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## Shilpa Nabapure

Department of Obstetrics &  
Gynecology, S.S Institute of  
Medical Sciences & Research  
Centre, Davangere, Karnataka,  
India

## Nachiketha SV

Department of Obstetrics &  
Gynecology, Karnataka Institute  
of Medical Sciences, Hubli,  
Karnataka, India

## Prema Prabhudeva

Department of Obstetrics &  
Gynecology, S.S Institute of  
Medical Sciences & Research  
Centre, Davangere, Karnataka,  
India

## Corresponding Author:

### Shilpa Nabapure

Department of Obstetrics &  
Gynecology, S.S Institute of  
Medical Sciences & Research  
Centre, Davangere, Karnataka,  
India

## Role of hysteroscopy in evaluation of patients with abnormal uterine bleeding

Shilpa Nabapure, Nachiketha SV and Prema Prabhudeva

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### Abstract

**Background and objectives:** Hysteroscopy is now accepted as the gold standard in evaluation of uterine cavity in patients with AUB. This study was planned to evaluate the role of hysteroscopy in diagnosis of patients with AUB.

**Methodology:** This is a cross-sectional study done in the Department of Obstetrics and Gynaecology, Karnataka Institute of Medical Sciences, Hubli. A total of 50 women who presented with complaints of abnormal uterine bleeding from December 2012 to November 2013 were studied. These women were subjected to hysteroscopy and histopathological examination.

**Results:** The mean age was  $39.86 \pm 8.29$  years. 60% of women complained of menorrhagia and postmenopausal bleeding was noted in 8% of the women. Endometrium hyperplasia was the commonest abnormality (16%) on hysteroscopy followed by endometrium polyp (12%). Histopathological examination showed endometrium hyperplasia in 16% and endometrium atrophy in 8%. The sensitivity and diagnostic accuracy of hysteroscopy in predicting accurate diagnosis was 88.24% and 84% respectively with 'good' agreement between hysteroscopy and histopathology (Kappa value -0.701).

**Conclusion:** Hysteroscopy is highly sensitive diagnostic procedure and provides useful information about the uterine cavity. Hence it may be ideal method for the evaluation of patients with abnormal uterine bleeding.

**Keywords:** Abnormal uterine bleeding, dilatation and curettage, hysteroscopy

### Introduction

Abnormal uterine bleeding (AUB) is one of the most common complaints with which a patient presents to a Gynecologist. Virtually every women will at some point in her lifetime experience episodes of bleeding that will be perceived as abnormal.

Dysfunctional uterine bleeding (DUB) has been defined as a state of abnormal uterine bleeding without any clinically detectable organic pelvic pathology (Kistner). It is a diagnosis of exclusion, and the clinician must proceed through logical stepwise evaluation to rule out all other causes of AUB. In most cases, DUB is associated with anovulation.

Traditionally Dilatation and Curettage (D & C) and Ultrasonography (USG) were the most common investigations employed in the evaluation of the causes of AUB. D & C has long been the diagnostic gold standard for abnormal uterine bleeding. However, only 70-80% of the endometrium can be curetted. Polyps and sub mucous fibroids are frequently undetected by curettage alone<sup>[1]</sup>. Ultrasonography clearly depicts the contour and the status of the ovary, but fails to provide adequate information regarding the endometrium. Hysteroscopy has ushered a new era in the evaluation of abnormal uterine bleeding. By direct visualization of the uterine cavity it is able to pin point the etiology in majority of the cases. It can detect endometrial hyperplasia accurately and aids in the early diagnosis of endometrial carcinoma and uterine polyps.

The judicious use of hysteroscopy to manage this medical entity adds a new dimension in handling this often perplexing problem. This study has been taken up to analyze the place of hysteroscopy in the evaluation of AUB in terms of accuracy of hysteroscopic findings and the contribution of the procedure to clinical diagnosis. It also aims to correlate hysteroscopic findings with histopathological results.

### Methodology

A cross sectional study was conducted on 50 women who presented to the Department of Obstetrics and Gynecology, Karnataka Institute of Medical Sciences, Hubli from December

2012 to November 2013 with complaints of abnormal uterine bleeding in the Women reporting with complaints of abnormal uterine bleeding at were selected for the study. Based on the 80% of average past three years hospital statistics the sample size of 50 was determined.

**Inclusion criteria:** Pre and post-menopausal women reporting with abnormal uterine bleeding.

**Exclusion criteria:** Women with abnormal uterine bleeding due to injuries of the vulva and vagina, pathology of the cervix and the ovaries and those not willing to participate in the study.

The study was approved by the Ethical and Research Committee, Karnataka Institute of Medical Sciences, Hubli and informed Consent was taken from all the participants.

The women were interviewed and data such as demographic characteristics, relevant history and obstetric history was including complaints, obstetric, sexual, menstrual, medical and pharmacological history was documented and clinical examination was performed and the findings were noted on a pre-designed and pretested proforma.

Hysteroscopy was done in the hospital as an inpatient procedure. Under short GA, a bimanual pelvic examination was done. After introducing Sim's speculum, the anterior lip of the cervix was caught with vulsellum. After measuring the length of the uterine cavity, the internal os was dilated with Hegar's dilator (whenever necessary). The hysteroscope was introduced into the cervical canal under vision. The uterine cavity was distended with 0.9% normal saline and examined. Uterine cavity was visualized. Patients with normal uterine cavities without any questionable areas were labeled as "Negative Hysteroscopic View" when the following 3 criteria were met: 1. Good visualization of entire uterine cavity; 2. No structural abnormalities in the cavity; 3. A uniformly thin, homogenous appearing endometrium without variation in thickness. Any abnormal/ pathological areas were visualized and the same was taken as biopsy and sent for histopathological analysis.

The data was analyzed using Microsoft Excel Worksheet. The categorical data was expressed as rates, ratios and proportions and continuous data was expressed as mean  $\pm$  standard deviation (SD). The diagnostic accuracy of hysteroscopy in comparison to histopathology was calculated by determining sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV). Kappa statistics was used to determine the agreement between hysteroscopy and histopathology. A "p value" of less than or equal to 0.05 at 95% confidence interval was considered as statistically significant.

## Results

In the present study, the mean age of the patients was found to be  $39.86 \pm 8.29$  years (Table 1). Clinically, 60% of the women presented with menorrhagia followed by irregular cycles (18%), polymenorrhagia (16%), postmenopausal bleeding (8%), menometrorrhagia (6%), oligomenorrhagia (6%) and hypomenorrhoea (4%). 48% of the women had duration of symptoms between six months to one year and 40% had duration of less than six months; only 12% of the women reported symptoms for more than one year (Table 2 & 3).

On hysteroscopy, 60% of the women had normal endometrium. 16% had endometrial hyperplasia, 12% were diagnosed to have endometrial polyp, 6% endometrial atrophy and 6% sub mucous myoma. On histopathology, 17 women had abnormal findings. Of these, 15 were abnormal and 2 were normal on hysteroscopy (Table 4).

The sensitivity of hysteroscopy in predicting accurate diagnosis was 88.24% and diagnostic accuracy was found to be 84%. The Kappa statistics showed with 'good' agreement between hysteroscopy and histopathology (Kappa value - 0.701). In diagnosing abnormal uterine bleeding, hysteroscopy had sensitivity, specificity, PPV, NPV, Diagnostic accuracy of 88.24%, 84.85%, 75%, 93.33%, 84% respectively (Table 5).

The overall correlation of hysteroscopy findings with histopathology was found to be 76%. Perfect correlation (100%) was noted with simple hyperplasia, submucousmyoma, endometrial polyp and cystoglandular hyperplasia.

**Table 1:** Age distribution in the study population

Age group (Years)	Distribution (n=50)	
	Number	Percentage
21 to 30	9	18.00
31 to 40	17	34.00
41 to 50	21	42.00
51 to 60	2	4.00
61 to 70	1	2.00
Total	50	100.00

**Table 2:** Duration of symptoms among the study population

Duration	Distribution (n=50)	
	Number	Percentage
< 6 months	20	40.00
> 6 months to 1 year	24	48.00
> 1 year	6	12.00
Total	50	100.00

**Table 3:** Chief complaints of the study population

Presentation	Distribution (n=50)	
	Number	Percentage
Menorrhagia	30	60.00
Polymenorrhagia	8	16.00
Oligomenorrhagia	3	6.00
Menometrorrhagia	3	6.00
Hypomenorrhoea	2	4.00
Irregular cycles	9	18.00
Postmenopausal bleeding	4	8.00

**Table 4:** Hysteroscopy findings among the study subjects

Findings	Distribution (n=50)	
	Number	Percentage
Normal Endometrium (p+s)	30	60.00
Proliferative endometrium(p)	14	28.00
Secretory endometrium(s)	16	32.00
E. Polyp	6	12.00
E. Atrophy	3	6.00
E. Hyperplasia	8	16.00
S. Myoma	3	6.00
Total	50	100.00

**Table 5:** Histopathology findings among the study subjects

Findings	Distribution (n=50)	
	Number	Percentage
Normal Endometrium (p+s)	33	66.00
Proliferative endometrium(p)	18	36.00
Secretory endometrium(s)	15	30.00
Endometrial atrophy	4	8.00
Endometrial polyp	2	4.00
Endometritis	1	2.00
Endometrial hyperplasia	8	16.00
Submucous Myoma	2	4.00
Total	50	100.00

**Table 6:** Accuracy of hysteroscopy considering histopathology as reference standard among the study population

Hysteroscopy	Histopathology		Total
	Abnormal	Normal	
Abnormal	15	5	20
Normal	2	28	30
Total	17	33	50
Sensitivity	Specificity	PPV	NPV
88.24	84.85	75.00	93.33
		p=	<0.001
Positive likelihood ratio	5.823529		
Negative likelihood ratio	0.138655		
Diagnostic accuracy	86		
Odds Ratio	1.294118		
Kappa	0.701		
SE of kappa	0.104		
95% confidence interval	0.498 to 0.904		
The strength of agreement	'good'.		

## Discussion

Abnormal uterine bleeding is one of the commonest conditions for which patients seek advice in the gynecological out-patient department. Hysteroscopy, either diagnostic or operative, with endometrial sampling is gaining acceptability over other diagnostic techniques and it can be performed either in the office or operating room. The ability to observe the entire endometrium provides accuracy and precision in sampling. It not only offers a quick, safe and accurate diagnosis, but also is curative in cases of fibroid polyps, intrauterine adhesions, menorrhagia and lost IUCD. This study was designed to assess the feasibility of hysteroscopy for identifying abnormal findings in uterine cavities in women presenting with abnormal uterine bleeding<sup>[2]</sup>.

In the present study, the mean age of the women was 39.86 ± 8.29 years. These findings suggest that, there is higher frequency of abnormal uterine bleeding in fourth and fifth decade. These findings were consistent with a recent study from Andhra Pradesh by Sunitha C *et al.* (2013) where authors reported 40% of the women between 30 to 39 years and 36% in the age range of 40 to 49 years<sup>[3]</sup>.

The clinical presentation observed in the present study was close to a study from Andhra Pradesh by Sunitha C *et al.* (2013) which reported majority of the patients with menorrhagia (46%) followed by post-menopausal bleeding (32%) while polymenorrhagia and metrorrhagia were present in 12% and 10% of the women.<sup>3</sup> Panda's series<sup>4</sup> had 60% cases of menorrhagia followed by polymenorrhagia and metrorrhagia.

In the present study hysteroscopy findings revealed 60% of the women with normal endometrium. The rate of normal findings observed in the present study was consistent with a study from Andhra Pradesh by Sunitha C *et al.* (2013) where authors noted 54% of the patients with normal findings<sup>[3]</sup>.

In this study most of the women were diagnosed to have endometrial hyperplasia (16%) followed by endometrial polyp (12%), endometrial atrophy (6%) and submucous myoma (6%). Similar diagnosis pattern was noted in a study from Andhra Pradesh by Sunitha C *et al.* (2013) where most common abnormality was endometrial hyperplasia (20%)<sup>[3]</sup>.

The sensitivity of hysteroscopy in predicting accurate diagnosis was 88.24% with specificity of 84.85%, PPV of 75%, NPV of 93.33% and diagnostic accuracy was found to be 84%. The Kappa statistics showed with good agreement between hysteroscopy and histopathology Kappa=0.701; Standard error of Kappa=0.104 (95% CI 0.498-0.904). Recent study by

Varadarajan R *et al.*<sup>[5]</sup> (2013) from Bangalore, Karnataka reported 96% sensitivity of hysteroscopy. Another study by Trajkovic Dinic SP *et al.*<sup>[6]</sup> (2011) from Serbia indicated a high sensitivity and specificity of hysteroscopy in detection of intrauterine pathology (100% and 91%). The sensitivity and specificity observed in the present study is comparable with these studies in the literature.

Considering the fact that from the majority of studies from literature review it can be seen that sensitivity of hysteroscopy in the detection of intrauterine pathology exceeds 80%, we can say that the hysteroscopy is a valid diagnostic tool in detecting the cause of postmenopausal bleeding.

100% correlation of hysteroscopy and histopathology was noted with simple hyperplasia, Submucous myoma, Endometrial polyp and cystoglandular hyperplasia. A similar study from Mangalore by Nandan N *et al.*<sup>[7]</sup> (2013) also reported correlation between hysteroscopy findings and histopathological examination of endometrial curetting.

Overall the study has proved the utility of hysteroscopy in the diagnosis of various endometrial and intrauterine lesions, with higher accuracy. Thus hysteroscopy should be used as a first line diagnostic modality in patients complaining of abnormal uterine bleeding.

## Conclusion

Adequate diagnosis is of utmost importance for the selection of relevant treatment and management techniques of abnormal uterine bleeding so as to avoid unnecessary surgical procedures. Hysteroscopy is highly sensitive diagnostic procedure which not only provides useful information about the uterine cavity but also an ideal method for the evaluation of patients with abnormal uterine bleeding. Further, endometrial biopsy improves the diagnostic accuracy of hysteroscopy in detecting endometrial pathology.

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