

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20231215>

Original Research Article

Sensitivity of ultrasound scan and hysteroscopy with histopathological correlation in identifying endometrial pathology for a mixed group of symptomatic and asymptomatic patients

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Received: 27 February 2023

Revised: 07 April 2023

Accepted: 10 April 2023

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ABSTRACT

Background: We wished to correlate abnormal findings on hysteroscopy with abnormal findings on Ultrasound. To study the accuracy of ultrasound for detection of uterine polyps using hysteroscopy as gold standard. Analyse the cases detected with Carcinoma Endometrium and other endometrial pathology.

Methods: In this retrospective study, we summarized data from 125 patients who underwent TVS examination followed by hysteroscopy under 2 consultants from 2017 to 2020. Specimens were obtained and sent for histopathological examination. Sensitivity, specificity, positive and negative predictive values for diagnosing uterine pathology were calculated for each method.

Results: The sensitivity and specificity of ultrasonography for identifying polyps is 27.03% and 98.04% respectively. The sensitivity of ultrasonography for identifying any abnormal pathology is 90.08%. A total of 74 hysteroscopy identified and histology confirmed polyps were identified with no incidence of cancer in all the polyps. A total of 8 patients were diagnosed to have Endometrial Cancer on endometrial biopsy. Of these 8, 7 were postmenopausal and 1 premenopausal. 2 patients of these were asymptomatic with incidental finding of thickened endometrium on ultrasonography.

Conclusions: Transvaginal ultrasound is a practical approach for initial evaluation of abnormal uterine bleeding, however a hysteroscopy would be necessary in most of the suspicious cases due to better diagnostic accuracy. A unique feature of this study is the inclusion of a group of asymptomatic women incidentally detected to have uterine pathology including uterine carcinoma on routine health examination hence highlighting the importance of routine gynaecological check especially in the peri and post-menopausal age group.

Keywords: Endometrium, Endometrial polyp, Hysteroscopy

INTRODUCTION

Abnormal uterine bleeding, symptomatic uterine conditions and incidental findings on screening studies require a thorough evaluation of the uterine cavity. Abnormal uterine bleeding is one of the leading causes of seeking gynaecological advice. The common approaches

to evaluating women with abnormal uterine bleeding or intrauterine lesions include pelvic sonography, saline infusion sonography, endometrial sampling. Hysteroscopy allows evaluation and guides choice of subsequent treatment options. Also, hysteroscopy avoids the risk of missing focal pathology, as may occur with blind endometrial sampling or dilation and curettage.

The International Federation of Gynecology and Obstetrics (FIGO) classification system PALM-COEIN (polyp, adenomyosis, leiomyoma, malignancy and hyperplasia, coagulopathy, ovulatory dysfunction, endometrial, iatrogenic, and not yet classified) adopted in 2011 integrates hysteroscopy findings into the evaluation of abnormal uterine bleeding.¹

Contraindications to hysteroscopy are viable intrauterine pregnancy, pyometra, active pelvic infection (including genital herpes infection), known cervical cancer.²

Transvaginal ultrasound (TVUS) is the first-line imaging study of choice for evaluation of patients with abnormal bleeding. This modality is effective at characterizing uterine and adnexal lesions and is less expensive than other modalities. However, in patients with structural alterations of the uterus (eg, endometrial polyps, uterine leiomyomas), complete visualization of the endometrium may be impaired.³

Endometrial polyps are localized hyperplastic overgrowths of endometrial glands and stroma around a vascular core that form a sessile or pedunculated projection from the surface of the endometrium.⁴

For postmenopausal patients with uterine bleeding, the American College of Obstetricians and Gynaecologists and the Society of Radiologists in Ultrasound advise that either endometrial sampling or transvaginal ultrasound (TVUS) can be used as the first diagnostic step for evaluating the endometrium.⁵

Hysteroscopy has the advantage of providing a direct visualization of the uterine cavity and the endometrium, allowing biopsy to be taken during the procedure from suspected abnormalities. This technique has become the standard of choice for evaluating the uterine cavity, but it is an invasive procedure, performed under local or general anaesthesia, and associated with discomfort. Recent advances include office hysteroscopes which do not require anaesthesia and can be done on OPD basis.

Among the patients included in this study at Sir HN Reliance foundation hospital are patients who come for a routine health check-up where part of their investigation in the above 40 yr age group includes an abdominal and pelvis scan and a follow up consultation is arranged with a gynaecological consultant. So in this study we have included women who were asymptomatic but had an incidental detection of a uterine abnormality on ultrasound. Such women are labelled as being asymptomatic.

METHODS

The study was a retrospective study with a sample size of 125 patients conducted at Sir HN Reliance Foundation Hospital, Mumbai.

The patients included had undergone both hysteroscopy and had had abnormal uterine bleeding/ abnormal ultrasonography findings from 1st January 2017 to 31st December 2020. Patients included were under the care of two consultant gynaecologists working at Sir HN Reliance Foundation Hospital. There were no exclusion criteria.

The proposed study was granted ethical approval by the Scientific advisory committee at HN Reliance foundation hospital.

Patients attending the Gynaecology OPD at Sir HN Reliance Foundation Hospital and Research centre with complains of abnormal uterine bleeding or having abnormal ultra-sonographic findings on routine health check-up were evaluated for inclusion in the study

The outcome measures were determining the sensitivity and specificity of sonography and hysteroscopy in identifying endometrial pathology.

Abnormal uterine bleeding was defined as including cyclic excessive bleeding, irregular menstrual cycles, postmenopausal bleeding,

Sir HN Reliance foundation hospital offers routine health check-up for patients on demand which include various laboratory investigation, radiological investigations and consultation with physicians. As a part of this health check-up package women over the age of 40 years undergo screening ultrasound of the pelvis and mammography.

So in this study we have included women who were asymptomatic but had an incidental detection of a uterine abnormality of ultrasound. Such women are labelled as being asymptomatic.

The uterine cavity and endometrium were considered normal if sonograms showed a hyperechoic line in the middle of the uterus with a homogenous endometrial lining and distinct margins to the myometrium. Other findings, such as deformations of the endometrial lining, absence of a central hyperechoic line, the appearance of any structure with or without well-defined margins, and variable echogenicity, postmenopausal endometrial thickening of greater than 4 mm were considered as abnormal

The patients were seen by 2 consultants. Hysteroscopy was performed in the Department of Gynaecology by 2 consultants using a 5 mm hysteroscope with 30-degree lens telescopes. A sterile saline solution was used as the distention medium. Resection of abnormal findings was performed and specimens were obtained and sent for histopathological examination. Curettage was performed in all patients with abnormal uterine bleeding or suspected intrauterine findings.

Data were analysed by SPSS 18.0 software. Sensitivity, specificity, positive and negative predictive values were calculated for TVS and hysteroscopy in diagnosing

various uterine pathologies. Fisher's exact test was used to calculate the differences between categorical variables. $P < 0.05$ was considered as significant.

RESULTS

Of the total of 125 women, 57 were menstruating (45.6%) 68 were postmenopausal (54.4%) Figure 1.

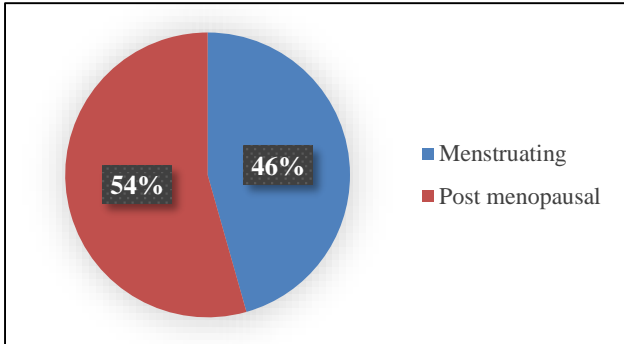


Figure 1: Menstrual status.

The mean age among menstruating age group was 47.1 years, among the postmenopausal age group was 62.6 years, overall mean age was 55.5 years.

34 women were asymptomatic and found to have abnormal ultrasound results on routine health check-up. 91 women were symptomatic, which included Abnormal uterine bleeding (56), postmenopausal bleeding (35) Figure 2.

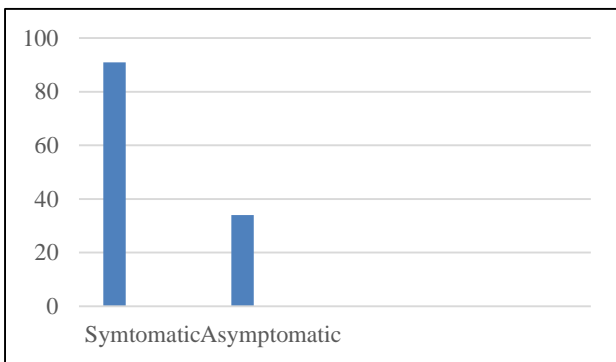


Figure 2: Symptom status.

Of the 34 asymptomatic patients, 33 were postmenopausal and one was menstruating. Ultrasound scan findings in this group included increased endometrial thickness for 26 patients, polyp in six, fibroids in one and adenomyosis in one. Hysteroscopy identified 27 polyps, 4 thickened endometrium, 2 of which were found to have endometrial cancer, 1 Fibroid, 1 finding of adhesions and one normal finding Figure 3.

Ultrasound scan while determining there was an abnormality mostly increased endometrial thickness was not able to identify polyp as the abnormal finding in 21 of the 26 cases.

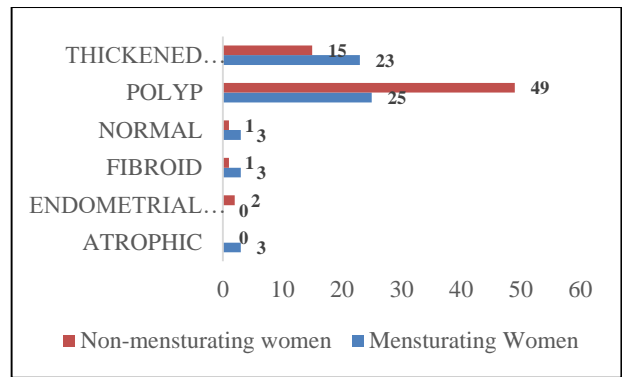


Figure 3: Hysteroscopy results.

Figure 4 shows 2 of the scan identified cases of increased endometrial thickness were proven to have endometrial cancer

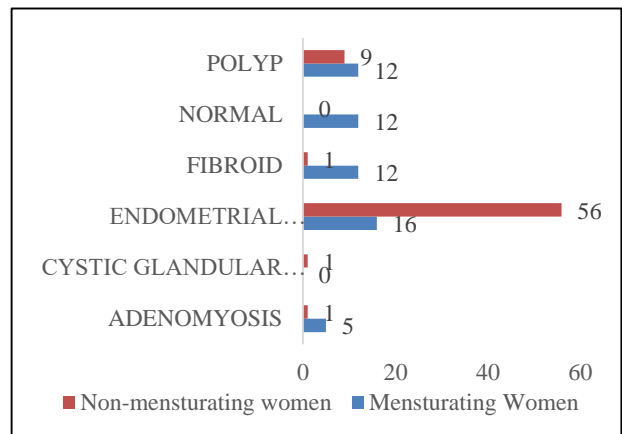


Figure 4: USG results.

For all patients combined total number of polyps identified were 74 of which scan identified 21 polyps. Scan identified increased endometrial thickness in 73 cases but at hysteroscopy operator perceived increased endometrial thickness was seen in 38 cases (52%), rest of the cases the cause of increased endometrial thickness were endometrial polyps.

In total eight cases endometrial cancer were found on hysteroscopy.

Hysteroscopy findings of 39 cases of patients with increased endometrial thickness, 31 benign and 8 cases of endometrial cancer were detected. Which gives a prevalence percentage of 20.5% where increased endometrial thickness was appreciated on hysteroscopy.

Of the 8 cancer cases, 7 were post-menopausal and one menstruating. 2 of the 8 cases were asymptomatic at presentation. No cases of cancer were seen in the 74 polyp specimens removed. 4 cases were normal on hysteroscopy. The sensitivity of ultrasound scan and identify any abnormal pathologies 90.08%.

DISCUSSION

Transvaginal scan (TVS) exam is a non-invasive tool that provides good views of the uterus and the endometrium. It is minimally invasive, economical and well tolerated.

The sensitivity and specificity of TVS for diagnosing all lesions of the uterine cavity presenting with abnormal uterine bleeding have been reported in various publications.

De Vries et al report a sensitivity of 60–70% with a specificity of about 90%.⁶ Kelekci et al found that TVS demonstrated a sensitivity of 56.3% with a specificity of 72% in diagnosing intra cavity abnormalities.⁷

TVS has significantly lower sensitivity but comparable specificity with hysteroscopy in diagnosing endometrial polyp and submucous fibroid, as reported by Gunadhar Maiti et al. reported endometrial polyp was detected in 58% by TVS.⁸

In a study including Danish females ages 20 to 74 years, the prevalence of endometrial polyps in pre- and postmenopausal females was 7.6 and 13 percent, respectively.⁹

The vast majority of endometrial polyps are benign. In systematic reviews and meta-analyses including large numbers of patients (ie, >10,000 and >21,000 patients), the incidence of malignant polyps was between 3.4 and 3.57 percent.

The risk of malignancy is higher in selected patients, including postmenopausal patients, patients with bleeding, patients using tamoxifen, and those with a hereditary cancer syndrome (eg, Lynch and Cowden syndrome). These characteristics are also associated with an increased risk of endometrial malignancy without polyps.^{10,11}

For postmenopausal patients with uterine bleeding, the American College of Obstetricians and Gynecologists and the Society of Radiologists in Ultrasound advice that either endometrial sampling or transvaginal ultrasound (TVUS) can be used as the first diagnostic step for evaluating the endometrium.⁵

In contrast with postmenopausal patients, there is no standard threshold for abnormal endometrial thickness in premenopausal patients and the utility of TVUS for excluding endometrial carcinoma in premenopausal patients has not been established.¹²

Polypectomy under hysteroscopic guidance is the treatment of choice for most endometrial polyps.¹³ Hysteroscopic instruments that may be used to remove a polyp include grasping forceps, micro scissors, electrosurgical loop (ie, resectoscope), morcellator, or a bipolar electrosurgical probe.^{14,15} All polyps in our study were benign.

In our study we achieved a higher sensitivity of 90% for detecting uterine abnormalities but specificity for detecting the most common abnormality polyp was 28.37%.

It seems that the relatively low specificity is the “price” we have to pay in order to increase our detection rate. The purpose of our study was not just to evaluate the validity of TVS in diagnosing uterine abnormalities but to compare it to hysteroscopy, which is a diagnostic and operative tool. Based on the results of our study, it seems that hysteroscopy is still needed as a diagnostic and not only as an operative tool. The contribution of hysteroscopy to diagnosis of uterine abnormalities was more evident in cases of intrauterine polyps.

Limitations

Due to the limited sample size, larger studies will be required to draw conclusions. Regarding the asymptomatic patient group which was analysed using results of the health check-up, a larger study would be needed with that subset to make significant analysis.

CONCLUSION

Doppler sonography is an indispensable tool in evaluating Transvaginal ultrasound is a practical approach for initial evaluation of abnormal uterine bleeding, considering the low cost, minimally invasive nature and easy availability, however a hysteroscopy would be necessary in most of the suspicious cases due to better diagnostic accuracy.

Transvaginal sonography has poor specificity to pick up discreet pathology like endometrial polyps most of the times identifying it as an increased endometrial thickness. Addition of routine Doppler examination for vascularity might improve sensitivity. All polyp removed at examination were benign this gives us confidence while counselling patient to inform that of favourable outlook for polyps.

A unique feature of this study is the inclusion of a group of asymptomatic women who were incidentally detected to have uterine pathology including uterine carcinoma (2 of 34 women) on routine health examination hence highlighting the importance of routine gynaecological check-up especially in the peri and post-menopausal age group.

ACKNOWLEDGMENTS

Authors would like to thank Dr Tarang Gianchandani CEO, Dr Charulata Pamnani Director –Medical services, Mr Shreyans Rai statistician at Sir HN Reliance foundation hospital their help in completing this study.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Shetty A, Dalal A, Manwani S. Sensitivity of ultrasound scan and hysteroscopy with histopathological correlation in identifying endometrial pathology for a mixed group of symptomatic and asymptomatic patients. *Int J Reprod Contracept Obstet Gynecol* 2023;12:1309-13.