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Results of local excision for rectal carcinoma

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OBJECTIVE: To determine the results peranal excision for rectal carcinoma.

DESIGN: Retrospective case series.

SETTING: A university-affiliated hospital.

PATIENTS: Of 178 patients who presented for curative resection of rectal carcinoma between 1975 and 1993, 19 (10.7%) were deemed suitable for local excision. There were 10 men and 9 women with a mean age of 71.2 years. The follow-up ranged from 13 to 184 months.

INTERVENTION: Peranal excision.

MAIN OUTCOME MEASURES: Histologic differentiation, gross morphology, depth of invasion and size of the carcinoma, adequacy of margins of excision, complications of operation, rates of recurrence, results of salvage therapy and 5-year survival.

RESULTS: There were no intraoperative complications. Postoperative complications included urinary retention (one patient) and bleeding (one patient). There were five local recurrences (26%). Salvage operations were performed in three (60%) patients and were successful in two of them. The 5-year cancer-specific survival rate was 82%. The recurrence rate was higher in patients with inadequate margins of excision and ulcerative lesions. Neither size nor grade of the carcinoma correlated with recurrence.

CONCLUSIONS: Local excision of rectal carcinoma can be performed successfully in selected patients. Diligent follow-up is required, because up to 60% of local recurrences can be treated successfully.

OBJECTIF : Déterminer les résultats d'une excision peranale d'un cancer du rectum.

CONCEPTION : Série de cas rétrospective.

CONTEXTE : Hôpital affilié à une université.

PATIENTS : Sur 178 patients qui se sont présentés pour subir une résection curative d'un cancer du rectum entre 1975 et 1993, 19 (10,7 %) ont été jugés aptes à subir une excision locale. Il y avait 10 hommes et 9 femmes dont l'âge moyen s'établissait à 71,2 ans. La durée du suivi a varié de 13 à 184 mois.

INTERVENTION : Excision peranale.

PRINCIPALES MESURES DES RÉSULTATS : Différenciation histologique, morphologie microscopique, profondeur de l'invasion et grosseur du cancer, suffisance des bords de l'excision, complications à la suite de l'intervention, taux de rechute, résultats de la thérapie de préservation et survie à 5 ans.

RÉSULTATS : Il n'y a pas eu de complications intra-opératoires. Les complications postopératoires ont comporté la rétention d'urine (un patient) et le saignement (un patient). Il y a eu cinq rechutes locales (26 %). On a procédé à des interventions de rattrapage chez trois (60 %) patients et ces interventions ont réussi dans deux cas. Le taux de survie spécifique au cancer à 5 ans s'est établi à 82 %. Le taux de rechute a été plus élevé chez les patients chez lesquels les bords de l'excision étaient insuffisants et qui avaient des lésions ulcérantes. On n'a établi aucune corrélation entre la grosseur ou la catégorie du cancer et la rechute.

CONCLUSIONS : Il est possible de procéder avec succès à une excision locale d'un cancer du rectum chez certains patients. Un suivi diligent s'impose, parce qu'il est possible de traiter avec succès jusqu'à 60 % des rechutes locales.

Abdominoperineal resection (APR) as described by Miles in 1908[1] remains the standard treatment for patients with low-lying invasive rectal carcinoma. However, realizing that less than 15% of patients with lesions confined to the submucosa will have lymph-node involvement, many authors have reported on local excision for these lesions.[2-5] Absolute indications for local treatment of rectal carcinoma are not well defined. There is a subset of patients with metastatic disease and symptoms who may benefit from local excision, thus sparing them the morbidity of more extensive surgery. There are also those who refuse colostomy or have other medical problems that contraindicate a low anterior resection (LAR) or APR because of the associated mortality and morbidity. Criteria for the selection of patients for local excision ideally should include lesions that are mobile, are located in the distal one-third of the rectum, are preferably polypoid and not deeply penetrating the rectal wall, that occupy less than one-third of the circumference of the rectum, are well or moderately well differentiated and are without evidence of anal sphincter involvement.[6] There should be no palpable or radiologic evidence of lymph-node involvement. We describe 19 patients who underwent local excision of rectal carcinomas as their primary treatment for cure to determine the propriety of this treatment.

PATIENTS

We reviewed the charts of all patients who underwent resection for rectal carcinoma by one surgeon between 1975 and 1993. During this time 178 patients underwent resection for cure. Local excision was performed in 22 (10.7%) of the 178 patients, and in 19 of them (10 men, 9 women) the operation was performed for cure. A larger number of patients were suitable for local forms of therapy, but they had received intracavitary radiotherapy, which excluded them from our review. The median age of the 19 patients was 73 years (range from 54 to 86 years, mean 71.2 years). Follow-up was obtained on all patients. Preoperative investigations included physical examination, complete blood count, liver function tests, colonoscopy or barium enema with biopsy of the lesion. Endorectal ultrasonography was used later in the series when it became available. Patients also underwent abdominal ultrasonography or computed tomography (CT) to identify any metastatic disease.

TECHNIQUE

The patient is placed in a prone or lithotomy position, depending on the location of the lesion. A Parks or Pratt retractor is used for exposure. A full-thickness excision is performed around the lesion, to include 1 cm of normal rectal wall. Orientation of the specimen is retained by pinning to allow accurate histologic interpretation by the pathologist. The defect is closed transversely with full-thickness mattress sutures of 4-0 polyglycolic acid or polyglactin.[6]

RESULTS

Pathological characteristics

Eleven of the lesions were sessile, 4 were ulcerative and 4 were polypoid. Fifteen lesions were moderately or well differentiated, 2 were poorly differentiated, 1 was colloid and 1 was not classified by the pathologist. Twelve lesions extended to the submucosa, 6 to the muscularis propria and 1 into the perirectal fat (Table I).

Complications

There were no intraoperative complications. Two (10.5%) patients had postoperative complications. Urinary retention occurred in one patient, requiring insertion of a Foley catheter. The other patient had postoperative bleeding from the surgical site that responded to simple suture ligation.

Recurrences

Five (26%) patients had recurrent carcinoma. The average time to recurrence was 12 months (median 11 months). Four lesions recurred at the suture line and one in the pelvis. One of the patients had synchronous suture-line involvement and liver metastases and was treated with radiotherapy. Two of the four patients underwent repeat local excision. One of these patients is alive over 10 years from the time of repeat resection; the other patient underwent APR and was without evidence of disease 28 months from the original diagnosis and 7 months from APR. The fourth patient refused further operations and was treated with fulguration 15 months after the original excision. The patient with a pelvic recurrence underwent APR after the initial recurrence, but liver and lung metastasis developed 12 months later and he died of his disease (Table II).

Survival

Ten patients were alive at a median of 58 months (range from 13 to 184 months, mean 83 months). Seven patients died of other causes at a median of 59 months (range from 13 to 136 months, mean 57.7 months). Two patients died of their disease at 34 and 52 months. The overall crude 2- and 5-year survival rates were 89% and 60% respectively. Two- and five-year cancer-specific survival rates were

100% and 82% respectively. Patients operated on palliatively died of their disease at a median of 10 months.

DISCUSSION

Overall recurrence rates after local excision of rectal carcinoma have been reported to range from 0% to 27%.[7] Our reported recurrence rate of 26%

Table I

Pathological Features of Carcinomas and Characteristics and Outcome in 19 Patients Who Underwent Local Excision for Rectal Carcinoma

	Patient				Tumour				
No.	Age, yr	Sex	Time to recurrence, mo	Follow-up, status (mo)*	Histologic type†	Macroscopic appearance‡	Depth of invasion§	Resection margin¶	Vascular invasion
1	54	F	11	NED (131)	MP	S	SM	Close	No
2	57	M	—	NED (53)	M	S	SM	Free	No
3	59	M	11	DOD (52)	M	U	MP	Close	No
4	61	F	—	NED (184)	M	S	SM	Free	No
5	61	F	—	DOC (136)	W	S	SM	Free	No
6	62	F	—	NED (137)	M	U	TM	Close	Yes
7	70	M	—	NED (54)	M	P	SM	Free	Yes
8	73	M	—	NED (28)	W	S	MP	Free	Yes
9	77	M	—	NED (28)	MW	S	SM	Pos	Yes
10	77	M	—	DOC (36)	M	S	SM	Free	No
11	78	F	10	DOD (34)	M	P	SM	ND	No
12	79	F	—	NED (62)	P	S	MP	Free	No
13	80	M	—	DOC (78)	MW	S	SM	Free	No
14	80	M	—	DOC (66)	M	U	MP	Free	No
15	80	F	14	NED (151)	W	U	SM	Free	No
16	81	M	—	NED (117)	MW	P	SM	Free	No
17	81	M	—	DOC (59)	W	P	MP	Free	Yes
18	85	F	12	AWD (16)	C	S	MP	Free	No
19	86	F	—	DOC (16)	M	S	SM	Close	No

*NED = no evidence of disease, DOD = died of disease, DOC = died of other causes, AWD = alive with disease
†P = poorly differentiated, MP = moderately poorly differentiated, M = moderately differentiated, MW = moderately well differentiated, W = well differentiated, C = colloid tumour
‡U = ulcerative, P = polypoid, S = sessile
§SM = submucosa, MP = muscularis propria, TM = transmural
¶Close = within 2 to 3 mm, free = free of malignant cells, Pos = positive for malignant cells, ND = not determined

Table II

Recurrence Patterns and Treatment in Five Patients With Recurrent Disease

Patient no.	Time to recurrence, mo	Site of recurrence	Treatment of recurrence	Outcome (mo)	Further treatment	Outcome (mo)
1	10	Suture line, liver	RT	Died (34)	None	—
2	11	Suture line	LE	RR (21)	APR	Alive (28)
3	11	Pelvis	APR, RT/CT	RR (23)	CT	Died (52)
4	12	Suture line	Fulguration*	AWD	None	—
5	14	Suture line	LE	Alive (144)	None	—

*Patient refused more invasive treatment
RT = radiotherapy, LE = local excision, APR = abdominoperineal resection, CT = chemotherapy, RR = repeat recurrence, AWD = alive with disease

is similar to that noted by Despretz and associates[8] who found a 20% incidence in patients treated by radiotherapy followed by brachytherapy at the time of excision. Biggers, Beart and Ilstrup[9] reported a 27% local recurrence rate for patients with invasive disease. We compared patients in our series with our patients who underwent more extensive abdominal excision of rectal carcinomas (LAR or APR) during the same time period and found similar recurrence rates. In 33 patients who underwent LAR for Dukes' class A lesions, local recurrence developed in 24%, and in 6 patients who had APR for Dukes' A lesions a locoregional recurrence developed in 17%.

Table III[9–16] reviews those series in the literature that evaluated local recurrence, salvage and survival rates for local excision of rectal carcinoma. Excluded were those series that included patients who were treated by polypectomy or fulguration and patients who received adjuvant therapy. Only series reporting on invasive carcinoma were included.

The decision to avoid a major operative intervention in patients with invasive adenocarcinoma of the rectum such as LAR or APR is often made on factors other than the pathological features of the carcinoma. The patient's age, state of health and acceptance of a stoma must be taken into consideration. It is believed that approximately 15% of rectal lesions are Dukes' A class and amenable to local excision.[3] In our series, 39 of 178 patients (21.9%) had Dukes' A lesions. Of these, over half (19) underwent local excision.

In patients for whom local resection is considered, several factors must be considered. Depth of invasion can be estimated by rectal examination with an accuracy estimated at 80%.[17] Evidence of pelvic adenopathy on physical or radiologic examination should preclude local excision. Intrarectal ultrasonography may significantly help the clinician in the appropriate selection of patients for local excision but was not available for most of our patients. Factors evaluable at the time of surgery included carcinoma grade, size, morphology and depth of invasion and adequacy of the margins of resection.

High-grade and colloid lesions are considered unsuitable for local excision by several authors owing to a higher rate of recurrence.[10,18] In our series, two patients were described as having poorly or moderately poorly differentiated carcinoma, and one of these patients had a local recurrence. The patient with a colloid carcinoma also had a local recurrence. The other two recurrences were moderately or well differentiated lesions. Lock and associates[18] analysed recurrence rates relative to the degree of differentiation. Of 152 patients studied, 56 had low-grade lesions and 1 died. Eighty-one patients had average-grade lesions and 10 died. Fifteen patients had high-grade lesions and 6 underwent early reoperation; 3 of these died of their carcinoma. Lock and associates concluded that local excision remains valid

Table III

Review of the Results of Local Excision for Invasive Rectal Carcinoma Without Adjuvant Therapy, Treated for Cure, From Eight Published Series, Including the Present Series

Series	No. of patients	Rate of local recurrence, %	Salvage procedure done, %	Survival rate, %	Mean follow-up, yr
Stearns, Sternberg, DeCosse, 1984[10]	31	26	88	90*	5
Nothiger, 1985[11]	63	13	ND	88	NA
Biggers, Beart, Ilustrup, 1986[9]	141	27	ND	67	5
Cutherbertson and Simpson, 1986[12]	25	24	ND	100	5
Heberer et al, 1987[13]	42	7	ND	84	5
DeCosse et al, 1989[14]	48	10	40	90*	5
Killingback, 1992[15]	40	25	50	72	5
Green et al, 1994[16]	104	22	ND	T1–93 T2–83 T3–0	5
Present series	19	26	60	82*	5

*Cancer-specific survival. For all other series there was no indication of the type of survival rate — crude or corrected.
ND = not discussed, NA = not available

for low-grade lesions but is not recommended for patients with average-grade lesions.

The size of the lesion did not seem to determine outcome in our series. The diameter of the lesions ranged from less than 1 cm to 8 cm. In patients with a recurrent carcinoma, the diameter was 2.0 cm, 2.4 cm, 2.5 cm, 3.5 cm and 4.5 cm respectively, similar to the overall distribution of size of the lesions. This is in contrast to the findings of Grigg and associates,[19] who reported a 6% recurrence rate and a 5-year cancer-specific survival of 100% for lesions less than 3 cm in dimension. However, they included only lesions with a pedicle or pseudopedicle and lesions confined to the mucosa or submucosa, with no clinical evidence of pelvic lymph-node involvement.

Greaney and Irvin[20] noted a better survival in polypoid than ulcerating carcinomas. In our series there were four ulcerative lesions with two recurrences. Fourteen lesions were polypoid with three recurrences.

Depth of invasion has also been noted to affect outcome. Hager, Gall and Hermanek[21] noted a higher recurrence rate for lesions that invaded the muscularis propria. In our series, seven patients (35%) had lesions through the muscularis propria, and two of them (29%) had a recurrence.

Resection margins positive for malignant cells have been associated with higher recurrence rates.[10,22,23] Minsky[22] reported an increase from 6% to 56%. Killingback[23] reported increases from 23% to 36% if margins were positive for malignant cells. Of the 19 patients in our series, resection margins were involved in one patient, who died of other causes at 13 months without evidence of recurrence. Margins of normal tissue were noted to be small in four patients and unassessable in one. Recurrence occurred in three of these five patients.

Close follow-up of patients who undergo local excision is necessary. We noted that of the five patients with recurrence, the carcinoma in three patients was amenable to repeat resection (the other two patients had distant disease or refused more extensive resection.) Two of these three patients were still alive and disease free at 7 and 140 months respectively. The third patient died of distant metastases 40 months after repeat excision. Conflicting reports regarding the results of salvage operations for local recurrence have been reported. Cuthbertson and Simpson[12] achieved good salvage results by radical resection. On the other hand, Killingback[15] found that 5 of 10 patients with local recurrence were suitable for radical resection, and only 1 of these survived the malignant disease (dying of cardiac disease 3 years after resection). Other salvage rates are reported to be between 25% and 100%.[4,10,11,19,24]

In a recent study of their own experience that addressed all the above considerations, Green and associates[16] reviewed 104 patients who underwent discectomy with intent to cure, representing 16% of patients with carcinoma of the rectum. Of the nine patients whose operation was converted to a more radical procedure because of failure to meet criteria for cure, five had no residual disease and two died with carcinoma. The remaining 95 patients were followed up from 1 to 152 months (mean 64.1 months). The overall recurrence rate was 22.4% (T1 = 10.6%, T2 = 38.9% and T3 = 100%; well differentiated = 0%, moderately differentiated = 21.1% and moderately to poorly differentiated = 58.3%). They concluded that transanal discectomy remains an option for cure in selected patients.

Adjuvant therapy has been used in an effort to decrease the incidence of recurrence after local excision.[25] Ben-nett and associates[26] reported a recurrence rate of 16% after the administration of 45 Gy to 19 patients who underwent local excision. Bailey and associates[3] reported on 53 patients who underwent local excision; 24 received full-dose radiotherapy postoperatively. With a follow-up ranging from 12 to 130 months, there was only an 8% recurrence rate. Minsky[22] reviewed the results from seven institutions, with series numbers ranging from 12 to 46 patients who underwent margin-negative local excision and postoperative pelvic radiotherapy. Some also received adjuvant chemotherapy. They found a local recurrence rate ranging from 6% to 18%. Of the three institutions that reported failure by stage, local recurrence developed in 3% of patients with T1 lesions, 10% of patients with T2 lesions and 24% of patients with T3 lesions. Minsky therefore recommended that T3 lesions be treated by extended resection with preoperative or postoperative radiotherapy.

Graham and colleagues[27] reported on the use of postoperative chemotherapy and radiotherapy, using 5-fluorouracil and leucovorin, with radiation in doses of 45 Gy plus a perineal boost of 9 Gy. Three of 14 patients so treated experienced grade 3 to 4 toxicity manifested by cystitis, proctitis or perineal skin desquamation, but there were no local recurrences and only one case of distant metastases.

CONCLUSIONS

Nineteen patients who underwent local excision for rectal carcinoma between 1975 and 1993 had local recurrence rates similar to those who underwent more extensive resection. Surgical margins that are close to or involved in the malignant process or invasion through the muscularis propria are both associated with higher

recurrence rates. Ulcerated lesions have a higher recurrence rate no matter which method of resection is used. Although our series is small, only two patients (29%) with lesions through the muscularis propria had recurrence, a rate similar to that in patients whose carcinoma was confined to the submucosa (25%). Close follow-up of all patients who undergo local excision of rectal carcinoma is mandatory because the recurrent lesion is often amenable to further surgical excision.

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