carcinoma invading the muscle layer), determined on the basis of histological findings. Postoperative patients' treatments (according to group) are summarized in Tables 1, 2 and 3 in ac-

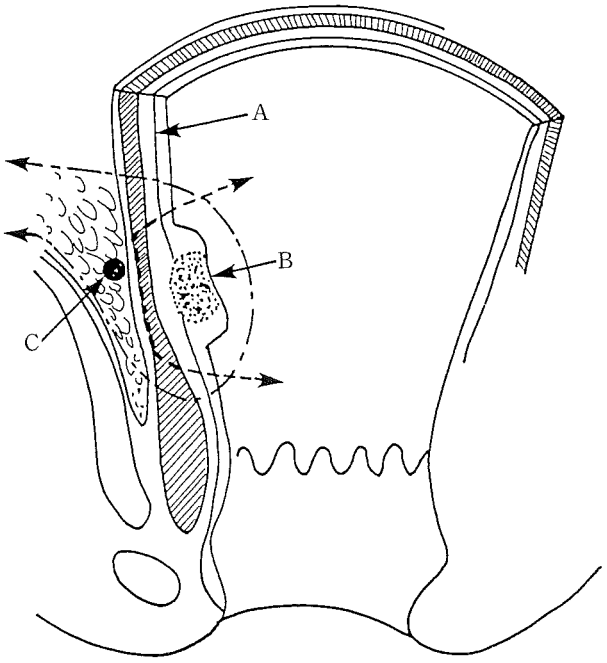

Fig. 1. Transanal and Transsacral Local Resection
← - - - - - → Resection including muscle layer
← - - - - - - → Resection of entire rectal wall and adjacent tissue
A: mucosal muscle
B: carcioma
C: pararectal lymphnode

cordance with the general rules for clinical and pathological studies on cancer of the colon, rectum and anus (edited by the Japanese Research Society for Cancer of the Colon and Rectum [7]). The grade of submucosal cancer cell invasion was rated on a three-point scale of sm (+) : mild, sm (++) : moderate and sm (+++) ; massive. The degree of intravenous cancer cell invasion (v) and lymphatic cancer cell invasion (ly) was rated on a four-point scale of (–) : none, (+) : mild, (++) : moderate and (+++) : severe.

Histological surgical margin tests for local resection were negative for cancer cells in all patients.

Table 1 summarizes seven cases with m carcinoma. All patients survived without recurrence except one patient, who died of secondary gastric carcinoma.

Table 2 presents ten cases of sm carcinoma. Of the ten patients, one died of secondary endometrial carcinoma, and two had recurrence. In Case 5, a carcinomatous ulcer reappeared at the same site five years and eight months after the primary resection. Consequently an abdominoperineal dissection of the rectum was performed. In Case 6, a histopathological examination after polypectomy revealed an intravenous invasion, and consequently a local resection was performed for reasons of safety. However, distant metastases to the liver and lung occurred four years and one month after

Table 1. Local Resection of Lower Rectal m Carcinoma

Case	Age	Sex	Macroscopic Shape	Maximum Diameter (mm)	Grade of Differentiation	Adenoma (A)/ Carcinoma (Ca) Ratio	Postoperative Course
1	72	Male △	Isp villous	40 × 50	Well differentiated	A > Ca	8 years and 9 months after treatment, living
2	54	Female	IIa	17 × 12	Well differentiated	A ≒ Ca	7 years after treatment, living
3	43	Male	IIa	10 × 10	Well differentiated	A < Ca	3 years and 10 months after treatment, living
4	57	Male	Isp villous	40 × 30	Well differentiated	A > Ca	3 years and 7 months after treatment, living
5	74	Male △	IIa	6 × 5	Moderately differentiated	A < Ca	3 years and 6 months after treatment, living
6	70	Female	Is	40 × 25	Moderately differentiated	A > Ca	3 years after treatment, living
7	41	Female	Isp	25 × 20	Well differentiated	A > Ca	4 years and 4 months after treatment, died of another disease (Gastric cancer)

△ Transsacral wedge resection

Table 2. Local Resection of Lower Rectal sm Carcinoma

Case	Age	Sex	Macroscopic Shape	Maximum Diameter (mm)	Grade of Differentiation	sm	ly	v	Adenoma (A)/ Carcinoma (Ca) Ratio	Postoperative Course	
1	53	Female	IIa + IIc	20 × 20	Well differentiated	(+++)	(+)	(−)	Ca	9 years and 4 months after treatment, living	
2	53	Female	IIa	13 × 10	Moderately differentiated	(++)	(−)	(−)	A < Ca	7 years and 4 months after treatment, living	
3	71	Male	IIa	20 × 10	Moderately differentiated	(+)	(−)	(−)	A < Ca	6 years and 2 months after treatment, living	
4	70	Male	IIa	12 × 9	Moderately differentiated	(+)	(+)	(−)	A < Ca	6 years and 4 months after treatment, living	
5	54	Female	IIa + IIc	20 × 20	Moderately differentiated	(++)	(−)	(−)	A < Ca	6 years and 11 months after treatment, living	The patient had a local recurrence and underwent a secondary operation (curative resection) 5 years and 8 months after primary operation.
6	58	Male◎	Isp	20 × 15	Well differentiated	(+)	(−)	(+)	A ≒ Ca	4 years and 8 months after treatment, living	The patient had distant metastases in the liver and lung and underwent resection of the both lesions 4 years and 1 month after the primary operation.
7	73	Female	Isp	30 × 22	Moderately differentiated	(+)	(−)	(−)	A > Ca	4 years and 5 months after treatment, living	
8	54	Male*◎	IIa + IIc	18 × 15	Well differentiated	(+++)	(−)	(−)	Ca	2 years and 9 months after treatment, living	
9	50	Female	IIa	20 × 18	Moderately differentiated	(++)	(−)	(−)	A ≒ Ca	1 years and 10 months after treatment, died of another disease	(endometrial carcinoma)
10	34	Male*	IIa	8 × 8	Well differentiated	(++)	(−)	(−)	Ca	1 month after treatment, living	

* Carcinoid ◎ Local resection after polypectomy
△ Transsacral wedge resection

Table 3. Local Resection of Lower Rectal pm Carcinoma

Case	Age	Sex	Macroscopic Shape	Maximum Diameter (mm)	Grade of Differentiation	Ly	v	Adenoma (A)/ Carcioma (Ca) Ratio	Postoperative Course
1	66	Female	IIa	14 × 12	Moderately differentiated	(–)	(–)	Ca	7 years and 3 months after treatment, living (The patient had a local recurrence and underwent a secondary operation (curative resection) 4 years and 11 months after the primary operation.)
2	86	Female	Isp villous	45 × 30	Moderately differentiated	(–)	(–)	A > Ca	Survived for 6 years and 7 months, died of a carcinoma recurrence (The patient had a local recurrence and underwent a secondary operation (curative resection) 3 years and 9 months after the primary operation.)
3	86	Male	Bor.1	35 × 30	Well differentiated	(–)	(–)	Ca	4 years and 9 months after treatment, living
4	68	Male	Bor.1	30 × 25	Moderately differentiated	(–)	(–)	Ca	4 years and 8 months after treatment, living
5	66	Female	Bor.2	20 × 12	Well differentiated	(+)	(+)	Ca	1 years and 7 months after treatment, died of carcinoma recurrence

esection, and both metastatic lesions were resected (anterior segmentectomy of the liver and right lower lobectomy of the lung). Case 8 was a patient with carcinoid who underwent a local resection because the histopathological examination after polypectomy for submucosal massive invasion was positive.

Table 3 shows five cases with pm carcinoma. In Cases 3, 4 and 5, even though advansed carcinoma was strongly suspected from preoperative inspection and palpation, radical operation was not chosen for various reasons. Instead local resection of the rectal wall with an expanded surgical margin was carried out. In Cases 1 and 2, lesions were first characterized as sm carcinoma. After local resection, they were judged to be pm carcinoma, and a secondary radical operation was judged necessary in both cases. In Case 1, however, as a result of a complication of multiple myeloma and its treatment, we missed the opportunity to reoperate the lesion.

The patient had local recurrence four years and eleven months after initial resection and underwent abdominoperineal resection of the rectum. The patient is now alive and free from the disease.

In Case 2, radical operation was suspended because of age and a cerebrovascular disease. Since local recurrence appeared after three years and nine months, an abdominoperineal dissection of the rectum was carried out. The patient, however, died of cancer two years and seven months after the surgery. A palliative local resection was chosen because of age in Case 3, and a history of cardiac failure in Case 4. In Case 5, liver metastatis was already present when rectal carcinoma was diagnosed. Although we recommended proctectomy and hepatectomy, a local resection of the primary lesion and transarterial chemoembolization was chosen for the metastatic liver lesion in accordance with the patient's wishes.

DISCUSSION

With early cancer of the large intestine, 64% is generated in the anus and the rectum. More specifically, 38% of the cancer generates in the region below the peritoneal reflection.[4] This means that in many cases early rectal cancer appears at "the site where local treatment is easy". On the other hand, colostomy is unavoidable at this site, in almost all cases, if resection of the rectum with lymph node dissection is performed. Therefore, "local resection" tempts surgeons due to the ease of operative procedure and also because of the quality of postoperative life. However, the quality of

postoperative life should be balanced with radicality of treatment. There must be clear reasons for choosing local resection in patients with advanced carcinoma. We analyzed the operative results of local resection in 22 patients with malignant polypoid tumors in the lower rectum to investigate the ideal situation for local resection.

In cases with m carcinoma, there has been no report of lymph node metastasis or distant metastasis. Protruded type m carcinoma can be radically treated by local resection, of course, and even polypectomy is effective. With polypectomy, however, there have been some reports[4] of local recurrence attributable to residual carcinoma cells. Therefore, local resection, in which the polyp can be completely resected, is more reliable than polypectomy for treating a region for which the transanal or transsacral approach is possible. In particular, local resection should be performed primarily on patients with type I or type IIa polyps, in which the distinction between m and sm carcinomas is difficult to determine prior to surgery (Case 4 shown in Table 2, for example).

For sm carcinoma, which is different from m carcinoma, the application of local resection is now seen as controversial. Since the incidence of lymph node metastasis is 4.2-8.2%[1,3], and metastasis is found in the primary lymph node in almost all cases[5], a low anterior resection of the rectum is justifiable against carcinomas on the upper part of the rectum. However, when abdominoperineal dissection, a radical operation, is performed on carcinomas of the rectum near the anus, more than 90% of patients without lymph node metastasis are also forced to suffer the inconvenience of an artifical anus, difficulties in urination and sometimes even sexual function.

In our hospital, even if sm carcinoma was revealed via histopathological examination after a local resection was performed close to the anus ; radical operations have not immediaterly followed. Also, patients underwent follow-up observation over a period of three months. Carcinoma recurred in only two patients (Table 2).

IIa + IIc type, presence of angioinvasive growth, poorly differentiated types, and massive invasion into the submucosal layer have been noted as high risk factors in sm carcinoma. In particular, 11.1-14.8% of cases with IIa + IIc type have lymph node metastasis[9]. Some investigators have urged, therefore, that radical operations should be carried out in all cases with IIa + IIc type carcinoma regardless of site safety. The patients with recurrence in our study were also of the IIa + IIc type. However, taking into consideration that 17.5% of sm carcinoma is IIa + IIc type[9] and that colostomy is irreversible, we hesitate to apply abdominoperineal dissection of the rectum to all patients with IIa + IIc type carcinoma. We are planning to treat IIa + IIc lesions, not with a local resection as done in the past (Fig. 1 ← – – – – → line) but instead to employ a resection of the total rectal wall. This involves an expanded surgical margin or a tube resection of the rectum via the transsacral approach, in which lymph nodes are partially dissected (Fig. 1 ← - - - - - → line)[6].

Case 6 shown in Table 2 was a case with hematogenous metastasis in which recurrence could not have been prevented even if sufficient lymph node dissection had been performed in the primary surgery. This case suggests that we must not forget, during the postoperative follow-up, that hematogenous metastasis may occur, very rarely, even in patients with sm carcinoma.

In cases with pm carcinoma, sufficient lymph node dissection should be included in the surgical procedure regardless of the site of the primary lesion, since the incidence of lymph node metastasis exceeds 25%[8]. In patients who are expected to have pm carcinoma, the application of local resection is limited to cases where patients have some serious complicating factos which make radical operation impossible.

For Cases 1 and 2, preventive resection for sm carcinoma was performed in the primary operation because the patients had other disease complications. In retrospect we believe that we should have carried out radical surgery before recurence in both cases. However, the Case 2 patient had been completely bedridden since the secondary radical surgery. This case clearly points out the difficulty in determining priorities when dealing with elderly patients: the duality of radical operations or considerations of postoperative life quality.

In Cases 1, 2, 3 and 4, patients survived for four years or more even though they only underwent a local resection for pm carcinoma. Histological examination revealed no angioinvasion in these patients.

On the basis of these findings, we believe that local resection should be appreciated as an effective life-prolonging treatment, even for patients with pm carcinoma, when the balance between the surgical stress of radical operations and life expectancy, estimated from the patient's general condition, are taken into consideration.

The presence of angioinvasion in resected specimens will serve as a prognosis indicator for patients undergoing a local resection for pm carcinoma due to angioinvasion. We believe that an accurate preoperative assessment of local tumor depth and staging are essential for the rational planning of surgical strategy in order to treat polypoid carcinoma in the lower rectum. The introduction of endoluminal ultrasonography is favored for this purpose[2].

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