Curative Resection of Rectal Carcinoid Tumors with Transanal Endoscopic Microsurgery

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ABSTRACT

Background: Transanal endoscopic microsurgery is a minimally invasive technique for local resection of rectal tumors. Its place needs to be defined for resection of carcinoid tumors of the rectum.

Materials and Methods: From 1998 to 2004, rectal carcinoid tumors were diagnosed in 5 patients. The diagnosis was suggested at biopsy in all patients. All tumors were resected full thickness with transanal endoscopic microsurgery. Data were obtained retrospectively from a review of hospital charts.

Results: At the time of operation all tumors were small without clinical or biochemical signs of metastasis. All resected tumors were highly differentiated and had free margins without invasion into the submucosa. Operative times ranged from 15 to 35 minutes. Hospital stays ranged from 2 to 4 days. No morbidity or mortality was observed. Follow-up ranged from 3 to 75 months. No recurrences were observed.

Conclusion: Transanal endoscopic microsurgery is an excellent technique for removal of carcinoid tumors of the rectum and even the distal part of the sigmoid, if the diameter is <1 cm without invasion of the rectal wall.

INTRODUCTION

Carcinoid tumors are rare neuroendocrine tumors, with 5-year survival rates of approximately 50%. Therapy depends on histopathologic features, localization, and the stage of the tumor at the time of diagnosis. These tumors are found most often in the gastrointestinal tract, most frequently in the ileocecal region and the rectum. In the rectum, local resection of tumors is preferred to transabdominal resection because of minimal morbidity and mortality. In smaller rectal carcinoid tumors, the chance of lymph node and distant metastasis is very low. These tumors are suitable for local resection with curative intent.1–6

Transanal resection according to the technique described by Parks and Stuart is the oldest and most frequently used technique for local excision of rectal tumors. However, incomplete resection and limitations in more proximal and larger rectal tumors have been observed. Transanal endoscopic microsurgery (TEM) is a more recent option for complete resection, and in more proximal and larger, even circumferential, tumors. It is often considered the technique of choice for the resection of benign tumors and a useful means for palliation in disseminated rectal cancer. It has been studied for its curative application for carcinomas.6–13 TEM was introduced in our hospital in 1995. Since that time, rectal carcinoid tumors have been resected with TEM in 5 patients. In this study, the results are presented.

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MATERIALS AND METHODS

From 1998 to 2004, rectal carcinoid tumors were diagnosed in 5 patients. All patients were analyzed according to the same standard protocol used in patients with rectal adenomas and carcinomas eligible for TEM. The protocol includes patient history, physical and rectal digital examination, blood tests, coloscopy with biopsy, and abdominal ultrasound. If TEM was considered, rigid rectoscopy was performed to access the exact tumor location. Distance to the lower margin of the tumor was measured from the anal verge. Endorectal ultrasound was performed to assess possible invasion. Specific rectal carcinoid 5-hydroxyindoleacetic acid (5-HIAA) was measured in the urine. All patients underwent full thickness excision with TEM.

The resected specimens were spread on a cork specimen board by means of fine needles to avoid anatomical distortion by formalin fixation. Circumferential margins were investigated. Pathologic analysis included tumor area, depth of invasion, presence or absence of lymphatic or vascular invasion, and tumor differentiation. Based on histological evidence, resection of each tumor was reported by the pathologist as either complete or incomplete according to the extension of the tumor to the resection margin.

All data, including follow-up information, were obtained retrospectively from a review of hospital charts.

Operative technique

TEM is a minimal invasive operation. The central component of the one-port system consists of a 12–20 cm rectoscope, a handle, and a four-port working insert. It is introduced transanally and fixed to the operating table with a Martin arm that allows complete freedom of positioning. A stereoscope with a documentation endoscope and a maximum of 3 instruments can be introduced in the working insert. An insufflator and specially developed TEM pump are connected via a tube system for gas insufflation, pressure measurement, irrigation, and suction. An electrosurgery unit is used for cutting and coagulation. The system is airtight, for creating a pneumorectum. After removal of the specimen, the defect is closed transversely with a running suture. Clips are used as knots.

RESULTS

The diagnosis was suggested at biopsy in all patients. One of the patients was referred because of possible incomplete resection of a carcinoid tumor at endoscopy. At the time of operation, all tumors were small, without clinical or biochemical signs of metastasis and no endorectal ultrasound signs of invasion. Histological investigation of the resected specimens revealed free margins in 4 patients. In the patient referred after endoscopic removal of a carcinoid tumor, tissue changes were observed as a result of the endoscopy with no apparent carcinoid tumor remaining. All 5 tumors were highly differentiated without invasion of the rectal wall. Operative time ranged from 15 to 35 minutes. Postoperative stays were 2 to 4 days. Neither morbidity nor mortality were observed. Follow-up has ranged from 3 to 75 months and no recurrences have been observed at the time of writing (Table 1).

DISCUSSION

Rectal carcinoid tumors present relatively often at an early stage without distant metastases because they are incidentally found at endoscopy or with rectal bleeding. From a histopathological point of view it is important to differentiate between low grade carcinoid tumors and high grade neuroendocrine carcinomas, as the latter have a worse prognosis and might be treated primarily with chemotherapy. Carcinoid tumors do not respond to chemotherapy and surgery is the therapy of choice. Total mesorectal excision (TME) with autonomic nerve preservation is the surgical technique of choice if cure is intended in rectal cancer. However,
due to the high morbidity and mortality compared to local techniques, it has also been investigated for surgical cure of rectal cancer. Lymph nodes are not removed with local resection. In low risk rectal carcinomas the risk on lymph node metastasis at operation is minimal as is the risk on local recurrences after local resection.4–6,13

Criteria for local resection of rectal carcinoid tumors have been formulated. Unlike rectal carcinomas, the diameter of the tumor and the depth of invasion are the only relevant parameters for treating rectal carcinoid tumors. With a diameter <1 cm and free margins, 5-year survival is reported at 100% after local excision. Invasion of the rectal wall is not observed in these tumors. In tumors with a diameter of 1 to 2 cm, free margins, and no invasion, 5-year survival is also 100%. In cases of invasion, 5-year survival drops to 73%. For lesions with a diameter >2 cm, TEM is advised, and 5-year survival ranges from 25% to 50%.3,15–19 In our study, all tumors were <1 cm and were removed completely. We have not observed any recurrences, and our results are in line with the literature.

Local resection is preferable to a laparotomy, due to the high morbidity and mortality associated with laparotomy. The most used technique is transanal resection according to Parks and Stuart, but tumors more proximal in the rectum and larger tumors are difficult to excise. TEM is a minimally invasive technique. Key elements are use of a long trocar, creation of a pneumorectum, and use of a stereoscopic optic, providing a stable, unequalled view on the tumor. As a consequence, tumors from the dentate line to the lower sigmoid, including circumferential tumors, can be excised. This avoids the need to master several, often technically demanding, local techniques that have the added limitations of increased mortality and morbidity. Moreover, without TEM, up to 50% of the tumors could not have been excised locally, and laparotomy would have been unavoidable.6–13

Our hospital is a tertiary center for patients with tumors suitable for TEM. Most patients are referred if the referring surgeon was not able to resect the tumor transanally because of area or distance. All but 1 patient in this study were referred and all tumors were located in the proximal part of the rectum, illustrating the increased possibilities with TEM. Moreover, it is advisable to excise rectal tumors with a margin of at least 1 to 2 cm of macroscopically normal mucosa to assure complete margins. This means that resections have been made up to 12 cm from the anal verge. In all cases, a complete resection was obtained in a limited operative time, without complications. TEM is capable of safely resecting proximal tumors in the rectum were otherwise a TME would have been performed.

CONCLUSION

TEM is an excellent technique for curing carcinoid tumors of the rectum and even the distal part of the sigmoid, if the diameter is <1 cm and without signs of invasion of the rectal wall.

REFERENCES

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