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The Act of Hysteroscopy in Detecting Endometrial Cancer, National Cancer Institute Experience, Egypt

Amr Kamal Younis[1], Mohamed Abd Al Fatah El Zohiery[1], Rasha Allam[2], Adel Hosney Ahmed[1]*

***Corresponding author:**
Adel Hosney Ahmed MSc.
Department of Surgical Oncology
National Cancer Institute
Cairo University, Egypt
E-mail: adel.husni@live.com

[1]Department of Surgical Oncology, National Cancer Institute - Cairo University, Egypt
[2]Department of Stastical, National Cancer Institute - Cairo University, Egypt

ABSTRACT

Objectives: to assess the diagnostic role of the hysteroscopy in endometrial cancer detection compared to pathology as a gold standard.
Methodology: This is a descriptive diagnostic accuracy study, including 136 women attending to National Cancer Institute, Cairo University outpatient clinic and presenting with post-menopausal bleeding or any ultrasound diagnosed endometrial mass, in the 2 year interval from July 2021 till July 2023. Ultrasound, Hysteroscopy and hysteroscopic guided biopsy were used for evaluation of these cases.
Results: In our study, hysteroscopy has a good diagnostic accuracy (88.24%) with a sensitivity, specificity, PPV & NPV of 63.63%, 96.11%, 84% & 89.19%, respectively. The most common type of cancer was endometrioid adenocarcinoma (45.4%).
Conclusion: Hysteroscopy represents a tool with an excellent specificity for endometrial cancer. Even though hysteroscopic views are highly valid, biopsies are necessary to diagnose endometrial hyperplasia and malignancy.
Key words: hysteroscopy, postmenopausal bleeding, biopsy, endometrial cancer

INTRODUCTION

The most common malignancy in the gynecological organs is endometrial cancer (EC). Premenopausal women account for 25% of EC diagnoses, while women up to 40 years old with a history of estrogen- or hormone-related conditions, such as ovarian dysfunction, persistent anovulation, infertility, obesity, and polycystic ovary syndrome, account for nearly 5% of cases (1).

Endometrial biopsy is important to detect endometrial malignancy as it has high sensitivity and specificity . There are several methods to take samples for histopathology as dilation and curettage, pipelle and hysteroscopy (2). However, we cannot deny the role of transvaginal ultrasound in evaluation and prediction of any endometrial pathology (3).

In the last four decades, physicians started to apply the use of hysteroscopy to evaluate uterine cavity abnormality as well as detect any pathology. Hysteroscopy is a minimally invasive diagnostic and operative technique that has the ability to visualize the whole uterine cavity through a fine bore scope to

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detect pathology and get directed biopsies (4).

One of the recent systemic reviews of 65 studies and 26,346 women were involved in the studies demonstrate that hysteroscopy has a sensitivity of 86.4% and a specificity of 99.2% for confirmation of endometrial carcinoma (5).

The aim of this study is to assess the diagnostic role of the hysteroscopy in endometrial cancer detection compared to pathology as a gold standard.

METHODOLOGY

This is a descriptive diagnostic accuracy study, including women attending to National Cancer Institute, Cairo University outpatient clinic and presenting with postmenopausal bleeding or any ultrasound diagnosed endometrial mass, in the 2 year interval from July 2021 till July 2023.

Inclusion criteria

Women with post-menopausal bleeding, suspicious of intrauterine lesions detected by ultrasound or previous failed endometrial biopsy, were enrolled in the study.

Exclusion criteria

We ruled out women with suspected or diagnosed pregnancy, active infection of the genital organs (e.g: herpes simplex of the genital area) and Cervical cancer that may completely block cervical canal.

Sample size

All patients who met the eligibility criteria were incorporated in the study during the period July 2021 to July 2023. Based on statistics from Surgery department the number of cases who attend is four cases per month. Therefore, the expected number of cases is predicted to be around 100 cases at minimum.

Ethical committee approval

Our study protocol was approved from the ethical committee of National Institute of cancer.

Data collection

Patient data were collected from medical records retrieved from Cancer Epidemiology & Biostatistics department, and the following items were obtained and analyzed: age, hysteroscopy report details (cervical canal, endometrial cavity, tubal ostia and any intracavitary pathology detected), previous sampling, provisional diagnosis and histopathological results to be compared with hysteroscopy results.

Statistical analysis

IBM SPSS Advanced Statistics (Statistical Package for Social Sciences), version 23 (SPSS Inc., Chicago, IL), was used to analyze the data. Number and percentage were used to characterize qualitative data, while mean and standard deviation were used to characterize numerical data. Using ROC (receiver operating characteristics) analysis using a logistic regression model, the calculation of sensitivity, specificity, positive predictive value, negative predictive value, and overall accuracy with their 95% confidence intervals were carried out. A p-value of 0.05 or less was regarded as statistically significant.

RESULTS

We performed outpatient hysteroscopy for the total 136 cases, then a histologic diagnosis of the obtained endometrial sample was obtained. Of these, in 25 cases the hysteroscopic investigator suspected endometrial cancer (*table 1*). In 12 instances of false negatives, the examiner characterized the hysteroscopic image as having big polyps. The remaining patients were divided into two groups: benign pathology (n=48) and normal hysteroscopy (n=63). These patients were 52.07 ± 11.65 years old on average.

In our research, hysteroscopy yielded a sensitivity of 63.63% and a high specificity for the detection of endometrial cancer (*table 2*).

The histological types of 33 individuals who received a final malignant diagnosis are displayed in (*table 3*). Endometrioid adenocarcinoma was the most frequent forms of cancer (45.4%).

Table 1 - Frequency of Histologic and hysteroscopic findings (n=136)

Suspected endometrial carcinoma on hysteroscopic view	25
Normal uterus on hysteroscopy	63
Histologic diagnosis of endometrial carcinoma	33
False positive	4
False negative	12
Endometrial cancer diagnosed on top of normal OH	7

Table 2 - Accuracy of OH for detection of endometrial cancer

Sensitivity	63.63%
Specificity	96.11%
Positive predictive value	84%
Negative predictive value	89.19%
Accuracy	88.24%

Table 3 - Histological types of malignant cases

Histological type	Number (n=33)
Adenocarcinoma	15 (45.4%)
Squamous cell carcinoma	2 (6.1%)
Adenosquamous	1 (3%)
Clear cell carcinoma	1 (3%)
Serous carcinoma	5 (15.2%)
Uterine sarcoma:	
Adenosarcoma	2(6.1%)
Leiomyosarcoma	1(3%)
Malignant mixed mullerian tumor	5(15.2%)
Choriocarcinoma	1(3%)

DISCUSSION

A frequent gynecological disease, endometrial cancer has been more common recently in terms of both incidence and death (6). Approximately 65,620 new instances of endometrial cancer were diagnosed in 2020, and the disease was responsible for almost 12,000 deaths in the US; in contrast, 61,380 cases were diagnosed and 10,920 fatalities were reported in 2017 (7). Thankfully, with surgery alone, the majority of patients with early-stage endometrial cancer have a favorable prognosis.

The main symptom of carcinoma of the endometrium is abnormal uterine bleeding (AUB), of which post-menopausal hemorrhage makes up around 90% of cases. When the thickness of the endometrial echo is less than 4 mm, transvaginal ultrasound (TVU) is the recommended initial test for postmenopausal bleeding, according to the American College of Obstetricians and Gynecologists (ACOG). A tissue sample should be examined if TVU is unable to detect a thin endometrial echo in a postmenopausal woman who is bleeding. At the moment, hysteroscopy is regarded as the gold standard for evaluating the uterus because it can be used in conjunction with focused biopsy or curettage in addition to offering direct sight of the uterus (8).

Our study is a descriptive diagnostic accuracy study, including women attending to National Cancer Institute, presenting with post-menopausal bleeding or any ultrasound diagnosed endometrial mass, to assess the diagnostic role of the hysteroscopy in endometrial cancer detection compared to pathology as a gold standard.

Hysteroscopy has a high diagnostic accuracy for endometrial cancer, according to a comprehensive study, with a sensitivity and specificity of 86.4% and 99.2%, respectively (9). In our study, hysteroscopy provides a good diagnostic accuracy (88.24%) in our study, with corresponding sensitivity, specificity, PPV, and NPV values of 63.63%, 96.11%, 84%, and 89.19%.

Although the hysteroscopic sensitivity for identifying endometrial cancer was deemed satisfactory in their study, Gkrozou et al.'s analysis revealed that hysteroscopy was more effective in excluding rather than diagnosing endometrial cancer cases, which is consistent with our findings. In terms of specificity, hysteroscopy fared even better when used as a diagnostic method for endometrial cancer (10).

A prior study showing that, in women with AUB, hysteroscopy is more effective in identifying endometrial cancer than in ruling it out (5). This may be explained by the various inclusion criteria that were used in their investigation as well as the variations in endometrial thickness measured by ultrasound. Since the population gets more particular, these criteria may have an impact on test outcomes.

The usefulness of hysteroscopy in the diagnosis of endometrial cancer was investigated by Amor et al. The hysteroscopic view exhibits good sensitivity (92.3%) and great specificity (99.1%) for endometrial cancer (11).

Using particular criteria (such as ulceration, hypervascularity, necrosis, irregular mass, etc.), we subjectively assessed the endometrium during hysteroscopy in order to distinguish between pre-cancerous lesions like endometrial hyperplasia and benign pathologies like endometrial polyps.

A transvaginal ultrasound is usually the initial step in the endometrial assessment. Measuring endometrial thickness sonographically is a precise and straightforward method to assess if additional testing is required to exclude cancer.

Although guidelines propose a cut-off value of 3 to 5 mm below which endometrial cancer is improbable in symptomatic women, several cut-off values for endometrial thickness have been employed (8).

Although transvaginal ultrasonography has a good sensitivity for diagnosing intrauterine illnesses, its specificity for predicting malignant endometrial disorders is limited when measuring endometrial thickness or Doppler ultrasonography (12).

The optimal diagnostic approach to prevent endometrial pathology underdiagnosed as cancer is to

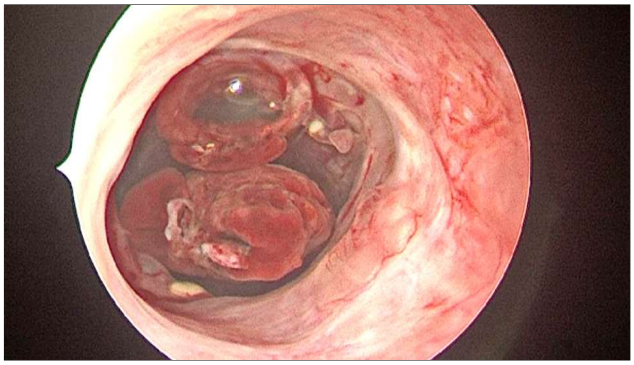

Figure 1 - Hysteroscopic view showing irregular mass suggestive of malignany

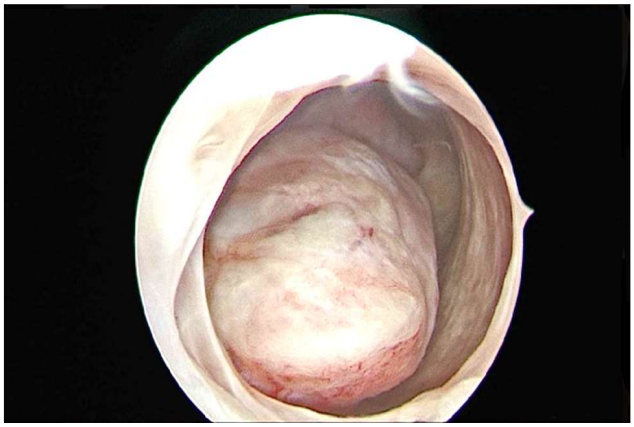

Figure 2 - Hysteroscopic view showing intracavitary myoma

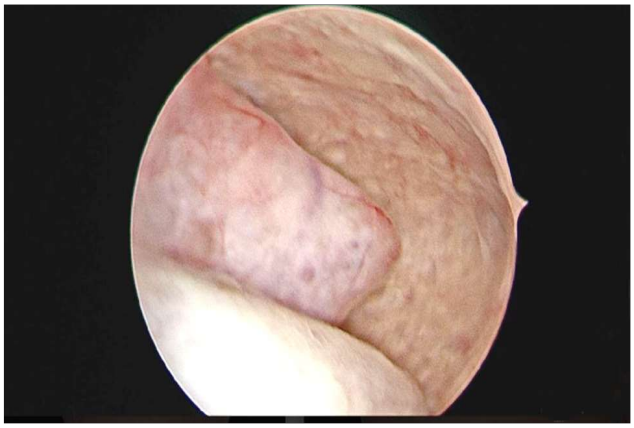

Figure 3 - Hysteroscopic view showing endometrial polyps

combine hysteroscopy and ultrasonography with hysteroscopic guided biopsy (13).

The current study, which found that 63.63% of endometrial cancer cases were suspected by hysteroscopy and confirmed by histologic investigation, further highlights the significance of hysteroscopy. Twelve times, neither the hysteroscopy nor the ultrasound study, which suggested endometrial polyps, suggested the tumor. It is important to note that the histological analysis revealed endometrioid carcinoma to be the primary focus within the polyp.

Nonetheless, one cannot be contemptuous of individuals who, after a TVUS diagnosis of endometrial disease, had an unimpressive office hysteroscopy. It has been noted that patients in the current study's sample who have normal office hysteroscopy and post-menopausal bleeding may get an unexpected endometrial cancer diagnosis at tissue diagnosis (7/63). This may have a massive implementations on management of such subgroup of patients.

A greater likelihood of endometrial cancer has been linked to a number of nongenetic risk factors, especially for the most common histological subtype, endometrioid adenocarcinoma.(14) Among the most frequent risk factors as highlighted from patients' history in this study ; hypertension (14/33), obesity (23/33), diabetes mellitus (16/33), dyslipedemia (5/33) and psychiatric disorders such as depression (3/33). Four patients were undergoing treatment with tamoxifen. None of the patients were undergoing treatment hormone replacement therapy.

Despite the relatively adequate number of patients, our study has limitations. The subjective interpretation of malignancy features at hysteroscopy mostly had an impact on the calculated sensitivity of hysteroscopy. The procedure was performed by multiple clinicians which may have a diagnostic bias. In addition, ultrasound features should have been more standardized to obtain similar patient baselines features.

CONCLUSIONS

Hysteroscopy represents a tool with an excellent specificity for endometrial cancer. Even though hysteroscopic views are highly valid, biopsies are necessary to diagnose endometrial hyperplasia and malignancy.

Conflict of interest

All author declare that they have no conflict of interest.

Ethical statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013).

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