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Research Article

## The role of diagnostic hysteroscopy in abnormal uterine bleeding and its histopathological correlation following blind dilatation and curettage

Hariharan Valson, Chinmay Kulkarni\*, Sukanya Mukerjee, Shylaja N. Gowda

Department of Obstetrics and Gynaecology, DM Wayanad Institute of Medical Sciences, Wayanad, Kerala, India

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**\*Correspondence:**

Dr. Chinmay Kulkarni,

E-mail: [kulkarnichinnu@gmail.com](mailto:kulkarnichinnu@gmail.com)

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### ABSTRACT

**Background:** Abnormal uterine bleeding (AUB) is a common gynecological disorder in women. To render appropriate treatment it is vital to establish the correct diagnosis, in this backdrop we have studied the utility of hysteroscopy as a diagnostic procedure against a blind dilatation and curettage. The objectives of the study were hysteroscopic evaluation of abnormal uterine bleeding in reproductive and post-menopausal women. Hysteroscopic findings were compared with the histopathological reports following blind dilatation and curettage.

**Methods:** It is a prospective study on women with symptoms of AUB for a period of one year from Oct 2014 to Nov 2015. Detailed history and clinical examination with an ultrasound (USG) of pelvis to see for endometrial thickness and any structural abnormality was done. 50 cases were included for hysteroscopy. Endometrial biopsy was taken by blind dilation and curettage (D & C) and sent for histopathological examination (HPE). The hysteroscopic and histopathological findings were analyzed.

**Results:** Both hysteroscopy and (D & C) were accurate when an abnormality was diagnosed, giving a specificity of 96.4% and 96.4% respectively and positive predictive value of (95.2% versus 94.4%). 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 curettage (false negative rate: 9.1% versus 22.7%). In intracavitary lesions like polyp, hysteroscopy gave 100% accuracy.

**Conclusions:** Hysteroscopy is a sensitive diagnostic procedure that provides useful information in all intracavitary lesions and has a higher sensitivity and specificity. A blind D & C for AUB may miss focal lesions including endometrial carcinoma, hence hysteroscopy is advisable.

**Keywords:** Abnormal uterine bleeding, Hysteroscopy, Endometrial carcinoma, Dilatation and curettage

### INTRODUCTION

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.<sup>1,2</sup> It is estimated that a woman has a 1 in 20 lifetime chance of consulting her gynaecologist because of heavy

menstrual bleeding.<sup>3</sup> Inconsistencies in nomenclature and lack of standardized methods of classification have hampered investigation and management of AUB. In an effort to bring improvement, Federation of International Gynecology and Obstetrics (FIGO) have approved a classification system for abnormal uterine bleeding. It classifies the causes into two categories structural and functional. It is described by the acronym PALM – COEIN.<sup>4</sup>

PALM (structural): P- Polyp, A-Adenomyosis, L-Leiomyoma, M-Malignancy.

COEIN (functional): C-Coagulopathies, O-Ovulatory dysfunction, E-Endometrial, I-Iatrogenic, N-Not yet classified.

Diagnostic D & C was an important diagnostic procedure for the diagnosis of AUB for many years and advent of hysteroscopy has led to a new era in the diagnosis of AUB. Diagnostic D & C is a blind procedure and likely to miss many diagnosis. Hysteroscopy involves direct visualization of the uterine cavity and biopsy can be taken under direct visualization. "A vigilant eye in the uterine cavity is better than numerous blind curettages" – Lindmann. Hence it is now considered as gold standard for diagnosis of AUB.<sup>5</sup>

## METHODS

This study was carried out over a period of 1 year. Women of reproductive age group, above 20 years, perimenopausal and post-menopausal women were included in the study. The patients with adnexal masses, and cervical lesions, bleeding diathesis were excluded from the study. 50 cases of AUB were included in the study. These patients were seen in the outpatient department, a detailed menstrual history, both systemic and gynecological examination was done. USG pelvis was done to detect any structural abnormality and to see the endometrial thickness. Patients were admitted on D7-D10 of their menstrual cycle. In case of post-menopausal woman, they were prepared and admitted when the bleeding decreased or stopped. Hysteroscopy was performed with 4 mm rigid scope with normal saline as distending medium under general anesthesia. The endometrium was described as normal, atrophic, hyperplastic based on the typical appearance of the endometrium. All the intracavitary lesions like endometrial polyps, sub mucous myoma were seen and documented. Under the same sitting, a blind curettage was done and the endometrium sent for HPE. Statistical results: McNemar's chi-squared = 1.5, d.f = 1, p-value = 0.220.

## RESULTS

Age group of the patients ranged from 30-64 years and the higher prevalence of AUB was seen in the age group 41 to 50years (Table 1). Mean age was 45 years. Menorrhagia 44% (22) was the most typical presentation (Table 2).

Abnormal findings were seen in 21 patients (42%), while the remaining 29 patients (58%) showed normal endometrium (Table 3).

Amongst the 18 cases which were reported to be abnormal, 6 patients (12%) had hyperplastic (Figure 1) endometrium (4 simple hyperplasia without atypia, 2

simple hyperplasia with atypia), 4 patients (8%) had polyp (Figure 2), 4 (8%) patients had atrophic endometrium (Figure 3), 2 had endometritis (Table 4). Histopathology findings corroborate the hysteroscopically detected cases of hyperplasia, atrophic endometrium and endometritis.

**Table 1: Age distribution of AUB patients.**

Age in years	Normal	Abnormal	Percentage
20-30	Nil	Nil	0 (0%)
31-40	3 (6%)	2 (4%)	5 (10%)
41-50	22 (44%)	8 (16%)	30 (60%)
>51	4 (8%)	11 (22%)	15 (30%)
Total	29 (58%)	21 (42%)	50 (100%)

**Table 2: Distribution of patients according to menstrual abnormality in AUB (n=50).**

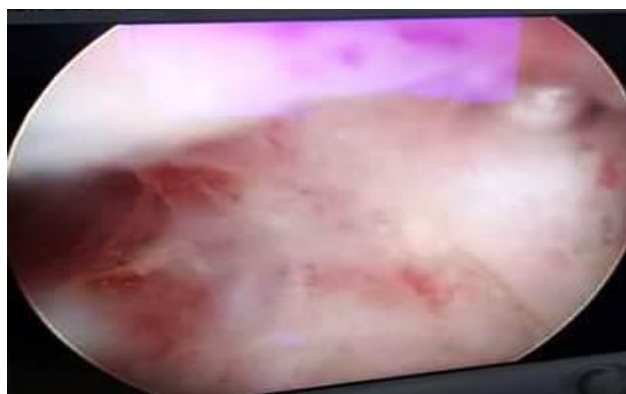
Type	Number of patients	Percentage (%)
Menorrhagia	22	44
Polymenorrhoea	13	26
Postmenopausal bleeding	7	14
Metrorrhagia	5	10
Oligomenorrhoea	3	6

**Table 3: Distribution of patients according to hysteroscopic findings.**

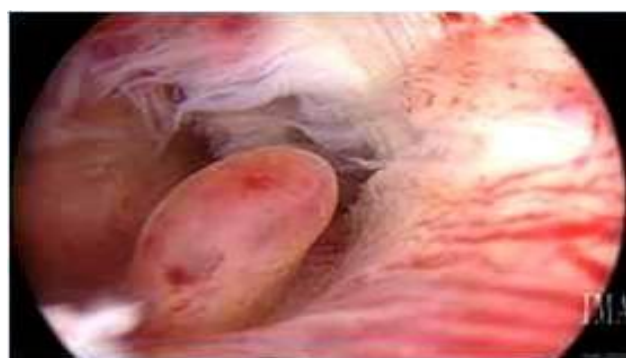
Findings	No. of patients (n)	Percentage (%)
Normal	29	58.0
Hyperplastic	6	12.0
Atrophic	4	8.0
Polyp	8	16.0
Submucous myoma	2	4.0
Endometrial carcinoma	1	2.0
Total	50	100



**Figure 1: Hyperplastic endometrium.**



**Figure 2: Atrophic endometrium.**



**Figure 3: Endometrial polyp.**

**Table 4: The histopathological findings (n=50).**

Findings	No of patients (n)	Percentage (%)
Normal	32	64.0
Simple hyperplasia without atypia	4	8.0
Simple hyperplasia with atypia	2	4.0
Atrophic endometrium	4	8.0
Myoma (submucous)	1	2.0
Polyp	4	8.0
Endometritis	2	4.0
Endometrial carcinoma	1	2.0
Total	50	100

Of the 50 patients who underwent hysteroscopy and curettage, 42 patients (84%) had the same tissue diagnosis in both hysteroscopy and curettage. Hysteroscopy revealed more information than curettage in 5 (10%) cases and curettage revealed more information in 2 (4%) cases. Out of the 32 cases said to be normal in HPE study, 4 cases of polyp and 1 case of submucous myoma was missed by D & C (Table 5).

**Table 5: Showing clinicopathological correlation.**

Hysteroscopic findings	No of cases	Histopathological findings						
		Normal	Endometrial polyp	Hyperplasia	Submucous fibroid	Endometrial atrophy	Endometrial CA	Endometritis
Normal	29	32	0	0	0	0	0	0
Endometrial polyp	08	0	04	0	0	0	0	0
Hyperplasia	06	0	0	06	0	0	0	0
Sub mucous fibroid	02	0	0	0	01	0	0	0
Endometrial atrophy	04	0	0	0	0	04	0	0
Endometrial CA	01	0	0	0	0	0	01	0
Endometritis	0	0	0	0	0	0	0	02

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 (False negative rate: 9.1% versus 22.7%).

**Table 6: 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%

**DISCUSSION**

Abnormal uterine bleeding is one of the most frequently encountered conditions in gynecology, as quoted by Prentice A.<sup>6</sup> 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, well-illuminated, 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.<sup>7</sup> 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.<sup>8,9</sup> The complication rate of the procedure is very less; hence nowadays many gynecologists are performing office hysteroscopy.<sup>10</sup> In our study there were no operative complications. In the large study done by Singhi et al, the complication rate was 0.6%.<sup>11</sup> The complications in comparison to D & C are much lower, as hysteroscope is inserted under vision.<sup>12</sup> The most common finding was endometrial polyp (16%). The majority of other studies also state the highest incidence of endometrial polyp (32.5% Raquel et al, 37.6% Cordeiro et al).<sup>13,14</sup> The type of abnormal hysteroscopic findings vary according to the age group and presentation. In our series of patients, endometrial polyp and hyperplasia were the predominant findings with symptoms of menorrhagia and metrorrhagia (18%). Our results are comparable to results published by other authors (Table 7).

The abnormal findings on hysteroscopy ranged from 50% to 74% in other studies. Our study showed abnormality in 42% of the patients. Of the 21 cases with abnormal findings on hysteroscopy (Table 8), commonest was endometrial polyp (16%), followed hyperplasia (12%), and submucous myoma (4%).

**Table 7: Comparative study with other authors.**

S.no	Author (year)	No of cases	Normal	Abnormal
1	Sheetal Patil <sup>15</sup>	100	50%	50%
2	Dasgupta <sup>16</sup>	252	38.8%	61.2%
3	Trajkovic <sup>17</sup>	239	41.02%	58.98%
4	Aisha Razzaq <sup>18</sup>	80	37.5%	62.5%
5	GuinGeeta <sup>19</sup>	100	26%	74%
6	Sudhanshu Sekhar <sup>20</sup>	100	38%	62%
7	Singh S et al <sup>21</sup>	100	48%	52%
8	Present study	50	58%	42%

**Table 8: Commonest endometrial pathology (comparison with other authors).**

S.no	Author(year)	Polyp	Hyperplasia	Myoma
1	Sheetal Patil <sup>15</sup>	9%	18%	11%
2	Dasgupta <sup>16</sup>	12.3%	25.7%	18.2%
3	Trajkovic <sup>17</sup>	20.5%	8.5%	7.7%
4	Aisha Razzaq <sup>18</sup>	18.8%	17%	11.3%
5	GuinGeeta <sup>19</sup>	28%	30%	16%
6	Sudhanshu Sekhar <sup>20</sup>	18%	16%	10%
7	Singh S et al <sup>21</sup>	08%	26%	07%
8	Present study	16%	12%	04%

The results of our study indicate a high sensitivity and specificity of hysteroscopy in detection of intrauterine pathology (90.9%, 96.4%). Two cases which were diagnosed as normal by hysteroscopy, turned out to be endometritis by histopathology. The study of Allameh et al; confirmed a sensitivity of 100% and specificity of 80.5% and the study of Tandulwadkar et al. 97% and 98%, respectively.<sup>22,23</sup> Pasqualotto et al reported sensitivity of hysteroscopy for detection of endometrial polyp as 99%, while Epstein et al reported it as 80%.<sup>24,25</sup> In the study of Jakab et al, the sensitivity of hysteroscopy in detection of circumscribed intrauterine lesions was 100%.<sup>26</sup> Kelekci et al found sensitivity of 87.5% and specificity of 100% for hysteroscopy in detecting intracavitary abnormalities.<sup>27</sup> In our present study detection of intracavitary lesion was 100%. Hysteroscopy diagnosed polyps, hyperplasia and sub mucosal myoma with 100% accuracy. The confirmation of the diagnosis was made in post hysterectomy specimens sent for histopathology, thereby yielding sensitivity, specificity, PPV, NPV of 100%. Patil et al and Panda et al, also reported accuracy of 100% in the diagnosis of endometrial polyp and submucous myoma.<sup>15,28</sup> This was comparable to other study. Whereas Velle et al obtained diagnostic accuracy of 88.6% In case of endometrial hyperplasia Loverro et al stated the sensitivity, specificity, PPV, NPV of 98,95,63,99% respectively.<sup>7,29</sup> Arslan et al reported a PPV of 71.4% and NPV of 95.4% in diagnosis of endometrial hyperplasia. In one of the



latest study done by Chaudhari KR, Sathe P, the sensitivity, specificity, Positive Predictive Value (PPV), Negative Predictive Value (NPV) and accuracy of diagnostic hysteroscopy in the study was 98.3%, 80.5%, 89.7%, 96.7% and 91.8% respectively.<sup>30</sup> In our study, the diagnostic hysteroscopy had sensitivity of 90.9% specificity of 96.4%, PPV of 95.2% and NPV of 93.1%, and accuracy of 94%. Hysteroscopy diagnosed 4 cases of atrophic endometrium; Histopathological examination confirmed the findings, giving the accuracy of 100%. The incidence of endometrial cancer that is seen in the literature is generally higher.<sup>31</sup> Abnormal peri and postmenopausal bleeding is associated with endometrial cancer in about 10% of cases.<sup>32</sup> The lower incidence in our study 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.

The accuracy of hysteroscopy in this study is 94% and that of histopathology was 88%. In the present study, the results of hysteroscopy and diagnostic curettage were in agreement in 84% of patients, hysteroscopy revealed more details in 12% of cases, which was not detected in diagnostic curettage while in 4% of the cases diagnostic curettage gave a diagnosis of endometritis which were seen as normal in hysteroscopy.

## CONCLUSIONS

Hysteroscopy is emerging as the new gold standard for the evaluation of abnormal uterine bleeding. The diagnostic accuracy of hysteroscopy is very high compared to D & C in intracavitary lesions D & C can miss focal lesions which can be picked up by hysteroscopy. Endometrial biopsy under hysteroscopic guidance can play a supporting role in supplementing the diagnostic accuracy of hysteroscopy. Adequate diagnosis is crucial for the selection of relevant treatment of abnormal uterine bleeding and avoidance of unnecessary major surgical procedure.

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