

# Comparison of hysteroscopy and histopathology in diagnosing abnormal uterine bleeding: an experience from a tertiary care center of eastern India

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## ABSTRACT

**Background:** About one third of gynecological consultations are from abnormal uterine bleeding (AUB) in eastern India. In most of the cases, it remains as transient condition and cured by conservative medications but few of them require endometrial biopsy for definitive diagnosis to formulate treatment. **Objectives:** To find out the common uterine abnormality and to determine the validity and agreement of findings by hysteroscopy with histopathological findings. **Methods:** This observational study was conducted upon 150 women, who were selected consecutively from outpatient department of a tertiary care hospital of West Bengal from July, 2019 to December, 2019. Women with history of abnormal uterine bleeding for more than six months durations, and who required hysteroscopy directed endometrial tissue sampling for histopathological diagnosis comprised our study subjects. Hysteroscopy findings were compared to histopathological findings by means of sensitivity, specificity, positive predictive value, negative predictive value, and kappa. **Results:** Mean age of subjects was 39.68±6.19 years and commonest symptom and histopathology finding were menorrhagia (33.3%) and proliferative endometrium (25.3%) respectively. Endometrial thickness of 5-10 mm was the commonest (68.67%) by transvaginal sonography. The sensitivity, specificity, positive predictive value and negative predictive value were 96%, 53.8%, 90.9% and 77.8% respectively for detecting overall abnormal pathology by hysteroscopy in comparison to histopathology. Histopathological findings were comparable with hysteroscopy findings. **Conclusions:** For abnormal uterine bleeding, hysteroscopy can be a better tool for collecting proper sample for histopathological test while dilatation and curettage is a blind procedure. Accuracy in diagnosis helps to formulate better treatment protocol and to avoid unnecessary hysterectomies.

**Keywords:** Abnormal uterine bleeding, endometrial curettage, hysteroscopy, transvaginal sonography.

Abnormal uterine bleeding (AUB) means any deviation from the normal menstrual cycle in respect of regularity, frequency, volume, duration or amount of bleeding during or in between periods for at least a period of six months.<sup>1-3</sup> In hospitals, almost 30-40% of all gynecological consultations took place for abnormal uterine bleeding<sup>3-5</sup> and 30% of women suffered from this problem during their reproductive

life<sup>2</sup>. It is more common in perimenopausal and postmenopausal women. Quality of life also adversely affected by AUB.<sup>6</sup>

To describe abnormal uterine bleeding, FIGO introduced new classification system on the basis of etiology by the acronym PALM-COEIN e.g. Polyp, Adenomyosis, Leiomyoma, Malignancy and Coagulopathy, Ovulatory

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dysfunction, Endometrial, Iatrogenic, and yet not classified. PALM group related to the discrete or structural entities which can be measured visually or with some imaging modalities i.e. ultrasonography or CT scan etc or by histopathology. But COEIN group is related to findings that cannot be described by imaging techniques or histopathology.<sup>2,6</sup>

Some decades ago, dilatation and curettage was the most common operation for endometrial sampling, which is less sensitive for definitive diagnosis<sup>3, 7</sup> of the patient with a diagnostic error varying from 10 to 25%.<sup>8</sup> Transvaginal sonography may suspect the endometrial pathology but tissue diagnosis is required for confirmation. In the new era of endoscopic surgery, hysteroscopy guided endometrial sampling has significant role in detecting intrauterine pathology for precise and accurate diagnosis.<sup>1,4</sup> Dilatation and curettage i.e. the blind surgery method is now replaced by 'see and treat' strategy.<sup>6, 9</sup> Now hysteroscopy act as a surgeon's eye within the uterine cavity. After visualization, endometrial biopsy was taken from exact suspicious site for histopathological diagnosis. Hysteroscopy is now considered as 'Gold Standard' for evaluation of uterine cavity.<sup>10</sup>

Hence, introduction of hysteroscopy has dramatically changed the detection and treatment modalities for endometrial pathologies in recent times.<sup>3, 5, 8</sup> Here we plotted the data to compare utility of hysteroscopy and histopathology with clinical symptoms of abnormal uterine bleeding. The objectives of our study were to find out the common uterine abnormality and to determine the validity and agreement of hysteroscopic findings with histopathological findings.

#### **Materials and methods**

In this observational study, we collected data of consecutive one hundred fifty women from who fulfilled the laid down inclusion and exclusion criteria, at the time of data collection in the last two years. Hysteroscopy was done postmenstrual whenever possible, barring those women of grossly irregular menstrual cycle or continuous vaginal bleeding. Objective of our study was to evaluate the diagnostic accuracy of hysteroscopy in the patient of abnormal uterine bleeding.

Inclusion criteria: Consecutive women of 20 to 60 years' age, admitted for diagnostic hysteroscopy with history of abnormal menstrual bleeding were included in the study from the period 1<sup>st</sup> January, 2019 to 31<sup>st</sup> December, 2019. Complaints of the women were categorized as menorrhagia, metrorrhagia, menometrorrhagia, polymenorrhea, irregular

spotting or continuous bleeding for last six months and not responding to conservative medications. Women with normal or slightly bulky size uterus on bimanual examination and also by transvaginal sonography (TVS) were only included.

Exclusion criteria: Women beyond age group 20 to 60years', with menstrual complaints such as oligomenorrhea and hypomenorrhea, women having suspected pregnancy or preexisting thyroid dysfunction and/or coagulopathy revealed in pre-operative investigations, who responded to conservative medications such as hormonal or non-hormonal drugs, tranexamic acid, ethamsylate and not requiring hysteroscopy, women having similar menstrual complaints for less than 6 months' duration were excluded from this study. Per speculum examination done on all women where cervical or vaginal pathology was suspected were also excluded from the study.

Relevant history of all women was taken. Detailed clinical examination was conducted which included per vaginal and per speculum examination. Transvaginal sonography was done along with the routine pre-operative investigations. The patients with the above mentioned criteria were admitted in hospital a day before operation.

In the morning, misoprostol 400 mcg vaginal self administration by women was utilized for ripening the cervix to facilitate hysteroscope introduction. Hysteroscopy was performed with 30 degree telescope with 2.9 mm working channel (Karl Storz, Germany). Gradual dilatation of endocervical canal by Hegar cervical dilators up to 6 mm (if required) was performed to facilitate hysteroscope entry under general anesthesia. Distension of uterine cavity was done by normal saline with inflow pressure of 120 mm of Hg. Hysteroscope after entering distended uterine cavity, visualized both the tubal ostia in panoramic view and was followed by inspecting all of the four intrauterine walls, and findings were recorded. After removing hysteroscope, endometrial sample was collected by gentle endometrial curettage for histopathological diagnosis. The correlation between findings of hysteroscopy and histopathology was tabulated.

We used diagnostic trials of meta-analysis as a guideline which was published by Walter L et and Deville WL et al.<sup>11, 12</sup> Here two outcomes were considered i.e. uterine intra cavity lesions include - endometrial polyp, proliferative, secretory, atrophic endometrium, iatrogenic endometrium, simple endometrial hyperplasia, endometrial carcinoma; presence of such lesions in uterine cavity were considered as

positive findings and presence of normal endometrium was considered as negative finding. Data were abstracted as 2x2 tables of hysteroscopy suspected diagnosis and was compared with the histopathology result. Test error was defined whenever hysteroscopy result was negative for a specific intra uterine lesions but such result in reference standard test i.e. histopathology result was found positive for presence of intra-cavity lesion was considered as false negative result. False positive results were cases in which result were positive for presence of intra cavity lesion by hysteroscopy but histopathology showed presence of negative result i.e. absence of such uterine lesion. The data were analyzed by using IBM SPSS version 24<sup>th</sup> of statistical software. Chi square test was used for comparing categorical result. The kappa statistic value was calculated to measure the chance of agreement at 95% confidence level. To evaluate quantitative outcomes, Mann Whitney U test was used and for continuous parameters independent samples 't' test was used. P value less than 0.05 was considered as statistically significant.

**Results**

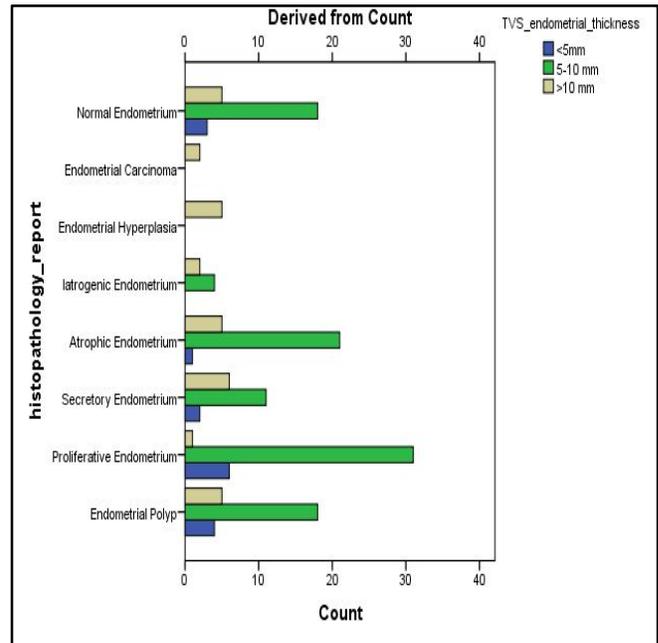
Out of one hundred fifty women, most of the them 76 (50.7%) belonged to 31- 40 years' age group, followed by 64 (42.7%), 7 (4.7%) and 3(2%) of women belonging to 41- 50 years, 20-30 years and 51-60 years' age groups respectively. Mean age of presentation was 39.68±6.19 years. Anemia categorized by measured hemoglobin (Hb) level at the time of hospital attendance of the women in our study. Depending on the reports, anemia was categorized into mild, moderate and severe according to WHO classification of anemia in nonpregnant women. It was seen that majority of women 76(50.7%) had mild anemia and 49(32.7%) had moderate anemia, 4 (2.7%) had severe anemia and 21 (14%) women were free from anemia. In our study the endometrial thickness on TVS was predominantly between 5-10mm of 103/150 (68.67%) women. Only 16/150 (10.7%) had endometrial thickness (ET) < 5mm and 31/150 (20.7%) had ET> 10mm (Table 1, Figure1).

Menorrhagia 50 (33.3%) was the most frequent indications for hysteroscopy. (14%), (22.7%), (10%) and (13.3%) of women were presenting complaints of metrorrhagia, menometrorrhagia, polymenorrhea and irregular spotting respectively (Table 2). Surprisingly forgotten Cu -T in-utero was found in three women of which one had an embedded Cu-T within the uterine musculature

**Table 1: According to age, hemoglobin level and endometrial thickness by transvaginal sonography distribution of women (n=150).**

Variables	Categories	Number	Percentage	Mean±SD
Age (years)	20-30	7	4.7	39.68±6.98
	31-40	76	50.7	
	41-50	64	42.7	
	51-60	3	2	
Hemoglobin levels (gm)	Normal (>11)	21	14	10.29±2.11
	Mild anemia (9-10.9)	76	50.7	
	Moderate anemia (7-8.9)	49	32.7	
	Severe anemia (<7)	4	2.7	
Endometrial thickness (mm)	<5	16	10.7	8±3.16
	5-10	103	68.7	
	>10	31	20.7	

with finding of normal endometrium in both hysteroscopy and histopathology. Seven women with endometrial adhesion were found as incidental finding on hysteroscopy with normal endometrium on histopathology. The findings of forgotten Cu-T and intra uterine adhesions were not recorded in study table.



**Figure 1: Comparing transvaginal sonography (TVS) report with histoscopic findings**

Most frequent (25.3%) histopathology finding was proliferative endometrial picture in thirty-eight women out of one hundred fifty. This was followed by endometrial polyp and atrophic endometrium; both were found in twenty-seven women in histopathology. Secretory endometrium and iatrogenic endometrium were found in nineteen and six women respectively on histopathology. Simple endometrial hyperplasia was found in five cases, and two women

**Table 2: Hysteroscopy findings along with patients complains**

Types of complains	Hysteroscopy findings								Total
	Endometrial Polyp	Proliferative Endometrium	Secretory Endometrium	Atrophic Endometrium	Atrogenic Endometrium	Simple Hyperplasia	Endometrial Carcinoma	Normal Endometrium	
Menorrhagia	14	18	5	2	1	0	0	11	50(33.3%)
Metrorrhagia	2	10	3	4	0	0	0	1	21 (14%)
Menometrorrhagia	10	1	8	11	0	2	1	0	34(22.7%)
Polymenorrhea	0	3	2	5	0	0	0	6	15(10%)
Irregular spotting	2	4	4	2	4	3	1	0	20(13.3%)
Continuous bleeding	1	5	0	1	1	2	0	0	10(6.7%)
Total: N =150	29	41	22	25	6	7	2	18	150(100%)

revealed endometrial carcinoma on histopathology (Table 3).

Patients with endometrial polyp: In twenty-nine women, small soft, pedunculated structure with smooth surface were seen, which appear to be endometrial polyp, histopathology report confirmed the findings in twenty-seven women. The diagnostic accuracy of hysteroscopy for detecting endometrial polyp was 96% when compared to histopathology report. But considering the final diagnosis, sensitivity, specificity, positive predictive value and negative predictive value of hysteroscopy were 92.6 %, 96.7 %, 86.2 % and 98.3 % respectively. Cohen’s kappa came out to be 0.87(95%, CI 0.76 - 0.97), that indicates perfect agreement.

to be proliferative type in hysteroscopy, but histopathology revealed presence of proliferative type in thirty-eight women. The diagnostic accuracy of hysteroscopy were 87.3 %, and sensitivity, specificity, positive predictive value and negative predictive value of hysteroscopy were 78.9 %, 90.2 %, 73.2% and 92.7% respectively for detecting proliferative endometrium. Between the two methods, it showed substantial agreements evident from Cohen’s kappa 0.67 (95%, CI 0.54 - 0.81).

Patients with secretory endometrium: In twenty-two women, endometrium was thick and slightly orange coloured and appeared to be secretory type in hysteroscopy.

**Table 3: Comparison of Hysteroscopy and Histopathological findings**

Findings	Hysteroscopy findings (n=150) Number	Histopathology findings (n=150) Number	Chi-square statistic ( $\chi^2$ , df, (P value))
Endometrial polyp	29	27	0.071, 1, (0.79)
Proliferative endometrium	41	38	0.154, 1, (0.69)
Secretory endometrium	22	19	0.254,1, (0.61)
Atrophic endometrium	25	27	0.110,1, (0.73)
Atrogenic endometrium	6	6	-
Simple endometrial hyperplasia	7	5	0.333,1, (0.56)
Endometrial carcinoma	2	2	-
Normal endometrium	18	26	1.612,1, (0.20)

Patients with proliferative endometrium: In forty-one women, endometrium was pinkish smooth, and thin appear

Histopathology confirmed presence of 19 women of secretory endometrium. The diagnostic accuracy of

hysteroscopy were 92.7%, and sensitivity, specificity, positive predictive value and negative predictive value of hysteroscopy were 78.9%, 94.7%, 68.2% and 96.9% respectively for detecting secretory endometrium. Cohen's kappa came out to be 0.69(95%, CI 0.52 - 0.86) which represents substantial chance between the two methods.

Patients with atrophic endometrium: In twenty-five women, there was presence of flat, thin and pale colored endometrium looks like atrophic type in hysteroscopy. Histopathology confirmed twenty-seven women were atrophic type endometrium. The diagnostic accuracy of hysteroscopy were 98%, and sensitivity, specificity, positive predictive value and negative predictive value of hysteroscopy were 92.3%, 99.2%, 96% and 98.4% respectively for detecting atrophic endometrium. Agreement between the two methods showed perfect agreement as evident from Cohen's kappa 0.93 (95%, CI 0.85 - 1.00).

Patients with iatrogenic endometrium: There was history of taking oral progesterone by six women (4%). Both hysteroscopy and histopathology findings were suggestive of iatrogenic endometrium in all of them. The diagnostic accuracy of hysteroscopy here 98%, and sensitivity, specificity, positive predictive value and negative predictive value of hysteroscopy were 66.7%, 99.3%, 80% and 98.6% respectively for detecting iatrogenic endometrium. Cohen's kappa came out to be as 0.72(CI 95%, 0.41 - 1.00) which represent substantial agreement. In our study 4% women was found with iatrogenic endometrium variety.

Patients with simple endometrial hyperplasia: In seven patients, there were thickened edematous endometrium; the findings were suggestive of simple endometrial hyperplasia in hysteroscopy. Histopathology confirmed five of them had presence of endometrial hyperplasia. The diagnostic accuracy of hysteroscopy here was 97.3% and sensitivity, specificity, positive predictive value and negative predictive value of hysteroscopy were 80%, 97.9%, 57.1% and 99.3% respectively for detecting simple endometrial hyperplasia. Cohen's kappa came to be 0.65 (95%, CI 0.34 - 0.97) which signify moderate agreement between the two methods.

Patients with endometrial carcinoma: In two women, there were ulcerative, hemorrhagic, polypoidal growth with increased vascularity within the uterine cavity, the finding was highly suggestive of endometrial carcinoma. Histopathology confirmed that both (2/2) of the women had endometrial carcinoma. The diagnostic accuracy of hysteroscopy here was 100% for detecting endometrial carcinoma. We had evaluated diagnostic efficacy of

hysteroscopy to detect abnormal pathology and compared it with histopathology finding and found sensitivity, specificity, positive predictive value and negative predictive value were 96%, 53.8%, 90.9% and 77.8%.

### Discussion

In our study, most of the women i.e. 50.7% and 42.7% were from 31-40 years and 41-50 years' age group respectively with mean age of 39.68±6.98. Guin G et al<sup>5</sup> and Singha P et al<sup>6</sup> in their two separate studies found mean age were 39.74 and 36.4 ±7.6 respectively. The findings were closely similar with our study.

Most of the women 76/150 (50.7%) had mild anemia (9 - 10.9 gm %). Moderate (7-8.9 gm %) and severe anemia (<7 gm %) was found in 49/150(32.7%) and 4/150 (2.7%) women respectively and mean hemoglobin level was 10.29±2.11 in our study. Study reported by Kumari A et al<sup>7</sup> shows 53.33% women had mild anaemia (10-10.9 gm %). In their study, moderate (7-9.9 gm %) and severe (<7 gm %) anaemia was found in 16.11% and 6.66% women respectively. Their finding closely similar to our finding though their adopted classification of anemia according to haemoglobin level was slightly different.

Nearly two-third numbers of women 103/150 (68.67%) were within 5-10 mm endometrial thickness, followed by 16/150 (10.67%) and 31/150 (20.67%) women had <5 mm and >10 mm endometrial thickness respectively.

In our study 33.3% women were presented with menorrhagia i.e. most common symptom. It was followed by menometrorrhagia, metrorrhagia, irregular spotting, polymenorrhea, continuous bleeding and were presenting symptoms of 22.7%, 14%, 13.3%, 10%, 6.7% women respectively in descending orders. Menorrhagia was commonest complain of 32% women in the study reported by Sharma J et al<sup>13</sup>. The study reported by Talukdar B et al<sup>14</sup> on one hundred three women, found menorrhagia was most common symptom of 43.69%. The other presenting symptoms were metrorrhagia, menometrorrhagia, polymenorrhea, postmenopausal bleeding of 18.45%, 15.54%, 13.59% and 8.73% women respectively. In a study conducted by R Sujatha<sup>15</sup> on two hundred forty women found most common presenting symptom was menorrhagia, found in 49.18% women, followed by polymenorrhea, polymenorrhea, metrorrhagia, postmenopausal bleeding was present on 22.92%, 16.66%, 6.66% and 4.58% respectively. Similarly, in our study most common symptom was menorrhagia. The frequency of other symptoms was also similarly comparable with our study.

Regarding detection of different types of abnormal pathology, our study did not find any significant difference ( $>0.05$ ) between the findings of hysteroscopy and histopathology. Sinha P et al<sup>6</sup> also did not find any significant difference in most of their findings as compared to histopathology.

In our study, considering the substantial differences of abnormal pathologies, we were mostly concentrated to evaluate sensitivity, specificity, positive predictive value, negative predictive value of different abnormal pathology for abnormal uterine bleeding. Sensitivity, specificity, positive predictive value and negative predictive value of hysteroscopy for detecting endometrial polyp were 92.6 %, 96.7 %, 86.2 % and 98.3 % respectively. Sinha P et al<sup>6</sup> found sensitivity and specificity of 66.7% and 100% respectively to diagnose endometrial polyp in their fifty-six cases of study. Their findings were slightly differing from our findings may be due to their small sample size. A study conducted by D Pandey et al<sup>9</sup> showed sensitivity, specificity, positive predictive value, negative predictive value of 71.4%, 90.9%, 44.4%, 100% respectively to diagnose endometrial polyp by hysteroscopy. This finding was similar to our study; only findings of positive predictive that differed may be that was incidental.

To diagnose proliferative endometrium by hysteroscopy, sensitivity, specificity, positive predictive value and negative predictive value were 78.9 %, 90.2 %, 73.2% and 92.7% respectively. In the study conducted by Patil SG et al<sup>8</sup> showed sensitivity, specificity, positive predictive value and negative predictive value were 78.57%, 86.2%, 80.48% and 84.74% respectively to diagnose proliferative endometrium by hysteroscopy in comparison to histopathology. Similar findings found in our study.

For detecting secretory endometrium by hysteroscopy, sensitivity, specificity, positive predictive value and negative predictive value of hysteroscopy were 78.9%, 94.7%, 68.2% and 96.9% respectively. In the study conducted by Patil SG et al<sup>8</sup> showed sensitivity, specificity, positive predictive value, negative predictive value were 54.54%, 93.58%, 70.58% and 87.95%, respectively. The findings were closely similar to our study.

D Pandey et al<sup>9</sup> showed sensitivity, specificity, positive predictive value, negative predictive value was 100%, 94.1%, 33.33%, 100% to diagnose atrophic endometrium by hysteroscopy in their study of seventy-four women. Considering our study, 92.3%, 99.2%, 96% and 98.4% were sensitivity, specificity, positive predictive value and negative

predictive value of hysteroscopy respectively for detecting atrophic endometrium. Barring positive predictive value, most of the findings were similar to our findings. 4% women were found with iatrogenic endometrium variety in our study. The study conducted by Sujatha R<sup>15</sup> showed 3.75% women had an iatrogenic endometrium variety, this finding is closely resembles with our study.

For detecting simple endometrial hyperplasia sensitivity, specificity, positive predictive value and negative predictive value of hysteroscopy were 80%, 97.9%, 57.1% and 99.3% respectively. D. Pandey et al<sup>9</sup> showed sensitivity, specificity, positive predictive value, negative predictive value were 85.7%, 88.4%, 50%, 97.8% respectively to diagnose endometrial hyperplasia by hysteroscopy in their study, i.e. similar finding found to our study.

Histopathology confirmed that both of the women suspected by hysteroscopy had endometrial carcinoma in our study. The diagnostic accuracy of hysteroscopy to detect endometrial carcinoma was 100%. In a study by L Mencaglia<sup>16</sup>, found accuracy was 100% to diagnose endometrial carcinoma when hysteroscopy and histopathology were used in combination. The finding was absolutely similar to our finding.

In our study, we compared overall abnormal pathology detected by hysteroscopy with histopathology and found 96%. 53.8%, 90.9% and 77.8%. sensitivity, specificity, positive predictive value and negative predictive value respectively. A study conducted by Firdous N et al<sup>4</sup> on fifty cases, found that sensitivity, specificity, positive predictive value, negative predictive value and accuracy of hysteroscopy were 93.2%, 83.9%, 82%, 94% and 88% respectively to diagnose over all etiologies of abnormal uterine bleeding by hysteroscopy. Garg G et al<sup>17</sup> in their study described nearly 100% accuracy of hysteroscopy to diagnose most of the intrauterine pathologies in comparison with histopathology. Similar finding was also found by Dongen HV et al<sup>18</sup> in their study.

There was some limitations in our study. As the study was retrospective in nature, it faced several challenges to retrieve medical records. Some of the data was missing. Hysteroscopy patterns were documented by different observers. Histopathological reports were used for data collection, tissue sampled were not reviewed to verify diagnosis. So, to conclude, although there were certain limitations but our study establishes usefulness of hysteroscopy in comparison to histopathology to diagnose

intra uterine lesions in women presenting with abnormal uterine bleedings.

### Conclusion

From our study, it is confirmed that hysteroscopy has important role indefinite diagnosis of abnormal uterine bleeding. Addition of hysteroscopy and trans vaginal sonography within the management protocol may further enhances the accuracy of diagnosis by proper endometrial sampling. From our study, it can be rightly said that use of hysteroscopy and histopathology were not competitive, rather complementary for managing abnormal uterine bleeding.

**Conflict of interest:** None. **Disclaimer:** Nil.

### References

1. Lasmar RB, Dias R, Barrozo PRM, Oliveira MAP, Coutinho EDSF, Rosa DBD. Prevalence of hysteroscopic findings and histologic diagnoses in patients with abnormal uterine bleeding. *Fertil Steril*. 2008 ; 89(6):1803-5.
2. Mishra S, Panda B. Efficacy of ultrasonography and hysteroscopy and their correlation with endometrial histopathology in a case of abnormal uterine bleeding In late reproductive age. *AIMDR*. 2018 ; 4(5):10-4.
3. El-Gamal HH, Abd-El-Salam MM, Ghanem RM, Al-Ani S. Role of diagnostic hysteroscopy and histopathology in evaluation of abnormal uterine bleeding. *Egypt J Hosp Med*. 2018; 72 (7): 4765-71.
4. Firdous N, Mukhtar S, Bilal S, Beigh SK. Role of hysteroscopy and histopathology in evaluating patients with abnormal uterine bleeding. *Int J Reprod Contracept Obstet Gynecol*. 2017; 6(2): 615-9.
5. Guin G, Sandhu SK, Lele A, Khare S. Hysteroscopy in evaluation of abnormal uterine bleeding. *J Obstet Gynaecol India*. 2011; 61(5): 546-9.
6. Sinha P, Yadav N, Gupta U. Use of hysteroscopy in abnormal uterine bleeding: an edge over histopathological examination. *J Obstet Gynaecol India*. 2018; 68(1): 45-50.
7. Kumari A, Kumar R. Abnormal uterine bleeding in perimenopausal age: an observational study. *Indian J Obstet Gynecol Res*. 2018; 5(4): 539-43.
8. Patil SG, Bhute SB, Inamdar SA, Acharya NS, Shrivastava DS. Role of diagnostic hysteroscopy in abnormal uterine bleeding and its histopathologic correlation. *J Gynecol Endosc Surg*. 2009;1(2):98-104.
9. Pandey D, Kunamneni S, Inukollu PR, Su H. Establishing patterns on hysteroscopy in abnormal uterine bleeding (AUB). *J Minim Invasive Gynecol*. 2017; 6:178-82.
10. Allameh T, Mohammadzadeh F. Diagnostic value of hysteroscopy in abnormal uterine bleeding compared to pathology reports. *Iran J of Reprod Med*. 2007; 5(2):61-4.
11. Deville WLJM, Bezemera PD, Bouter LM. Publications on diagnostic test evaluation in family medicine journals: an optimal search strategy. *J of Clin Epidemiol*. 2000; 53(1): 65-9.
12. Deville, WL, Buntinx, F, Bouter, LM, Montori VM, Vet HCWD, et al. Conducting systematic reviews of diagnostic studies: didactic guidelines. *BMC Med Res Methodol*. 2002; 2(9). <https://doi.org/10.1186/1471-2288-2-9>
13. Sharma J, Tiwari S. Hysteroscopy in abnormal uterine bleeding vs ultrasonography and Histopathology report in perimenopausal and postmenopausal women. *J Nepal Med Assoc*. 2016; 55(203): 26-8.
14. Talukdar B, Mahela S. Abnormal uterine bleeding in perimenopausal women: Correlation with sonographic findings and histopathological examination of hysterectomy specimens. *J Midlife Health*. 2016; 7(2):73-7.
15. Sujatha R. Study of dysfunctional uterine bleeding in patients in a medical college hospital. *Indian J Obstet Gynecol*. 2019; 6(3): 308-11.
16. Mencaglia L. Hysteroscopy and adenocarcinoma. *Obstet Gynecol Clin North Am*. 1995; 22(3): 573-9.
17. Garg G, Patvekar M, Agarwal K, Bhatia I, Sanghi S. A study of the role of hysteroscopy in abnormal uterine bleeding. *J Gynecol Surg*. 2017; 33(6): 226-30.
18. Dongen HV, Kroon CDD, Jacobi CE, Trimbos JB, Jansen FW. Diagnostic hysteroscopy in abnormal uterine bleeding: a systematic review and meta-analysis *BJOG*. 2007;114: 664-75.

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