

Transanal endoscopic microsurgery: A single centre experience

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ABSTRACT

Introduction: The aim of this study was to evaluate the implementation of transanal endoscopic microsurgery (TEM) technique for the removal of rectal adenomas or early rectal cancer in the Centre of Oncosurgery, Oncology Institute of Vilnius University.

Methods: From October 2009 to June 2011 a total of 41 patients underwent TEM for rectal adenomas or early rectal cancer. 19 were women and 22 men, median age was 64 years, range 31 to 87 years. Rectal lesions were from 0.9 to 7.0 cm in diameter, and 3 to 13 cm from the anal verge. Full thickness excision with one cm safety margins was attempted in all cases, followed by closing of the rectal wall defect in one-layer using a running monocryl 3.0 suture using silver clips. In one case (TEM for T2 rectal cancer), the abdominal cavity was penetrated and two-layer closure was performed.

Results: In these series of 41 patients there were no complications or deaths. Hospital stay ranged from 2 to 13 days, average 6 days. Final histology revealed 24 (59%) lesions to be tubular or villous adenomas, in 6 (15%), foci of carcinoma in situ (pTis) were present. Five (12%) were TNM stage pT1 and 4 (10%) were pT2 cancers. Well-differentiated neuroendocrine tumors were found in 2 (4%). A 60 year old woman underwent open partial TME in the pT1 group; her tumor was in upper third of the rectum and preoperatively judged as pTis. In another case (pT1 group), in an 81 year old man, lymphovascular invasion was present on final pathology. He received postoperative adjuvant chemoradiotherapy. All patients are under surveillance.

Conclusion: TEM is safe and is an alternative to transanal excision for rectal adenomas and early rectal cancer. Further follow-up is necessary to evaluate recurrence rates and oncological results in a subgroup of patients with invasive rectal cancer.

Key words: Rectal polyp; Rectal cancer; Transanal endoscopic microsurgery (TEM).

Introduction

Transanal endoscopic microsurgery (TEM) was first introduced by Gerhard Buess from Germany in 1983 [1]. Since then it has been widely used as an alternative to local excision or major abdominal surgery for benign rectal lesions and early rectal cancer. It offers a very attractive

combination of minimally invasive local treatment with large full-thickness local excision under improved vision with gentle tissue handling. Its role in removal of rectal polyps seems to be not debatable, but the true place in local treatment of rectal cancer is yet to be determined due to sub-optimal oncological outcomes [2,3]. One of the shortcomings of this technique has been related to high cost of the complex equipment, which may be replaced in future with a single access laparoscopic port via the anus and standard laparoscopic instruments

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[4,5]. The aim of our study was to evaluate our single center early experience with conventional TEM.

Patients and methods

From October 2009 to June 2011 a total of 41 patients underwent TEM for rectal adenomas or early rectal cancer. 19 were women and 22 men, age range was 31 to 87 years, median age was 64 years. Rectal lesions were from 0.9 to 7.0 cm in diameter, and situated 3 to 13 cm from the anal verge. If benign adenoma was diagnosed, proctoscopy with biopsy was followed by total colonoscopy. In case of malignant lesions, all patients additionally underwent pelvic magnetic resonance imaging (MRI) and endorectal ultrasound, as well as abdominal ultrasound and chest X-ray.

All operations were performed under general anaesthesia, in lithotomy, prone jack-knife, left lateral or right lateral positions (depending on the exact location of the tumor). Standard TEM equipment was used. Full thickness excision with 1 cm safety margins was attempted in all cases, followed by closing of the rectal wall defect in one-layer running monocryl 3.0 suture using silver clips. In one case (TEM was performed for T2 rectal cancer); the abdominal cavity was penetrated and two-layer closure was performed.

All patients operated for rectal adenocarcinoma were offered TEM as an alternative to open total mesorectal excision (TME). These tumors were less than 3 cm in diameter, well or moderately differentiated with no histological signs of poor prognosis on preoperative biopsy. Two patients were operated for well-differentiated neuroendocrine tumors; one was offered TEM after snare polypectomy of the lesion thought to be a rectal adenoma, and one for the same condition diagnosed by biopsy; in both cases, the tumor was less than 1 cm in diameter. All specimens were pinned on card and fixed in 10% formal saline before being examined by haematoxylin and eosin, and in the case of neuroendocrine tumours, with specialized stains, by a pathologist. Wall invasion was classified based on the standard American Joint Committee for Cancer and Union Internationale Contre Le Cancer staging system.

Results

In this series of 41 patients there were no recorded complications or deaths. In-hospital stay ranged from 2 to 13 days, on an average 6 days. Final histology revealed 24 (59%) lesions to be tubular or villous adenomas, 6 (15%) foci of carcinoma in situ (pTis) were present, 5 (12%) T1, 4 (10%) T2 cancers and well-differentiated neuroendocrine tumors in 2 (4%).

Final pathology is illustrated in table 1.

Table 1. Final pathology in 41 patients undergoing TEM.

Final pathology	Number of patients (%)
Tubular or tubulovillous adenoma	24 (59%)
pTis	6 (15%)
T1	5 (12%)
T2	4 (10%)
Well-differentiated neuroendocrine tumor	2 (4%)

In all cases operated for malignant lesions, safety margin was not compromised and in all but one case (T1 group) final histology was favourable (well or moderately differentiated, no lymphovascular invasion). In the pT1 group one woman aged 60 years was operated for an upperthird rectal cancer, and open partial total mesorectal excision (TME) was proposed and performed; no residual tumor or positive lymph nodes were detected. Preoperatively, she was staged Tis. In another case (pT1 group), in an 81 year old man, lymphovascular invasion was present. He received postoperative adjuvant chemoradiotherapy. The other 3 patients in the T1 group are under surveillance.

Of 4 patients with T2 cancer, two patients (an 87 year old man and a 67 year old woman) underwent TEM as a compromised treatment due to comorbidity which precluded open resection. In the other two cases, tumours were understaged as T1 during preoperative evaluation. All were offered adjuvant chemoradiotherapy. One patient refused post-operative chemoradiotherapy.

Furthermore, an 87 year old man refused any other therapy or surveillance.

All patients after TEM are in a postoperative surveillance protocol which includes rigid proctoscopy (plus endorectal ultrasound in a group with invasive cancer) every 3 months during first two years. So far, no recurrent or progressing disease has been found.

Discussion

TEM seems to be a satisfactory alternative to trans-anal excision or major abdominal resection for removal of benign rectal lesions. However, regardless of a number of articles in the current literature, the superiority of TEM compared to transanal excision, was not demonstrated until recently, when de Grafet al [6] demonstrated a statistically significant difference comparing postoperative morbidity between the two procedures (5.3% and 10% respectively). The superiority of either trans-anal excision or TEM compared to abdominal resection has been recorded by many authors including Langer et al [7], who however, did not show a statistically significant difference in this respect between the two options of trans-anal approach. For most of our patients, should TEM be not available, a conventional trans-anal excision would be offered, excluding several cases when adenomas were located in the upper third of the rectum. For the latter, abdominal resection would be deemed necessary and, obviously, those patients benefited the most. We attempted to perform most of our early TEM's for benign polyps to avoid the negative impact of a learning curve during operation for a rectal cancer with its consequent poor oncological outcomes.

While managing patients with rectal cancer, our primary and most important aims are: local control of the disease, prevention of distal spread, long-term survival, preservation of a normal route for defecation, avoidance of damage to sexual and urinary function and good overall quality of life. Total mesorectal excision is a gold standard today for rectal cancer treatment in terms of local control, prevention of distal spread and long-term survival, but may result in a permanent stoma and a significant chance of

sexual or urinary dysfunction, and adversely affect quality of life. Accepted low-risk criteria in T1 rectal carcinoma suitable for local treatment are well or moderately differentiated lesions, smaller than 3 cm in diameter, and with no signs of lymphovascular invasion. Those were principles used in our series too. However, a negative resection margin may be a factor of major importance [8]. As pointed out by Borshitz [9], in case of negative resection margin for pT1 rectal cancer, recurrence was only 4%; if the resection margin was less than 1 mm, unknown or positive, recurrence rate was as high as 46%. In our comparatively small group with early rectal cancer, a negative resection margin was achieved in all cases. Only one patient from the T1 group, due to unfavorable final histology, did not accept surgery which would have been abdominoperineal excision. He was offered chemoradiation. Otherwise, immediate radical surgery in partially excised rectal pT1 carcinomas is known to result in good survival rates [9].

If, for properly selected pT1 rectal cancer, adequate TEM alone seems to be a good method of treatment, pT2 cancers harbour a much more difficult problem. In any rectal cancer case, the main difference between TEM and total mesorectal excision is the omission of proper lymph node dissection in TEM. This residual cancer bearing lymph node may be a cause for local recurrence. Up to date, conventional staging modalities have failed to resolve this problem. As nicely demonstrated, early pT1 or pT2 rectal cancers are likely to be associated with a small lymph node metastasis, not easily identified by endorectal ultrasound, which may explain a relatively high rate of recurrence after local excision [10]. As for trans-anal excision in pT2 lesions, local therapy alone is related with a high risk of local recurrence [11-15] and is inadequate treatment if the intention is to cure. Some authors have demonstrated good results while adding adjuvant radiotherapy [16]. A more recent strategy may be neoadjuvant chemoradiation followed by TEM for selected rectal pT2 cancer patients [17]. Our strategy in the current series was to advocate further

treatment if pT2 cancer was found in the final histology.

Conclusions

TEM was a safe alternative to trans-anal excision for rectal adenomas and early rectal cancer. Further follow-up is necessary to evaluate recurrence rates in all and oncological results in a subgroup of patients with invasive rectal cancer.

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