

## A Hospital-Based Assessment of the Accuracy of Hysteroscopy in the Diagnosis of the Cause of Bleeding in Women with Abnormal Uterine Bleeding: An Observational Study

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### Abstract

**Aim:** The aim of the present study was to assess the accuracy of hysteroscopy in the diagnosis of the cause of bleeding in women with abnormal uterine bleeding.

**Material & Methods:** This prospective observational study was conducted on 200 patients attended the Department of Obstetrics and Gynaecology, Yashoda Multi-speciality Hospital, Somajiguda, Hyderabad, India for the duration of 2 years and to assess the role of diagnostic hysteroscopy and histopathology in evaluation of abnormal uterine bleeding.

**Results:** Majority of the patients belonged to 31-40 years age group. Of the 200 patients, majority, 86 had symptoms for more than 1 year, 64 patients had symptoms for 6 months to 1 year and 50 patients had symptoms for less than 6 months. Majority of the patients presented with menorrhagia. The second commonest was post-menopausal bleeding in 32 cases. There were 30 cases with polymenorrhagia and 26 patients with Hypomenorrhoea. Out of 200 patients, 54 had proliferative followed by 44 secretory. Histopathology findings corroborate the hysteroscopically detected cases of hyperplasia, atrophic endometrium and endometritis. Both hysteroscopy and curettage were accurate when an abnormality was diagnosed, giving a specificity of 97.3% and 97.3% respectively and positive predictive value of 94.3% and 95.5% respectively. The ability to diagnose a lesion was more with hysteroscopy i.e. sensitivity in comparison to curettage, (91.9% versus 78.2%) while a negative diagnosis was less wrongly made with hysteroscopy in comparison to diagnostic curettage.

**Conclusion:** Hysteroscopy has a definitive role in evaluating patients with abnormal uterine bleeding especially with patient with thick endometrium, in any age group. Hysteroscopy is a safe and reliable procedure in the diagnosis of cases with abnormal uterine bleeding with high sensitivity, specificity, positive predictive value and negative predictive value and the results of hysteroscopy are immediately available. Hysteroscopy and histopathology complement each other in evaluating patients with abnormal uterine bleeding for accurate diagnosis and further treatment.

**Keywords:** Hysteroscopy, Histopathology, Uterine Bleeding.

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### Introduction

Abnormal uterine bleeding is the commonest complaint which is noticed in a gynecology out-patient setting. Goldstein et al [1] has defined abnormal uterine bleeding as “patients having either metrorrhagia defined as vaginal bleeding separated from expected menses or menorrhagia defined as patient's subjective complaints of either increased duration or increased volume of flow or both. Patients usually present themselves to the Gynecologist when there is variation in the normal cyclical pattern. The variation could be due to

physiological, hormonal change or may be due to benign or malignant condition. Age specific association of endometrial lesions are known to occur. [2] Hence, this needs a proper evaluation. Hysteroscopy guided biopsy is the recommended diagnostic test in the present day. The traditional blind dilatation and curettage can miss focal intrauterine lesions like polyp, sub mucous fibroid and cancer. The other diagnostic tests involve transvaginal sonography (TVS) and saline infusion sonography (SIS). [3]

Abnormal uterine bleeding (AUB) has been defined as irregular bleeding, which occur either as prolonged duration of flow, infrequent bleeding episodes, or bleeding associated with dyspareunia and extremely heavy flow during menstrual periods. There has been several causes of AUB explored in the past few decades. The most common causes have been attributed to fibroids, polyps, bleeding disorders, and polycystic ovarian syndrome. It has been estimated that about one-third of all the gynecological consultations are attributed to AUB. [4] Fibroid (leiomyoma) is also one of the most important causes of AUB and it is also related to subfertility, miscarriage, pre-term labor, and complication during pregnancies. In addition many women with AUB are also associated with iron deficiency anemia. [5] The extent of impact of AUB on the woman's reproductive health also significantly impairs her socioeconomic well-being and indirectly has a bearing on her quality of life. Therefore there is an increasingly demanding necessity to evaluate the causes of AUB and also explore the pathognomic features of AUB in order to minimize its impact.

One of the established techniques for evaluating the uterine abnormalities is hysteroscopy. Hysteroscopy has been proved to have diagnostic accuracy and helps in localizing the lesions with minimal errors. However, histopathology has been considered as the gold standard in evaluating the pathological causes of AUB. [6] In addition, hysteroscopy also allows direct sampling of the tissue for biopsy of suspicious lesions and therefore has been considered as a useful tool for evaluating the endometrial pathology for malignancies. [7] Therefore hysteroscopy has better scope in replacing for the traditional dilatation and curettage. In addition, the other advantage of hysteroscopy is converting the investigative procedure into a therapeutic one. Nevertheless, there are very few studies that have documented the validity of hysteroscopy in diagnosis of AUB. Although it may be complemented with histopathology, the reliability of hysteroscopy as a single procedure to manage AUB has not been explored so far. Therefore, there is a compelling need to evaluate the comparative efficacy of hysteroscopy and histopathology in order to value hysteroscopy as a screening tool for diagnosis of AUB. [8]

Hence the aim and objectives of this study were to study the accuracy of hysteroscopy in evaluation of abnormal uterine bleeding and to correlate hysteroscopic findings with histopathologic findings.

#### Material & Methods

This prospective observational study was conducted on 200 patients attended the Department

of Obstetrics and Gynaecology, Yashoda Multi - speciality Hospital, Somajiguda, Hyderabad, India for the duration of 2 years and to assess the role of diagnostic hysteroscopy and histopathology in evaluation of abnormal uterine bleeding.

#### Inclusion Criteria:

- Age: 20 – 50 years of age with abnormal uterine bleeding due to structural causes. Written and signed informed consent by the patient to participate in the study.
- Multiparous and nulliparous women with abnormal uterine bleeding who will not require any emergency management at the time of the study.

#### Exclusion Criteria:

- Patient with severe anemia due to menorrhagia.
- Professed vaginal bleeding.
- Suspected pregnancy.
- Patient unwilling to participate in study.
- Patient with tight or closed cervical os.

#### Methodology

A detailed History including the following points as Present history of bleeding including onset, course, duration, and criteria of bleeding pattern. History of recent hormonal contraception and particular drug intake. History of bleeding tendency or general cause of bleeding. Past history of operations or blood transfusion. Family history of similar condition.

General examination includes Weight, height, BMI, general appearance. Vital signs (blood pressure and pulse), pallor and manifestations of anemia were noted. Inspection of external genitalia. Bimanual examination to detect uterine size, mobility, axis, tenderness and adnexal masses was done. Pelvic ultrasound report was checked.

#### Hysteroscopy Evaluation:

Diagnostic hysteroscopy was conducted outside of the formal operating theatre setting in an appropriately sized, fully equipped and staffed treatment room with adjoining, private changing facilities and toilet, Yashoda Multi -speciality Hospital, Somajiguda, Hyderabad, India. Diagnostic hysteroscopy was carried out by a professional, skilled and expertise examiner. An assistant nurse was available. Written patient's information was provided before the appointment and consent for the procedure were taken.

Women without contraindications advised to take standard doses of non-steroidal anti-inflammatory agents (NSAIDs), Diclofenac sodium supp. 100mg, around one hour before their scheduled outpatient hysteroscopy appointment with the aim of reducing pain in the immediate postoperative period.

We used a rigid continuous flow 30" hysteroscopy, with an outer sheath of 2.9 mm. The technique provided a constant uterine distention by attaching plastic bags of saline 0.9% to dual infusion tubing. The cavity was explored looking for polyps, masses, myomas or polyploidy endometrium. The light source used in this study is a fiber optic light cable, with straight connector, diameter 2.5mm, length 180 cm. Distension of the uterine cavity was needed by attaching plastic bags of saline solution 0.9%, at a pressure of 200- 120 mmHg with the aim to use the lowest pressure required to distend the uterine cavity adequately. The procedure was monitored using a single chip video camera, and the image is displayed on a monitor visible to the operator. The camera has a focal length varying from F70 to F 140.

The hysteroscopy picture which appeared through the optic was transmitted on the monitor by the camera which was fitted to the eyepiece of the

optic where the 30" diagnostic hysteroscopy could be performed with better visualization and accuracy.

**Statistical analysis:** Data were statistically described in terms of range, mean  $\pm$  standard deviation ( $\pm$  SD), median, frequencies (number of cases) and percentages when appropriate. Agreement between US, hysteroscopy diagnosis and endometrial sampling diagnosis was done using kappa statistic. For comparing categorical data, Chi square ( $\pm 2$ ) test was performed. Exact test was used instead when the expected frequency is less than 5. p values less than 0.05 was considered statistically significant. All statistical calculations were done using computer programs SPSS (Statistical Package for the Social Science; SPSS Inc., Chicago, IL, USA) version 15 for Microsoft Windows.

## Results

**Table 1: Demographic data**

Variables	Number (%)
<b>Age (years)</b>	
20-30	26 (13)
31-40	88 (44)
41-50	52 (26)
51-60	34 (17)
<b>Duration of symptoms</b>	
<6 months	50 (25)
6months – 1 year	64 (32)
>1 year	86 (43)
<b>Clinical presentation</b>	
Menorrhagia	50 (25)
Continuous bleeding	24 (12)
Hypomenorrhea	28 (14)
Polymenorrhea	14 (7)
Polymenorrhagia	30 (15)
Post-menopausal bleeding	32 (16)
Other	26 (13)

Majority of the patients belonged to 31-40 years age group. Of the 200 patients, majority, 86 had symptoms for more than 1 year, 64 patients had symptoms for 6 months to 1 year and 50 patients had symptoms for less than 6 months. Majority of the patients presented with menorrhagia. The second commonest was post-menopausal bleeding in 32 cases. There were 30 cases with polymenorrhagia and 26 patients with Hypomenorrhea.

**Table 2: Findings at endometrial histopathology**

Findings	No. of patients (%)
Proliferative	54 (27)
Secretory	44 (22)
Simple hyperplasia without atypia	32 (16)
Simple hyperplasia with atypia	12 (6)
Complex hyperplasia without atypia	12 (6)
Complex hyperplasia with atypia	6 (3)
Endometrial polyp	24 (12)
Atrophic endometrium	8 (4)
Tuberculous endometrium	6 (3)
Endometrial carcinoma	2 (1)
Total	200 (100)

Out of 200 patients, 54 had proliferative followed by 44 secretary. Histopathology findings corroborate the hysteroscopically detected cases of hyperplasia, atrophic endometrium and endometritis.

**Table 3: Comparison of the validities**

	<b>Hysteroscopy</b>	<b>Histopathology</b>
Sensitivity	91.9%	78.2%
Specificity	97.3%	97.3%
PPV	94.3%	95.5%
NPV	93.2%	85.5%
Accuracy	95%	89%

Both hysteroscopy and curettage were accurate when an abnormality was diagnosed, giving a specificity of 97.3% and 97.3% respectively and positive predictive value of 94.3% and 95.5% respectively. The ability to diagnose a lesion was more with hysteroscopy i.e. sensitivity in comparison to curettage, (91.9% versus 78.2%) while a negative diagnosis was less wrongly made with hysteroscopy in comparison to diagnostic curettage.

### Discussion

Abnormal uterine bleeding is one of the most frequently encountered conditions in gynecology, as quoted by Prentice A. [9] Till recently the usual method of evaluating abnormal uterine bleeding was dilatation and curettage. The diagnosis was obtained by this manner in most patients, yet in about 10% blind curettage; may miss the focal lesions. Hysteroscope offers a valuable tool in the hands of the Gynecologist. Hysteroscopic inspection of uterine cavity is a simple and well accepted method. The direct real time visualization, real-color, hydrated, wellilluminated, and augmented vision of the uterine cavity make this diagnostic tool very accurate to detect minute focal endometrial pathology and small lesions and helping us to take well guided direct biopsies. Hysteroscopic examination predicts endometrial lesions with a good accuracy as well as endometrial aspect characterization, adopting a nomenclature similar to that used by the pathologist. This approach makes correlation between hysteroscopic findings and histopathological results easier. [10] The use of hysteroscopy in abnormal uterine bleeding is replacing the blind curettage, as it "sees" and "decides" the cause. This is because the uterine cavity can be observed panoramically and the area in question can be curetted for histopathological examination. In fact, it is the eye in the uterus. [11,12]

Majority of the patients belonged to 31-40 years age group. Of the 200 patients, majority, 86 had symptoms for more than 1 year, 64 patients had symptoms for 6 months to 1 year and 50 patients had symptoms for less than 6 months. In an investigation directed by Schwarzler a sum of 104 patients with age differing from 26 to 79 years

were evaluated. [13] Tahir considered 400 ladies all above age of 35 years with maximum occurrence between 40-50 years. [14] Majority of the patients presented with menorrhagia. The second commonest was post-menopausal bleeding in 32 cases. There were 30 cases with polymenorrhagia and 26 patients with Hypomenorrhea. Out of 200 patients, 54 had proliferative followed by 44 secretary. Histopathology findings corroborate the hysteroscopically detected cases of hyperplasia, atrophic endometrium and endometritis. Symptomatic exactness of hysteroscopy for endometrial hyperplasia was 68.2, 71.4 and 76.4% of an arrangement announced by Valle et al [15] Sheth et al [16] and Panda et al [17] separately. Haller et al [18] had revealed affectability and specificity of 100 and 96.7%, separately. Panda A et al [17] had announced indicative precision of 100% in diagnosing polyp.

The incidence of endometrial cancer that is seen in the literature is generally higher. [19] Abnormal peri and post-menopausal bleeding is associated with endometrial cancer in about 10% of cases. [20] The lower incidence in our study was may be due to the patients with postmenopausal bleeding were taken up for fractional curettage, which is still opted by many of the Gynecologists in our setup. Both hysteroscopy and curettage were accurate when an abnormality was diagnosed, giving a specificity of 97.3% and 97.3% respectively and positive predictive value of 94.3% and 95.5% respectively. The ability to diagnose a lesion was more with hysteroscopy i.e. sensitivity in comparison to curettage, (91.9% versus 78.2%) while a negative diagnosis was less wrongly made with hysteroscopy in comparison to diagnostic curettage.

### Conclusion

Hysteroscopy has a definitive role in evaluating patients with abnormal uterine bleeding especially with patient with thick endometrium, in any age group. Hysteroscopy is a safe and reliable procedure in the diagnosis of cases with abnormal uterine bleeding with high sensitivity, specificity, positive predictive value and negative predictive value and the results of hysteroscopy are immediately available. Hysteroscopy and

histopathology complement each other in evaluating patients with abnormal uterine bleeding for accurate diagnosis and further treatment.

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