

# Hysteroscopic Evaluation and Histopathological Findings in Abnormal Uterine Bleeding

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## Abstract

**Introduction:** Abnormal uterine bleeding (AUB) is a common gynecological issue, characterized by change in frequency of menstruation, duration of bleeding phase or amount of blood loss. In gynecological outpatient department about 33% of women have AUB and the percentage raises more in perimenopausal women. It can be associated with various causes like endometrial polyp, leiomyoma, adenomyosis, endometrial hyperplasia, ovulatory dysfunction and sometimes endometrial carcinoma. A number of diagnostic techniques like transvaginal ultrasonography, endometrial curettage and hysteroscopic guided biopsy are available.

**Aims:** To study hysteroscopic findings and its correlation with histopathology of endometrium in AUB.

**Setting and design:** Observational cross-sectional study conducted at a tertiary care hospital.

**Methods and materials:** Demographic details and clinical history were obtained and 70 cases out of 162 were selected based on inclusion and exclusion criteria. Thorough examination and essential investigations like complete blood count and transvaginal ultrasonography (TVUS) were done. After preoperative preparations patients were subjected to hysteroscopy and guided biopsy. Hysteroscopy was used to visualize the uterine cavity and to detect uterine malformations, polyps, submucosal fibroids,

hyperplastic endometrium or endometrial atrophy.

**Results and conclusion:** The accuracy of hysteroscopy in identification of polyp, endometrial hyperplasia and endometrial carcinoma was found to be 97.1%, 77.1%, 75.7%, respectively and overall accuracy of hysteroscopy in diagnosing pathology behind abnormal uterine bleeding was 67%. Hence, hysteroscopy though can act as an adjunct in diagnosis of AUB, histopathology will continue to be superior and gold standard.

**Keywords:** Polyps; Endometrial hyperplasia; Endometrial carcinoma; Endometrial curettage; Dilatation and curettage; Endometrial biopsy.

## Introduction

Abnormal Uterine Bleeding is a common and debilitating gynecological disorder encountered in reproductive age women due to derangement in their normal menstrual flow or pattern. In gynecological outpatient department about 33% of women have AUB and the percentage raises more in premenopausal women.<sup>1,2</sup> Due to this the social life, morbidity and clinical workload are found to be impacted. It can be associated with various causes like endometrial polyp, leiomyoma, adenomyosis, endometrial hyperplasia, ovulatory dysfunction and sometimes endometrial carcinoma. Various

diagnostic techniques have evolved over years to determine etiology of AUB. Dilatation and curettage (D&C) sample can be done to obtain endometrial sample for histopathological examination and to rule out premalignant and malignant conditions like endometrial hyperplasia and endometrial carcinoma. It has wide range of diagnostic or curative purpose, but has risk of anesthesia, cervical tear and perforation of uterus as it is a blind procedure. The various causes of AUB namely endometrial polyp, submucous myoma etc. are often missed on conventional diagnostic procedures like USG and D&C.<sup>3</sup> Hysteroscopy is an important diagnostic method and its sensitivity and specificity as seen in numerous studies in cases of AUB is significantly high. The various etiologies of AUB namely endometrial polyp, submucous myoma etc. are often missed on conventional diagnostic procedures like transvaginal ultrasonography and isolated dilatation and curettage.

Various studies have been undertaken in the past to compare the various diagnostic modalities available for diagnosis of AUB. These studies have shown the advantage of hysteroscopy over isolated dilatation and curettage in finding etiology of AUB. Since hysteroscopy and its directed biopsy is more accurate than dilatation and curettage alone, it is considered an accurate 'gold standard' in identification of uterine cavity pathologies<sup>4</sup>. The present prospective study was carried out to analyze the accuracy of hysteroscopy as compared to histopathological findings in evaluation of abnormal uterine bleeding.

## Materials and Methods

**Study design:** Observational cross-sectional study

**Study duration:** October 2017 to October 2019

**Study area:** Department of Obstetrics and Gynecology in a tertiary care hospital Pune

**Inclusion criteria:** Women >18 years with AUB attending gynecology OPD

**Exclusion criteria:** Women having

1. Endocrine disorders like hyper-or hypothyroidism, diabetes, adrenal disease, prolactin disorders
2. Coagulation disorders
3. Liver diseases

4. Renal diseases
5. Diagnosed cervical or uterine malignancy and taking treatment for the same
6. On medications like steroids, neuroleptics, anticoagulants and cytotoxic agents.

## Method:

Women coming to Gynecology OPD for AUB were included after informed consent. Demographic details and clinical history was obtained. Detailed menstrual history regarding onset, course, duration, amount of bleeding were obtained. Out of 162 cases 70 cases were selected for present prospective study. Any women with diabetes mellitus, hypertension, thyroid disorders were excluded from the study.

Thorough general, systemic and gynecological examination was done in the remaining cases. Size of the uterus, its mobility and presence of any cervical or adnexal masses was noted. They were subjected to essential investigations like complete blood count, coagulation profile, thyroid profile, Paps smear and transvaginal ultrasonography (TVUS).

The patients were admitted and preoperative preparations were done prior to Hysteroscopy and D & C.

If any intrauterine pathology was detected, its shape, size and site was estimated and recorded. The thickness, color, vasculature and consistency of the endometrium was studied and recorded.

## Statistical Analysis:

All the collected data was entered in Microsoft Excel Sheet 2007. The data was then transferred and analyzed using SPSS ver. 21. Qualitative data was represented in the form of frequency and percentage while quantitative data was represented using Mean  $\pm$  S.D. Appropriate statistical evaluation was carried out as per the type and distribution of data. A *p*-value of <0.05 was taken as level of significance.

## Results and Discussion

In the present study, maximum age incidence was between 41 and 50 years (34.3%). The youngest patient in this study was 26 years old and the oldest was 53 years old.

Out of total 70 patients, 55.7% presented with Heavy menstrual bleeding. Other presentations were intermenstrual bleeding (44.2%), Dysmenorrhea (35.7%) followed by Scanty

bleeding (4.2%). Two cases (2.8%) with frequent menstrual bleeding were also present.

Of the 70 patients, 54 cases (77.1%) were multiparous while 10 cases (14.3%) were nulliparous.

On examination, as per BMI 65.7% women were normal weight while 30% and 4.3% were overweight and obese respectively.

On USG examination, fibroid was reported in 27.1% cases while 21.4% and 12.9% reported polyp and endometrial hyperplasia respectively. Adenomyosis was reported in 17.1% cases Table 1.

**Table 1:** Distribution of cases as per USG findings

USG Findings	N	%
Fibroid*	19	27.1
Polyp	15	21.4
Hyperplasia	9	12.9
Adenomyosis	12	17.1

\*I/M-8, SM-2, SS-9

Abnormal findings were seen in 54 patients (77.1%), while in the remaining 16 patients (22.9%), no abnormality was detected (negative hysteroscopic view). Majority of the cases had endometrial polyp (45.7% cases), followed by Endometrial hyperplasia (22.9%) and submucosal fibroids (2.9%). There were also 3 cases (4.3%) with atrophic endometrium and 1 case (1.4%) of endometrial carcinoma (Table 2 and Fig. 1).

**Table 2:** Distribution of cases as per hysteroscopic findings

Hysteroscopic Findings	N	%
Normal	16	22.9
Polyp	32	45.7
Fibroid	2	2.9
Hyperplasia	16	22.9
Endometrial Carcinoma	1	1.4
Atrophic endometrium	3	4.3

**Distribution of cases as per Histopathology findings**

Of the 70 cases, 20 (28.5%) were proliferative endometrium while 11 (15.7%) were secretory endometrium on histopathology. The most common abnormality observed was polyp (24.2% cases) (Fig. 1 ), followed by endometrial Hyperplasia (12.9% each) and endometrial carcinoma (4.2%) (Table 3 and Fig. 2).

**Table 3:** Distribution of cases as per histopathology findings

Histopathological Diagnosis	N	%
Proliferative endometrium	20	28.5
Secretory endometrium	11	15.7
Polyp	17	24.2
Hyperplasia without atypia	8	11.4
Hyperplasia with atypia	1	1.4
Endometrial carcinoma	3	4.2
Abnormal endometrium s/o hormonal effect	10	14.2



**Fig. 1:** Hysteroscopy-endometrial polyp arising from fundus of uterus.



**Fig. 2:** Hysteroscopy-irregular growth, friable tissue with ulceration-endometrial carcinoma.

**Table 4:** Correlation of hysteroscopy findings and histopathology reports

Hysteroscopic Findings	Histopathological Diagnosis							Total
	A	B	C	D	E	F	G	
Atrophic endometrium	0	0	1	0	1	1	0	3
Carcinoma	0	1	0	0	0	0	0	1
Fibroid	0	0	1	0	0	0	1	2
Hyperplasia	3	2	3	1	0	4	3	16
Polyp	4	0	2	0	16	7	3	32
Normal	3	0	1	0	0	8	4	16
<b>Total</b>	<b>10</b>	<b>3</b>	<b>8</b>	<b>1</b>	<b>17</b>	<b>20</b>	<b>11</b>	<b>70</b>

A- Endometrium hormonal effect, B- Carcinoma, C- Hyperplasia without atypia, D- Hyperplasia with atypia, E- Polyp, F- Proliferative endometrium, G- Secretory endometrium

Table 4 showed the association of hysteroscopy and histopathology findings. Overall agreement between the hysteroscopy and histopathology diagnosis for pathological findings was 67% with sensitivity, specificity, PPV and NPV as 90%, 39%, 65% and 75% respectively.

The sensitivity, specificity, PPV and NPV of hysteroscopy to diagnose polyp was 94.1%, 69.8%, 50% and 97.4% respectively with overall accuracy of 75.7%.

The sensitivity, specificity, PPV and NPV of hysteroscopy to diagnose hyperplasia was 50%, 80.6%, 25% and 92.6% respectively with overall accuracy of 77.1%.

The sensitivity, specificity, PPV and NPV of hysteroscopy to diagnose carcinoma was 33.3%, 100%, 100% and 97.1% respectively with overall accuracy of 97.1%.

AUB is a common gynecological disorder seen in reproductive age women with a higher incidence in perimenopausal women. In the present study, maximum age incidence was between 41 and 50 years (34.3%). The youngest patient in this study was 26 years old and the oldest was 53 years old. Panda et al. found that maximum age incidence was between 35–45 years.<sup>5</sup> In Gianninoto's series, commonest incidence was between 30 and 45 years.<sup>6</sup> Trotsenburg reported maximum age incidence between 41–50 years. Similar observations were also made by other authors.<sup>7</sup>

### Clinical Presentation

Out of total 70 patients, 55.7% presented with heavy menstrual bleeding. Other presentations were intermenstrual bleeding (44.2%), Dysmenorrhoea (35.7%) followed by Scanty bleeding (4.2%). Two cases (2.8%) with frequent menstrual bleeding were also present. Pallor was present in 34.3% cases.

Panda et al.<sup>5</sup> (1999) series had 60% cases of menorrhagia followed by Polymenorrhagia and Metrorrhagia. Goyal et al.<sup>8</sup> (2015) in their study also observed menorrhagia as the foremost presenting symptom in the study population (58%) which was followed by menometrorrhagia and metrorrhagia. In a study, Chhikara et al.<sup>9</sup> (2016) assessed accuracy of diagnostic hysteroscopy with that of the histopathology reports of the obtained endometrial samples. The commonest symptom with which the patients presented was menorrhagia (40%) which was followed by metrorrhagia (38%) and polymenorrhagia (12%). Similar findings were also observed by Gita et al. (2011)<sup>10</sup> et al. and Sunitha et al. (2013).<sup>11</sup> Garg et al.<sup>12</sup> (2017) in their study of 60

cases, observed menorrhagia in 43% of the cases ( $n = 26$ ) while polymenorrhagia was seen in 23.3s ( $n = 14$ ). Sinha et al.<sup>13</sup> (2018) observed 66.1% AUB case being presented as menorrhagia, 30.4% as polymenorrhagia and 3.6% as intermenstrual bleeding.

### Hysteroscopy Findings

Hysteroscopy permits direct visualization of the uterine cavity and helps in diagnosis of intracavitary abnormalities in AUB. Abnormal findings were seen in 54 patients (77.1%), while in the remaining 16 patients (22.9%), no abnormality was detected (negative hysteroscopic view) (Table 5).

**Table 5:** Hysteroscopy findings

Author	Abnormal hysteroscopy (%)
Sunitha et al. <sup>11</sup>	46.0
Panda et al. <sup>5</sup>	53.4
Sinha et al. <sup>13</sup>	53.6
Wamsteker et al. <sup>14</sup>	58.5
Gianninoto et al. <sup>6</sup>	75.0
Present Study	77.1

### Etiology of Abnormal Uterine Bleeding

Majority of the cases had endometrial polyp (45.7% cases), followed by Endometrial hyperplasia (22.9%) and submucosal fibroids (2.9%). There were also 3 cases (4.3%) with atrophic endometrium and 1 case (1.4%) of endometrial carcinoma.

Majority of the studies on AUB reported polyps as the most common etiology with incidence ranging from 9.1% in Mencaglia L et al.<sup>1</sup> to 45.9% in Pasqualotto et al.<sup>16</sup> series. Panda et al.<sup>5</sup> found polyp as the most common etiology for DUB (39%) followed by endometrial hyperplasia (28.3%). Garg G et al.<sup>12</sup> in their study of 60 cases found endometrial polyps as the commonest cause of AUB, comprising 26.67% of total cases, followed by myomas (23.33%) and endometrial hyperplasia (11.7%). Wamsteker et al.<sup>14</sup> found endometrial polyp in 19%, endometrial hyperplasia in 12.2% and fibroid in 7.8% cases.

### Diagnostic Accuracy of Hysteroscopy

Overall agreement between the hysteroscopy and histopathology diagnosis for pathological findings was 67% with sensitivity, specificity, PPV and NPV as 90%, 39%, 65% and 75% respectively.

Garuti et al.<sup>17</sup> aimed to estimate accuracy of hysteroscopy in predicting endometrial pathology in cases of AUB. Hysteroscopy showed sensitivity,

specificity, NPV, and PPV of 94.2%, 88.8%, 96.3%, and 83.1%, respectively, in predicting abnormal or normal histopathology of endometrium. Dinić et al.<sup>19</sup> observed sensitivity of hysteroscopy in the detection of intrauterine pathology as 100%, while the specificity was 91%, the PPV was 93% and the NPV was 100%. Chaudhari et al.<sup>20</sup> studied 98 females with AUB. The sensitivity, specificity, PPV, NPV and accuracy of diagnostic hysteroscopy in the study was 98.3%, 80.5%, 89.7%, 96.7% and 91.8% respectively. Chhikara et al.<sup>9</sup> observed that the combined sensitivity and specificity of hysteroscopy for diagnosis of intrauterine pathologies was 84% and 72% respectively. Sinha et al.<sup>13</sup> in their study observed that the overall agreement between the two modalities as 62.5%. For pathological abnormalities overall, hysteroscopy had sensitivity, specificity, PPV and NPV values of 78.3%, 63.6%, 60% and 80.8% respectively.

In present study, the sensitivity, specificity, PPV and NPV of Hysteroscopy to diagnose polyp was 94.1%, 69.8%, 50% and 97.4% respectively with overall accuracy of 75.7%. The sensitivity, specificity, PPV and NPV of Hysteroscopy to diagnose hyperplasia was 50%, 80.6%, 25% and 92.6% respectively with overall accuracy of 77.1%. The sensitivity, specificity, PPV and NPV of Hysteroscopy to diagnose carcinoma was 33.3%, 100%, 100% and 97.1% respectively with overall accuracy of 97.1%. The present study findings showed that hysteroscopy is a valuable tool for diagnosing endometrial pathologies in cases of abnormal uterine bleeding. Though hysteroscopy is somewhat less sensitive diagnostic modality for endometrial hyperplasia and carcinoma than polyps, diagnostic accuracy is still very high.

Madan and Al-Jufairi et al.<sup>21</sup> reported diagnostic efficacy of hysteroscopy to be more specific for endometrial hyperplasia (85%) and endometrial carcinoma (99.5%); however, the sensitivity of hysteroscopy for diagnosing endometrial cancer was 40% and 30% for endometrial hyperplasia. These results were in accordance with present study where specificity was high (80.6% and 100%) while sensitivity was low (50% and 33.3%) for hyperplasia and carcinoma. Garuti et al.<sup>18</sup> in their study also observed that hysteroscopy showed highest accuracy in diagnosing endometrial polyps (i.e. sensitivity of 95.3%, specificity 95.4%, PPV 98.9% and NPV 81.7%) while sensitivity was relatively low for hyperplasia and carcinoma. deWit and Vleugels observed that endometrial hyperplasia was confirmed only in less than half of the cases by hysteroscopy while among seven proven cases

endometrial carcinoma suspected in two cases. In present study too, carcinoma was suspected on hysteroscopic view in only 1 of the 3 proven cases. Chhikara et al.<sup>9</sup> in a similar study, observed the sensitivity and specificity of hysteroscopy for endometrial hyperplasia and 66.6% and 90.2% respectively, while for endometrial polyps, they were 80% and 97.5% respectively.

## Conclusion

The present prospective study correlating hysteroscopic findings with histopathology of endometrium concluded that the accuracy of hysteroscopy in identification of polyp, endometrial hyperplasia and endometrial carcinoma was 97.1%, 77.1%, 75.7% respectively and overall accuracy of hysteroscopy in diagnosing pathology behind abnormal uterine bleeding was 67%. Hence, hysteroscopy can serve as a useful adjunct in diagnosis of etiology of abnormal uterine bleeding, but histopathology will continue to be superior and gold standard for its diagnosis.

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