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Original Article

Long-term survival outcomes of laparoscopic staging surgery in treating endometrial cancer: 20 years of follow-up

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ABSTRACT

Objective: To assess the long-term outcomes of laparoscopic staging surgery (LSS) in treating patients with endometrial carcinoma.**Materials and Methods:** Patients with endometrial cancer who underwent LSS between June 1995 and June 2014 were prospectively registered. Perioperative data, complications, disease recurrence, and long-term survival were measured.**Results:** The study included 287 consecutive patients [mean age (\pm standard deviation), 53 ± 10.4 years; mean body mass index, 27.3 ± 6.7 kg/m²] with a median follow-up ranging from 1 to 216 months. No laparotomy conversion was recorded for any patient. The mean operative time was 207 ± 63.5 minutes, and the mean blood loss was 183 ± 166.7 mL. The mean numbers of pelvic nodes and para-aortic nodes removed were 18 ± 4.8 and 8 ± 5 , respectively. More than 80% of the patients had an International Federation of Gynecology and Obstetrics (FIGO) Stage 1 disease. The overall complication rate was 3.1%, including two patients of bladder injuries and one with bowel injury intraoperatively, and post-operatively one patient with pelvic abscess, three with urinary tract infection, one with voiding difficulty, and one with bowel perforation. The overall survival rates were 94% in 5 years and 92.7% in 20 years. No port-site metastasis was recorded in this study.**Conclusions:** Patients with endometrial carcinoma treated by LSS had compatible or even better long-term survival outcomes and less complication in comparison with the published data, in addition to the benefits of its minimally invasive characteristics. LSS should be the treatment of choice for endometrial cancer.Copyright © 2016, Taiwan Association of Obstetrics & Gynecology. Published by Elsevier Taiwan LLC. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

Endometrial cancer is the most common gynecologic cancer of the female genital tract in developed and developing countries, and it occurs in postmenopausal women, with a peak incidence between 55 and 60 years of age. The incidence of endometrial cancer increases in patients with diabetes mellitus or hypertension and

notably in recent decades in Taiwan, probably because of lifestyle changes among its citizens.

Most patients with endometrial cancer are diagnosed at an early stage and treated surgically with good outcomes [1]. Complete surgical staging for endometrial cancer includes peritoneal cytology, exploration of the peritoneal cavity, extrafascial total hysterectomy, bilateral salpingo-oophorectomy, and systematic pelvic and para-aortic lymphadenectomy [2]. The idea of laparoscopic lymphadenectomy first originated in combination with Schauta's vaginal hysterectomy by Dargent [3,4]; however, Querleu et al [5] first reported laparoscopic pelvic lymphadenectomy in the staging of early carcinoma of the cervix, and Childers et al [6] were the first to report the laparoscopic para-aortic lymph node dissection. Childers et al [7] were also the first to report the laparoscopic treatment of endometrial cancer.

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Over the past two decades, there have been many reports on the efficacy and safety of laparoscopic oncologic surgery with at least equivalent outcomes, including disease-free survival and overall survival rates [8,9]. However, the results of long-term follow-up are still few. We have been performing laparoscopic staging surgery (LSS) for patients with endometrial cancer since 1993, and published a preliminary report of 105 patients with good results in 2012 [10]. In this study, we extended our follow-up to 288 patients for a period of >20 years, with the aim of evaluating the long-term outcomes.

Materials and methods

Between June 1995 and June 2014, we investigated 287 consecutive patients with endometrial cancer who underwent LSS at Chang Gung Memorial Hospital, Tao-Yuan, Taiwan. Preoperatively, these patients were all histologically proven to have endometrial cancer and assumed to be in the early stage based on clinical assessment.

As reported previously, two experienced surgeons (C.L.L. and K.G.H.) performed most of the surgeries, including procedures of peritoneal lavage, hysterectomy with bilateral salpingo-oophorectomy, pelvic and para-aortic lymphadenectomy, as well as omentectomy for patients of serous papillary carcinoma and clear cell carcinoma. The operation was performed with five trocars, including two 12-mm and three 5-mm trocars, using a 10-mm laparoscope via a skin incision at the midpoint of the umbilicus and xiphoid process (Lee–Huang point), and all other ancillary ports laterally, as described previously [11–13]. Laparoscopic hysterectomy (LH) was performed via a laparoscopically assisted vaginal approach or a total laparoscopic approach and the uterus was removed vaginally without breaking into the endometrial cavity. Since the revised International Federation of Gynecology and Obstetrics (FIGO) staging criteria of 2009 [14], the current policy at our institution is to perform pelvic and para-aortic lymphadenectomy in all patients with endometrial cancer.

Patients with FIGO Stage IB Grades 2–3 and FIGO Stage IC Grades 1–2 were clinically observed or received whole-pelvic radiation and vaginal brachytherapy or chemotherapy, according to the adverse risk factors. Furthermore, those with FIGO Stages IIA and IIB received whole-pelvic radiation and/or vaginal brachytherapy. Patients with advanced stages of endometrial cancer received adjuvant therapy with radiotherapy, chemotherapy, or concurrent chemoradiotherapy.

Data collection and statistical analysis

Perioperative data including the operation time, number of retrieved lymph nodes, intraoperative blood loss, length of hospitalization stay, and the occurrence of intra- and postoperative complications including blood transfusion, and febrile status were recorded, and also the pathological data including the histological type, presence of lymphovascular space invasion, cytological findings, and the number of lymph nodes in the pelvic and para-aortic areas. At the end of the study, the patterns of recurrence, disease-free survival, and overall survival were analyzed.

All the data were analyzed using SPSS for Windows release 19.0.0/2010 (IBM-SPSS Inc., Chicago, IL, USA). Continuous variables such as age and body mass index (BMI) values are presented as mean \pm standard deviation, whereas parity is presented as median value and range. The cumulative event rates (recurrence and death) were calculated using the Kaplan–Meier method, with the time to the first event as the variable.

Results

The characteristics of the study population are shown in Table 1. The mean age (\pm standard deviation) of the patients was 53 ± 10.4 years. The mean BMI was 27.3 ± 6.7 kg/m². Fourteen patients had a history of other cancers: six with breast cancer, five with colon cancer, one with nasopharyngeal carcinoma, one with a molar pregnancy, and one with liver cancer. Of 287 patients, 126 (43.7%) underwent hysteroscopic examination. Of these, one (0.79%) was positive for peritoneal cytology. More than 80% of the patients had FIGO Stage 1 cancer. As for the final pathological findings, there were 161 patients (56.3%) with Grade 1, 71 (24.7%) with Grade 2, and 47 (16.2%) with Grade 3 cancer.

The intra- and postoperative characteristics are shown in Table 2. The mean operation time was 207 ± 63.5 minutes, and the mean blood loss was 183 ± 166.7 mL. The type of hysterectomy was generally simple hysterectomy (84.7%), whereas some had modified radical hysterectomy (10.1%) for the suspicion of cervical involvement preoperatively. However, 15 (5.2%) patients underwent LH and bilateral salpingo-oophorectomy only and did not undergo other staging surgery procedures because of the very early stage or superficial involvement of the disease and the well-differentiated characteristics (Table 2), and among young patients oophorectomy could also be spared. None of the patients received an autologous blood transfusion or required conversion to laparotomy. The mean numbers of pelvic lymph nodes and para-aortic nodes removed were 18 ± 4.8 and 8 ± 5 , respectively. Para-aortic lymph node dissection was performed in 76 patients (26.4%) who had known risk factors. The mean hospital length of stay was 6 ± 4.4 days. In total, 71 patients (24.7%) received adjuvant therapy according to their final surgical stage and adverse risk factors. Nineteen patients (6.6%) underwent adjuvant chemotherapy, 12 (4.1%) radiotherapy, and 40 (13.9%) concurrent chemoradiotherapy.

The surgery-related complications are shown in Table 3. The perioperative complications included two bladder injuries and one bowel injury, and the postoperative complications within 30 days included one pelvic abscess, three urinary tract infections, one bowel perforation, and one difficulty voiding.

Table 1
Patient characteristics ($n = 287$).

	Mean \pm SD
Age (y)	53 \pm 10.4
BMI (kg/m ²)	27.3 \pm 6.7
Cancer history (n)	
Breast cancer	6
Colon cancer	5
Nasopharyngeal carcinoma	1
Molar pregnancy	1
Liver cancer	1
Hysteroscopic examination ($n = 126$), n (%)	
Positive cytology after hysteroscopy,	1 (0.79)
FIGO (2008) stage, n (%)	No (%)
IA	210 (73.1)
IB	28 (9.7)
II	9 (3.1)
IIIA	9 (3.1)
IIIB	4 (1.3)
IIIC1	22 (7.6)
IIIC2	4 (1.4)
IV	1 (0.3)
Grading, n (%)	
G1	161 (56.3)
G2	71 (24.7)
G3	47 (16.2)
Unknown	8 (2.8)

BMI = body mass index; FIGO = International Federation of Gynecology and Obstetrics; SD = standard deviation.

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