

Province Wide Clinical Governance Network for Clinical Audit for Quality Improvement in Endometrial Cancer Management

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Background: According to the hub-and-spoke model introduced in the Provincial Healthcare System of Reggio Emilia, early endometrial cancer is treated in peripheral low-volume hospitals (spokes) by general gynecologist, whereas more complex cancers are treated by gynecological oncologists at the main hospital (hub).

Objective: To guarantee a uniformly high standard of care to all patients with endometrial cancer treated in hub and spoke hospitals of Reggio Emilia Province.

Methods: The specialists of the 5 hospitals of Reggio Emilia Province instituted an inter hospital and multidisciplinary oncology group to write common and shared guidelines based on evidence-based medicine through the use of clinical audit. They valued the process indicators before and after guidelines introduction identifying the site of improvement and verifying the standard achievement.

Results: Diagnostic hysteroscopy use increased significantly from preguideline period, 53%, to postguideline period, 74%. Magnetic resonance use and accuracy increased significantly from preguideline to postguideline periods: 8.1% to 35.3% and 37.3% to 74.7%, respectively. Laparoscopy use increased from 1.6% (preguideline) to 18.6 (postguideline). Early surgical complications decreased from 16% (preguideline) to 9% (postguideline). Radiotherapy use increased from 14.% (preguideline) to 32.3% (postguideline).

Conclusion: It is possible for a provincial oncology group to build an oncology network providing an improvement in the assistance of patients with endometrial cancer through the use of clinical audit. Clinical audit made it possible to obtain the full attendance of specialists of various disciplines involved in the treatment of endometrial cancer to optimize response time schematizing process.

Key Words: Endometrial cancer, Audit, Guideline, Health care quality improvement, Team training

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Endometrial cancer (EC) is the most common gynecological malignancy in the developed countries and the sixth most common malignancy of the female genital tract worldwide. Its incidence has increased owing to longer life expectancy, increased obesity, and increased use of tamoxifen to treat patients with breast cancer. Improvements in surgical skills, anesthetic techniques, and preoperative and postoperative care have allowed most patients to be considered candidates for surgery.

In Italy, every year, there are approximately 7800 new cases of EC. It represents the fourth most common cancer in females and was responsible for 0.8% of total deaths caused by female cancers. As regards mortality, there were approximately 2440 deaths from EC. Incidence rates are quite homogeneous across Italy, with a ratio between areas with the highest and lowest rates of approximately 2. Particularly, in the Reggio Emilia Province every year, there are approximately 70 new cases of EC, and the standardized mortality rate is 3.1/100,000, with a 5-year survival rate of 80%.¹

To offer a better quality of assistance associated with more acceptable costs, a hub-and-spoke model was introduced in the Provincial Healthcare System of Reggio Emilia.

The Hub and Spoke model assumes that for certain situations and complex diseases, rare and expensive skills are necessary, which cannot be maintained so widespread but should instead be concentrated in regional centers of high specialization (hubs) where patients are sent from peripheral hospitals (spokes).

Particularly, cancers that require more complex surgery or a more specialized multidisciplinary approach, such as ovarian cancer or advanced EC, or patients at increased anesthesiological risk, are treated by gynecological oncologist at the main hospital (hub).

Hence, because early EC is a cancer with better prognosis, early EC can be treated also in peripheral low-volume hospitals (spokes) by a general gynecologist.

From a preliminary revision of treated cases, it was evident that no standardized homogeneous and therapeutic strategies were adopted in the different hospitals of Reggio Emilia Province.

Based on these evidences, a multidisciplinary group including 20 physicians and 1 biostatistician was instituted in the 2004. The working group was trained in clinical audit aimed to identify the quality indicators and to realize a common and shared workup in accordance with evidence-based medicine. The final goal was to decrease and delete the critical points through the realization of gynecologic oncology network achieving the best clinical practice.

MATERIALS AND METHODS

In the 2004, 20 physicians and 1 biostatistician from 5 hospitals of Reggio Emilia Province (Arcispedale Santa Maria Nuova of Reggio Emilia, Sant'Anna Hospital of Castelnovo nè Monti, Ospedale Civile of Guastalla, Ospedale Franchini of Montecchio, and Ospedale Magati of Scandiano) instituted a multidisciplinary interhospital group to build an oncologic network.

A preparatory scoping audit was undertaken to identify the key issues involved with the management of EC and with the writing of common and shared guidelines (GL). Quality and standard indicators for improvements were identified after a careful revision of the literature and of principal gynecologic societies GL. When these indicators were not found in the literature, they were defined by oncology group consensus based on their current practice.

Quality and standard indicators were identified in the diagnostic and therapeutic strategy of EC: use of diagnostic hysteroscopy (DH), dilatation and curettage (D&C), total abdomen and pelvis computed tomography (CT) and diagnostic accuracy, lower abdomen and pelvis magnetic resonance (MR) and diagnostic accuracy, surgical approach, lymphadenectomy adequacy, early surgical complications, and radiotherapy.

The overall concordance of histotype and grade between endometrial sampling and final hysterectomy findings were evaluated.

Magnetic resonance assessment of myometrial and cervical stromal invasion and lymph node metastasis was evaluated.

When MR was replaced by CT, CT assessment of the tumor extension and spread to the lymph nodes was evaluated.

Clinic audit were organized in 2 phases. In the first phase, patients treated in the period from 2002 to 2004 were retrospectively analyzed and sites of improvement were identified.

In the second one, patients treated in the period from 2007 to 2008 were prospectively analyzed after the introduction of GL to perform improvement correction. By comparing data coming from the 2 audits, it was possible to verify changes obtained after the introduction of GL and to verify standard achievement.

Case Ascertainment and Data Collection

All the patients submitted to hysterectomy for EC in the Reggio Emilia Province hospitals were included in the audit. Patients were identified by record linkage between data coming from hospital discharge records and from pathological database. We identified the following *ICD-IX-MC* (International Classification of Diseases, 9th revision, clinical modification) codes: 182.0 (malignant neoplasm corpus uterine), 182.1 (malignant neoplasm uterine isthmus), and 179 (malignant neoplasm uterus not otherwise specified).

Every gynecological unit identified a revisor team to value cases with data registered on a purpose-designed Web site (using SPSS Data Entry).

The case report form included all the purpose information to value the following quality indicators: diagnostic accuracy, concordance between preoperative sampling and final pathology, surgical approach, complication rate, and appropriateness of the adjuvant radiotherapy.

Data Handling and Analysis

Data were exported electronically from the Web site into SPSS (version 17.0; SPSS, Inc, Chicago, IL). The Web data entry ensured few missing data for clinical cases included in the analysis. Comparisons were made between presenting characteristics and principal clinical outcomes of patients.

Statistical Methods

Patient data are presented as percentages with numerator/denominator and as summary statistics of mean and SD as appropriate. To identify significant changes in clinical practice, statistical univariate analyses using a χ^2 test and Student *t* test were performed as appropriate.

Significance levels were presented as *P* values. It was assumed that the differences observed were statistically significant at $P \leq 0.05$. SPSS software (version 17.0; SPSS, Inc, Chicago, IL) was used in the data analyses.

RESULTS

A total of 237 patients operated for EC were evaluated; 135 patients were evaluated before GL (2002–2004), and 102 patients were evaluated after GL introductions (2007–2008). The 2 populations were comparable for age and stage (Table 1). The changes obtained are shown in Table 2 ($P < 0.01$).

Magnetic resonance and CT diagnostic accuracy significantly improved in the description of tumor extension and spread to lymph node from pre-GL (37.3% and 57.3%, respectively) to post-GL period (74.7% and 82.7%, respectively; $P = 0.007$). The overall concordance of histotype and grade between endometrial sampling and final hysterectomy findings was 78.3% (post-GL) and 74.5% (pre-GL), respectively ($P = 0.43$ not statistically significant). The grading overall concordance did not significantly improved in the post-GL period compared with that of pre-GL period (73.8% vs 67%; $P = 0.3$).

Lymphadenectomy increased from 52.5% (pre-GL period) to 63.7% (post-GL period). In patients with endometrioid adenocarcinoma, lymphadenectomy was performed in 61% of the patients in the post-GL period compared with the 53% of the patients in the pre-GL period. More than 80% of

TABLE 1. Comparison of characteristics of patients with EC during pre-GL and post-GL periods

Patients' Characteristics	Pre-GL Patients	Post-GL Patients	<i>P</i>
Age			
Mean \pm SD	64.6 \pm 11.7	65.4 \pm 10.8	
Range	30–94	38–88	NS*
Stage, n (%)			
I	94 (80.3)	74 (75.0)	NS†
II-III-IV	23 (19.7)	25 (25.0)	
Final Histotype			
Adenocarcinoma	107 (90.7)	80 (80.8)	0.03†
Papillary serous carcinoma	9 (7.6)	10 (10.1)	
Others	2 (1.7)	9 (9.1)	

*Student *t* test.
† χ^2 test.
NS, Not significant.

TABLE 2. Comparison of quality indicators of patients with EC during pre-GL and post-GL periods

Patients Characteristics	Pre-GL Patients n = 135 (%)	Post-GL Patients n = 102 (%)	<i>P</i> §
Diagnostic Hysteroscopy	72 (53.3)	76 (74.5)	0.0009
D&C	26 (19.0)	12 (11.7)	NS*
CT use	64 (47.4)	19 (18.6)	0.000
MR use	11 (8.1)	36 (35.3)	0.000
Surgical Approach			0.000
Laparotomy	107 (87.7)	80 (78.4)	
Laparoscopy	2 (1.6)	19 (18.6)	
Vaginal hysterectomy	13 (10.7)	3 (3.0)	

* χ^2 test.

patients with grade (G) 2 to G3 disease underwent lymphadenectomy in the post-GL period compared with 44% of G2 patients and 74% of G3 patients in the pre-GL period.

Lymphadenectomy was performed in 100% of patients with clear cell, squamous, and mucinous carcinomas, in 89% of patients with papillary serous carcinomas, and in 67% of undifferentiated carcinomas (Table 3). In some patients, lymphadenectomy was not performed because aggressive histotype was diagnosed only in the final pathologic examination, and the patients refused a new operation (laparoscopic lymphadenectomy). In other cases, patients were at high-risk surgery so lymphadenectomy was avoided.

Before and after GL introduction, the median number of lymph nodes resected during full pelvic lymphadenectomy was 21 (range, 8–40), and the median number of lymph nodes resected during full para-aortic lymphadenectomy was 8 (range, 7–9).

No improvement in the surgical staging of histotype other than endometrioid adenocarcinoma was reached in the post-GL period. Omentectomy and peritoneal biopsies were not performed in all cases of papillary serous and clear cell carcinomas as required.

TABLE 3. Post-GL lymphadenectomy according to histotype

Presurgical Histotype	Lymphadenectomy (n = 62)	Presurgical Histotype (n = 95)	Percent
Endometrioid	49	80	
Clear cell	1	1	
Papillary serous	8	9	89
Undifferentiated	2	3	67
Squamous and mucinous	2	2	100

TABLE 4. Comparison of surgical complication of lymphadenectomy in the pre- and post-GL periods

Complications of Lymphadenectomy	Pre-GL Patients n = 64, n (%)	Post-GL Patients n = 65 n (%)	P
Hemorrhage	6 (9.4)	3 (4.6)	NA
Fever (temperature >38°C for more than 48 h)	0 (0)	1 (1.5)	NA
Thromboembolism	1 (1.6)	0 (0)	NA
Transfusion	8 (12.5)	2 (3.1)	NA

NA, statistical test not applicable for small sample in the variable.

Early surgical complications decreased from 16% (19 cases in the pre-GL period) to 9% (9 cases in the post-GL period), but the difference was not statistically significant ($P = 0.12$). In particular, lymphadenectomy-related complications decreased (Table 4). Pre-GL radiotherapy was performed in 14% (19/135) of the patients, and in the post-GL period, radiotherapy was used in 32.3% (33/102) of the patients.

DISCUSSION

Endometrial cancer, unlike other gynecological cancers, has traditionally been regarded as easy to treat. Nevertheless, 25% of women will die of recurrence within 5 years of diagnosis.² Most women are managed by generalist gynecologist rather than care being centralized to a gynecological oncology unit. Since the early years of this decade, several audits about the management of EC investigated the best way to guarantee access to a uniformly high standard of care.

A prospective regional audit reported that there was limited tertiary referral to a gynecological oncologist, with often inadequate standards and with only one third of patients having basic staging procedures performed fully.³ Another study suggested that there should be a greater emphasis on improving the overall quality of surgical staging in EC because deficiencies in staging and variations in the use of adjuvant radiotherapy could represent a possible source of avoidable mortality in patients with EC.⁴ A later audit confirmed that staging has been poorly performed and inadequate staging was a predictor of worse outcome. Only 12% of women with EC in Scotland were operated on by a gynecologic oncology specialist. This audit concluded that despite centralization of women with EC resulting in accurate staging information, it was not yet known what effect this may have on outcome.⁵ However, there is no clear evidence that surgical centralization improves outcomes in EC.³ Low-risk disease may be managed effectively without a gynecological oncology center.⁶

In Provincial Healthcare System of Reggio Emilia, EC is treated both in the main hospital (hub) by a gynecological oncologist and in the peripheral low-volume hospital (spoke)

by general gynecologists, whereas advanced EC or women with high anesthesiological risk are sent to the main hospital.

Each spoke was responsible for diagnosing EC, preoperative staging, and surgical treatment. Histologic diagnosis, radiotherapy, and follow-up were centralized and executed by the main hospital specialists. In this way, as well as cost saving with a specialist dedicated to gynecological cancer pathology and radiotherapy, it was possible to perform a peer review on the work of a peripheral hospital.

This organization for the treatment of EC has necessitated the construction of a network working to ensure uniformity of care.

To our knowledge, the present study is the first Italian audit aimed to determine the accuracy of diagnosis and treatment pathway of EC.

This study has shown that it is possible for a provincial oncology group to build an oncology network providing an improvement in the assistance of patients with EC through the use of clinical audit. Despite that it is well-known that audit does not guarantee patient care improving, in our case, audit had a pivotal role. The overall aim of clinical audit is to improve patient outcomes by improving professional practice and the general quality of service delivered.

Clinical audit made it was possible to obtain the full attendance of specialists of various disciplines involved in the treatment of EC to optimize response time schematizing process (avoiding unnecessary tests). Nevertheless, the audit has allowed the recovery and the centralization of clinical data, allowing a revision. Clinical audit has fostered the sharing and discussion of the more complex cases in multidisciplinary teams; especially, the clinical audit allowed specialists of different hospitals to work in a uniform manner as if they belonged to the same facility structure. This made it possible to shorten the acquisition and implementation of GL. Guideline documents might save time and effort for physicians by facilitating the dissemination of good practice and promoting a more consistent approach to care. Scientifically valid and user-friendly GL might affect practice because they are easily accepted.

After GL introduction, diagnostic hysteroscopy use increased from 53% (pre-GL period) to 74.5% (post-GL period) and D&C use decreased from 19% (pre-GL period) to 11.7% (post-GL period). We try to increase the use of DH because it is reported in the literature that the diagnostic accuracy of DH is high for EC. A positive hysteroscopy result increased the probability of cancer to 71.8%, whereas a negative hysteroscopy result reduced the probability of cancer to 0.6%.⁷ Moreover, in women with endometrial focal lesions, hysteroscopy with endometrial resection is superior to D&C for obtaining a representative endometrial sample in women with postmenopausal bleeding.⁸

Preoperative CA 125 dosage was significantly increased from 27% (pre-GL period) to 65.7% (post-GL period). It is well-known that preoperative CA 125 is correlated significantly with tumor stage, is a significant independent predictor for lymph node involvement, and an important prognostic indicator of outcome.^{5,6} In our study, CA 125 showed a specificity of 94%, a sensitivity of 50%, a positive predictive value (probability to detect an advanced stage with a positive test)

of 72.2% (8/11) and a negative predictive value (probability to detect an early stage with a negative test) of 85.7% (48/56).

In a recent study based on 413 patients with endometrioid EC, the best cutoff CA 125 values for preoperative selection of intermediate- to high-risk, and high-risk diseases were 17.3 and 21.9 U/mL (sensitivity of 62.4% and 68.9%; specificity of 54.6% and 64.3%; positive predictive values of 57.9% and 64.2%; negative predictive values of 59.2% and 67.4%; and accuracy values of 58.5% and 65.8%).⁹

Use of MR increased significantly from 8.1% (pre-GL period) to 35.3% (post-GL period). Magnetic resonance diagnostic accuracy improved in the description of tumor extension and spread to lymph nodes from pre-GL period (58.9% and 65.3%, respectively) to post-GL period (37.3% and 57.3%, respectively).

Currently, MR is the most widely used modality for preoperative planning. As MR has excellent soft tissue contrast, it has become the standard for imaging uterine malignancies, providing a comprehensive assessment of disease before implementing potentially curative treatments.

The role of MR imaging in patients with histologically proven EC is to evaluate the depth of myometrial and cervical invasion and detect pelvic lymph node involvement preoperatively. Imaging can estimate the depth of myometrial invasion and thereby help determine the need for lymph node dissection, can estimate the stromal cervical invasion and thereby determine the need for radical hysterectomy. Imaging findings of advanced disease can change patient management from potentially curative to palliative.

In the detection of peritoneal nodules greater than 1 cm, MR imaging has been reported to be superior to CT, and detection of peritoneal disease is improved by using dynamic fat-saturated T1-weighted contrast-enhanced images with gadolinium. Magnetic resonance imaging cannot distinguish malignant from hyperplastic lymph nodes. Several studies have suggested that a short axis of more than 1 cm and necrosis can reliably predict lymph node involvement. Sequences used for detection of lymph node metastases are axial T2-weighted, coronal T1-weighted, and fast imaging using steady-state acquisition.¹⁰

Rarely, if ultrasound and hysteroscopy cannot be performed or are equivocal, MR can be also used to diagnose EC. The T2-weighted and contrast-enhanced sequences are the most useful for distinguishing normal endometrium and myometrium from disease. Imaging parallel and perpendicular to the plane of the uterus optimizes visualization of the endometrial-myometrial interface. The normal endometrium is hyperintense on T2-weighted images, whereas tumors tend to be intermediate and heterogeneous in signal intensity.¹¹

There was no statistically significant improvement ($P = 0.43$) of the overall concordance of histotype and grade between endometrial sampling and final hysterectomy findings. Overall histotype concordance was 78.3% (post-GL) and 74.5% (pre-GL), and the grading overall concordance was 73.8% (post-GL) and 67% (pre-GL). In a recent study, the accuracy of preoperative examination was 95.8% (69/72) for histological type and 90% (65/72) for histological grade.¹²

In our study, high concordance was observed in low-grade adenocarcinoma (G1 concordance was 82%). This is an

important finding because it is well-known that preoperative tumor grade based on endometrial sampling by various methods has uniformly been reported to not correlate accurately with final pathologic grade.^{13–25} A higher FIGO grade on final pathologic hysterectomy assessment will be diagnosed in 24% of patients with preoperative FIGO grade 1 by combining published series.^{14,15}

About surgical treatment, laparoscopic approach increased from 1.6% (pre-GL period) to 18.6% (post-GL period). Laparoscopic approach should be preferred because it is evident that laparoscopic hysterectomy is beneficial for a shorter hospital stay, less pain, and quicker resumption of daily activities.²⁰ Moreover, laparoscopy is the least expensive surgical approach for the treatment of EC.²¹

In the literature, patients with EC are stratified in 3 risk classes. High-risk patients (deep myometrial invasion or intraperitoneal disease, 18% risk of pelvic node metastasis) should have complete pelvic and para-aortic lymph node staging with adjuvant treatments tailored to the results of the pathologic examination from the lymphadenectomy specimen. The results of morbidity studies of lymphadenectomy do not show significant adverse effects, and retrospective studies even seem to show a survival benefit of this strategy.

Patients at intermediate risk were defined as having grade 2 or 3 histology and/or inner-mid myometrial invasion and had a 2% to 6% risk of nodal metastasis.

Patients who are at low risk (grade 1 histology, endometrial involvement only) based on the final report of the pathology of the surgical specimen do not require pelvic or para-aortic lymphadenectomy; in this subgroup, the risk-benefit balance suggests no surgical staging.^{22,23}

According to the literature,²³ we stated to perform lymphadenectomy in case of G3 tumors, G2 tumors larger than 2 cm in diameter, clear cell or papillary serous carcinomas, myometrial invasion greater than 50%, and cervical involvement.

Lymphadenectomy increased from 52.5% (pre-GL period) to 63.7% (post-GL period; Table 3). Particularly, in endometrioid adenocarcinoma patients, lymphadenectomy was performed in 61% of the patients in the post-GL period compared with 53% of the patients in the pre-GL period. Lymphadenectomy was performed in 100% of the patients with clear cell, squamous, and mucinous carcinomas, in 90% of papillary serous carcinomas, and in 67% of undifferentiated carcinomas. In some patients, lymphadenectomy was not performed because the aggressive histotype was diagnosed only in the final pathologic examination, and the patients refused a new operation (laparoscopic lymphadenectomy). In other cases, the patients were at high-risk surgery so lymphadenectomy was avoided. More than 80% of the patients with G2 to G3 disease received lymphadenectomy in the post-GL period compared with 44% of G2 disease and 74% of G3 disease of patients in the pre-GL period. However, in the pre- and post-GL introduction, the number of lymph nodes resected was adequate according to literature guideline (the median number of lymph nodes resected during full pelvic lymphadenectomy was 21, and the median number of lymph nodes resected during full para-aortic lymphadenectomy was 8).²⁴

No improvement in surgical staging, other than that of endometrioid adenocarcinoma, was reached in the post-GL period. Omentectomy and peritoneal biopsies were not performed in all cases of papillary serous and clear cell carcinomas as required.

Although increasing in lymphadenectomy, early surgical complications decreased from 16% (19 cases in pre-GL period) to 9% (9 cases in post-GL period); particularly, lymphadenectomy-related complications decreased, but the difference was not statistically significant ($P = 0.12$; Table 4). Despite that the small sample size did not allow for achievement of the statistical significance, the reduction in complications showed a clinical relevance as assistance improvement.

Probably the rate of complication decreased because of the increase of the use of laparoscopy and the increase of training in lymphadenectomy. It well-known that laparoscopy may be considered as the criterion standard of assessment of the status of regional lymph nodes in gynecologic malignancies.²⁵

Regarding adjuvant therapy, pre-GL radiotherapy, 14.1% (19/135), increased to post-GL, 32.3% (33/102); but in some cases (stage IIIC patients), it was not possible to follow the guideline indications because anatomic conditions such as small vagina did not allow for performance of brachytherapy.

Although significant improvements were achieved during our experience of clinical audit, some points of EC patient assistance required forward changes.

To offer a continuous assessment and improvement of clinical activity, to validate the achieved changes, and to limit a “Hawthorne effect,” a program of periodic clinical audit has been planned every 2 years. Moreover, new implementation strategies of local GL will be actuated.

This study shows the clinical audit to be a useful instrument to assess the quality of care, to suggest new modality of assistance, and to improve the quality of care according to evidence-based medicine. Finally, we are firmly convinced that clinical audit is an essential tool to monitor and to implement clinical governance, with the goal of guaranteeing a uniformly high standard of care to all patients, especially in the reality similar to ours where it is not possible to centralize all diseases.

REFERENCES

1. Incidence and mortality data of the Italian Network of Cancer Registry (AIRT), 1998–2002. Cancer-specific figures: Endometrial cancer. Available at: <http://www.registri-tumori.it/incidenza1998-2002/rapporto/Schede%20specifiche%20per%20tumore/Tumore%20del%20corpo%20dell'utero.pdf>. Accessed October 6, 2010.
2. ISD. *Trends in Cancer Survival in Scotland 1971–1995*. Edinburgh, Scotland: Information and statistics Division of National Health Service in Scotland; 2000.
3. McCrum A, Howe K, Weeks J, et al. A prospective regional audit of surgical management of endometrial cancer in the South and West of England. *J Obstet Gynaecol*. 2001;21:605–609.
4. Crawford SC, De Caestecker L, Gillis CR, et al. Staging quality is related to the survival of women with endometrial cancer: a Scottish population based study. Deficient surgical staging and omission of adjuvant radiotherapy is associated with poorer survival of women diagnosed with endometrial cancer in Scotland during 1996 and 1997. *Br J Cancer*. 2002;86:1837–1842.
5. Parkin DE, Warraich Q, Fleming DJ, et al. An audit of the quality of endometrial cancer care in a specialised unit. *Scott Med J*. 2006;51:22–24.
6. Royal College of Obstetricians and Gynaecologists (RCOG)/British Gynaecological Cancer Society. A Joint Working Group response to A policy framework for commissioning cancer services. London. 1996.
7. Clark TJ, Voit D, Gupta JK, et al. Accuracy of hysteroscopy in the diagnosis of endometrial cancer and hyperplasia: a systematic quantitative review. *JAMA*. 2002;288:1610–1621.
8. Han SS, Lee SH, Kim DH, et al. Evaluation of preoperative criteria used to predict lymph node metastasis in endometrial cancer. *Acta Obstet Gynecol Scand*. 2001;80:1131–1136.
9. Kim HS, Park CY, Lee JM, et al. Evaluation of serum CA-125 levels for preoperative counseling in endometrioid endometrial cancer: a multi-center study. *Gynecol Oncol*. 2010;118:283–288.
10. Peungjesada S, Bhosale PR, Balachandran A, et al. Magnetic resonance imaging of endometrial carcinoma. *J Comput Assist Tomogr*. 2009;33:601–608.
11. Daniel J, Bell DJ, Pannu HK. Radiological assessment of gynecologic malignancies. *Obstet Gynecol Clin N Am*. 2011;38:45–68.
12. Cetin C, Ozdemir S, Esen H, et al. The clinical value of preoperative and intraoperative assessments in the management of endometrial cancer. *Int J Gynecol Cancer*. 2010;20:358–362.
13. Leitao MM Jr, Kehoe S, Barakat RR, et al. Endometrial sampling diagnosis of FIGO grade 1 endometrial adenocarcinoma with a background of complex atypical hyperplasia and final hysterectomy pathology. *Am J Obstet Gynecol*. 2010;202:278.
14. Eltabbakh GH, Shamonki J, Mount SL. Surgical stage, final grade, and survival of women with endometrial carcinoma whose preoperative endometrial biopsy shows well-differentiated tumors. *Gynecol Oncol*. 2005;99:309–312.
15. Case AS, Rocconi RP, Straugh JM Jr, et al. A prospective blinded evaluation of the accuracy of frozen section for the surgical management of endometrial cancer. *Obstet Gynecol*. 2006;108:1375–1379.
16. Leitao MM Jr, Kehoe S, Barakat RR, et al. Comparison of D&C and office endometrial biopsy accuracy in patients with FIGO grade 1 endometrial adenocarcinoma. *Gynecol Oncol*. 2009;113:105–108.
17. Chi DS, Barakat RR, Levine DA, et al. The incidence of pelvic lymph node metastasis by FIGO staging for patients with adequately surgically staged endometrial adenocarcinoma of endometrioid histology. *Gynecol Oncol*. 2007;104:S8–S9.
18. Stovall TG, Photopulos GJ, Poston WM, et al. Pipelle endometrial sampling in patients with known endometrial carcinoma. *Obstet Gynecol*. 1991;77:954–956.
19. Traen K, Holund B, Mogensen O. Accuracy of preoperative tumor grade and intraoperative gross examination of myometrial invasion in patients with endometrial cancer. *Acta Obstet Gynecol Scand*. 2007;86:739–741.

20. Mourits MJ, Bijen CB, Arts HJ, et al. Safety of laparoscopy versus laparotomy in early stage endometrial cancer: a randomised trial. *Lancet Oncol*. 2010;11:763–771.
21. Barnett JC, Judd JP, Wu JM, et al. Cost comparison among robotic, laparoscopic, and open hysterectomy for endometrial cancer. *Obstet Gynecol*. 2010;116:685–693.
22. Delpuch Y, Barranger E. Management of lymph nodes in endometrioid uterine cancer. *Curr Opin Oncol*. 2010;22:487–491.
23. Chi DS, Barakat RR, Palayekar MJ, et al. The incidence of pelvic lymph node metastasis by FIGO staging for patients with adequately surgically staged endometrial adenocarcinoma of endometrioid histology. *Int J Gynecol Cancer*. 2008; 18:269–273.
24. Gynecologic Oncology Group, Surgical manual, 25, 2005:11–12.
25. Querleu D, Leblanc E, Cartron G, et al. Audit of preoperative and early complications of laparoscopic lymph node dissection in 1000 gynecologic cancer patients. *Am J Ob Gyn*. 2006;195:1287–1292.