

# Role of Hysteroscopy in Clinicopathologic Evaluation of Abnormal Uterine Bleeding

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## ABSTRACT

**Background:** Hysteroscopy has been proved to have diagnostic accuracy in abnormal uterine bleeding (AUB) 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. The reliability of hysteroscopy as a single procedure to manage AUB has not been explored so far. This study was carried out to evaluate the validity of hysteroscopy in the diagnosis of AUB.

**Materials and methods:** This cross-sectional study was carried out among 50 patients diagnosed with AUB. Hysteroscopy was performed along with curettage and the tissue obtained was sent for histopathological examination. All the participants underwent diagnostic hysteroscopy and hysteroscopic-guided curettage. The hysteroscopic findings were correlated with histopathological findings.

**Results:** We observed that hysteroscopy was an effective diagnostic tool for detecting endometrial hyperplasia, with a specificity of 93% and negative predictive value of 90.1%. As far as polyps were concerned, we observed that hysteroscopy was an effective screening and diagnostic tool of detecting polyps, with a sensitivity of 93.3% and specificity of 82.8%.

**Conclusion:** Because the histopathological findings significantly correlated with the hysteroscopy findings, we are of the opinion that hysteroscopy may as well replace the traditional dilatation and curettage and at the same time replace invasive procedures for endometrial sampling.

**Keywords:** Abnormal uterine bleeding, Curettage, Endometrial hyperplasia, Endometrial polyps, Histopathology, Hysteroscopy.

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## INTRODUCTION

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.<sup>1</sup> 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.<sup>2</sup> 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.<sup>3</sup> 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.<sup>4</sup> 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, for example, curettage, thereby completing the treatment of AUB in a single

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sitting. 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 hystero-pathology in order to evaluate hysteroscopy as a screening tool for diagnosis of AUB.<sup>5</sup>

## OBJECTIVE

This study was carried out to evaluate the validity of hysteroscopy in the diagnosis of AUB.

## MATERIALS AND METHODS

### Study Setting and Participants

This cross sectional study was carried out among women of reproductive age group, who were referred for evaluation of AUB in our tertiary care hospital. The study was carried out for a period of

6 months. A total of 50 patients with AUB participated in the study were taken up for the study.

**Inclusion Criteria**

- Age between 20 years and 49 years
- All cases of AUB.

**Exclusion Criteria**

- Pregnancy/lactation
- Patients warranting emergency management of AUB
- Presence of severe iron deficiency anemia.

**Ethical Approval and Inform Consent**

Approval was obtained from Institutional Ethics Committee prior to the commencement of the study. All the patients were explained in detail about the study and informed consent was obtained prior to the commencement of data collection.

**Data Collection**

The procedure was undertaken in the post menstrual period. Hysteroscopy was performed along with curettage and the tissue obtained was sent for histopathological examination. The distending medium used in the study was normal saline. All the participants underwent diagnostic, hysteroscopic-guided curettage. The hyseroscopic findings were correlated with histopathological findings. The background characteristics of the study participants were obtained from the medical records.

**Data Analysis**

Data were entered and analyzed using SPSS version 21. The findings of the hysteroscopy and histopathology were tabulated as percentages. Chi-square test was used to compare the statistical significance between hysteroscopy and histopathology findings. A *p* value <0.05 was considered as statistically significant.

**RESULTS**

This study was carried among 50 women of reproductive age group who were referred with AUB. Majority of the participants belong to 36–44 years (48%). The most common presenting symptom among the study participants was menorrhagia (54%). Majority of the participants were suffering from AUB for <6 months (54%). Majority of the participants were multiparous (86%) (Table 1).

It was observed that according to hysteroscopy, majority of the participants had a normal endometrium (48%). According to histopathological diagnosis, the most common finding was proliferative endometrium (34%) followed by polyps (28%) (Table 2). The distribution of endometrial thickness is depicted in Figure 1. It has been observed that majority of the participants had an endometrial thickness >9 mm (52%).

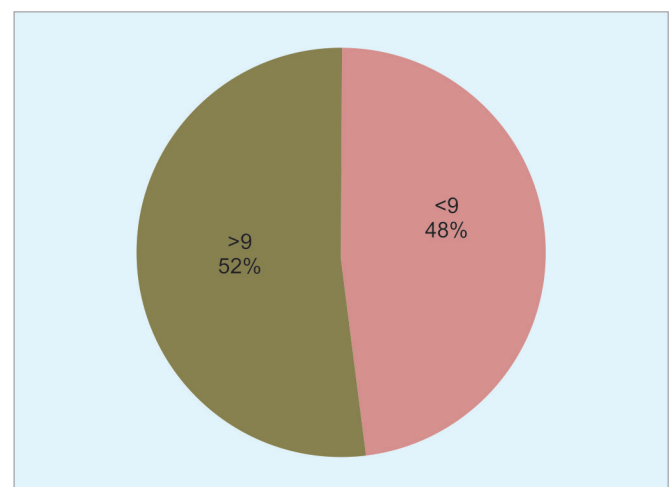
We analyzed the statistical significance by comparing the hysteroscopic findings with histopathology findings among the study participants. It was observed that among those who reported hyperplasia, in hysteroscopy, a majority of the histopathological findings confirmed to simple hyperplasia (50%) while 33.3% showed proliferative endometrium. Similarly, majority of the patients who were diagnosed as polyps in hysteroscopy were confirmed as

**Table 1:** Background characteristics

S. no.	Characteristics	Frequency (n = 50)	Percentage
1	Age (in years)		
	≤35	21	42
	36–44	24	48
	≥45	5	10
2	Type of menstrual problem		
	Menorrhagia	27	54
	Polymenorrhea	13	26
	Metrorrhagia	6	12
	PNB	4	8
3	Duration of symptoms (in months)		
	<6	27	54
	6–12	17	34
	>12	6	12
4	Gravida status		
	Nulliparous	7	14
	Multiparous	43	86

**Table 2:** Clinicopathological findings in abnormal uterine bleeding

S. no.	Findings	Frequency (n = 50)	Percentage
1	Hysteroscopy		
	Normal	24	48
	Endometrial hyperplasia	6	12
	Polyp	20	40
2	Histopathology		
	Proliferative	17	34
	Simple hyperplasia	7	14
	Adenomatous	1	2
	Polyp	14	28
	Endometritis	1	2
	Atrophy	1	2
Irregular ripening	9	18	



**Fig. 1:** Distribution of endometrial thickness among the study participants

**Table 3:** Correlation between hysteroscopy and histopathology findings

S. no.	Hysteroscopy findings	N	Histopathology findings (n) (%)					Chi-square	p value	
			Proliferative	Simple hyperplasia	Benign (adenoma/polyp)	Endometritis	Atrophy			Irregular ripening
1	Normal	24	12 (50)	4 (16.7)	0 (0)	1 (4.2)	1 (4.2)	6 (25)	44.7	0.0001
2	Hyperplasia	6	2 (33.3)	3 (50)	1 (16.7)	0 (0)	0 (0)	0 (0)		
3	Polyp	20	3 (15)	0 (0)	14 (70)	0 (0)	0 (0)	3 (15)		

**Table 4:** Validity of hysteroscopy as a screening tool for detecting endometrial hyperplasia

Hysteroscopy	Histopathology		Total
	Present	Absent	
Hyperplasia present	3	3	6
Hyperplasia absent	4	40	44
Total	7	43	50
Sensitivity = 42.8%	Specificity = 93%	Positive predictive value = 50%	Negative predictive value = 90.1%

**Table 5:** Validity of hysteroscopy as a screening tool for detecting polyps

Hysteroscopy	Histopathology		Total
	Present	Absent	
Polyp present	14	6	20
Polyp absent	1	29	30
Total	15	35	50
Sensitivity = 93.3%	Specificity = 82.8%	Positive predictive value = 70%	Negative predictive value = 96.6%

polyps by histopathology in 70% of the participants. The observed findings were statistically significant (Chi-square = 44.7;  $p$  value < 0.0001) (Table 3).

We explored the validity of hysteroscopy as a screening/ diagnostic tool for endometrial hyperplasia and polyps. We observed that hysteroscopy was an effective diagnostic tool for detecting endometrial hyperplasia, with a specificity of 93% and a negative predictive value of 90.1% (Table 4). As far as polyps were concerned, we observed that hysteroscopy was an effective screening and diagnostic tool of detecting polyps, with a sensitivity of 93.3% and specificity of 82.8% (Table 5).

The receiver operator characteristic curve (ROC) curves for hyperplasia and polyps are depicted in Figures 2 and 3. It may be observed that the ROC curve representing polyps are indicative of the validity of hysteroscopy as a screening tool. The area under the curve for endometrial hyperplasia was 0.679, while the same for endometrial polyp was 0.917. Therefore, the diagnostic ability of hysteroscopy to detect endometrial hyperplasia is 67.9%, while the same for endometrial polyps is 91.7%.

## DISCUSSION

Hysteroscopy is a valuable, simple, low-risk technique that allows an adequate exploration of the uterine cavity under visual control. It ensures speed and safety with diagnosis and treatment. The results are immediately available. In patients with AUB, hysteroscopy provides the possibility of immediate diagnosis and if necessary provides scope for sampling the tissue. In addition, hysteroscopy procedure may be converted into curettage for immediate relief of AUB. Lesions such as endometrial polyps and pedunculated fibro myomas can also be removed under direct vision with the

hysteroscope, thereby completing the surgical procedure on table. In addition, a diagnosis of endometrial atrophy is best made using hysteroscopy. This is because curettage does not always yield in a positive diagnosis of atrophy and may only worsen the situation. The other advantages of using hysteroscopy include the ease of procedure in patients with intra uterine synechia. Hysteroscopy can also be used detect the presence, extension, and nature of these synechia, and can also be used remove these under visual control.

Majority of the participants in our study belong to 36–45 years, which was similar to study done by El-Gamal et al.<sup>5</sup> in our study majority of the participants complained of menorrhagia, which was also similar to the findings of El-Gamal et al.<sup>5</sup> Our study has demonstrated that hysteroscopy significantly correlated with histopathological findings in terms of identifying endometrial hyperplasia and polyps. The validity of hysteroscopy as a screening tool in our study significantly proved to be effective as a diagnostic tool for both hyperplasia and polyps (specificity 93% for hyperplasia and 82.8% for polyps). Moreover, it is also an effective screening tool for detecting the presence of polyps (sensitivity 93.3%). In the study done by El-Gamal et al., similar findings were observed in terms of high sensitivity 91.9% and specificity 86.5% for detecting intra uterine lesions, including endometrial polyps and endometrial hyperplasia, similar to our study.<sup>5</sup> In another study done by Guin et al., a majority of the participants had symptoms similar to our study (menorrhagia) and endometrial hyperplasia and polyps were the most common findings with hysteroscopy, similar to our study.<sup>1</sup> In another study done by Audimulapu et al., menorrhagia was the most common symptom (42%) similar to our study findings. Moreover, the sensitivity and specificity of hysteroscopy was 74.3% and 93.3%, which was similar to our study findings.<sup>6</sup>

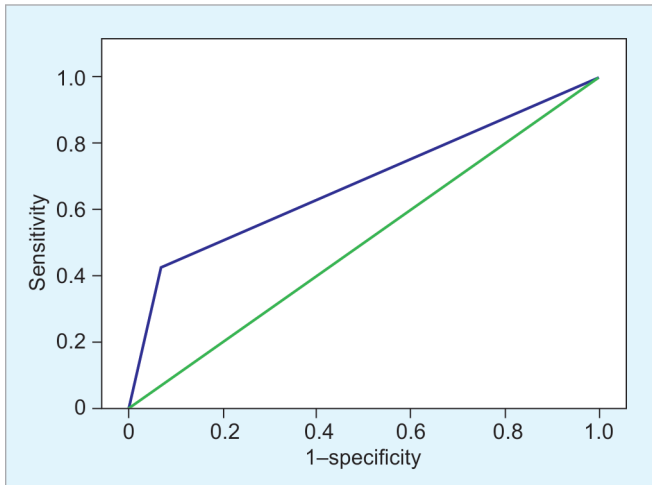


Fig. 2: ROC curve for endometrial hyperplasia

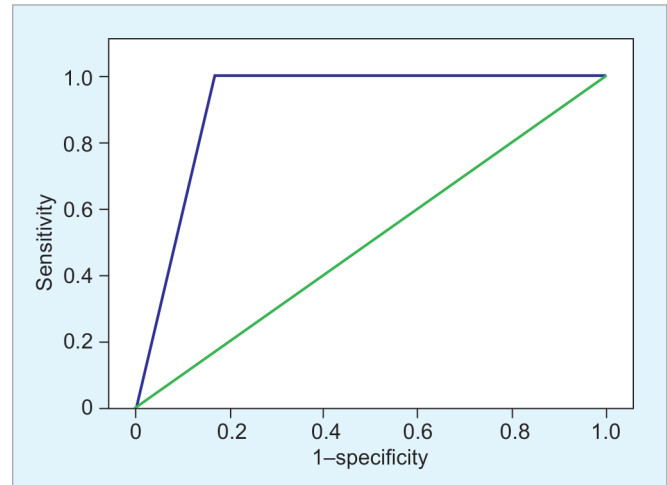


Fig. 3: ROC curve for endometrial polyps

Our study was carried out to the objective of evaluating the role of hysteroscopy as the diagnostic/screening tool for evaluation of AUB. Apart from 48.6% of the patients who had a normal hysteroscopy findings, the other major findings of the study were endometrial hyperplasia and uterine polyps. As far as endometrial hyperplasia was concerned, our study demonstrated that hysteroscopy is a better diagnostic tool compared to a screening tool because of high specificity and high negative predictive value. This is beneficial for the evaluating physicians because hysteroscopy for evaluating hyperplasia minimizes the burden on the invasive procedures, as it also can be used as a confirmatory test for the management. As far as endometrial polyps are concerned, hysteroscopy has proved to be a very effective screening and diagnostic tool because of increased sensitivity and specificity values. This study has also emphasized that hysteroscopy for managing endometrial polyps is the best noninvasive technique because it can also be further on converted into a surgical procedure for excision of these pedunculated polyps.

### CONCLUSION

This study has emphasized on the clinical evaluation of AUB using hysteroscopy. In this study, we observed that hysteroscopy is effective diagnostic tool for detecting key abnormalities in the endometrium, namely endometrial hyperplasia and pedunculated polyps. Because the histopathological findings significantly correlated with the hysteroscopy findings, we are of the opinion that hysteroscopy may as well replace the traditional dilatation

and curettage and at the same time replace invasive procedures for endometrial sampling. Moreover, the feasibility of converting hysteroscopy procedure into therapeutic procedure gives ample scope for the gynecologist to evaluate the problem of AUB in detail and explore the possible mechanisms of managing AUB in a noninvasive method.

### REFERENCES

1. Guin G, Sandhu SK, Lele A, et al. Hysteroscopy in evaluation of abnormal uterine bleeding. *J Obstet Gynaecol India* 2011;61(5): 546–549. DOI: 10.1007/s13224-011-0088-6.
2. Whitaker L, Critchley HOD. Abnormal Uterine Bleeding. *Best Pract Res Clin Obstet Gynaecol* 2016;34:54–65. DOI: 10.1016/j.bpobgyn.2015.11.012.
3. Patil SG, Bhute SB, Inamdar SA, et al. Role of diagnostic hysteroscopy in abnormal uterine bleeding and its histopathologic correlation. *J Gynaecol Endosc Surg* 2009;1(2):98–104. DOI: 10.4103/0974-1216.71617.
4. Loiacono RM, Trojano G, Del Gaudio N, et al. Hysteroscopy as a valid tool for endometrial pathology in patients with postmenopausal bleeding or asymptomatic patients with thickened endometrium: hysteroscopic and histological results. *Gynecol Obstet Invest* 2015;79(3):210–216. DOI: 10.1159/000371758.
5. El-Gamal HH, Abd-El-Salam MM, Ghanem RM, et al. Role of diagnostic hysteroscopy and histopathology in evaluation of abnormal uterine bleeding. *Egypt J Hosp Med* 2018;72(7):4765–4771.
6. Audimulapu S, Sudeepti M. A comparative diagnostic evaluation of hysteroscopy, transvaginal ultrasonography and histopathological examination in 50 cases of abnormal uterine bleeding. *IAIM* 2017;4(8):1–11.