



A case report of endometrial carcinoma by DA Vinci robotic surgical system

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Abstract: Endometrial carcinoma is one of the most common cancers in the female reproductive tract, which affects women's health seriously. It is of vital importance for patients of endometrial carcinoma to undergo surgery treatment, since most patients are in the early stages of the disease when they are first diagnosed with good prognosis. At present, the commonly used surgical methods for endometrial cancer include traditional open surgery, laparoscopic surgery, single-hole endoscopic surgery, and robot surgery system, which brings new hope for the disease treatment. As a new advanced technology, robot-assisted surgery (RAS) has shown a few of advantages over traditional surgery, especially it can not only overcome complex anatomy, low exposure, surgical precision, and fixing lymph node, but also decrease the incidence of postoperative complication. We reported a 52-year-old patient with endometrial carcinoma complained of 2-month history of vaginal bleeding. After undergoing endometrial sampling with hysteroscopy, the patient was diagnosed that the mass was located in the border of cervix and uterus cavity. Successfully, the patient was preoperatively diagnosed as endometrial carcinoma (type II, stage II) and accepted radical hysterectomy (type II), omentum resection, pelvic and abdominal para-aortic lymphadenectomy with DA Vinci robotic surgical system. The aim of this video is to describe the use of this kind of surgery, and share our experience of DA Vinci robotic surgical system.

Keywords: DA Vinci robotic surgical system; endometrial carcinoma; radical hysterectomy (II)

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Introduction

Endometrial carcinoma is a group of epithelial malignancies that occur in the endometrium, also known as uterine body cancer. It represents one of the most common cancers in the female reproductive tract. Usually, when endometrial carcinoma is first diagnosed, most patients are in the early stages of the disease. Since the tumor is still confined to the uterus, the prognosis of early surgical treatment is satisfactory. Therefore, surgery is the first major step in the management of this disease, and the outcomes of surgery can guide the choice of postoperative adjuvant treatment. Standard surgical treatment for endometrial cancers includes total hysterectomy with bilateral salpingo-oophorectomy, pelvic lymph node and

para-aortic lymph node dissections ± omentectomy (1). At present, the commonly used surgical methods for endometrial cancer include traditional open surgery, laparoscopic surgery, single-hole endoscopic surgery, and robot surgery system, which brings new hope for the disease treatment.

Robot-assisted surgery (RAS) is a relatively new minimally invasive technology that has shown some advantages over other surgical techniques, including improved visualization through three-dimensional imaging, greater precision and more accurate control of instrumentation, in addition to improved ergonomics for the surgeons (2). Aiko (3) demonstrated that RAS was feasible and safe for early-stage endometrial cancer, since it was similar to conventional laparoscopic surgery in number

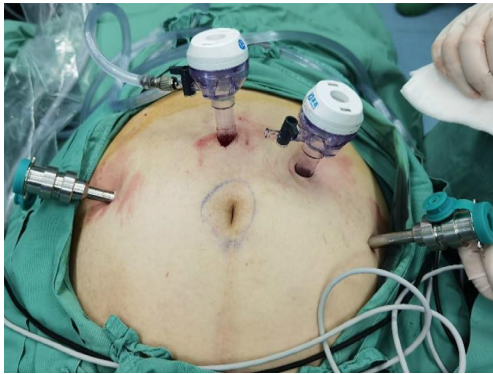


Figure 1 The surgical incision.



Figure 2 The surgical incision.

of resected lymph nodes and surgical complications. A study found RAS for the surgical treatment of patients suffering from early-stage endometrial cancer was associated with favorable surgical and oncologic outcomes, particularly for unfavorable groups such as elderly and obese women, since per-operative complications, conversion to laparotomy rate, post-operative hospital stay, the comprehensive complication index (CCI) score and disease-free survival were not impacted by increasing BMI.

In the case reported here, A 65-year-old woman who underwent menopause at age 52 complained of 2-month history of vaginal bleeding. She denied the use of estrogen replacement therapy. She had a history of diabetes mellitus controlled with an oral hypoglycemic agent for many years, and she had no past history with high blood pressure or other internal diseases. During a physical exam, the abdomen had no mass, also, the external genitalia appeared normal and the uterus seemed to be of normal size without adnexal masses. Ultrasonography showed high echogenic

area about the scope of 1.3×1.1 cm in the cervical canal, with obscure boundary and rich blood flow signal.

Pelvic

CT examination didn't find obvious evidence of tumor. The patient underwent endometrial sampling with hysteroscopy, and the mass was located in the border of cervix and uterus cavity. The biopsy pathology revealed clear cell carcinoma. Immunohistochemical staining showed P16(+), P53(20%+), ER(-), Vim(-), HNF-1β(+), NapsinA(+), WT-1(-), CEA(-), Ki-67(70%+). Successfully, the patient was preoperative diagnosed as endometrial carcinoma (type II, stage II) and accepted radical hysterectomy (type II), omentum resection, pelvic and abdominal para-aortic lymphadenectomy with DA Vinci robotic surgical system. Systemic lymphadenectomy was performed. Finally, postoperative pathological analysis revealed the tumor invaded superficial muscularis and cervix.

We present the following article in accordance with the CARE reporting checklist (available at <https://gpm.amegroups.com/article/view/10.21037/gpm-21-2/rc>).

The video

Radical hysterectomy (II) and systemic lymphadenectomy with DA Vinci robotic surgical system (*Video 1*).

Surgical technique

All procedures performed in studies involving human participants were in accordance with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this study and any accompanying images.

After intubation, the patient was placed in a cystolithotomy position with the buttocks higher than the head. An observation port was made 3 cm above the umbilicus and 1 cm near the median. Another two incisions of about 8 cm were made at the side. The fourth one is between the two incisions on the left. The surgical incision was selected as shown in *Figures 1,2*.

At the beginning of the surgical procedure, the pelvis was carefully evaluated. Separating pelvic conglutination and restoring normal anatomical relationships was helpful to ensure the carrying out of the operation. In the process of separation, the interstitial tissues need to be identified to reduce bleeding.



Figure 3 Ligating the infundibulopelvic ligament (left pelvic).

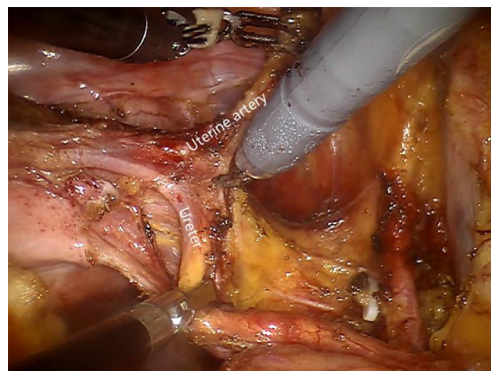


Figure 6 Opening ureteral tunnel (right pelvic).



Figure 4 Pelvic lymph node dissection (left pelvic).

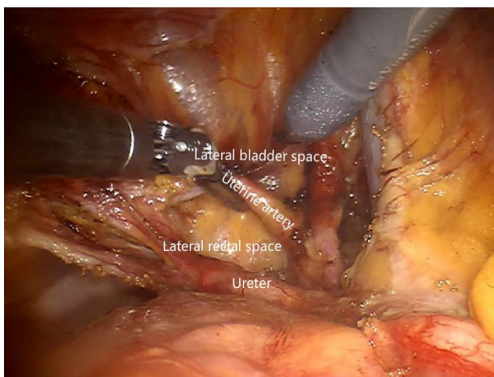


Figure 5 Ligating uterine artery (right pelvic).

High ligation of infundibulopelvic ligament

Opening the lateral colon peritoneum to expose the ureter, and then ligating the infundibulopelvic ligament (*Figure 3*).

U type of dissection of pelvic lymph node

Pelvic lymph node dissections are always the center of the surgery. After the resection of the lymph nodes from the lateral side of the external iliac vessel to the foot, the internal iliac vessels and the external iliac vessels were identified and exposed. The space between the obturator fossa and the lateral external iliac vessel was widened by blunt dissection, carefully exposing the obturator nerve and the vessel network below it, and gradually remove the pelvic lymph nodes. We called it U type dissection (*Figure 4*).

Uterine arteries ligation

The crux of the uterine artery ligation is to make out its anatomical location and dissociate it from the initial part (*Figure 5*).

Ureter separation

The ureter is an especially important structure in radical surgery. Its separation and protection are the key to extensive total hysterectomy (*Figure 6*).

Comments

Our experience in RAS for treating patients with endometrial carcinoma was advantageous. Over all, in the face of complex anatomy, low exposure, surgical precision, and fixing lymph node, traditional laparoscopic surgery has some defects in blind area of vision and difficult operation. However, robotic surgery can perfectly overcome these

shortcomings, which can shorten the operation time, decrease the incidence of postoperative complications, and decrease the length of hospital stay. On the downside, one obvious defect of the RAS is lack of tactile feedback, which will increase the difficulty of bladder and rectum separation. Also, as a new advanced technology, it is not easy to popularize due to its high costs.

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Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in studies involving human participants were in accordance with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this study and any accompanying images.

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