



## Case report

## Multiple isolated ovarian cancer recurrences in the cervix and vagina after supracervical hysterectomy: A case report

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## ABSTRACT

We present a rare case of a patient who was treated for advanced-stage ovarian cancer with optimal debulking surgery that included a supracervical hysterectomy, instead of total abdominal hysterectomy, who subsequently developed 3 isolated recurrences in the cervix and vagina. We suggest there may be a link between the type of hysterectomy and location of recurrence; we also emphasize the importance of pelvic exam and Papanicolaou smear for patients who have undergone supracervical hysterectomy as part of their ovarian cancer debulking surgery.

### 1. Introduction

Ovarian cancer is the second most common gynecologic malignancy, and the most lethal, in the United States (American Cancer Society, 2021). In 2022; an estimated 19,880 women will be newly diagnosed with ovarian cancer in the United States, and approximately 12,810 patients will die from this disease (Siegel et al., 2022). Most patients are diagnosed with advanced disease, which is generally managed with surgical resection and platinum-based chemotherapy (Cannistra, 2004). Despite continuous advances in the surgical and chemotherapeutic management of ovarian cancer, most patients will recur within 18–24 months, with approximately 29% recurring in the abdominal cavity and 25% in the pelvic cavity (Ushijima, 2010).

The main goal in the surgical management of ovarian cancer is to achieve a complete gross resection to obtain the greatest survival benefit (Winter et al., 2007, 2008; Hoskins et al., 1994). Surgery typically involves a total abdominal hysterectomy (TAH), bilateral salpingo-oophorectomy, as well as removal of the omentum and all disease sites (Clinical Gynecologic Oncology, 2021). Supracervical hysterectomy, however, has been proposed as an alternative to TAH as part of debulking surgery (Markman and Walker, 2006; Milam et al., 2007; Fanning et al., 2014).

Here, we present a patient who developed isolated ovarian cancer

recurrences in the cervix and vagina after optimal debulking surgery that included a supracervical instead of TAH. Informed consent was obtained.

### 2. Case report

A 74-year-old G1P1 female who was diagnosed with stage IIIC high-grade mixed serous and endometrioid ovarian cancer underwent optimal debulking surgery with supracervical hysterectomy and bilateral salpingo-oophorectomy at an outside hospital in 2008. She transferred to our institution, and her outside pathology was reviewed. An intraperitoneal (IP) port was placed, and she received 3 cycles of intravenous (IV) carboplatin and paclitaxel followed by 3 cycles of IV/IP paclitaxel and cisplatin. She remained disease-free for 10 years.

In February 2019, she had a Papanicolaou (Pap) smear, which was positive for malignant cells showing adenocarcinoma, suggesting recurrence of disease. Her CA-125 level was within normal limits, and she was asymptomatic, with no vaginal bleeding or discharge. She underwent an exploratory laparotomy, trachelectomy, and omentectomy for cytoreduction. The pathology report showed high-grade serous carcinoma. She received 6 cycles of carboplatin and gemcitabine. Of note, she required a dose reduction due to significant cytopenia. She completed her treatment in August 2019, at which point a computed

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tomography (CT) scan showed no evidence of disease.

In September 2019, her Pap smear again showed atypical glandular cells favoring neoplastic process. She underwent a positron emission tomography (PET) scan, which showed no evidence of disease. She underwent a colposcopy with a vaginal biopsy, which showed high-grade serous adenocarcinoma. She was then treated with whole pelvic radiation therapy and brachytherapy boost for her second recurrence.

In September 2021, her Pap smear again was positive for malignant cells showing carcinoma. Her prior PET scan in July 2021 did not show evidence of disease. Her CA-125 level was 16 U/mL (within the normal limit). She underwent 2 punch vaginal biopsies that showed atypical cells. She had a repeat vaginal biopsy in October, which confirmed her third recurrence. It was noted at the time that there was some irregularity at the vaginal cuff likely due to a past biopsy. Her magnetic resonance imaging (MRI) showed a new complex cystic lesion, measuring  $1.6 \times 3.2 \times 1.7$  cm, containing thin septations and mural nodularity in the left pelvis along the hysterectomy resection margin (Fig. 1). There was also mural nodularity measuring up to 0.6 cm in the posterior inferior aspect of the cystic lesion. No adenopathy was noted. A PET scan showed new mild hypermetabolism at the right aspect of the vaginal cuff, possibly neoplasm or infectious/inflammatory changes (Fig. 2). A new non-hypermetabolic cystic lesion was noted at the left aspect of the vaginal cuff. She then underwent an exam under anesthesia and partial vaginectomy. During the surgery, she was found to have a well-healed area at the right vaginal apex as well as a 1-cm polyp on the left vaginal apex. Both sites were excised and sent to pathology, which showed recurrent high-grade serous carcinoma involving squamous mucosa in the left vaginal polyp and benign necrotic tumor in right vaginal tumor.

After discussion at our weekly treatment planning conference, our

multidisciplinary care team decided it was reasonable to offer the patient a tertiary surgical cytoreduction. The patient was counselled about the risks of operating in a previously irradiated field. She elected to undergo exploratory laparotomy, resection of recurrent malignancy with omentectomy, radical upper vaginectomy, bilateral parametrectomy and paracolpectomy, which resulted in a complete gross resection of tumor. Intra-operative findings noted a 2–3 cm left mass at the vaginal apex penetrating from the peritoneal cavity into the vagina, as well as adhesions of small bowel to the left vaginal tumor. Pathology revealed metastatic high-grade serous carcinoma. Her postoperative recovery was unremarkable, and she was discharged on postoperative day 3. She did well at her postoperative follow-up visit. She did not receive further treatment, and her surveillance visit is scheduled for 6 months after surgery.

### 3. Discussion

Ovarian cancer metastases to the cervix and vagina are rare. In this case, the patient had 3 recurrences in the cervix and vagina after optimal debulking surgery that incorporated a supracervical hysterectomy. The recurrences, which were detected by Pap smear, suggest a possible, unique relationship between type of hysterectomy and location of recurrence, and highlight the importance of surveillance exams for patients who undergo this type of treatment.

Ovarian cancer recurrence in the cervix and vagina occurs in approximately 5–10% of patients who recur (Vaccarello et al., 1995; Gershenson et al., 1985; Apical vaginal recurrence of ovarian carcinoma, 2021) In 1996, Casey et al. reported on a case series of 19 patients (4.8% of total patients) with recurrence in the vaginal apex, 10 of whom had an asymptomatic mass that was found on follow-up exam or second-

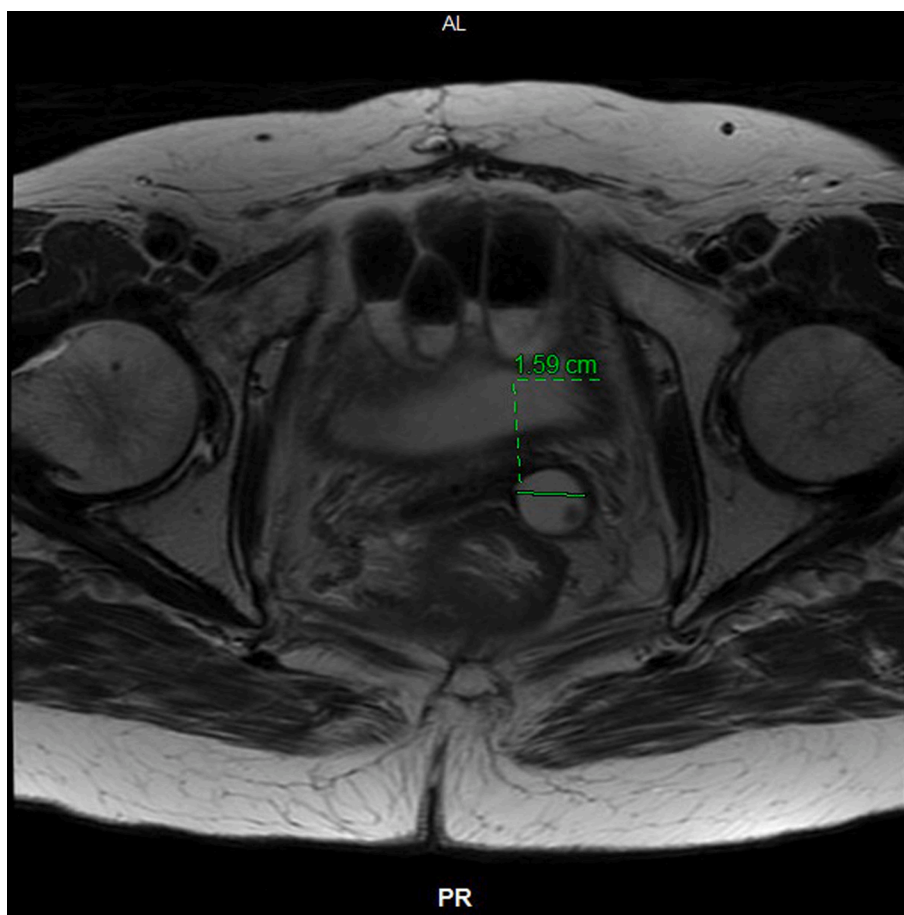


Fig. 1. Pelvic MRI showing a new  $1.6 \times 3.2 \times 1.7$  cm complex cystic lesion.

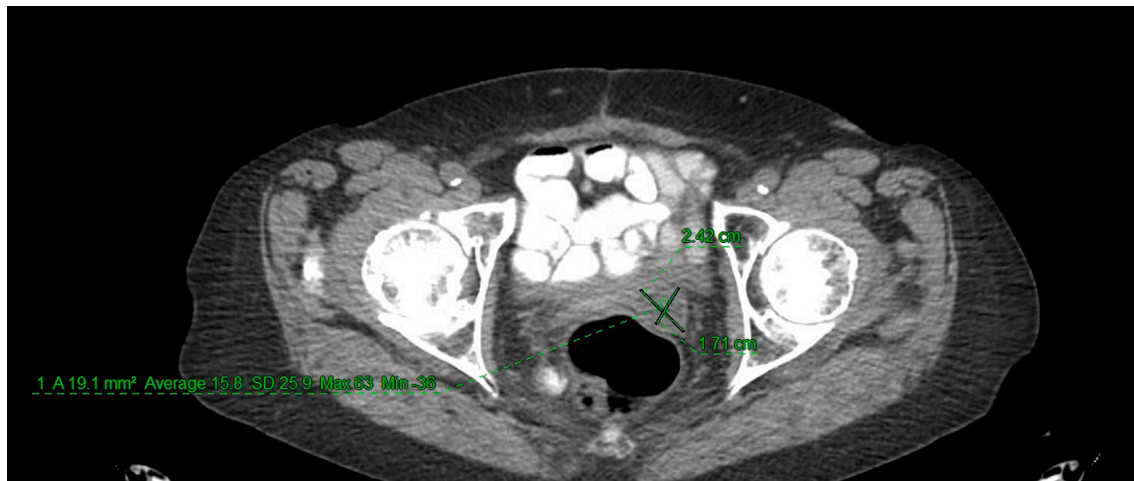


Fig. 2. PET-CT scan showing new local recurrence at the left aspect at the vaginal cuff.

look laparotomy ([Apical vaginal recurrence of ovarian carcinoma, 2021](#)). More recently, Feinberg et al. reported on 147 patients with ovarian cancer recurrence and found only 13 (8.8%) developed recurrence in the pelvic/vaginal/inguinal area ([Feinberg et al., 2022](#)). In our case, the patient had 3 local recurrences in the cervix and vagina over the course of 3 years, which has not been previously reported. Patients with local vaginal recurrences tend to do well with surgery or radiation or both ([Firat and Erickson, 2001](#)). Our patient was treated with both for her recurrences.

Supracervical hysterectomy was suggested as an alternative method for debulking surgery by [Markman and Walker, 2006](#) to prevent vaginal leakage during intraperitoneal chemotherapy ([Markman and Walker, 2006](#)). In 2007, Milam et al. compared a group of 47 patients who had undergone supracervical hysterectomy versus 190 who had undergone TAH during ovarian cancer debulking ([Milam et al., 2007](#)). They found the rates of vaginal or cervical recurrence were not statistically different between the two groups (8.5% in the supracervical group versus 3.7% in the TAH group); progression-free survival (PFS) and overall survival (OS) were also not statistically different. The authors concluded that supracervical hysterectomy could be a reasonable method of surgery, although they did note the sample size was small. In addition, although there was no significant difference in PFS and OS between the two groups, both reported outcome measures were relatively low compared to those of more recent studies. It might be possible that the significance of cervico-vaginal recurrences was affected by the shorter follow-up times before recurrence. Fanning et al. evaluated 51 patients who had undergone laparoscopic supracervical hysterectomy during ovarian cancer debulking between 2009 and 2012; they reported only 1 recurrence in the distal vagina and none in the cervix ([Fanning et al., 2014](#)). However, median follow-up was only 1.7 years, whereas our patient had her first recurrence after 10 years.

Most patients with advanced ovarian cancer recur within 18–24 months of treatment ([Ushijima, 2010](#)). Peritoneal recurrences are the most common, occurring in approximately 75% of recurrences ([Amate et al., 2013](#)). One of the leading explanations for recurrence is peritoneal dissemination of microscopic disease. In our case, our patient recurred three times at extraperitoneal sites—the cervix and vagina—despite multiple resections, chemotherapy, and radiation. This could theoretically be explained by the presence of a larger amount of microscopic residual disease potentially in the cervix that was not removed during the primary debulking surgery. However, more research is warranted to further elucidate this phenomenon.

Current guidelines from the National Comprehensive Cancer Network for ovarian cancer post-treatment surveillance include physical exam with pelvic exam every 2–4 months for the first 2 years, every 3–6

months for the next 3 years, and annually thereafter ([NCCN Clinical Practice Guidelines, 2021](#)). Pap smear is not indicated as part of post-treatment surveillance. CA-125 and other tumor markers are recommended if initially elevated in patients, as is imaging when clinically indicated. Ovarian cancer recurrence in the cervix or vagina is rare and mostly asymptomatic ([Apical vaginal recurrence of ovarian carcinoma, 2021](#); [Green et al., 2020](#)). In a recent review, Feinberg et al. concluded that frequent pelvic exams—every 3 months—is not needed for patients who undergo a complete hysterectomy due to a very low yield of isolated recurrence ([Green et al., 2020](#)). Our patient did not have any symptoms through all 3 recurrences, and the recurrences were only detected through pelvic exam and routine Pap smear. While frequent pelvic exams might not benefit patients who undergo a TAH, our case shows that closer surveillance, with more frequent pelvic exams and Pap smears, may be needed for patients who undergo a supracervical hysterectomy.

In conclusion, we suggest more research is needed to understand the relationship between hysterectomy type and location of recurrence. Since there may be a correlation between supracervical hysterectomy and local vaginal or cervical recurrence, at this time we recommend a TAH as standard of care during debulking surgery for ovarian cancer. For those who undergo a supracervical hysterectomy, we recommend frequent pelvic exams and Pap smears as part of post-treatment surveillance for the prompt detection and treatment of recurrences.

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## CRediT authorship contribution statement

**Anh Q. Nguyen:** Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Visualization, Writing – original draft, Writing – review & editing. **Sarah Ehmann:** Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Project administration, Writing – original draft, Writing – review & editing. **Jaqueline Feinberg:** Writing – review & editing. **William P. Tew:** Writing – review & editing. **Karen Carthew:** Writing – review & editing. **Yuko Sonoda:** Writing – review & editing. **Dennis S. Chi:** Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Supervision, Writing – review & editing.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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