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Transanal total mesorectal excision (taTME) for cancer located in the lower rectum: Short-and mid-term results

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Abstract

Background: Laparoscopic trans-abdominal total mesorectal excision is technically demanding. Transanal Total Mesorectal Excision (taTME) is a new technique which seems to provide technical advantages. This study describes the results of taTME in a consecutive series of patients with low rectal cancer.

Methods: From January 2012 to December 2013, a consecutive series of 26 patients with low rectal cancer underwent laparoscopic taTME with coloanal anastomosis. cT4 or Type II-III rectal cancer (according to Rullier's classification) were contraindications to taTME. After anal sleeve mucosectomy, the rectal wall was transected at the ano-rectal junction. A single-access multichannel port was inserted in the anal canal. taTME was performed from down to up until the sacral promontory posteriorly and the Pouch of Douglas anteriorly were reached. A laparoscopic trans-abdominal approach was used to complete the left colon mobilization.

Results: Sixteen patients (61.5%) were male. The mean distance of the rectal cancer from the anal verge was 4.4 cm (range 3–6). Nineteen patients (73.1%) received long-course neoadjuvant radiotherapy. At final pathology, resection margins were negative in all the patients: the mean distal and radial resection margins were 19 mm and 11.2 mm, respectively. TME was complete in 23 patients (88.5%) and nearly complete in three. Postoperative mortality was 3.8%. The overall morbidity rate was 26.9% (7 patients): two patients (7.7%) had an anastomotic leakage (Dindo I-d). After a mean follow up of 23 months, no patients have developed a local recurrence.

Conclusions: laparoscopic taTME allow wide resection margins and good quality TME.

Keywords: Rectal cancer; TME; Transanal approach; Laparoscopy

Introduction

There is increasing evidence suggesting that sphincter-saving procedures for cancers located in the lower rectum are oncologically safe.[1] Recent studies have provided further evidence that laparoscopic low anterior resections with coloanal anastomosis have similar short- and long-term outcomes when compared with open procedures.[2,3] However, laparoscopic total mesorectal excision (TME) for low rectal cancers is technically and oncologically demanding, mainly in obese and male patients with a narrow pelvis and a bulky mesorectum. Because of the confines of the bony pelvis, the thinning of the distal mesorectum, and the laparoscopic approach, obtaining adequate distal as well circumferential resection margins is challenging. The difficulty of laparoscopic trans-abdominal TME has been recently highlighted by two European studies analyzing almost two thousand patients operated on for rectal cancer in a short-time period: less than 15% of these patients underwent a laparoscopic TME.[4,5]

In 1995 Bannon et al. reported on their preliminary experience of transanal abdominal transanal proctosigmoidectomy (TATA) in 65 patients with low rectal cancer.[6] More recent studies have suggested that transanal rectal dissection reduces the risk of positive distal and radial resection margins increasing the number of sphincter-saving procedures.[7,8] Moreover, it seems to facilitates the laparoscopic abdominal time of the up-to down mesorectal dissection.[8,9]

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Recently, Lacy's group has reported a series of 20 patients with rectal cancer, only one third in the lower rectum, who underwent laparoscopic transanal TME (taTME).[10] Laparoscopic taTME seems to have technical and oncological advantages when compared with the "open" transanal approach to the mesorectal dissection. First of all, laparoscopic taTME allows a complete mobilization of the rectum-mesorectum whereas the "open" taTME allows only a partial mobilization.[7,8] Moreover, the better vision of the dissection planes due to the laparoscopic approach seems to improve TME quality.

Aim of the present series is to analyze the short- and mid-term results of a series of 26 patients with cancer located in the lower rectum who underwent laparoscopic taTME combined with trans-abdominal laparoscopic surgery and coloanal anastomosis.

Material and methods

From January 2012 to December 2013, 72 patients with mid-low rectal adenocarcinoma underwent low anterior resection in our Surgical Department. Indication for taTME was the presence of a low rectal cancer requiring a low anterior resection with colo-anal anastomosis. cT4 or Type II-III rectal cancers (according to Rullier's classification[1]) at the preoperative staging were contraindications to taTME. Of the 72 patients with mid-low rectal cancer, 35 patients had a cancer located in the mid rectum and underwent a conventional up-to-dowm TME. Thirty-eight patients had a cancer located in the lower rectum: the taTME approach could not be performed due the stage in 5 patients (cT4), to previous rectal surgery in 6 patients, and to patient's refusal in one patient. All these 12 patients underwent a conventional up-to-down TME. Overall 26 patients with low rectal cancer could undergo a taTME procedure.

Thoraco-abdominal Computed Tomography (CT) and lower abdomen High-resolution magnetic resonance imaging (MRI) were routinely used to stage patients with rectal cancer. Endorectal Ultrasound was used in cT1-2 patients. Definition of rectal cancer location was based on preoperative MRI: up to 4 cm from the ano-rectal junction, low rectum; >4–8 cm, mid rectum; >8 up to 12 cm, upper rectum.

Indication for neoadjuvant radiotherapy was in accordance with ESMO guidelines.[11] The patients with indication to neoadjuvant radiotherapy were enrolled in the RECTUM-SIB Trial (NCT 01224392) and randomized to radiotherapy alone (IG-IMRT 23 × 2 Gy + SIB 0.4 Gy/day [Σ 55.2 Gy]) versus chemo-radiotherapy (IG-IMRT 23 × 2 Gy + capecitabine [825 mg/m^2]). Restaging of the rectal cancer was performed by thoraco-abdominal CT, lower abdomen MRI, and by endoscopy about 8 weeks after the end of chemo-radiotherapy course.

Patients with positive nodes in the specimen received 6 months of adjuvant chemotherapy.

All these patients were included in an Enhanced Recovery after Surgery program.

The procedure was approved by the ethical committee of the hospital and all the patients signed an informed consent for this new approach.

Surgical technique

Each patient had preoperative bowel preparation the day before surgery. Prophylactic antibiotics were administered before the incision.

TRANS-ANAL APPROACH: The patients were placed in a lithotomy position with the right arm along the body and the thighs/legs abducted and slightly flexed. A Lone Star Retractor (CooperSurgical, Trumbull, CT, USA) was inserted. A betadine gauze was placed in the rectum above the incision line. After cutting the anal mucosa just above the dentate line, a sleeve mucosectomy was performed toward the anorectal junction and the anal mucosa was closed with a running suture. The rectal wall was circumferentially transected at the level of the anorectal junction and, after the dissection of the first 2 cm of the lower rectum, a SILS™ Port (Covidien, Mansfield, MA, USA) was placed in the anal canal. Frozen analysis of the distal resection margin was not routinely performed. The pelvic cavity was inflated with CO_2 to a pressure of 10–12 mmHg. The 5-mm laparoscope (Olympus, Tokyo, Japan) was introduced trough the upper trocar. The left inferior trocar was used for the grasper or for the suction-irrigation cannulas whereas the right inferior trocar was used for the Ligasure™ 5 mm blunt tip sealer device (Covidien, Mansfield, MA, USA). The mesorectum was circumferentially dissected from down to up toward the anatomical landmarks of a "good" taTME: the sacral promontory posteriorly, the Pouch of Douglas anteriorly, and the iliac vessels laterally. In the posterior plane, after sectioning the rectosacral fascia, the dissection followed the concavity of the sacrum. The anterior plane of dissection was in front of Denonvillier's fascia. In the lateral plane, particular attention was paid to the inferior hypogastric plexus, keeping the dissection in close contact with the fascia of the mesorectum.

ABDOMINAL APPROACH: The patients were placed in the Trendelemburg and right lateral tilt position. By using a 3-port technique SILS™ Port above the umbilicus, 5-mm Versastep trocar in the right flank and 10-mm Versastep trocar in the right iliac fossa (Covidien, Mansfield, MA, USA) a high tie of the inferior mesenteric vessels (Multifire clip applier, B Braun Germany) and a complete mobilization of the mid-distal transverse colon, splenic flexure and descending-sigmoid colon were performed. The peritoneum of the Douglas pouch was sectioned and the previous trans-anal plane of dissection was easily found. The specimen was extracted trans-anally and the low anterior resection was completed. In obese patients with a bulky mesorectum, the specimen was extracted trough the SILS™

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