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Original research

Transanal endoscopic microsurgery for large benign rectal tumors; where are the limits?

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ABSTRACT

Introduction: Local excision is the treatment of choice for large benign rectal lesions. Transanal endoscopic microsurgery is recommended. The excision of large lesions >4 cm has been previously described. We report our series of lesions >5 cm that have been excised via the transanal endoscopic microsurgery.
Methods: Patients who underwent transanal endoscopic microsurgery for rectal tumors, between the years 2002–2012, were identified. Patients with tumors greater than 5 cm consisted the study group. Tumor diameter was determined based on fresh specimen measurements. Data pertaining to patients and tumor characteristics, operative and histopathology findings, postoperative outcomes were collected. Local recurrence and effects on anal sphincter function were assessed.
Results: Twenty five patients (14 female) with mean age of 70.3 ± 10.1 years, met the inclusion criteria. The mean tumor size was 5.7 ± 0.9 cm. The median distance from anal verge was 8 cm (range 1–17). Preoperative biopsy of the rectal tumor revealed adenoma with/without dysplasia in 24 patients. Postoperative findings were adenoma with/without dysplasia in 20 patients, T1 rectal cancer in 4 patients and tail gut cyst in one patient. Free margins were documented in 17 patients, in 7 it was involved and in one patient it could not be determined. In 2 cases the procedure was discontinued. Except for nonspecific transient fever no postoperative complications were reported. After a median follow up of 24.2 months, the 3-year LR rate was 10.9%.
Conclusion: TEM is feasible for the treatment of large benign rectal tumors. It may be an alternative method for proctectomy in selected patients with large rectal lesions.

1. Introduction

Local excision (LE) of large benign rectal lesions (LBRL) is challenging. An expected limitations are increased rate of malignancy, rectal perforation and/or stenosis [1,2]. A common alternative would be conventional radical surgery i.e. anterior resection of rectum. It however associated with procedure related morbidity and mortality. LE using the endoscopic mucosal resection, submucosal dissection, transanal excision, or transanal endoscopic microsurgery (TEM) techniques is therefore preferred.

TEM allows for submucosal or en bloc dissection with a full-thickness rectal wall excision [3]. It would be the procedure of choice given the relatively high rate of incidental cancer in LBRL [4,5].

Adequate LE of large lesions with free margins may be technically difficult. It may be complicated with involved margins, thus, with high recurrence rate [1].

Furthermore, excision of large lesions and creation of large rectal wall defects may be complicated with rectal perforation in the early postoperative period and with rectal stenosis afterwards [2]. Perforation requires urgent surgical treatment. Rectal stenosis, on the other hand, is associated with fecal urgency and incontinence. It negatively impacts patients' quality of life [6].

Full-thickness transanal excision via TEM provides a safe and efficient treatment for large rectal polyps greater than 4 cm in size [7]. In case of unexpected early rectal cancer, full thickness excision can be curative. Moreover, TEM is an alternative method of treatment for locally recurrent LBRL [7,8].

We conducted this study to assess the short and long term outcomes of LE of LBRL. Specifically, LE of tumors greater than 5 cm

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using the TEM technique has been rarely described [9].

2. Materials and methods

All patients who underwent LE of LBRL via the TEM technique between the years 2002–2012, were identified from a computerized database at the department of general surgery. LBRL was defined as a benign tumor greater than 5 cm in diameter. Tumor size was determined based on fresh operative macroscopic specimen measurements. Rectal lesions were defined as any lesion with an upper margin located within 17 cm of the anal verge, which was assessed by means of rigid proctoscopy.

Feasibility of transanal endoscopic excision is assessed by digital rectal exam and rigid proctoscopy.

Routinely, at our department, all benign rectal lesions, except for circumferential ones, are treated with LE via TEM. Lesions suspicious for cancer are initially referred to transrectal ultrasound to assess T stage. When there is no agreement between histopathology and TRUS findings, in terms of tumor invasiveness, we repeat the biopsy. If the discrepancy persists, an excisional biopsy is performed. Often, using the TEM technique. Early rectal cancer with favorable features may be excised transanal using TEM, while locally advanced cancer referred to conventional proctectomy. The procedure is performed by single colorectal surgeon.

2.1. Technique

Patients, who were scheduled for TEM procedure, underwent sodium phosphate enema several hours prior to the operation. Antibiotic prophylaxis was usually administered at the time of anesthetic induction. Procedures were performed under regional or general anesthesia. Patients were positioned according to the tumor site, in supine, prone jack-knife, left or right lateral positions. After gentle digital dilatation of the anal sphincter, the TEM equipment (Wolf, Knittlingen, Germany) was inserted and secured to the operating table. Marking dots are placed 1 cm around the tumor, followed by full-thickness excision of the tumor. However, mucosectomy or submucosal dissection may be performed for lesions with benign endoscopic and pathologic features located anteriorly in the upper rectum, to avoid peritoneal entry. Tumors were dissected in distal to proximal fashion. If huge lesion is the case, upon excision of the distal part, the rectoscope was introduced proximally, re-placed and the tumor excision was completed en block. A special attention was paid to complete the excision en block, in one piece.

Wall defects were closed transversally with absorbable sutures (PDS, Ethicon). Large wall defects of the retroperitoneal segment of the rectum were occasionally left open. Postoperatively, patients were allowed to resume diet on postoperative day one, and were discharged from hospital on postoperative day 1–2.

2.2. Data collection

Patients demographics, co morbidities and tumors characteristics were collected. Operative notes were reviewed and data pertaining to operative indications, type of surgery and intraoperative complications were retrieved.

2.3. Outcomes

Short term postoperative outcomes were evaluated. Morbidity assessment included septic complications related to the procedure i.e. pelvic abscess, peritonitis due to rectal perforation; urinary complications; postoperative hemorrhage and blood transfusion. Length of hospital stay (LOS) was also noted.

In terms of long term outcomes, patients are examined every 3 months, complaints for gas or fecal incontinences were collected. Generally, all patients are interviewed at the postoperative visits for anal incontinence, following the Wexner score.

Patients were also evaluated by digital rectal examination and rigid proctoscopy for rectal stenosis and for local recurrence (LR). Patients with early rectal cancer are also followed up by serial tumor marker levels every 3 months, computerized tomography annually, and Colonoscopy at 1, 3, 5 years after operation.

2.4. Statistical analysis

Categorical variables were summarized as frequency (%), and quantitative variables as mean ± standard deviation and, minimum; 25th%; median; 75th%; maximum. Associations with quantitative variables analyzed by *t*-test. LR was calculated using the Kaplan-Meier test. A p-value <0.05 was considered as statistically significant.

3. Results

During the study period 310 TEM procedures were performed at our department. Twenty five patients (14 female) with mean age of 70.3 ± 10.1 years met the inclusion criteria. The mean tumor size was 5.7 ± 0.9 cm. Median tumor distance from anal verge was 8 cm (range 1–17). Mean operative time was 84 ± 23 min. TRUS was performed in 18 patients. It revealed T1 tumor in 6 patients, intramucosal lesions in 11 and retrorectal lesion in one patient.

No conversions to laparotomy due to rectal perforation were reported. In 2 patients however, the TEM procedure was discontinued, because complete excision could not be completed endoscopically. In both cases, the tumor extended up into the anterior wall of the upper rectum. Since full thickness excision was indicated, the procedure was omitted and subsequent anterior resection was performed. Eighteen patients underwent full thickness excision and five patients underwent submucosal dissection.

Of the entire cohort, en-block margins-free excision was reached in 17 (68%) patients. Margins were involved in 7 patients and it could not be determined in one patient. Repeated TEM was feasible in two more patients for involved margins. The scar at previous excision site was excised and the goal of free margins was reached. In two patients complete LE was infeasible and the procedure was abandoned. They, subsequently, underwent anterior resection and their final pathology revealed T1 rectal cancer. Three more patients with involved margins lost to follow up. Patients with pathology findings and operative treatment are listed in Table 1.

Ultimately, complete excision using the TEM technique was feasible in 19 of the 25 patients, (76%). Moreover, in subgroup of patients with benign lesions at the final histopathology report, complete excision rate increased to 90.5% (19 out of 21).

Pre and postoperative histopathology findings are summarized in Table 2. Notably, pathology assessment revealed findings compatible with early rectal cancer in four patients (16%). Two of them underwent anterior resection for incomplete excision. In the third one adequate LE was sufficient, while the fourth patient underwent repeated TEM to extend resection margins. (Table 1).

Short term outcomes were favorable (Table 3). In fact, no significant complications were reported except for transient fever in two patients. Also no mortality events have occurred. Median length of stay was remarkably short 2 (1–3) days.

Long term outcomes i.e. anal sphincter function and LR, were encouraging (Table 4). After a median follow up of 24.2 months, LR rate was 10.9% (2 patients). Of the two patients with LR, one presented with recurrent adenoma and was again treated with LE by