

Local Excision of Rectal Tumours — Local Experience*

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ABSTRACT

Background. Although local excision of rectal cancers is associated with less morbidity compared to radical resection, its place as a curative procedure is still unclear amidst current controversies. In this study, we reviewed the results of local excision of both benign and malignant rectal mucosa tumours in our department.

Methods. Computerised data collected prospectively were analysed for consecutive cases of local excision presenting from January 1994 to December 2001.

Results. There were 28 males and 17 females of mean age 61.2 years (range 31 to 86). The mean follow-up period was 24 months (SEM 3.3). The most common presenting symptom was bleeding per rectum (67.6%), followed by change in bowel habit (17.6%). The mean operating time was 29.8 min (SEM 4.4), with a mean hospital stay of 3.8 days (SEM 0.5). Complications of local excision were post-operative bleeding (6.7%), urinary tract infection (2.2%), acute retention of urine (2.2%) and mild incontinence (2.2%). Overall local recurrence rate for benign adenomatous polyps was 12.9%. Recurrence rate of T1 adenocarcinomas was 20.0%, while that for T2 adenocarcinomas was 33.3%. The mean time to recurrence for benign tumours was 19 months (SEM 4.1) and malignant tumours 38 months (SEM 23.6). All recurrences were salvageable with radical resection but 67% of cancer patients had nodal disease at resection. There were no deaths at mean follow-up of 24 months (SEM 3.3). Age, sex, tumour size, operative technique and histology were not found to be significant predictors of recurrence.

Conclusion. Local recurrence is significant after local excision of both malignant and benign rectal tumours. Hence, diligent follow-up is recommended.

Keywords: cancer, polyp, rectal, rectum, surgery

INTRODUCTION

Mid and lower rectal tumours are frequently encountered by colorectal surgeons.¹ Radical surgical management of these tumours comprises abdomino-perineal resection or if suitable, restorative resection (ultra-low anterior resection). The latter is now being increasingly applied, especially in the last 2 decades, with the advent of circular staplers and acceptance of closer distal margins.^{1,2}

However, radical resection of distal rectal cancer is a major undertaking with substantial morbidity and mortality.¹ Urinary and sexual dysfunction may occur and post-operative bowel function may be poor, not to mention the need for temporary or permanent stomas.¹⁻³ Anastomotic leak rates for lower rectal tumours are reported to be between 5 to 10%.¹ Despite radical surgery, local recurrence still occurs in 5 to 30% of cases.⁴ Local excision is an attractive alternative that has lower mortality and complication rates of 0 to 22%.¹ It avoids a stoma and is technically less demanding and thus safer for patients with numerous co-morbidities. However its role as a curative procedure remains unclear as this procedure does not address draining lymph nodes. There has been a resurgence of

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interest in local excision in recent years and some authors have reported good results when local excision was combined with adjuvant therapy.^{1,5,6} Thus, there is a need to re-define the role of local excision as a curative procedure.

This study reviewed our centre's experience in locally excised rectal mucosal tumours, both benign and malignant. It aimed to document our local experience and identify patients amenable for this more conservative treatment. Benign tumours were also included in this study to compare the difference in results between benign and malignant tumours after local excision. Few studies published thus far have reported on the follow-up of benign tumours after transanal local excision.

METHODS

A retrospective review of consecutive cases of histologically proven mucosal rectal tumours that had undergone transanal local excision over a 7-year period between January 1994 and December 2001 was performed. Data, collected prospectively, was extracted from our computer database and further clinical information was extracted from a review of clinical notes. Only cases treated with curative intent were included in this review. All the tumours were mobile on clinical examination and within 10cm of the anal verge. Of the cases suspected of cancer pre-operatively, 28% declined radical resection while 35% had co-morbidities of either or combined ischaemic heart disease, diabetes mellitus and renal impairment. Local excision was thus performed in these patients rather than radical resection. The remaining 37% were deemed clinically localised by the surgeon and amenable for local excision as curative therapy rather than radical surgery.

Pre-operative investigations included full blood count, serum electrolytes, liver function, chest x-ray, full colonoscopic examination and imaging of the liver for cancer cases (ultrasound or computed tomography). Computed tomography of the pelvis and endorectal ultrasonography (which became available at our center in 1997) were used as adjunctive investigations for tumour depth and lymph node involvement where there was suspicion of malignancy. All patients suspected of cancer pre-operatively underwent full thickness excision. Suspected benign tumours were treated by submucosal excision if the tumour was easily prolapsible or full thickness excision if the tumour was more sessile. Full bowel preparation and prophylactic antibiotics were generally used. The patients were put in the lithotomy position and a Park's rectal retractor

was used to provide exposure to the tumour. Excision was performed with a 1cm margin. After haemostasis, the wound was either closed with Vicryl 2/0 or left open to granulate. All operations were performed under the supervision of consultant specialist colorectal surgeons, using a standardised technique.

None of the patients reviewed received adjuvant therapy. Follow-up was through clinic visits (quarterly for the first 2 years, twice-yearly for the next 3 years and annually thereafter) and recurrences picked up clinically by digital rectal examination or on follow-up colonoscopy (annually until negative for polyps and cancer, every 3 years thereafter). Endorectal ultrasonography was performed when indicated. Serum carcinoembryonic antigen (CEA) levels were used to follow-up patients with cancer.

Parameters reviewed were patients' age and gender, presenting symptoms, tumour site and size, operative technique and time, length of hospital stay, histological stage and differentiation. These factors were then correlated to the incidence of tumour recurrence and the occurrence of complications from the procedure. Disease-free interval and salvage techniques in recurrences were also reviewed. Non-parametric tests (Mann-Whitney U and Kruskal-Wallis) were used where appropriate to analyse for significance using SPSS for Windows (SPSS Inc, Chicago, USA), version 10.0 on an IBM personal computer.

RESULTS

There was a total of 45 patients, of whom 28 were males and 17 were females. Their mean age was 61.2 (standard error of mean, SEM 2.2; range 31 to 86) years. The most common presenting complaint was bleeding per rectum (67.6%), followed by change in bowel habit (17.6%), symptomatic prolapsing mass (8.9%) and incidental finding during follow-up for colorectal cancer (5.9%). All tumours were mobile polypoidal lesions on digital rectal examination. Eleven (24.4%) of the tumours had some induration palpable suggestive of cancer. All were within 10cm of the anal verge with a mean distance of 5.5cm (SEM 0.3). Endorectal ultrasonography was performed in 10 patients (22.7%). Nine of these patients had UT0 lesions while 1 had UT2 lesion. Two patients with UT0 lesions on sonography were found to have T1 and T2 adenocarcinoma on histology. The patient with UT2 lesion was found to have a tubulovillous adenoma.

The mean operative time was 29.8 minutes (SEM 4.4). Full thickness excision was performed for 60.6% of the patients, while in the remaining 39.4%, the excision

Table 1. Recurrence rates after local excision of rectal tumours.

Histology	Number of Patients	Local Recurrence	Percentage Recurrence
Benign			
Tubulovillous Adenoma	12	1	8.3%
Villous Adenoma	19	3	15.8%
Malignant			
T1 Adenocarcinoma	10	2	20.0%
T2 Adenocarcinoma	3	1	33.3%
Malignant Melanoma	1	0	0%
Total	45	7	

Table 2. Management of recurrences after local excision of rectal tumours.

Age	Histology	Recurrence Free Interval (Months)	Salvage Procedure	Currently Disease-Free
71	Villous adenoma (moderate dysplasia)	11	Transanal excision (adenoma)	Y
58	Villous adenoma (moderate dysplasia)	28	Endoscopic excision (adenoma)	Y
52	Tubulovillous adenoma (moderate dysplasia)	24	Endoscopic excision (adenoma)	N
77	Villous adenoma (moderate dysplasia)	13	Transanal excision (adenoma)	Y
43	T1 moderately differentiated adenocarcinoma	7	Low anterior resection (T3N1)	N Metastatic lung disease
31	T1 moderately differentiated adenocarcinoma	22	Low anterior resection (T2N0)	Y
67	T2 moderately differentiated adenocarcinoma	84	Abdomino-Perineal resection (T4N1)	Y

was to the submucosal plane. The wounds were closed with suture in 81.8% of the cases and left open to granulate in the rest. Mean length of hospital stay was 3.8 days (SEM 0.5). There was no peri-operative mortality. Complications of the procedure (13.3%) were bleeding (6.7%), urinary tract infection (2.2%), acute urinary retention (2.2%) and mild incontinence (2.2%). None of the patients were sent for adjuvant therapy. There was no statistical difference between full thickness or submucosal resection upon operative time ($p=0.22$) or complication rate ($p=0.52$). Neither closure nor leaving the wound open had any statistically significant difference on operative time ($p = 0.31$) and complication rate ($p=0.176$).

The mean measured size of freshly resected pinned out specimen was 3.5cm (SEM 0.33) in length and 2.7cm (SEM 0.2) in breadth. Lesions which were clinically considered to be benign were of a mean size of 3.2cm (SEM 0.4) in length and 2.4cm (SEM 0.2) in breadth. Lesions which were clinically considered malignant were of a mean excised size of 4.0cm (SEM

0.5) in length and 3.5cm (SEM 0.3) in breadth. There was no statistically significant difference in size between benign and malignant tumours (length, $p=0.66$, width, $p=0.36$). Macroscopically, 68.9% of the resected tumours were pedunculated while 39.4% were sessile. There was also no statistically significant difference in shape between benign and malignant tumours ($p=0.29$). The histological findings are shown in Table 1. The margins were clear in all except 1 patient with T1 moderately differentiated adenocarcinoma. He was subsequently found to have a local recurrence on follow-up and underwent anterior resection 7 months after the initial operation. Histology was that of T3N1 adenocarcinoma. He progressed to having lung metastasis and underwent salvage chemotherapy.

The mean follow-up period was 24 months (SEM 3.3). The overall recurrence rate was 12.9% for benign adenomatous polyps and 21.4% for cancers. The difference was not statistically significant. The outcomes of patients with recurrences are summarised in Table 2. The mean time to recurrence was 27 months

(SEM 9.9). The mean time to recurrence for benign tumours was 19 months (SEM 4.1) while that for malignant tumours was 38 months (SEM 23.6). There was no statistically significant difference in recurrence time between benign and malignant tumours. There was also no significant differences in the recurrence rates when they were analysed for sex, age, size of tumour, intra-operative time, shape of tumour (pedunculated or sessile), technique of wound closure and histology. The management of the recurrences is shown in Table 2. A total of 67.7% of cancer recurrence cases had nodal disease at the time of radical resection with 1 patient progressing to metastatic lung disease. To date, after a mean follow-up of 36 months (range 1 to 84 months), none of the cancer patients had died after local excision.

DISCUSSION

Transanal local excision of rectal mucosal tumours, compared to radical resection carries less morbidity and mortality.^{1,5,6,7,9} In our series, hospital stay of 4 days was relatively short, complications were minor and there were no peri-operative mortalities. The overall complication rate was 13.3%. Previous publications have reported complication rates of between 0 to 22% and hospital stays of between 1 to 8 days.¹ This compares favourably to radical surgery which carries a mortality rate of 6%, anastomotic leak rates of 5 to 10% and urinary and sexual dysfunction rates of 30 to 40%.^{1,8} It also avoids a temporary or permanent stoma. However, local excision fails to address draining lymph nodes and thus is only suitable for tumours with minimal rectal wall invasion where the risk of lymph node involvement is thought to be minimal. Even in these tumours, it is debatable whether local excision is a curative procedure.^{1,5-9} Endorectal ultrasonography is a useful adjunct for pre-operative assessment of these lesions. The accuracy with respect to depth of invasion has been reported to be between 82 to 93% and with respect to lymph node involvement, 65 to 81%.¹ In our series, 2 of the 10 patients had a false negative finding while 1 had a false positive finding. Accuracy with respect to depth of invasion was 70%. This emphasises that endorectal ultrasound accuracy is highly dependant upon operator experience.

Reported rates of local recurrence after cancer excision based on retrospective studies on local excision alone vary widely.¹ In 1977, Morson *et al* reported a 2.8% overall recurrence rate (n=105) while the latest report by Mellgren *et al* reported a 23% overall recurrence rate (n=108).^{1,7} Three recent larger studies on local excision alone have revealed overall local recurrence rates of T1 and T2 adenocarcinoma of more than 20%

(Mellgren *et al*, 23%, n=108; Garcia-Aguilar *et al*, 24%, n=82; Chakravarti *et al*, 28%, n=52).⁷⁻⁹ Hence, our cancer recurrence rate of 21.4% is comparable to the results of other studies. The results of transanal endoscopic microsurgery without adjuvant therapy has been reported to be between 4.2 and 25%, however patient selection and follow-up regimes varied widely in those studies.¹ The results of local excision with adjuvant radiotherapy or chemotherapy have been more favourably and generally the overall recurrence for T1 and T2 cancers have been reported to be under 20% (6 to 19%).^{1,10,11} However, all these studies were retrospective and to date, there are no randomised controlled studies on this topic and adjuvant therapy protocols have also not been clearly defined. In almost all the studies, the recurrence rates of locally excised T2 cancers were substantially higher than T1 cancers.^{1,5-10} This was consistent with our findings, although the difference was not statistically significant. Mellgren's series carried a 18% recurrence rate for T1 lesions compared to 47% for T2 lesions.⁷

Mellgren *et al* further compared 108 T1 and T2 cancers treated by transanal excision in 153 patients with T1N0 and T2N0 adenocarcinomas treated by radical resection. They found statistically significant differences in survival in favour of radical surgery for T2 tumours. A review of 805 cases by our department of rectal cancer revealed lymph node involvement in 5.6% and 19.6% of T1 and T2 tumours, respectively.¹² This may explain the higher recurrence rate for T2 lesions. The incidence of lymph node involvement and lymphatic vessel invasion was also increased in patients under 45 years of age.

This data suggest that local excision alone seems to be best reserved for T1 tumours in older patients or in patients for whom medical problems cause them to be at high risk for open surgery. With adjuvant chemoradiotherapy, the results in terms of local recurrences seem to be better for T2 tumours and for those patients with poor prognostic factors mentioned above.^{1,5,6,7,9,10,12} It may thus be an alternative for patients unwilling to have a stoma or who are unfit for radical surgery.

There are fewer studies on recurrence rates of transanally excised benign adenomatous polyps. Presumably benign adenomatous polyps should not be associated with lymph node involvement and thus local excision should be adequate as long as the excision margins are clear. The finding of local recurrence (13.3%, n=4) for benign polyps in our series is thus surprising, and perhaps the locally recurrent benign tumours were possibly metachronous in nature, as the

original resection margins were all clear. Over time, it is difficult to re-establish the exact site where the original tumour was excised unless dye tattooing techniques are used. The incidence of metachronous colorectal polyps is between 30 to 50%.^{13,14} All recurrences in our series were benign and treatable with a repeat local procedure without any complications. Nonetheless, follow-up is important which includes regular clinical examination and colonoscopy. Analysis of our series failed to demonstrate any significant factors predictive of recurrence. In our series, the recurrence rate for malignant disease (21.4%) appeared higher than that for benign disease (12.9%) and possibly reflected the malignant aggression of the primary lesion although analysis of our relatively small series did not reveal any significant difference.

Another noteworthy point is the wide range in the disease-free interval. Recurrence in the patient with the T2 carcinoma was only diagnosed 7 years after the initial excision. However, the mean disease free interval was 27 months and this correlated with previous reports of mean disease-free intervals of 18 to 29 months.^{5,6,8} Diligent long-term follow-up for all patients who have undergone local excision of any rectal tumours is thus highly recommended.

CONCLUSION

A significant recurrence rate is associated with both benign and rectal tumours treated by transanal local excision. Recurrence will occur regardless of the patients' age and sex, the size and shape of the tumour, the operative technique and the histology. Recurrences can occur many years after initial excision and regular long-term follow-up of patients treated in this way is prudent.

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