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Short communication

Risk of spilling cancer cells during total laparoscopic hysterectomy in low-risk endometrial cancer



Satoshi Shinohara*, Ikuko Sakamoto, Masahiro Numata, Atsushi Ikegami, Katsuhiko Teramoto

Department of Obstetrics and Gynecology, Yamanashi Prefectural Central Hospital, Kofu, Yamanashi, 1-1-1 Fujimi, Kofu, Yamanashi 400-8506, Japan

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ABSTRACT

Objective: To evaluate the risk of spilling cancer cells during total laparoscopic hysterectomy (TLH) using a uterine manipulator in early-stage endometrial cancer patients.

Materials and methods: We conducted a prospective study among women undergoing TLH for Clinical Stage IA endometrial cancer between March 2015 and November 2015. Peritoneal washings before the insertion of the uterine manipulator and after TLH were obtained. The two sets of washings were reviewed by a cytopathologist to determine the presence or absence of malignant cells in a blinded manner.

Results: Thirteen endometrial cancer patients (age 39–79 years, median: 62.2 years) were enrolled. The postoperative tumor grades were: G1: 11 (84.6%) and G2: 2 (15.4%). All patients underwent TLH and bilateral salpingo-oophorectomy. Pelvic/para-aortic lymph node dissection was not performed in all cases. Only one patient showed positive peritoneal cytology in the pre-TLH sample. There was high agreement (92.3%) between the two sets of washings in all patients. No patients received postoperative treatment.

Conclusion: We conclude that fallopian tubal cauterization is sufficient to provide protection from the dissemination of cancer cells into the peritoneal cavity at the time of TLH for endometrial cancers in early stages.

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Introduction

Endometrial cancer is the most common gynecological cancer in Japan. Studies show that ~5000 new cases occur every year and 65% of women with endometrial cancer are diagnosed in the early stages.¹ Standard surgical staging of endometrial cancer consists of total abdominal hysterectomy, bilateral salpingo-oophorectomy, peritoneal washings, and sampling of the pelvic and para-aortic lymph nodes.² Total laparoscopic hysterectomy (TLH) has been accepted recently as a safe and effective surgical technique. Beginning in April 2014, TLH became the authorized standard surgical procedure for early-stage endometrial cancers in Japan.³

Laparoscopic surgery has been widely used globally due to better surgical outcomes, shorter duration of hospitalization, faster recovery, and better cosmesis than those in traditional surgery.^{4,5}

However, some studies claim that TLH performed with a uterine manipulator in women with endometrial cancer causes an increase in the numbers of cancer cells in the peritoneal washings, and the resulting retrograde dissemination of cancer cells into the peritoneal cavity can significantly shorten the time to disease recurrence.^{2,6,7} These studies hypothesized that the use of an intrauterine manipulator may push cancer cells into the peritoneal cavity by transtubal transport. Conflicting results⁵ have also been reported and there is no consensus regarding the relationship between TLH for early-stage endometrial cancers and the dissemination of cancer cells into the peritoneal cavity.

The present study was undertaken to evaluate whether TLH causes retrograde dissemination of cancer cells into the peritoneal cavity, particularly when an intrauterine manipulator is used for TLH for early-stage endometrial cancer.

Conflicts of Interest: The authors declare no conflicts of interest pertaining to this study.

* Corresponding author. Department of Obstetrics and Gynecology, Yamanashi Prefectural Central Hospital, 1-1-1 Fujimi, Kofu, Yamanashi 400-8506, Japan.

E-mail address: shinohara617@gmail.com (S. Shinohara).

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Materials and methods

We conducted a prospective study among women undergoing TLH for Clinical Stage IA endometrial cancer between March 2015 and November 2015. The study design was reviewed and approved by the Human Subjects Review Committee of the Yamanashi Prefectural Central Hospital. The study was performed in accordance with the Declaration and Helsinki and informed consent was obtained from all patients. Surgery on all patients was performed by the same surgeon. We excluded cases with a large uterus, which could not be removed through the vagina without morcellation. All surgery was performed using a closed laparoscopic technique, and patients were positioned in the dorsal lithotomy position. After achieving pneumoperitoneum, the whole peritoneal cavity was visualized and pelvic irrigation was performed using normal saline. The fluid was then completely aspirated and sent for cytological evaluation (pre-TLH samples). Following that, the isthmus of each fallopian tube was cauterized to prevent the dissemination of cancer cells into the peritoneal cavity, and the intrauterine manipulator (Atom Medical, Tokyo, Japan) was inserted. TLH and bilateral salpingo-oophorectomy were then performed. Pelvic/para-aortic lymph node dissection was not performed in all cases. The uterus was removed through the vagina after TLH and the vagina was closed laparoscopically. Pelvic washing was repeated using normal saline, and the fluid was then completely aspirated and sent for cytological evaluation (post-TLH samples). The two sets of washings were reviewed by a cytopathologist to determine the presence or absence of malignant cells in a blinded manner.

Results

The data are summarized in Table 1. The age of the patients ranged from 39 years to 79 years (mean: 62.2 years). According to the International Federation of Gynecology and Obstetrics (FIGO) 2008 staging system, eight patients had Surgical Stage IA, five patients had Stage IB, and 11 patients had Grade 1 cancer. No patients had intraoperative or postoperative complications. No patients converted to laparotomy during surgery from this study. Only one patient showed positive peritoneal cytology in the pre-TLH samples. There was high agreement between the two sets of washings (92.3%). The median duration of follow-up was 3.4 months (range: 0–8 months). None of the patients developed recurrence during the follow-up period.

Discussion

Consensus does not exist regarding the possible relationship between TLH for early-stage endometrial cancer and dissemination

of cancer cells into the peritoneal cavity. We did not find any evidence to suggest an increased risk of spilling cancer cells by TLH using a uterine manipulator without a cellophane bag. This result corroborates those of recent studies.^{5,8}

Several studies have reported that using a uterine manipulator with an intrauterine balloon during laparoscopic surgery for endometrial cancer might be associated with positive cytological conversion, because of the pressure effect of the inflatable manipulator tip, and the spillage of tumor cells between the isthmus and the fimbriae.² However, these studies included patients with Grade 3 endometrioid carcinoma, serous carcinoma, clear cell carcinoma, and sarcoma, who might have a higher incidence of malignant peritoneal cytology than those with more common endometrioid histology.⁵ Furthermore, one study reported that no patients with positive cytological conversion had a recurrence during follow-up.² Considering that hysteroscopy did not cause the spreading of endometrial cells into the peritoneal cavity,^{9,10} the risk of cancer cell spillage during TLH may be minimized with appropriate patient selection.

In fact, tubal cauterization might not be sufficient to prevent the microscopic dissemination of cancer cells into the peritoneal cavity; however, it is doubtful whether the addition of more surgical procedures (such as a fallopian tube clip² and the use of cellophane bag,¹¹ which was initially designed to prevent the leakage of bile or gallstones into the peritoneal cavity) improves the prognosis of patients with endometrial cancer. If the same theory is applied, the risk of retrograde dissemination of cancer cells also exists during trans-abdominal hysterectomy (via the operator's gloves and other means).

In this study, it is difficult to explain why the cytology findings changed from positive to negative in Case 9. We believe that it might have been due to difficulty in detecting cancer cells from extensive pelvic washing at the end of surgery; however, it likely had nothing to do with protection from the dissemination.

Our study had several limitations. First, our study was conducted at a single center and had a small sample. Second, long-term follow-up of patients was not performed. Further studies are needed to explore the relationship between negative washings after TLH and prognosis in early-stage endometrial cancer. Prospective multicenter data collection about the dissemination of cancer cells into the peritoneal cavity in early-stage endometrial cancer patients will lead to a better understanding of the relationship between TLH and prognosis in this group of patients.

In conclusion, it appears that fallopian tube cauterization and pelvic washing at the end of surgery are sufficient to provide protection from the dissemination of cancer cells into the peritoneal cavity, indicating that TLH may not be associated with an increased risk of cancer cell spillage into the peritoneal cavity in early-stage

Table 1
Characteristics of laparoscopic hysterectomy performed for early-stage endometrial cancer.

| Case no. | Age (y) | Parity | Histology | Grade | Surgical stage | Pre-TLH samples | Post-TLH samples |
|----------|---------|--------|--------------|-------|----------------|-----------------|------------------|
| 1 | 66 | 3 | Endometrioid | G1 | IB | negative | negative |
| 2 | 66 | 4 | Endometrioid | G1 | IA | negative | negative |
| 3 | 50 | 2 | Endometrioid | G1 | IB | negative | negative |
| 4 | 75 | 2 | Endometrioid | G1 | IB | negative | negative |
| 5 | 65 | 2 | Endometrioid | G1 | IB | negative | negative |
| 6 | 39 | 1 | Endometrioid | G1 | IA | negative | negative |
| 7 | 61 | 3 | Endometrioid | G2 | IB | negative | negative |
| 8 | 64 | 2 | Endometrioid | G1 | IA | negative | negative |
| 9 | 46 | 1 | Endometrioid | G1 | IA | positive | negative |
| 10 | 67 | 2 | Endometrioid | G2 | IA | negative | negative |
| 11 | 79 | 1 | Endometrioid | G1 | IA | negative | negative |
| 12 | 61 | 1 | Endometrioid | G1 | IA | negative | negative |
| 13 | 73 | 1 | Endometrioid | G1 | IA | negative | negative |

TLH = total laparoscopic hysterectomy.

endometrial cancer. We believe that the benefits of laparoscopic surgery in early-stage endometrial cancer patients outweigh the risks of dissemination of cancer cells into the peritoneal cavity.

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