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An Evaluation of Transanal Endoscopic Microsurgery for Rectal Adenoma and Carcinoma

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ABSTRACT

Background: Transanal endoscopic microsurgery was introduced in the early 1980s. Since then, increasing numbers of rectal adenomas are being excised by this technique. The aim of this study was to evaluate our institution's experience with transanal endoscopic microsurgery for rectal adenoma and carcinoma.

Methods: Seventy-five patients (adenomas, n=58) underwent more than 90 TEM resections over a period of 5 years.

Results: Postoperative complications were minimal with 3% (n=2) in the adenoma group requiring transfusion and 0% 30-day mortality. One patient in each group developed transient fecal incontinence. During the follow-up period, 6 patients (10%) in the adenoma group underwent further local resections for their recurrences. Two patients in the carcinoma group (1 each of pathological T1 and T2 stage) developed recurrence at 24 months. A female with a T2 tumor was found to have an inoperable lesion and underwent sigmoid colostomy. Five of 17 patients had postoperative radiotherapy, and 2 patients developed radiation enteritis. Four patients died during follow-up due to unrelated reasons.

Conclusion: The transanal endoscopic microsurgery technique appears to be safe and associated with minimal morbidity. Careful selection of patients with thorough preoperative assessment is necessary for carcinoma patients. Patients with T1 lesions and favorable histology should only be considered for curative resection by this technique.

Key Words: Transanal endoscopic microsurgery, Rectal adenoma, Rectal carcinoma, Local resection.

INTRODUCTION

Local excision of rectal tumors was popularized by Parks et al[1] in the 1950s. Low-lying rectal lesions can very easily be dealt with by Parks' excision. Mid and upper rectal tumors pose a special problem due to inaccessibility and poor vision. These lesions were traditionally excised by low anterior resection for lesions above the peritoneal reflection and perineal approach for lesions below the peritoneal reflection. These procedures were bereft with considerable morbidity and mortality.[2,3] Parks et al[4] suggested that such radical procedures for low-grade rectal villous adenomas would be unnecessary in 60% to 80% of patients. Buess et al[5] developed a stereoscopic microscope with channels for irrigation, suction, and diathermy for use in transanal endoscopic microsurgery (TEM) and resected more than 250 rectal lesions between 1983 to 1991. Since then, an increasing number of rectal adenomas and selected carcinomas have been excised using this technique. Excellent visualization is the obvious advantage of TEM. We wanted to evaluate our institution's results of the TEM technique for rectal adenoma and carcinoma.

METHODS

Patients were identified from the surgical records, operation lists, and the hospital PMS system. Part of the data was collected prospectively. Case notes were studied thoroughly and data collected regarding duration of operation, operation technique, complications, duration of follow-up, etc. All the patients were assessed thoroughly for suitability for local excision. The minority of patients underwent preoperative transrectal ultrasound. The operative technique has been described previously.[5] Briefly, TEM was performed using the equipment developed by Buess and manufactured by Wolf (Knittlingten, Germany). This is based on an operating sigmoidoscope 12 cm or 20 cm in length and 4 cm in outer diameter, which incorporates a high quality binocular optical system providing up to 6x magnification. Rectal distension to a pressure of 10 mm Hg with simultaneous, continuous low-pressure suction is achieved with a combined endosurgical unit incorporating pressure sensitive insufflation of carbon dioxide and a roller suction unit.

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Submucosal excision was performed for rectal adenomas with a 0.5-cm margin marked by diathermy. Rectal cancers underwent full thickness excision. Absorbable sutures were used to close the defect, and the sutures were secured by silver clips. The position of the patient varied with the site of the lesion, and the Lloyd-Davies position was used for posterior lesions.

RESULTS

Over a period of 5 years (1993 to 1998), 75 patients (adenomas, n=58) underwent 90 TEM resections. In the adenoma group, 31 were male and the median age was 71 years (range, 31 to 94). In the carcinoma group, 7 patients were male and the median age was 76 years (range, 52 to 89). Of the 17 patients with carcinoma lesions, 6 were diagnosed preoperatively with benign lesions and hence underwent mucosectomy. The majority of patients were primarily referred by general practitioners (adenoma, n=40; carcinoma, n=13). Two patients in the adenoma group and 1 in the carcinoma group were fecal occult blood test (FOBT) screen detected. Rectal bleeding was the predominant presenting symptom in 30 (51%) adenoma and 9 (52%) carcinoma patients, respectively. Altered bowel habits (adenoma, n=5; carcinoma, n=3), diarrhea (adenoma, n=8; carcinoma, n=3) was noted **(Table 1)**. A family history of bowel cancer was recorded in 8 (13%) adenoma and 2 (11%) carcinoma patients. Twelve percent of adenoma patients and 11% of carcinoma patients were ingesting aspirin regularly.

Rectal Adenomas (n=58)

The median distance from the anal verge of adenoma lesions was 10 cm (range, 5 to 15) and approximately half of the lesions (n=24) were located in the posterior quadrant. An equal number of lesions (n=17) were located in the anterior and lateral quadrants. Twenty-six patients had undergone previous polypectomies, making TEM resection particularly difficult. Polypoid lesions were the commonest (n=27), with sessile lesions accounting for 10 lesions. Extensive carpeting occupying a quadrant was noted in 13 patients. These lesions were difficult to dissect, and some areas of partial thickness excision had to be done. The median duration of surgery was 112.7 minutes (range, 40 to 180), with 55% (n=32) of patients undergoing mucosectomy. The remaining patients underwent mucosectomy with some areas of partial thickness excision. Fourteen patients underwent full thickness resection because the preoperative histology suggested severe dysplasia. Histopathological examination revealed tubulovillous (n=20), villous (n=28), tubular adenoma in 10 patients. Mean postoperative stay was 4 days (range, 2 to 9).

Carcinoma (n=17)

Eleven patients in the carcinoma group underwent full-thickness excision with a median operating time of 131.2 minutes (range, 60 to 180). An equal number of lesions were located in the posterior and lateral quadrants (n=7). Histology revealed T1 (n=9), T2 (n=4), T3 (n=3), and T0 in 1 patient. Vascular invasion was noted in 4 lesions and lymphatic invasion in 2 lesions. Mean postoperative stay was 6.5 days (range, 3 to 20).

Postoperative Complications

Complications were minimal with no 30-day postoperative mortality. No perforations occurred, and no conversions to open surgery due to technical difficulties were required. Major rectal bleeding requiring transfusion was noted in 2 of the adenoma and none of carcinoma patients. Transient fecal incontinence was noted in 1 each of the adenoma and carcinoma patients, which settled before the next follow-up. Minor complications like postoperative pyrexia were noted in 6 of the adenoma and 2 of the carcinoma patients. Four of the adenoma and 2 of the carcinoma patients were catheterized, and half of these had to be catheterized for their previous history of urinary symptoms **(Table 2)**.

Follow-up

All the patients were followed up for at least 24 months, and the median follow-up for adenomas and carcinomas was 34 (range, 24 to 78) and 36 (range, 25 to 76) months, respectively **(Table 3)**. During this period, 6 patients in the adenoma group had local recurrence and underwent further TEM and endoscopic resections with good local control. Four patients had residual disease, which was identified during the first procedure. All these patients underwent further TEM within 3 months of the initial treatment with no further recurrences to date. Amongst the 6 patients with true recurrence, tubulo-villous with severe dysplasia (n=2) and moderate dysplasia (n=1), villous adenoma with moderate dysplasia (n=2) and tubular adenoma with severe dysplasia (n=1) were found.

Table 1.
Symptomatology

Symptoms	Adenomas (n=58)	Carcinomas (n=17)
Rectal bleed	30	9
Altered bowel habit	5	3
Diarrhea	8	3
Known polyp	12	0
Asymptomatic (FOBT)	2	1
Other symptoms	8	3

Table 2.
Complications

Complication	Adenomas (n=58)	Carcinomas (n=17)
Rectal bleed	2 (3%)	0
Fecal incontinence	1 (2%)	1 (5%)
Pyrexia	6 (10%)	2 (11%)
Urinary retention	4 (7%)	2 (11%)
30 day mortality	0	0

Table 3.
Follow-up

Complication	Adenoma (58)	Carcinoma (17)
Median Duration (Mos.)	34 (24-78)	36 (25-76)
Local Recurrence	6 (10%)	2 (11%)
Rectal Stricture	1	0
Radiation Enteritis	0	2

One patient in the adenoma group developed rectal stricture, which was successfully treated by dilatation. None of the patients in the adenoma group subsequently developed rectal cancer.

Two of 17 (11%) carcinoma patients had a recurrence of disease. Recurrence occurred in both patients at 24 months and both had adjuvant radiotherapy. One female had an extensive inoperable tumor and hence underwent palliative sigmoid colostomy. Two patients in the T3 group were discharged after 2 and 4 years of follow-up due to their age. Five patients underwent adjuvant radiotherapy, and 2 patients developed radiation enteritis, which settled with conservative management **(Table 4)**.

DISCUSSION

Our series of 75 patients who underwent TEM shows that this procedure can be done safely with minimum morbidity and no postoperative mortality. Steele et al[6] reported the series of the first 100 cases in 1996 from the UK with 5% overall recurrence rates. The follow-up period was short. Buess and Mentges[7] treated 229 patients with rectal adenomas with 8.7% recurrence rates. Chiavellati et al[8] reported a series of 24 patients with no recurrences albeit with short follow-up. In our series of 58 adenomas and 17 carcinomas, the recurrence rates have been 10% and 11%, respectively, with a minimum of 24 months of follow-up.

The importance of careful selection of carcinoma patients for TEM excision can not be overemphasized. Mentges et al[9] laid out the criteria for local therapy of rectal carcinomas based on Hermeneck's data: 1) Stage CS1, uT1, G1, or G2 well to moderately differentiated carcinomas. 2) Stage CS1, Ut1, G3, or G4 carcinomas (suspected at

Table 4.
Results for Carcinoma Patients

T0/T1 (n=10)	T2 (n=4)	T3 (n=3)
Mucosectomy, 6	–	–
Full thickness, 4	–	–
Radiotherapy, 2	Radiotherapy, 2	Radiotherapy, 1
Anterior resection, 1	Anterior/posterior resection, 1	–
Observation, 3	Observation, 1	Observation, 2
Recurrence, 1, Radiotherapy and mucosectomy group at 24 months	Recurrence, 1, Radiotherapy group, Sigmoid colostomy	Observation group discharged after 2 and 4 years of follow-up

operation to be p T1 high-risk carcinoma). 3) Major advanced stage carcinomas in patients with risk factors and in those who refuse major surgery or stoma (Palliation).

In our series, the predominant method of assessing suitability of carcinoma patients has been clinical evaluation. The majority of our patients were old with associated comorbid conditions in whom major surgery would have been inappropriate. Currently, a national database exists of cancer patients undergoing TEM.

CONCLUSION

It appears as though TEM for rectal adenomas and carefully selected cases of carcinomas is safe and achieves the objectives of cure with minimal morbidity and mortality.

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