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Case Report

Successful treatment of uterine cervical carcinoma with extensive vaginal lesions using laparoscopic surgery: A case report

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Summary

Objective: To present a rare case of uterine cervical carcinoma of 2008 International Federation of Gynecology and Obstetrics (FIGO) stage IB1 (pT2bN0M0), with extensive vaginal lesions treated by minimally invasive surgery. *Case report:* The vaginal mucosa of the patient was affected by intraepithelial carcinoma with focal invasion at almost the entire area. The whole lesions were completely removed by total laparoscopic radical hysterectomy and complete vaginectomy. *Conclusions:* The technique described in this report appears to be safe and feasible, and may be a useful option for the treatment of similar cases.

Key words: Cervical cancer; Minimally invasive surgery; Vaginal intraepithelial carcinoma.

Introduction

Extensive vaginal lesions are rare in early stages of cervical cancer. The standard treatment for cancers in the vaginal area are either radiation therapy (RT) or, in selected cases, surgery [1]. Surgery is reported to have several theoretical advantages over RT. It provides accurate pathologic diagnoses aiding in the more precise identification of prognostic factors, averts long-term adverse effects including vaginal stenosis and fibrosis of paravaginal tissues, and maintains surgical planes for successive reconstructive surgery [1]. Here, we describe a rare case of cervical carcinoma with extensive vaginal lesions that was successfully treated with laparoscopic surgery. Although the invasive lesions were focal, the vaginal intraepithelial lesions extended continuously from the uterine cervix to near the vaginal introitus. This necessitated complete resection of the vagina to ensure adequate surgical resection. To our knowledge, this is the first report of total laparoscopic radical hysterectomy with complete vaginectomy in early cervical cancer.

Case report

A 67-year-old Japanese woman (gravida 1, para 1) visited our hospital with irregular genital bleeding. Pelvic examination revealed a hard, uterine cervical tumor, measuring approximately 20 mm; bilateral parametria were soft. The colposcopic findings revealed invasive cancer of the uterine cervix and dense aceto-white epithelium with coarse punctuation, extensively involving the vaginal mucosa from the uterine cervix to near the introitus.

A biopsy of the uterine cervical tissues revealed an invading keratinizing squamous cell carcinoma. Magnetic resonance imaging (MRI) demonstrated a cervical tumor of high signal intensity, measuring 25 mm on the T2 weighed images (Figure 1). Serological examination revealed the levels of cancer antigen (CA) 125, CA19-9, carcinoembryonic antigen (CEA), and squamous cell carcinoma associated antigen (SCC) to be 40.9 U/ml, $<$ 2.0 U/ml, 5.4 ng/ml, and 2.7 ng/ml, respectively.

In view of the diagnosis of 2008 International Federation of Gynecology and Obstetrics (FIGO) stage IB1 cervical cancer, she underwent total laparoscopic radical hysterectomy with complete vaginectomy.

To determine the extent of surgery, vaginal biopsies were obtained from 8 points of the vaginal mucosa preoperatively and were submitted for frozen section study. In addition to invasive cervical carcinoma, the findings revealed extensive lesions of intraepithelial carcinoma with focal invasion. As the intraepithelial lesions nearly extended to the vaginal introitus, the created vaginal cuff occluded the vaginal cavity distal to the hymenal ring. Total laparoscopic radical hysterectomy was performed using a 5-port technique. A 12-mm umbilical port was initially inserted, and the abdomen was insufflated with carbon dioxide (10 mm Hg); 3 additional 5 mm trocars were inserted in the right, left, and medial aspects of the lower abdomen, at the level of the anterior superior iliac spine. Another 5-mm trocar

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Figure 1. — MRI shows the cervical tumor with a high signal intensity on T2 weighed images, measuring 25 mm (arrow)

was inserted below the left costal arch to retract the uterus using grasping forceps; the uterine manipulator was not employed. Surgery was commenced by incising the vesicouterine peritoneum, followed by the dissection of the posterior leaves of the broad ligaments. The paravesical and pararectal spaces were exposed. Straight needles with 2-0 nylon threads were inserted through the abdominal wall to retract the umbilical arteries, followed by exposure of the obturator fossae. After pelvic lymphadenectomy, the uterine arteries and the ureters were identified, and the uterine arteries were ligated at their origin. The round ligaments were dissected, and the bladder was retracted from the anterior uterine wall. The infundibulo-pelvic and uterosacral ligaments were successively coagulated and incised. The ureteral tunnel was then identified, and the anterior and posterior leaves of the vesico-uterine ligaments were dissected. The whole vagina was released by dissection from surrounding tissues.

Finally, the uterus and entire vagina were removed transvaginally. The nerves of the vesical branches of the pelvic plexuses were preserved bilaterally. The vaginal stump was sutured transvaginally, and the margins of the cut posterior leaves of the broad ligaments were sutured laparoscopically. The surgery was completed by placing

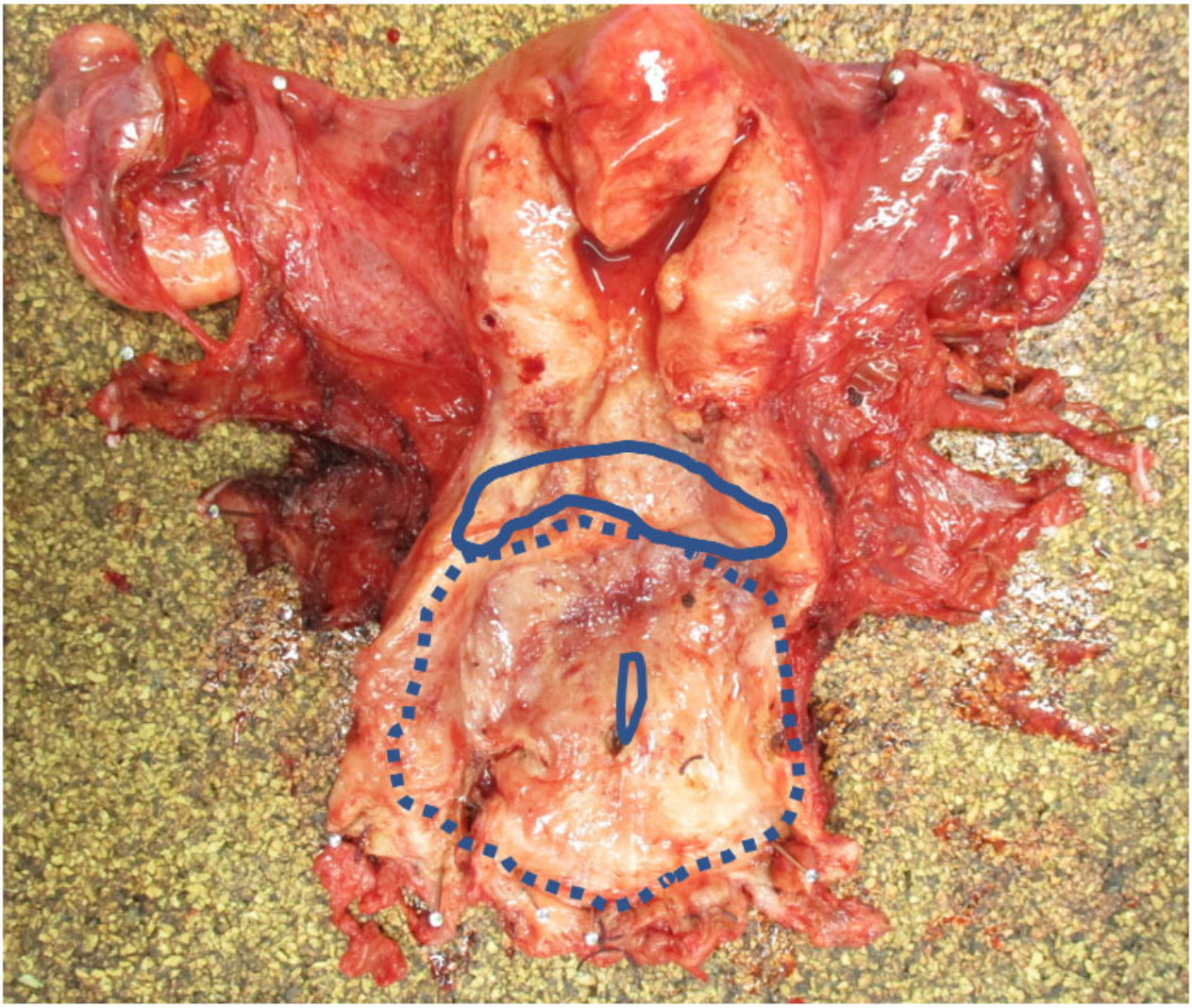

Figure 2. — Irregular surface of the vaginal mucosa spread widely to close to the vaginal opening. The ranges of invasive carcinoma and intraepithelial carcinoma are indicated by solid line and dashed line, respectively.

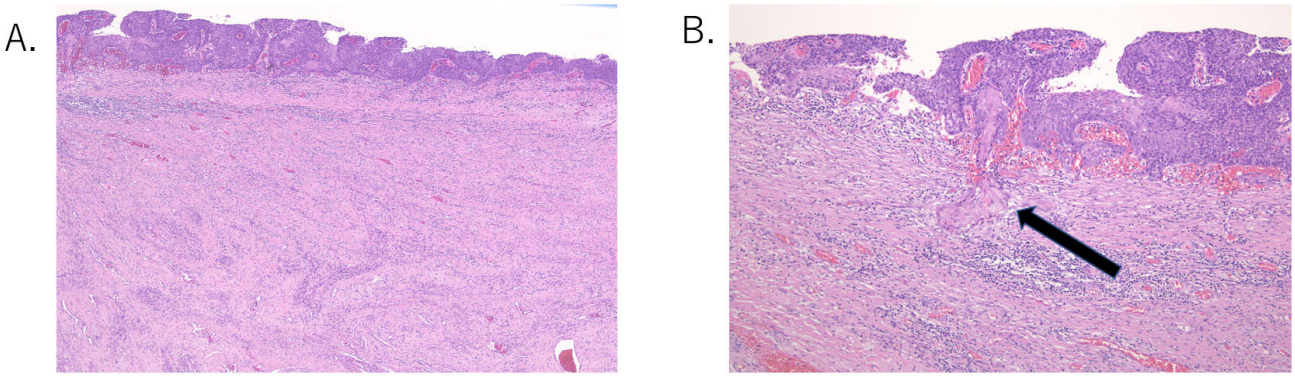

Figure 3. — A: Histopathological picture showing carcinoma in situ of vaginal wall. (HE staining, x10) B: microinvasive lesion is found in part of a range of carcinoma in situ. (HE staining, x10)

a drain in the pouch of Douglas. The duration of surgery extended for 293 minutes, and the estimated intraoperative blood loss was 195 mL.

Macroscopic examination revealed the size of the cervical tumor to be 45 x 23 mm (Fig 1A). The irregular surfaces of the vaginal mucosa were spread widely to close to the

vaginal opening (Figure 2). Microscopic examination revealed keratinizing squamous cell carcinoma, partially invading the parametrium. Extensive carcinoma in situ lesions were observed in the vagina, extending to the cervical lesion. Microinvasion was noted in a small area (Figure 3). No lymph node metastases were observed (0/44).

On the basis of these findings, the patient was finally diagnosed to have cervical cancer 2008 FIGO stage IB1 (pT2bN0M0). No perioperative complications were observed except for bladder dysfunction. Removal of the indwelling bladder catheter was a challenge owing to her cognitive impairment. She was discharged from hospital 18 days after surgery with a closed system urine bag. Finally, the balloon catheter was removed 6 months after the surgery, without any evidence of bladder dysfunction.

Owing to pathological parametrial invasion, she was considered to have a high risk of recurrence and was recommended adjuvant therapy. Chemotherapy, with 6 cycles of the paclitaxel (180 mg/m^2) and carboplatin (area under curve: 6) doublet (TC) was selected after discussion with the patient. There is no evidence of recurrence 13 months after the surgery.

Discussion

The case described in the present report demonstrated continuous extensive intraepithelial vaginal lesions with focal microinvasion from cervical cancer. Microinvasive squamous cell carcinoma of the vagina was originally reported by Dini and Park in 1984 [2]. Peters et al. reported 6 cases of microinvasive carcinoma of the vagina; 3 of the 6 had previously been treated for carcinoma of the cervix [3]. Eddy et al. reported 6 cases of superficially invasive carcinoma of the vagina; 5 of the 6 had undergone treatment for invasive cervical cancer [4]. A recent case report described multifocal microinvasive squamous cell carcinoma with extensive spread of squamous cell carcinoma in situ (CIS) into the uterine corpus, vagina, and left salpinx, that was diagnosed 5 years after conization of cervical CIS [5]. The patient described in our report, appeared to have a disease entity that was similar to that of these cases.

Surgery is considered to be overtreatment in vaginal cancer, except for the early stages, in which the upper posterior vagina is involved; the mainstay of treatment is definitive RT. However, in the early stages of vaginal cancer, outcomes with surgery and adjuvant therapy are reported to be acceptable in terms of survival and local tumor control [6].

A laparoscopic approach for vaginectomy may have several advantages compared with the vaginal approach, including better visualization of the tissues, anatomic access, and control of hemorrhage [7]. Li et al. reported the benefits of laparoscopic nerve-sparing radical vaginectomy in 12 patients with early-stage vaginal carcinoma involving the upper two-thirds of the vagina. They concluded that laparoscopic radical vaginectomy was safe and effective, and appeared to be a feasible and promising alternative to conventional surgical treatment in patients with early vaginal cancers [1].

Regarding the surgery for early-stage cervical cancer, two studies were reported that minimally invasive radical hysterectomy was associated with a higher rate of recurrence and poorer overall survival compared to open radical hysterectomy in 2018 [8, 9]. However, several problems were pointed out to accept the results as follows; 1) because of the difficulty of laparoscopic surgery, the learning curve for laparoscopic radical hysterectomy is especially very long [10]. 2) use of uterine manipulators and intracorporeal colpotomy have potential risk of causing tumor recurrence [11]. Therefore, it was reported that the results from two studies were not interpreted as signaling the end of minimally invasive surgery to treat cervical cancer [12]. In any case, it should be stated that patients with FIGO stage IA1 (lymphovascular invasion), IA2, IB1 cervical cancer must be informed about the results of two studies prior to making a decision about the planned means of access for radical hysterectomy at present [12].

The new FIGO criteria was reported at 2018 [13] and revised at 2019 [14]. Because current patient underwent surgery before the publications of two studies and 2018 FIGO staging system, the patient was diagnosed as FIGO stage IB1 cervical cancer and laparoscopic radical hysterectomy was employed. However, postsurgical pathological examination revealed the size of the tumor exceeded 4cm (corresponding to 2018 FIGO stage IB3) and partial invasion of the tumor to parametrium was observed. Therefore, from the current point of view, the patient was not suitable for minimally invasive surgery. In fact, we are following the current opinions and limiting the laparoscopic radical hysterectomy for the patients with FIGO stage IA1 (lymphovascular invasion), IA2, IB1 cervical cancer. We also provide patients sufficient explanation of the advantages and disadvantages associated with these surgical procedures before surgery.

In conclusion, in cases of cervical carcinoma with extensive vaginal lesions, total laparoscopic vaginectomy seems to be a safe and feasible treatment option, with potential clinical benefits. Further cases need to be studied before this approach can be adopted in the clinic.

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Conflict of interest

The authors declare that they have no conflicts of interest and nothing to disclose.

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