ELSEVIER

THE JOURNAL OF
MINIMALLY INVASIVE
GYNECOLOGY

Original Article

Minimally Invasive Staging of Endometrial Cancer Is Feasible and Safe in Elderly Women

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ABSTRACT **Study Objective:** To compare the surgical outcome of elderly and younger patients undergoing laparoscopic or robotic surgical staging of endometrial cancer.
Design: Retrospective analysis (Canadian Task Force classification II-2).
Setting: University-affiliated hospital.
Patients: One hundred twenty-nine patients comprised the study group. Sixty patients were aged 65 years or older (elderly group), and 69 patients were younger than 65 years (younger group).
Intervention: Abdominal, laparoscopic, or robotic hysterectomy.
Measurements and Main Results: Among the 109 patients who underwent laparoscopic or robotic staging, there were no differences in estimated blood loss, lymph node count, surgical time, complications, rate of blood transfusion, conversion to laparotomy, and mean postoperative stay between elderly and younger patients.
Conclusion: Minimally invasive surgical staging for endometrial cancer is both feasible and safe in the elderly population and offers similar outcomes as in younger patients. Journal of Minimally Invasive Gynecology (2011) 18, 200–204 © 2011 AAGL. All rights reserved.

Keywords: Elderly; Endometrial cancer; Hysterectomy; Laparoscopy

Endometrial carcinoma is the most common gynecologic malignancy in the United States and accounts for 6% of all cancers in women [1]. Women in the United States have a 2.5% lifetime risk of developing endometrial carcinoma [2]. It is especially prominent in the elderly population; the median age at diagnosis is 63.1 years, and 45% of endometrial carcinomas are diagnosed in women aged 65 years or older [1,3].

According to the joint 2010 International Federation of Gynecology and Obstetrics (FIGO)/TNM classification system, endometrial carcinoma is surgically staged [4]. Surgery alone is usually curative in women with low-risk disease. The classic surgical approach is total abdominal hysterectomy with bilateral salpingo-oophorectomy and pelvic and paraaortic lymph node sampling at laparotomy [5]. However, the laparoscopic approach is rapidly gaining acceptance by gynecologic surgeons. Several investigators have demonstrated the safety, efficacy, and feasibility of total laparoscopic or vaginally assisted laparoscopic hysterectomy, and this approach now represents a valid alternative to open surgery [6].

With traditional open surgery, elderly patients are believed to have a higher rate of postoperative cardiac complications, respiratory complications, and thromboembolic complications, and to have longer length of hospital stay and greater risk for loss of independence after surgery [6]. An important advantage of minimally invasive surgery in the elderly population is that it can potentially offer a shorter hospital stay, shorter recovery period, less discomfort, and improved quality of life. After examining the surgeon's perioperative responsibility for elderly patients, Keating and

The authors have no commercial, proprietary, or financial interest in the products or companies described in this article.
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Submitted September 5, 2010. Accepted for publication December 9, 2010.
Available at www.sciencedirect.com and www.jmig.org

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doi:10.1016/j.jmig.2010.12.003

Lubin [7] emphasized that additional goals of interventions should include maximizing the potential life span and independent function, relief of symptoms, and maintenance of dignity. Keeping these goals in mind, along with the multiple advantages associated with laparoscopy, this surgical approach may be the ideal method of treatment in elderly patients [6]. While minimally invasive staging of endometrial cancer has been largely accepted as a safe and feasible alternative to laparotomy, few data exist about its use in the elderly population. The objective of the present study was to compare the surgical outcome in elderly and younger patients undergoing laparoscopic or robotic staging of endometrial cancer.

Materials and Methods

Study Design

Approval for the study was received from the institutional review board. A retrospective clinical review was conducted of patients undergoing hysterectomy for the staging and treatment of endometrial cancer between April 2006 and May 2009. Clinical information was obtained from medical records and pathology reports. Patients with incomplete medical records were excluded. Patients underwent either total abdominal hysterectomy, laparoscopic-assisted hysterectomy, or robotic-assisted laparoscopic hysterectomy. The surgical approach was selected based on uterine size and physician discretion, and on multiple additional factors including previous abdominal surgery and ability to tolerate the Trendelenburg position. Patients with a uterus larger than 12 cm were offered laparotomy to avert disruption of the uterus during transvaginal delivery of the surgical specimen. The preoperative investigation was determined by physician discretion and was based on tumor grade, endometrial biopsy, and findings at dilation and curettage. All patients underwent preoperative chest radiography.

Patients were separated into 2 groups: younger (age <65 years) and elderly (age ≥ 65 years). These groups were then separated based on surgical approach: laparoscopy, robotic surgery, or laparotomy. The 6 groups were compared with respect to body mass index (BMI), parity, number of previous abdominal or pelvic surgeries, and the presence of major comorbid conditions including hypertension, diabetes, cardiac disease, history of stroke, pulmonary disease, pulmonary embolus, and other cancers. The 6 groups were then compared with respect to surgical outcomes including operative time, estimated blood loss, number of blood transfusions, surgical complications, length of hospital stay, and number of harvested lymph nodes.

Surgical Description

The technique for surgically staging uterine cancer was in accordance with the Gynecologic Oncology Group (GOG) *Surgical Procedures Manual*. Cytology was obtained on entry into the peritoneal cavity. Pelvic lymph nodes were removed from the distal half of the common iliac artery down to the circumflex iliac vein, and nodal tissue was removed anterior to the obturator nerve and surrounding the iliac arteries and veins. The paraaortic nodes included those overlying the vena cava (defined as right), between the vena cava and aorta, and to the left of the aorta (designated left paraaortic). The cephalad boundary of the paraaortic specimen was generally, but not limited to, the inferior mesenteric artery, and the distal boundary was the midpoint of the common iliac artery.

For robotic and laparoscopic procedures, sampling of the pelvic and aortic lymph nodes was conducted by elevation of the inferior mesenteric artery to identify the left ureter and resection of the nodes to the left of the aorta and down the lateral aspect of the left common iliac artery to the midpoint. The remainder of the lymphadenectomy followed the same boundaries as described earlier. The extent of lymph node dissection was determined by physician discretion based on tumor grade, depth of invasion, and results of frozen section analysis. Abdominal entry technique, accessory trocar placement, vessel-sealing devices, and dissection instruments were selected at the discretion of the surgeon.

Statistical Analysis

Data were analyzed using commercially available software (SPSS version 16.0; SPSS, Inc., Chicago, IL). The independent sample *t* test was used for comparison of means, and the χ^2 test for comparison of proportions. A p value of $<.05$ was considered significant for all tests. The BMI was calculated as weight in kilograms divided by height in meters squared. The normality of the data was evaluated using normality plots and histograms for each of the surgical outcome variables, with evaluation of skewness and kurtosis. The sample size of 109 patients provided greater than 99.9% power for detecting a difference between younger and elderly patients undergoing minimally invasive surgery ($\eta^2 = 0.616$), using a 2-tailed χ^2 test with statistical significance defined as $p < .05$.

Results

Data from 129 patients were available for analysis. Patients ranged in age from 33 to 86 years. Sixty patients comprised the elderly group (age, ≥ 65 years), and 69 patients comprised the younger group (age, <65 years).

Elderly patients were significantly older than those in the younger group (73 vs 56 years; $p < .05$). In the elderly group, 31 patients underwent laparoscopy, 17 underwent robotic surgery, and 12 underwent laparotomy, whereas in the younger group, 36 patients underwent laparoscopy, 25 underwent robotic surgery, and 8 underwent laparotomy. There was no significant difference between the elderly and younger groups in the percentage of patients undergoing minimally invasive surgery for staging of endometrial cancer.