



## Long-Term Oncologic Results of Transanal Endoscopic Microsurgery Combined with Endoscopic Posterior Mesorectum Resection in the Treatment of Elderly Patients with T1 Rectal Cancer

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### Abstract

**Background:** Transanal Endoscopic Microsurgery (TEM) combined with Endoscopic Posterior Mesorectal Excision (EPMR) as a two-stage procedure allows a radical resection of T1 rectal cancer and the relevant lymphatic drainage of the lower third of the rectum. The aim of the study was to assess the 5-year oncologic results of TEM combined with EPMR in the treatment of T1 rectal cancer in older patients.

**Methods:** Patients aged 69 or over with T1 cancer of the lower third of the rectum was examined in a prospective study between 2007 and 2016. All of them were treated with TEM in combination with EPMR in a two-stage procedure.

**Results:** Ten consecutive elderly patients (5 female and 5 male, mean age 73.5 years): in all patients, a full-thickness excision of the primary tumor was performed using TEM with a radial margin of at least 10 mm. In the second stage, 4-6 week later, EPMR was performed. There were no intraoperative complications apart from one small rectum perforation during EPMR which did not require conversion and was treated endoscopically. In the postoperative period, one patient had a hematoma which resolved itself without any additional treatment and one male patient complained of sexual dysfunction until 6 months postoperatively. The symptoms resolved themselves later without any additional treatment. There was no mortality or treatment related morbidity in the 60-month follow-up. In this time period we also did not observe any locoregional recurrence. None of our patients complained of any incontinence symptoms in the postoperative period apart from one female patient with fecal incontinence diagnosed preoperatively (gas incontinence).

**Conclusion:** TEM in combination with EPMR is a safe procedure, with a low complication rate and good long-term oncologic results. This could be especially attractive in frail, elderly patients that do not qualify for an extended resection. However, it requires further evaluation using a larger study group.

### Introduction

At present, local excision (LE) and, in particular, Transanal Endoscopic Microsurgery (TEM) is a well-established treatment for T1 cancer of the rectum. It has the advantage of significantly lower morbidity, short hospital stay, preserving basic physiological functions controlling defecation, miction and sexual functions which in turn allow the patient to maintain an adequate quality of life [1-4]. However, it is associated with an increased rate of local recurrence in comparison with extended resection [5-6]. Particularly, in the case of "high risk" T1 cancer characterized by a low degree of cell differentiation, infiltration of the lymphatic and blood vessels, tumor budding and perineural invasion can affect even up to 25% of patients [5]. That is why the Endoscopic Posterior Mesorectum Excision (EPMR) procedure was introduced, which allows resecting the lymphatic field in this region without sacrificing the rectum. According to the results published in the literature, this technique seems to be safe, with good short-term oncologic results and no influence on anorectal functions [7-10].

Therefore, the aim of the study was to assess the 5-year oncologic results of TEM combined with EPMR in the treatment of T1 rectal cancer in older patients.

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## Material and Methods

Patients with T1 cancer of the lower third of the rectum were examined in a prospective study between 2007 and 2016. All of them were treated with TEM in combination with EPMR in a two-stage procedure. Both procedures were described in detail in our previous studies [9,10].

Standard preoperative staging was performed comprising colonoscopy with pathological examination, rigid rectoscopy and endorectal ultrasonography (ERUS) to determine precisely the location of the tumor and deepness of invasion, a chest X-ray, a CT of the abdomen and pelvis and preoperative CEA serum level.

All the patients had a proctologic follow-up incl. ERUS and an anorectal manometry. A consecutive oncologic examination, based on an accepted follow-up program (history, physical examination, rectoscopy) was performed every three months for a period of two years and every six months for a further three years. Colonoscopy and computer tomography of the thorax, abdomen and pelvis were performed every twelve months).

## Results

Ten patients (5 female and 5 male; ranging in age from 69 to 78 with a mean of 73.5 years) with pathologically proven T1 rectal cancer took part in the prospective study during the period lasting from 2007 to 2016. Three patients were assessed as ASA 1, three patients as ASA 2 and four patients as ASA 3. In two patients the tumor was located on the anterior wall and in the eight patients on the posterior wall.

In all patients, a full-thickness excision of the primary tumor was performed using TEM with a radial margin of at least 10 mm. In the second stage EPMR was performed. There were no intraoperative complications apart from one small rectum perforation during EPMR, which did not require conversion and was treated endoscopically with two additional sutures. In the postoperative period, one patient had a hematoma which resolved itself without any additional treatment and one male patient complained of sexual dysfunction until 6 months postoperatively. The symptoms resolved themselves later without any additional treatment. There was no mortality and treatment related morbidity in the 60-month follow-up. In this time period we also did not observe any locoregional recurrence. None of our patients complained of any incontinence symptoms in the postoperative period apart from one female patient with fecal incontinence diagnosed preoperatively (gas incontinence).

## Discussion

TEM combined with EPMR in the treatment of T1 rectal cancer is a safe procedure: in the 5-year follow-up there was no mortality and no treatment related morbidity apart from one intraoperative perforation and a hematoma in the early postoperative period. Koeninger et al. [11] observed no intra- or postoperative complications in the report on two patients operated using the EPMR technique. Tarantino et al. [8] in the case series of 18 patients, reported no mortality and three cases of intraoperative perforation, treated endoscopically, with no clinical consequences in the postoperative period. They also observed one case of transient rectal inertia, paresthesia in the posterior femoral region and wound dehiscence. There were also two major complications after EPMR: one case of pulmonary embolism and one case of postoperative bleeding that required endoscopic evacuation [12]. It is worth mentioning that in our study population

all patients were older patients ( $\geq 69$  years old) and without any major complications in the postoperative period. We did not preoperatively perform full Geriatric Assessment to determine frailty. However, most of our patients had a long list of comorbidities and geriatric syndromes (among others, 40% were classified as ASA 3). The two-stage procedure, consisting of natural orifice surgery (TEM) and minimal invasive access to excise mesorectum (EPMR) may reduce the burden of surgical trauma on patients. This could be especially crucial in the older frail population in which coping with acute stressors is compromised.

In the 5-year follow-up we also did not observe any locoregional or systemic recurrence. In the study by Wu ZY et al., evaluating local recurrence rates of patients with high risk T1 rectal cancer after TEM, 15.4% of patients had mesorectal lymph nodes involvement [13]. In most cases the recurrence is linked to the presence of clinically non-detectable metastases in the regional lymph nodes. As it was described in our previous studies, the EPMR is a feasible technique for harvesting a representative number of lymph nodes, allowing excising the mesorectum up the level of the arteria rectal superior. In the series of Tarantino et al. [12] the median number of resected LN was 7 (range 1-22). Among them 5 patients had positive LN. In the report of Koeninger et al. [11] a pathological workup revealed positively lymph nodes in both patients with T1 cancer. In our study group, the average number of harvested LN was also 6.9 (ranging 4-11) with no case of metastases. This can make the EPMR not only a diagnostic tool but also a treatment modality. Whether this approach can really be oncologically radical will remain unclear until the results of further studies on a larger group are published. However, this combination of reduced surgical trauma, good functional results and potential oncologic adequacy may be essential in the treatment of elderly population even with higher stages of rectal cancer and an unacceptable risk of an extended, Tran's abdominal operation.

## Conclusion

EPMR in combination with TEM is a safe procedure, with a low complication rate and good long-term oncologic results. This could be especially attractive in frail, elderly patients that do not qualify for extended resection. However, it requires further evaluation using a larger study group.

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