



TAMIS for Recurrent Cancer of the High Rectum (25 cm from the Anal Verge) in a Patient with Serious Associated Disorders (Rescue Surgery)

Alessandro Verbo¹, MD;  Vito Laterza¹, MD; Marco Montagna^{1,2}, MD;  Giovanni DI Palma³, MD; Giovanni Moschetta¹, MD; Annamaria Martullo¹, MD

¹Catholic University of the Sacred Heart, Policlinico Agostino Gemelli IRCCS Rome, Italy

²Ospedali Riuniti, Foggia, Italy

³General Regional Hospital F. Miulli Acquaviva delle Fonti Italy

***Corresponding authors:**

Marco Montagna, MD;
Via Prussiano 23 Bisceglie 76011 Italy. Tel: +39 38 93484344
Email: marco.montagna89@gmail.com

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Abstract

Introduction: Transanal Minimally Invasive Surgery (TAMIS) is indicated for benign lesions of the rectum (≤ 3 cm and not $>1/3$ of rectal circumference), early-stage malignancies confined to the submucosa (T1 Sm1 on Kikuchi classification), neoplasms after an incomplete response to neoadjuvant treatment or with T1 residue, and T2-T3 N0 cancers in patients who cannot undergo major surgical resections (rescue surgery). TAMIS is especially recommended for neoplasms located at a distance of 5-18 cm from the anal verge.

Case Presentation: We performed TAMIS on a 72-year-old patient with multiple morbidities diagnosed with diffuse polyposis syndrome, with a history of multiple recurrences treated with surgical resections, and with a new recurrence on the ileorectal anastomosis at about 25 cm from the anal verge. A rectoscopy and a total body computerized tomography were performed (anastomotic level; size 2 cm; staging: cT1-2, N0, M0; histology: adenocarcinoma). The final decision after a multidisciplinary meeting was for TAMIS, due to high intra- and post-operative risks contraindicating major surgery. Data regarding total operating time, blood loss, length of stay, surgical and general intra- and post-operative complications, resumption of nutrition, and medications were collected. The operation was successful, with a total operating time of 55 minutes and an estimated blood loss of 20 ml. The patient was rapidly mobilized and nutrition was promptly resumed. The hospital stay was 3 days. No complications were observed.

Conclusion: In this case, we showed the feasibility and safety of the TAMIS resection at a greater distance than that normally recommended.

Keywords: Transanal minimally invasive surgery (TAMIS), Rectal cancer, Laparoscopic surgery

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Introduction

Transanal resection of rectal lesions is indicated for lesions located within 6 cm of the anal verge (1). Endoscopic procedures, such as endoscopic mucosal resection (EMR) and endoscopic submucosal dissection (ESD), are available for higher benign lesions (2). Conversely, these techniques are not clearly indicated for malignancies due to the high rate of incomplete resections and rupture of the tumors together with the difficulty of achieving full intestinal wall thickness resections (2). However, transanal endoscopic microsurgery (TEM) and transanal minimally invasive surgery (TAMIS) represent valid alternatives to major laparotomic or laparoscopic surgery for early malignancies (T1 Sm1), post-neoadjuvant therapy tumors (after incomplete response), and advanced rectal cancer (stage T2 and T3) in patients with many comorbidities and/or advanced age who would not tolerate major resections (3a systematic review of the current literature and a network meta-analysis (NMA). Both procedures have demonstrated optimal performances in terms of full-thickness resections of intact lesions, disease-free margins, and minimal local recurrence when performed by expert surgeons (4). Therefore, TEM and TAMIS combine the advantages of organ preservation with safety in terms of oncological radicality. In particular, TAMIS seems to solve some of the major issues of TEM, thanks to an easy operation assembly, a 360° 3D view (as compared to the 220° view of TEM), and the application of common laparoscopic equipment, resulting in a similar outcome to that of TEM at a lower cost (5, 6).

Case Presentation

Patient Data

A 72-year-old male was admitted to the Department of General and Oncological Surgery in October 2018 due to rectorrhagia. One week before, a rectoscopy showed a lesion suspected of malign tumor recurrence on a previous ileocolic anastomosis at a distance of 25 cm from the anal verge (Figure 1). Consequently, an endoscopic mucosal biopsy was performed, revealing adenocarcinoma. In 2002, the patient received a diagnosis of adenocarcinoma of the descending colon (pT3N0M0) in familial adenomatous polyposis (FAP), incompletely treated with a laparoscopic left hemicolectomy. In 2017, due to bowel obstruction for recurrence on the ileocolic

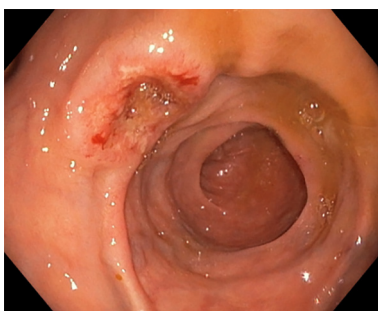


Figure 1: Rectoscopy image of the lesion.

anastomosis at a distance of 35 cm from the anal verge, the patient underwent subtotal colectomy (adenocarcinoma, pT3N1M0), complicated by an anastomotic leak on the fourth postoperative day and subsequent reoperation in an emergency setting. Finally, endoscopic resection of the residual polyps on the rectum was performed a few months after. Of note, the patient had severe respiratory failure from chronic obstructive pulmonary disease; he also had coronary artery disease with stenosis of the common and anterior descending trunk (less than 50%), arterial hypertension, benign prostatic hypertrophy, and morbid obesity.

Preoperative Preparation

A total body computerized tomography was obtained, staging the tumor as cT1-2N0. The preoperative anesthesiologic and cardiopulmonary evaluations suggested a high risk of major resection due to comorbidities. After discussing the case in a multidisciplinary setting, TAMIS was proposed even though the distance between the tumor and the anus (25 cm) was superior to the recommended limit (18 cm). Bowel preparation by polyethylene glycol electrolyte powder one day before surgery was prescribed. Additionally, fasting for 6 hours before the operation was required.

Surgical Procedure

With the patient in the knee-chest position, after inducing general anesthesia, we made use of the GelPOINT Path Transanal Access Platform device with an Insufflation Stabilization Bag (Applied Medical, CA™). During the operation, CO₂ pressure was never higher than 15 mmHg with 15 L/min flow. The lesion was located at the 10 o'clock position and had a maximum diameter of 2 cm with increased consistency of the mucosa starting from 25 cm of the anal margin (Figure 2A). Initially, the tumor perimeter was incised about 0.5 cm distant from the lesion with the electric hook (Figure 2B). A full-thickness resection was performed (Figure 2C), and the frozen sections at the four cardinal margins were negative. Finally, a 2-layer suture of the wound was performed with STRATAFIX 2-0 (Ethicon Inc., Johnson & Johnson, NJ, USA™) (Figure 2D). The overall operative time was 55 minutes, with approximately 20 mL of blood loss. Urinary catheterization was not necessary.

Postoperative Treatment and Results

The postoperative course was regular with no evidence of fever, urinary retention, rectorrhagia, incontinence, or intestinal obstruction. A fluid diet and a semi-solid diet were administered on the first and second postoperative days, respectively. Antibiotic therapy (cephalosporin and metronidazole) was discontinued on the third postoperative day. Pain relievers were administered as needed. The patient was discharged on the third day after surgery. The final pathological stage was pT2G2 (Figure 2E).

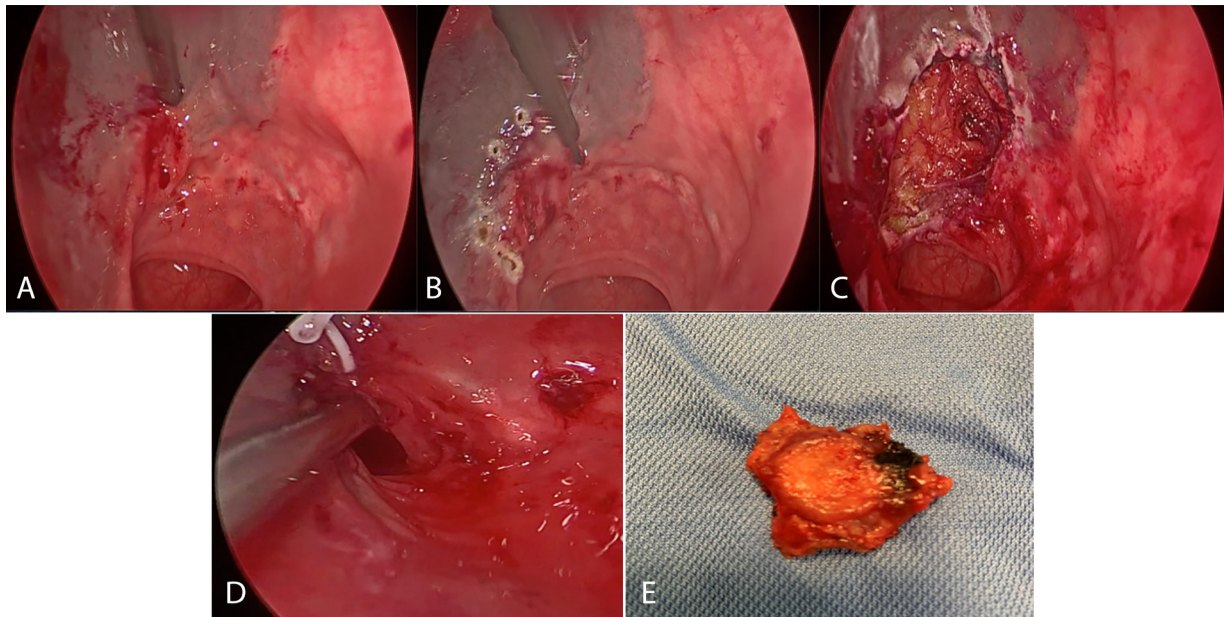


Figure 2: Surgical procedure: A) Lesion located at 10 o'clock position; maximum diameter of 2 cm, with increased consistency of mucosa starting 25 cm from the anal margin. B) Incision with the electric hook about 0.5 cm from the lesion. C) Full-thickness resection. D) Two-layer suture of the wound with STRATAFIX 2-0 (Ethicon Inc., Johnson & Johnson, NJ, USA™). E) Surgical specimen.

Follow-up

Three-month after discharge, a rectoscopy was performed with no signs of recurrence. The patient underwent a second check-up at 12 months (rectoscopy, blood chemistry tests, CT-scan) and a third one at 24 months (rectoscopy, blood chemistry tests, PET-TC), with no evidence of local and/or distant recurrence of disease.

Discussion

TAMIS was born as a minimally invasive procedure to treat benign rectal tumors and early malignancies (stage T1-T2) or neoplasms after incomplete response to neoadjuvant therapy, and the optimal operating range is for lesions located at a distance between 5 and 18 cm from the anal verge. Subsequently, the technique was also used for the treatment of many other conditions, such as neuroendocrine tumors, low rectal anastomotic fistulas, rectourethral fistulas, and removal of high rectal foreign bodies (7, 8). In our case, although the pathology was located at a distance greater than that suggested as an indicative limit, we completed the procedure with no need for conversion to open surgery. The use of an insufflation stabilization bag minimized the excursions of the rectum during breathing and ensured good vision throughout the operation. The short total surgical time (55 minutes), low blood loss (about 20 mL), and absence of complications allowed a length of stay of only three days with clear advantages for the patient as compared to laparotomic resection, together with dramatically reduced risks of urinary retention, rectorrhagia, incontinence, and intestinal obstruction. However, TAMIS is a complex technique due to the limited operative rectal space and, thus, should be performed by qualified

personnel in high-volume centers in order to avoid high complications rates and long operating times. In this regard, despite the use of soft devices, long operating times can lead to damage to the sphincter with significant effects on the function of the anus up to incontinence. A high number of other complications may also ensue, including infections, anastomotic fistulas, bleeding, tumor seeding, and pelvic relapses. Several studies have confirmed that the incidence of these complications remains low in qualified centers. In a single-institution retrospective study, Haugvik et al. (9) analyzed the outcomes of 51 patients undergoing TAMIS from 2011 to 2015. The overall morbidity was 12%. More specifically, 22% of the patients had a positive resection margin, while 31% of the specimens had an unclear resection margin state due to tissue fragmentation. In a small-scale clinical control study by Hahnloser et al., (10) no significant difference in the occurrence of postoperative bleeding between suturing or not suturing the resulting wound was described. Finally, a careful selection of cases is necessary for maximum optimization of the TAMIS procedure. The current indications are for benign lesions of the rectum up to 3 cm of diameter or that do not occupy more than 1/3 of the rectal circumference, malignancies at the initial stage confined to the submucosa (T1 Sml on Kikuchi classification), neoplasms after an incomplete response to neoadjuvant treatment or with residual T1 (risk of mesorectal positive lymph nodes: 3-6%), and locally advanced neoplasms (T2-T3) in patients who cannot undergo major resections due to compromised general conditions, a high rate of comorbidities, and/or advanced age (rescue surgery) (11). In conclusion, our experience with TAMIS led to successful outcomes. We can postulate that TAMIS is a reliable technique for the

treatment of benign tumors and early malignancies of the rectum. However, this technique still requires further standardization for the treatment of lesions

outside of the current indications.

Conflicts of interests: None declared.

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