

Robotic Transanal Palliation of Rectal Tumors in Frail Patients: How I Do It?

Aram Rojas, Mahir Gachabayov, Luis Quintero, Daniel M. Felsenreich, Roberto Bergamaschi
Department of Surgery, Westchester Medical Center, New York Medical College, Valhalla, NY, USA

Correspondence: Dr. Roberto Bergamaschi, Taylor Pavilion,
Suite D-361, 100 Woods Road, Valhalla, NY 10595, USA.

ABSTRACT

Frail patients with malignant tumors of the rectum may be candidates for palliative robotic transanal surgery, given increased risks for perioperative morbidity and mortality. We, herein, described the surgical technique of robotic transanal surgery and attempted to provide readers with a concise insight into the current state of this procedure.

KEYWORDS: *Frail patients, palliation, robotic transanal surgery*

INTRODUCTION

C olorectal resections, of both benign and malignant lesions, are one of the commonly performed surgeries in the United States and are known to carry high morbidity and mortality. The concept of transanal local excision was introduced in 1826 by Jacques Lisfranc in France; since that date the concept has significantly evolved.^[1] In 2009, a new approach of transanal minimally invasive surgery (TAMIS) was described.^[2] Although TAMIS offers better visualization with less costly special instrumentation, it also has some limitations including limited space of rectal lumen, restricted working angles due to the use of conventional laparoscopic instruments, instrument collision, and augmented external torque trying to compensate for the absence of internal instrumental articulation, which produces insufficient pneumorectum during the surgery.^[3]

In the beginning, TAMIS was adopted with skepticism around the world and it was not considered a practical approach. However, new

surgical technology as robotic platforms and instruments, allowed surgeons to develop a new technique, namely robotic TAMIS (R-TAMIS) in 2012,^[4] for the management of rectal tumors that could not be excised endoscopically. Nevertheless, the learning curve, indications, and patient selection played an important role in its further adoption and diffusion into clinical practice.

We aimed at describing the surgical technique of R-TAMIS and provide readers a concise insight into the current state of this procedure. **SURGICAL TECHNIQUE**

The following is a description of how to do perform R-TAMIS of rectal tumors for palliation in frail patients:

All surgeries are performed under general anesthesia with myorelaxation in order to prevent rectal lumen collapse. Patients are placed on the operating table in the modified lithotomy position in Allen stirrups when the tumor is located in the posterior rectal wall. For patients with tumors located on the anterior rectal wall, the position used is prone with a split table and the patient secured to it [Figure 1]. The perineal skin is

then prepped and draped sterile. A Lone Star retractor® (Cooper Surgical, Trumbull, CT, USA) is applied to the anal verge with sharp hooks to facilitate the insertion of a GelPOINT Path Transanal Access Platform (Applied Medical, Rancho Santa Margarita, CA, USA) beyond the anorectal ring with its sleeve sutured to the skin [Figure 2]. The GelPOINT is coupled with the 4 trocars [Figures 3 and 4]: two 8 mm bariatric robotic ports (to avoid external collision), one 8 mm robotic trocar for the camera, and a 10 mm

AirSeal™ port (Intelligent Flow System, Conmed, Utica, NY, USA) (to stabilize the pneumorectum).

The robotic system, da Vinci Xi cart (Intuitive Surgical, Sunnyvale, CA, USA) is docked perpendicular [Figure 5]

to the left side of the operating table. A pneumorectum is established at the pressure of 12 mmHg using humidified CO₂ allowing initial assessment of the lesion. Besides the robotic laparoscope, instruments are inserted under direct visual control. In this case, a vessel sealer is used,

along with a single fenestrated bipolar. The suction can then be manually inserted through the Airseal port. When excellent visualization is achieved, the mucosa around the tumor is marked with robotic monopolar scissors. Subsequently, the dissection in the submucosal layer from distal to proximal can begin [Figure 6].



Figure 1: Prone patient position for anterior rectal tumors

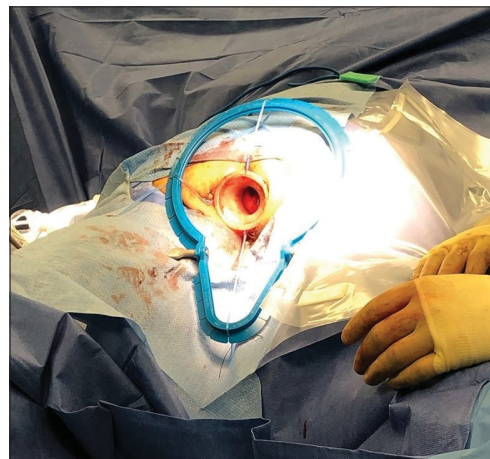


Figure 2: A Lone Star retractor® (Cooper Surgical, Trumbull, CT, USA) with GelPOINT® sleeve sutured to the skin

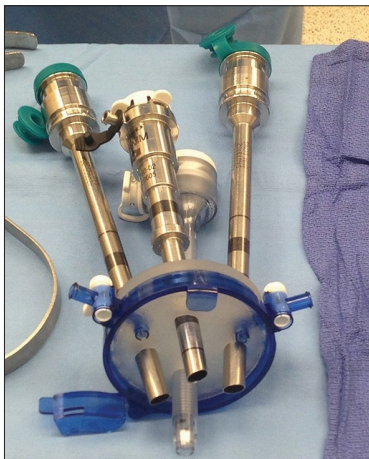


Figure 3: GelPOINT® with coupled trocars



Figure 4: GelPOINT® with coupled trocars



Figure 5: Docking of da Vinci Xi robotic system
rectal tumor



Figure 6: Distal to proximal submucosal dissection of the

Smoke released from the cautery is evacuated using a conventional 5 mm laparoscopic suction. Care must be taken to not penetrate the muscular layer or perforate the rectal wall and hemostasis is further checked [Figure 7]. The initial robotic instruments are then dismantled, the excised lesion is retrieved with a grasper, and a topical hemostatic Evarrest® Fibrin Sealant Patch (Ethicon U. S., LLC, Somerville, NJ, USA) can be applied over the excision bed.

DISCUSSION

The role of robotic systems in transanal surgery has been progressively evolving. A new robotic system, the da Vinci Xi, features 8 mm

instruments, including a vessel sealer and smaller camera, all of which help reaching areas of confined anatomy such as the deep pelvis. Furthermore, the EndoWrist with multiple degrees of freedom and the 3D high-definition visualization of the target offered by the above-mentioned robot allow for a lower risk of external conflict or instrumental collision and a natural instrument manipulation similar to open surgery but in a smaller operative field. R-TAMIS represents a valid alternative to TAMIS and appears to be better from a technical point of view.^[5]

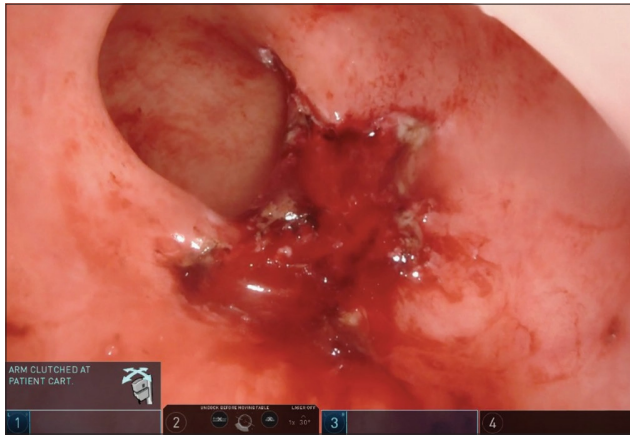


Figure 7: Intraoperative view following excision of the rectal tumor. While a number of risk factors have been identified, the emergent nature of the surgery and advanced age of patients are shown to significantly increase perioperative risks.^[6] Palliation may be achieved in elderly patients who are not candidates for resection due to severe comorbidities.^[7] Therefore, frail patients with rectal tumors who meet the indications for transanal resection can be a target population for R-TAMIS.^[8,9]

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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