

Assessing Accuracy of Hysteroscopy in the Diagnosis of the Cause of Bleeding in Women with Abnormal Uterine Bleeding: An Observational Study

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Received: 12-05-2023 Revised: 27-06-2023 / Accepted: 03-07-2023

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Conflict of interest: Nil

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 100 patients attended the Department of Obstetrics and Gynecology between the duration of 1 year 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 120 patients, majority, 43 had symptoms for more than 1 year, 34 patients had symptoms for 6 months to 1 year and 23 patients had symptoms for less than 6 months. Majority of the patients presented with menorrhagia. The second commonest was post-menopausal bleeding in 16 cases. There were 15 cases with polymenorrhagia and 13 patients with Hypomenorrhoea. Out of 100 patients, 26 had proliferative followed by 23 secretory. Histopathology findings corroborate the Hystereoscopically detected cases of hyperplasia, atrophic endometrium and endometritis. Both hysteroscopy and curettage were accurate when an abnormality was diagnosed, giving a specificity of 96.4% and 96.4% respectively and positive predictive value of 95.2% and 94.4% respectively (Table 6). The ability to diagnose a lesion was more with hysteroscopy i.e. sensitivity in comparison to curettage, (90.9% versus 77.4%) 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

Menstrual dysfunction is the cause of discomfort, inconvenience and disruption of healthy lifestyle, which affects millions of women in both developed and developing world. [1] AUB is one of the commonest conditions for which patients come to the gynecological out-patient. Any deviation from the normal pattern of menstrual bleeding is called as abnormal uterine bleeding. AUB is responsible for more than one-third of gynecologic

consultations and nearly two-thirds of hysterectomies. [2,3] Abnormal uterine bleeding is a common problem mainly encountered in perimenopausal and post-menopausal women. It attributes as a cause for 25% of total gynaecological surgeries performed by a gynaecologist. It is estimated that a woman has a 1 in 20 lifetime chance of consulting her

gynaecologist because of heavy menstrual bleeding. [4]

Although abnormal uterine bleeding is an outcome which has several aetiological reasons, FIGO has classified it into 9 main categories, which are arranged according to the acronym PALM-COIN (pronounced "pahm-koin"): polyp; adenomyosis; leiomyoma; malignancy and hyperplasia; coagulopathy; ovulatory dysfunction; endometrial; iatrogenic; and not yet classified. [5] Goals of clinical management are primarily dependent upon attaining a correct etiological diagnosis. Differential diagnosis will vary based on symptomatology as well as age. The history, physical examination and pelvic examination attempt to determine the site of the bleeding and its source. [6-8] Information gathered from this will suggest what direction the investigation would take and the treatment modality.

Until recent times, usual method of evaluating this symptom was dilatation and curettage. But this detects the cause in less than 50% of the cases. Hysteroscopy offers a valuable extension of the gynaecologist's armamentarium. It can enhance the indicative precision and can allow better treatment of uterine illnesses. After hysteroscopy, the elective surgery of the patient can be arranged better. Utilization of hysteroscopy in abnormal uterine bleeding is nearly supplanting blind curettage, as it sees and chooses the reason. [9-11] Hysteroscopy is viewed as an exact gold standard in endometrial cavity assessment and hysteroscopy related with guided biopsy was more precise than dilatation and curettage. [12] Hysteroscopy allows direct visualization of the endometrial cavity and importantly, directed endometrial sampling of any suspicious areas. Use of hysteroscopy in abnormal uterine bleeding is almost replacing blind curettage, as it "sees" and "decides" the cause. Clinical history, physical and pelvic examination endeavours to decide the site and source of the bleeding. [13,14]

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

A prospective observational study conducted on 100 patients attended the Department of Obstetrics and Gynecology, ANMMCH, Gaya, Bihar, India between the duration of 1 year to assess the role of diagnostic hysteroscopy and histopathology in evaluation of abnormal uterine bleeding. The study was approved by the Ethics Board of institute and an informed written consent was taken from each participant in the study.

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 in operating theatre setting in an appropriately sized, fully equipped and trained staffed in ANMMCH, GAYA, Bihar. 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 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 polypoid 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 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 (χ^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 (%)
Age (years)	
20-30	12 (12)
31-40	45 (45)
41-50	25 (25)
51-60	18 (18)
Duration of symptoms	
<6 months	23 (23)
6months – 1 year	34 (34)
>1 year	43 (43)
Clinical presentation	
Menorrhagia	25
Continuous bleeding	12
Hypomenorrhea	13
Polymenorrhea	6
Polymenorrhagia	15
Post-menopausal bleeding	16
Other	13

Majority of the patients belonged to 31-40 years age group. Of the 120 patients, majority, 43 had symptoms for more than 1 year, 34 patients had symptoms for 6 months to 1 year and 23 patients had symptoms for less than 6 months. Majority of the patients presented with menorrhagia. The second commonest was post-menopausal bleeding in 16 cases. There were 15 cases with polymenorrhagia and 13 patients with Hypomenorrhea.

Table 2: Findings at endometrial histopathology

Findings	No. of patients (%)
Proliferative	26 (26)
Secretary	23 (23)
Simple hyperplasia without atypia	15 (15)
Simple hyperplasia with atypia	7 (7)
Complex hyperplasia without atypia	6 (6)
Complex hyperplasia with atypia	3 (3)
Endometrial polyp	12 (12)
Atrophic endometrium	4 (4)
Tuberculous endometrium	3 (3)
Endometrial carcinoma	1 (1)
Total	100 (100)

Out of 100 patients, 26 had proliferative followed by 23 secretary. Histopathology findings corroborate the Hysteroscopically detected cases of hyperplasia, atrophic endometrium and endometritis.

Table 3: Comparison of the validities

	Hysteroscopy	Histopathology
Sensitivity	90.9%	77.3%
Specificity	96.4%	96.4%
PPV	95.2%	94.4%
NPV	93.1%	84.4%
Accuracy	94%	88%

Both hysteroscopy and curettage were accurate when an abnormality was diagnosed, giving a specificity of 96.4% and 96.4% respectively and positive predictive value of 95.2% and 94.4% respectively (Table 6). The ability to diagnose a lesion was more with hysteroscopy i.e. sensitivity in comparison to curettage, (90.9% versus 77.4%) 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. [15] 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 gynaecologist. 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. [16] 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. [17,18]

Majority of the patients belonged to 31-40 years age group. Of the 120 patients, majority, 43 had symptoms for more than 1 year, 34 patients had symptoms for 6 months to 1 year and 23 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. [19] Tahir considered 400 ladies all above age of 35 years with maximum occurrence between 40-50 years. [20] Majority of the patients

presented with menorrhagia. The second commonest was post-menopausal bleeding in 16 cases. There were 15 cases with polymenorrhagia and 13 patients with Hypomenorrhoea. Out of 100 patients, 26 had proliferative followed by 23 secretary. Histopathology findings corroborate the Hystereoscopically detected cases of hyperplasia, atrophic endometrium and endometritis. Symptomatic exactness of hysteroscopy for endometrial hyperplasia was 68.2, 71.4 and 76.4% of every an arrangement announced by Valle et al [21] Sheth et al [22] and Panda et al [23] separately. Haller et al [24] had revealed affectability and specificity of 100 and 96.7%, separately. Panda A et al [23] had announced indicative precision of 100% in diagnosing polyp. [24]

The incidence of endometrial cancer that is seen in the literature is generally higher. [25] Abnormal peri and post-menopausal bleeding is associated with endometrial cancer in about 10% of cases. [26] 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 gynaecologists in our setup. Both hysteroscopy and curettage were accurate when an abnormality was diagnosed, giving a specificity of 96.4% and 96.4% respectively and positive predictive value of 95.2% and 94.4% respectively. The ability to diagnose a lesion was more with hysteroscopy i.e. sensitivity in comparison to curettage, (90.9% versus 77.4%) 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.

References

1. Gimpelson RJ, Rappold HO. A comparative study between panoramic hysteroscopy with directed biopsies and dilatation and curettage: A review of 276 cases. *Am J Obstet Gynecol* 1988;158:489-92.
2. Lasmar RB, Dias R, Barrozo PR, Oliveira MA, Coutinho ED, da Rosa DB. Prevalence of hysteroscopic findings and histologic diagnoses in patients with abnormal uterine bleeding. *Fertility and sterility*. 2008 Jun 1;89(6):1803-7.
3. Gimpelson RJ, Rappold HO. A comparative study between panoramic hysteroscopy with directed biopsies and dilatation and curettage. A review of 276 cases. *Am J Obstet Gynecol*. 1988;158:489-92.
4. Schorge JO, Schaffer JJ, Halvorson LM et al. 2nd ed. New York. Mc Graw Hill. 2008.
5. Munro MG, Critchley HO, Broder MS, Fraser IS, FIGO Working Group on Menstrual Disorders. FIGO classification system (PALM-COEIN) for causes of abnormal uterine bleeding in nonpregnant women of reproductive age. *International Journal of Gynecology & Obstetrics*. 2011 Apr 1;113(1):3-13.
6. Farquhar C, Ekeroma A, Furness S, Arroll B. A systematic review of transvaginal ultrasonography, sonohysterography and hysteroscopy for the investigation of abnormal uterine bleeding in premenopausal women. *Acta obstetrica et gynecologica Scandinavica*. 2003 Jan 1;82(6):493-504.
7. Van Dongen H, De Kroon CD, Jacobi CE, Trimbos JB, Jansen FW. Diagnostic hysteroscopy in abnormal uterine bleeding: a systematic review and meta-analysis. *BJOG: An International Journal of Obstetrics & Gynaecology*. 2007 Jun;114(6):664-75.
8. Istre O, Qvigstad E. Current treatment options for abnormal uterine bleeding: an evidence-based approach. *Best Practice & Research Clinical Obstetrics & Gynaecology*. 2007 Dec 1;21(6):905-13.
9. Sciarra JJ, Valle RF. Hysteroscopy: a clinical experience with 320 patients. *American journal of obstetrics and gynecology*. 1977 Feb 15;127(4):340-8.
10. JE H. Microcolpohysteroscopy. A new procedure and its original application in gynecology. *J Reprod Med*. 1981; 26:375-82.
11. De Jong P, DOEL F, FALCONER A. Outpatient diagnostic hysteroscopy. *BJOG: An International Journal of Obstetrics & Gynaecology*. 1990 Apr;97(4):299-303.
12. Prasad A, Kumar A. Role of hysteroscopy in abnormal uterine bleeding and its histopathological correlation. *Age (years)*;20(30):15.
13. Firdous N, Mukhtar S, Bilal S, Beigh SK. Role of hysteroscopy and histopathology in evaluating patients with abnormal uterine bleeding. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*. 2017 Feb 1;6(2):615-20.
14. Phalak R, Rawal R, Mule VD. Hysteroscopy as a Diagnostic Aid in Gynecology. *International Journal of Interdisciplinary and Multidisciplinary Studies*. 2015;2(10):78-83.
15. Prentice A. When does heavy flow merit treatment?. *The Practitioner*. 2000 Mar;244(1608):174-82.
16. Elbareg AM, Elmahashi MO, Essadi FM. Evaluation of intrauterine pathology: efficacy of diagnostic hysteroscopy in comparison to histopathological examination. *Reprod Syst Sex Disord*. 2015;4(149):2.
17. Valle RF. Hysteroscopic evaluation of patients with abnormal uterine bleeding. *Surgery, gynecology & obstetrics*. 1981 Oct 1;153(4):521-6.
18. Baggish MS, Valle RF, Guedj H, editors. *Hysteroscopy: Visual perspectives of uterine anatomy, physiology and pathology*. Lippincott Williams & Wilkins; 2007.
19. Schwärzler P, Concini H, Bösch H, Berlinger A, Wohlgenannt K, Collins WP, Bourne TH. An evaluation of sonohysterography and diagnostic hysteroscopy for the assessment of intrauterine pathology. *Ultrasound in Obstetrics and Gynecology: The Official Journal of the International Society of Ultrasound in Obstetrics and Gynecology*. 1998 May 1;11(5):337-42.
20. Tahir MM, Bigrigg MA, Browning JJ, Brookes ST, Smith PA. A randomised controlled trial comparing transvaginal ultrasound, outpatient hysteroscopy and endometrial biopsy with inpatient hysteroscopy and curettage. *Br J Obstet Gynaecol*. 1999; 106(12):1259-64.
21. Valle RF. Hysteroscopic evaluation of patients with abnormal uterine bleeding. *Surg Gynecol Obstet*, 1981; 153:521-6.
22. Sheth S, Hamper VM, Kurman R. A study between hysteroscopy with directed biopsies and dilatation and curettage. *Am J Obstet Gynecol*. 1989; 158:489.
23. Panda A, Parulekar SV, Gupta A. Diagnostic hysteroscopy in abnormal uterine bleeding and histopathological correlation. *J Obstet Gynaecol India* 1999; 49:74-76.
24. Haller H, Maehjic N, Rukarina B, Krasevic M, Rucpic S, Mozetic D. Transvaginal sonography and hysteroscopy in women with postmenopausal bleeding. *Int J Gynaecol Obstet*. 1996; 54:155-9.
25. Ribeiro CT, Rosa-E-Silva JC, Silva-de-Sá MF, Rosa-ESilva AC, Poli Neto OB, Candido Dos Reis FJ. Hysteroscopy as a standard procedure for assessing endometrial lesions among

postmenopausal women. Sao Paulo Med J. 2007;125(2):338-42.

26. Creasman WT. Endometrial cancer incidence, prognostic factors, diagnosis, and treatment. Semin Oncol. 1997;24(1):S1-140-50.