

## Risk of port-site metastases in pelvic cancers after robotic surgery



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### Abstract

**Objective:** To assess the risk of occurrence of port-site metastases after robotic surgery for pelvic cancer.

**Methods:** Retrospective study from June 2007 to March 2013 of patients with gynecologic cancer who underwent robot-assisted surgery. We collected preoperative data, including characteristics of patients and FIGO stage, intraoperative data (surgery performed, number of ports), and postoperative data (occurrence of metastases, occurrence of port-site metastases).

**Results:** 115 patients were included in the study: 61 with endometrial cancer, 50 with cervical cancer and 4 with ovarian cancer. The surgical procedures performed were: hysterectomy with bilateral salpingo-oophorectomy, radical hysterectomy, pelvic lymphadenectomy, para-aortic lymphadenectomy and omentectomy. All surgical procedures required the introduction of 4 ports, 3 for the robot and 1 for the assistant. With a mean follow-up of 504.4 days (507.7 days for endometrial cancer, 479.5 days for cervical cancer, and 511.3 for ovarian cancer), we observed 9 recurrences but no port-site metastasis.

**Conclusion:** No port-site metastasis has occurred in our series. However, larger, prospective and randomized works are needed to formally conclude.

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**Keywords:** Robotic surgery; Pelvic cancer; Port-site metastasis

### Introduction

Over the last decade and a half, gynecologic oncologists have increasingly adopted minimally invasive approaches for the treatment of gynecologic cancers. Laparoscopy has been widely developed in gynecologic oncologic field, and has proved itself associated with similar oncological results, with lower operative morbidity.<sup>1</sup>

More recently, robotic surgery has undergone a major expansion, especially in gynecologic oncology. The introduction of robot-assisted laparoscopy, since the FDA approval (2005) in gynecologic surgery, offered a new approach with three-dimensional imaging, wrist-like instrument rotation, tremor ablation, motion scaling, and seemed

to overcome many of the difficulties associated with conventional laparoscopy.

To date, there is no randomized trial suggesting that robot-assisted surgery leads to better results than conventional laparoscopy. However, many studies have demonstrated feasibility and safety of robot-assisted surgery, and suggested that results were similar compared to conventional laparoscopy in terms of surgical outcomes, estimated blood loss, operative times and length of hospital stay.<sup>2–6</sup>

The first report of a port-site metastasis was published in 1978 and described a port-site metastasis in a patient who underwent diagnostic laparoscopy for ovarian cancer.<sup>8</sup> Raymond et al.<sup>15</sup> defined port-site metastases as “early tumor recurrences that develop locally in the abdominal wall, within the scar tissue of one or more trocar sites or an incision wound after laparoscopy and these should not be associated with peritoneal carcinomatosis”. Port-site metastasis risk after laparoscopy was strongly debated 15 years ago.

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Today there is a consensus which states that port-site metastasis is a rare event, occurring in 1%–2% of all laparoscopic procedures in gynecologic surgery,<sup>7–12</sup> which is similar to the incidence of metastases to drain sites and surgical incisions following laparotomy. As robotic surgery is now widely used in gynecologic oncology, and considering that the number, position and diameter of ports are different compared with laparoscopic procedures, it seemed interesting to us to assess the rate of port site-metastases following robotic procedures for gynecologic cancers. The aim of our study was to determine the port-site metastasis rate in patients with gynecologic malignancies managed by robotic surgery.

## Material and methods

We conducted a retrospective review of all patients operated on/managed by robotic surgery for gynecologic malignancies from June 2007 to March 2013 in the gynecologic oncologic surgery department of the “Hôpital Européen Georges-Pompidou”.

This work was part of the current on going process aiming to continually evaluate professional practices, especially in robotic surgery, for which we have a prospective database. This work was in accordance with our institutional guidelines about ethical approval for retrospective studies.

### Patients

The inclusion criteria were patients who underwent robotic surgery for gynecologic cancer, whatever the cancer was (endometrial, ovarian or cervical) and whatever the surgery performed, from June 2007 to March 2013. Patients who underwent conversion to laparotomy were excluded from the study. Data were extracted from the hospital medical database. We recorded, for each patient, demographic characteristics (age, weight, body mass index (BMI)), surgical procedure and final histological result, including the FIGO (Federation Gynecology and Obstetrics) stage.<sup>13</sup> Abstracted Data included adjuvant treatment, detection of port-site metastasis, recurrence, time to recurrence and overall survival.

### Surgical approach

In our institution, the robotic approach started in 2007. All procedures were performed by 3 surgeons experienced in laparoscopy who began their robotic activity after Lab training. The robot was used for different indications such as surgery of cervical or endometrial cancer (radical hysterectomy, sentinel node biopsy, pelvic lymphadenectomy, and para-aortic lymphadenectomy), surgery of ovarian cancer (omentectomy, hysterectomy, pelvic and aortic lymphadenectomy). All cases of gynecologic cancer, which could be operated on by laparoscopy, were logically eligible for

robotic surgery and yet, the surgical approach was determined by availability of the robot and degree of emergency. Thus, when the robot was not available, patients were operated by laparoscopy. All robot-assisted procedures were performed with patient in the low dorsolithotomy position. We didn't use uterine manipulators because of the robot position (between patient's legs). The surgical procedure was performed according to the tumor stage, and the national guidelines. We used the first version of the da Vinci Surgical System (Intuitive Surgical, Inc., Sunnyvale, Calif). We always performed an open-laparoscopy. Four trocars were placed during the procedure, and incision size ranged from 8 to 12 mm: one trans-umbilical 12 mm for the camera, 2 8 mm-robotic trocars placed 8 cm relative to the camera port, and one additional 12 mm assistant port. Placement of these trocars was procedure and surgeon dependent, more precisely for the para-aortic retroperitoneal lymphadenectomy, for which trocars were positioned on the left side of the patient. A carbon-dioxide (CO<sub>2</sub>) pneumoperitoneum of 12–14 mm Hg was maintained throughout the surgery. All specimens were systematically extracted in a plastic bag. A lavage of the port sites with povidone-iodine solution at the end of the procedure was performed at the discretion of the surgeon. 10–12 mm-trocar holes were closed in two layers, the plane of the fascia and the skin level, while the other trocar ports were sutured into the skin level. Port-site metastasis was defined as tumor recurrence in the abdominal wall, near or within the scar tissue of the previous robotic-trocar site.

## Results

167 patients were treated by robotic surgery during the study period, and 115 were included in the study. Of the 115 patients included in our series, 4 underwent a second robotic surgery for further staging; for the other 48 excluded robots procedures, reasons for exclusion were: benign surgery (myoma, promontofixation, hysterectomy, endometriosis) (n = 42), 4 conversions to laparoscopy and 2 conversions to laparotomy. Demographic and clinicopathological characteristics are summarized in [Table 1](#). The median age of the patients in the study was 60 years (range, 26–89 years). The median body mass index was 23.31 kg/m<sup>2</sup> (range, 17.63–44.8 kg/m<sup>2</sup>). No patient had intraoperative finding of ascites. Pelvic washings were obtained in 107 patients (93.04%). Of these, 106 patients had negative pelvic washings. 71 patients had adjuvant treatment (radiation therapy, brachytherapy or chemotherapy, alone or in combination). Patients who did not have adjuvant therapy after surgery were either patients with low risk endometrial cancer, either low risk cervical cancer patients or patients operated on after neoadjuvant medical treatment.

The robotic procedures performed are listed in [Table 2](#). Hysterectomy with bilateral salpingo-oophorectomy had been performed in 94 cases. Lymphadenectomy (pelvic, or para aortic or both) had been performed in 72 cases.

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