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Robotic Assisted Transanal Polypectomies: Is There Any Indication?☆

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ABSTRACT

Objectives: Robotic assisted transanal polipectomy may have advantages compared with the conventional transanal minimally invasive surgery technique. We evaluate the safety, feasibility and advantages of this technique.

Methods: Between February 2014 and October 2015, 9 patients underwent robotic transanal polypectomy. We performed a retrospective study in which we analyze prospectively collected data regarding patient and tumor characteristics, perioperative outcomes, pathological report, morbidity and mortality.

Results: A total of 5 male and 4 female patients underwent robotic TAMIS. Lesions were 6.22 cm from the anal verge. Mean size was 15.8 cm^2. All procedures were performed in the lithotomy position. Closure of the defect was performed in all cases. Mean blood loss was 39.8 ml. Mean operative time was 71.9 min. No severe postoperative complications or readmissions occurred. Median hospital stay was 2.5 days.

Conclusions: Robotic TAMIS is useful to treat complex rectal lesions. Our transanal platform allowed a wider range of movements of the robotic arms and to perform all procedures in the lithotomy position.

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Polipectomía transanal asistida por robot: ¿tiene alguna indicación?

Palabras clave:
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RESUMEN

Objetivos: La polipectomía transanal asistida por robot puede tener ventajas respecto a la cirugía laparoscópica transanal convencional. Evaluamos la seguridad, factibilidad y ventajas potenciales de esta técnica.

Métodos: Entre febrero de 2014 y octubre de 2015, se realizaron un total de 9 polipectomías transanales en nuestro centro. Realizamos un estudio retrospectivo de datos recogidos prospectivamente referentes a las características de los pacientes, tumores tratados, resultados perioperatorios, informe anatomopatológico y morbimortalidad.

Resultados: Fueron tratados 5 hombres y 4 mujeres mediante polipectomía robótica transanal. Las lesiones se encontraban a una distancia media de 6,2 cm respecto al margen anal. La superficie media de las lesiones fue de 15,8 cm^2. Todos los procedimientos fueron realizados en posición de litotomía, independientemente de la localización de la lesión. Se realizó cierre del defecto en todos los casos. El sangrado intraoperatorio medio fue de 39,8 mL. El tiempo quirúrgico medio fue de 71,9 min. No se objetivaron complicaciones graves postoperatorias ni reingresos y la estancia mediana fue de 2,5 días.

Conclusiones: La polipectomía transanal asistida por robot es útil para tratar lesiones rectales complejas o voluminosas. Nuestra plataforma de acceso transanal permitió un amplio rango de movimientos con los pacientes en litotomía.

Introduction

Transanal endoscopic microsurgery (TEM), introduced by Dr. Gerhard Buess more than 30 years ago[1] has demonstrated its superiority over conventional transanal excision for the resection of rectal tumors, mainly due to its capacity to carry out high-quality resections.[2,3] Langer et al. showed better long-term oncological results when they compared 54 TEM resections with conventional transanal excisions. When the results were compared between TEM and conventional transanal excision from a 17-year period, de Graaf et al. found a lower rate of fragmentation, recurrence and morbidity in TEM, with higher rates of negative resection margins.[4,5] In spite of all this, TEM has not been adopted in a generalized manner, due to its complex learning curve and the cost of the equipment necessary.[6]

Transanal minimally invasive surgery (TAMIS) is a novel procedure developed by Atallah et al.[7] as a hybrid technique between TEM and single-incision laparoscopic surgery for the resection of rectal lesions. TAMIS was designed as an affordable platform for many hospitals to provide access to lower rectal lesions for all surgeons with advanced laparoscopic skills and familiar with rectal surgery.

The indications for TAMIS are similar to those of TEM or the conventional transanal approach.[8] The TAMIS should be considered in patients with benign tumors or T1, properly selecting those with good prognostic factors in whom the risk of lymph node involvement is low.[9]

Although TAMIS is still under development, it has been explored extensively worldwide, with more than 30 retrospective studies to date covering more than 400 procedures.[10] TAMIS has been shown to be feasible in benign lesions and well selected early stage malignant lesions in the middle and lower rectum, making it a promising alternative to TEM.[11]

There are certain limitations when carrying out the TAMIS. Conventional laparoscopic instruments should be used in a limited surgical field like the rectal lumen. In this field, work angles and triangulation can be affected significantly. It is sometimes necessary to change the camera access port to a work port, and vice versa. These space restrictions sometimes make it necessary to force the access angulation of the work port in the TAMIS or to constantly move the orientation of the work port in the TEM. These changes can oscillate the pneumorectum, making the procedure more tedious and technically complicated. In some cases, the work port itself can be expelled from the rectal lumen due to these oscillations in pressure. The closed work angles and the need to change instrument or camera positions often make it essential to have either an assistant who is experienced in this type of procedures or a second expert surgeon.[12]

Perhaps the best way to express the advantage provided by the da Vinci surgical robot (Intuitive Surgical, Sunnyvale, CA, USA) is that it allows the surgeon to perform the intervention in a clear surgical field, with a magnified 3-D image and articulated instruments free of tremor transmission. These characteristics should minimize the inherent difficulties of endoluminal surgery.[13] In robot-assisted procedures, the surgeon can be in an ergonomic position on the console while the assistant is at the patient's side (Fig. 1). The control of the camera by the assistant is no longer a problem, since it is done by the surgeon himself from the console. In the specific case of robot-assisted transanal surgery, this instrument facilitates dissection of the rectal wall at the desired angles and closure of the defect after polypectomy. Sutures and knotting are facilitated clearly with robotic assistance. All these reasons make transanal robotic surgery a field of great interest.

The experience in transanal robotic surgery for the local excision of lesions is still very limited.[14–20] There are very few