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Original Research Article

Hysteroscopic Evaluation in Patients with Abnormal Uterine Bleeding, And Its Correlation with Histopathology: An Analytical Study of 63 Cases

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Abstract:

Introduction: Abnormal uterine bleeding (AUB) refers to bleeding that occurs outside of normal menstrual cycles and includes changes in the regularity, frequency, duration, or amount of bleeding during or between periods. AUB is a condition that causes significant impairment in women's health, impacting a substantial proportion of women in different stages of their reproductive life with 14-25% of women of reproductive age and up to 50% of women in the perimenopausal phase experiencing the effects of this condition.

Materials and Methods: The present study was an analytical observational study conducted in the Department of Obstetrics and Gynaecology for 6 months. 63 women aged 35 or above, who were experiencing abnormal uterine bleeding, willingly participated in the study by providing written consent. Each patient underwent a thorough medical history and general systemic examination. They were also subjected to baseline investigations, transvaginal sonography, diagnostic hysteroscopy, and endometrial biopsy.

Results: The overall diagnostic accuracy of our study came out to be 90.48%. The correlation between Histopathological and Hysteroscopic findings of the endometrium was statistically significant ($p<0.05$).

Conclusion: Hysteroscopy is a valuable diagnostic tool for identifying the underlying cause of AUB. Proper management of AUB will depend on several factors including the patient's age, fertility goals, and the results of the final histopathology. While hysteroscopy is a valuable tool for visualizing abnormalities in the uterine cavity, it is important to note that it is not a substitute for tissue diagnosis, which is considered the gold standard. Rather, hysteroscopy complements other diagnostic procedures by offering the advantage of direct visualization of any abnormalities within the uterine cavity.

Keywords: AUB, Hysteroscopy, Intracavitary Pathology.

Introduction

Abnormal Uterine Bleeding (AUB) refers to bleeding that occurs outside of the regular menstrual cycle, and which can involve changes in the usual pattern of bleeding. Changes in the frequency, duration, or amount of bleeding may occur in women, either during their periods or between them. 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. [1,2]

On average, menstrual bleeding lasts for about 4.7 days, with approximately 89.0% of menstrual cycles lasting 7 days or more AUB is a condition that causes significant impairment in women's health, impacting a substantial proportion of women in different stages of their reproductive life with 14-25% of women of reproductive age and up to 50% of women in the perimenopausal phase experience the effects of this condition. [3,4,5]

AUB affects 9-14% of women between menarche and menopause, having a profound effect on their standard of living and imposing financial constraints. [6] On average, the amount of blood

lost per menstrual cycle is 35ml. [7] The classification system for AUB is known as FIGO PALM-COEIN. The acronym represents nine major groups used to classify the causes of AUB. These groups are: Polyp, Adenomyosis, Leiomyoma, Malignancy, Coagulopathy, Ovulatory dysfunction, Endometrial causes, Iatrogenic causes, and not yet specified. [8] Various methods used to diagnose the structural causes of AUB include ultrasonography, sonosalpingography, hysteroscopy and D and C. Primary goal is to diagnose in the most efficient and least invasive manner. Sonography is the standard diagnostic tool used as a first line investigation by most clinicians for diagnosis of AUB. Sonography is good for uterine abnormalities like fibroids and ovarian pathology; however, it does not give any information about the uterine cavity. Sonohysterography is used as an added method with USG for diagnosing intracavitary lesions but it can only diagnose and not treat it. Hysteroscopy permits direct visualization of uterine cavity and hence is good for intracavitary lesions. In the era of modern endoscopic surgery, hysteroscopy-guided endometrial sampling plays a significant role in detecting intrauterine pathology for precise and accurate diagnosis. [9] Following visualization, an endometrial biopsy is taken from the exact suspicious site for histopathological diagnosis. As a result, curettage performed after hysteroscopy should now replace conventional dilatation and curettage. [10]

The aim of this research was to assess the extent of the correlation between hysteroscopic diagnosis and histopathological findings when investigating cases of abnormal uterine bleeding.

Materials and Methods

This analytical observational investigation was conducted in the Department of Obstetrics and Gynaecology at Smt. N.H.L. Municipal Medical College, Ahmedabad over from January 2024 to June 2024.

A comprehensive assessment was conducted by obtaining a detailed medical history and conducting a thorough general and systemic examination. The study population underwent routine investigations, including transvaginal sonography. Following that, hysteroscopy was performed, and endometrial biopsy was taken for histopathology after obtaining informed consent following counseling. Patients were observed in the recovery room for two hours and most of the patients were discharged on the same day or the next day.

The findings obtained by hysteroscopy were compared and correlated with histopathological findings categorical variables were presented as counts and percentages (%), while continuous variables were presented as mean standard deviation (SD) or median.

Qualitative variables were compared using either the Chi-Square test or Fisher's exact test. The sensitivity, specificity, positive predictive value, negative predictive value, and accuracy for each method were assessed and determined. To assess statistical significance, a significance level (p-value) of 0.05 or less was utilized. The data were recorded in a Microsoft Excel spreadsheet and analyzed using the Statistical Package for the Social Sciences (SPSS), specifically version 23.0.

Inclusion Criteria

35 years old or older and have reported complaints of abnormal uterine bleeding (AUB), which includes

- Heavy menstrual bleeding,
- intermenstrual bleeding,
- infrequent cycles,
- frequent cycles and
- irregular cycles

Exclusion Criteria

- Pregnant women,
- Lactating females,
- Females using Intra-Uterine Contraceptive Devices,
- Patients with Cervical malignancy, and
- Patients on medications such as: - Oral contra-ceptive pills, - Anti-psychotics, and - Anti-coagulants.
- Women having thyroid disorders, hyperprolac-tinemia, and systemic disorders like liver and renal diseases were excluded.

Results

The study enrolled 63 women who presented with symptoms at the Department of Obstetrics and Gynaecology at Smt. N.H.L. Municipal Medical College, Ahmedabad. The study enrolled a total of 63 female patients starting at age 35 years. The age distribution of patients with AUB is presented in the following table. The age distribution of the 63 patients with AUB showed that the majority (52.4%) were aged 40 years or younger, out of the respondents, 55.6% belonged to the 31-40 years age group, while 38.1% were in the 41-50 years age group. A smaller proportion, 6.3%, fell into the 51-60 years age group, and only 3.2% in the 61-70 years age group.

Of the 63 patients included in the study, 28 (44.4%) had regular menstrual cycles and 35 (55.6%) had irregular menstrual cycles. The frequency of menses was normal in 42 (66.7%) patients, frequent in 8 (12.7%) patients, and infrequent in 13 (20.6%) patients. For patients with complaints of the duration of the flow, there were 41 (65.1%) patients with a normal duration of flow followed by

15 (23.8%) patients with a prolonged duration of flow and 7 (11.1%) patients with duration of flow shortened. Out of the total of 63 patients, 15 (23.8%) patients had normal blood loss, 40 (63.5%) patients had heavy monthly blood loss during menses, and 8 (12.7%) patients had light blood loss.

Hysteroscopy findings

In our study, based on hysteroscopy findings, out of 63 patients, 26 patients were reported with normal hysteroscopy findings inclusive of proliferative and secretory endometrium, and the rest of the patients with abnormal hysteroscopy findings, the majority of patients i.e. 17(26.9%) were diagnosed with endometrial hyperplasia, followed by 13 (20.6%) patients were reported as polyp in the endometrium, 2(3.2%) patients reported as submucous fibroid and endometritis each, 2(3.2%) patients reported with atrophic endometrium and 1 (1.6%) patient was reported with adhesions. (Table 1)

Table 1: Hysteroscopic Findings

Hysteroscopy Findings	Cases (n-63)	Percentage
Normal	26	41.3
Atrophic Endometrium	2	3.2
Endometrial Hyperplasia	17	26.9
Submucous Fibroid	2	3.2
Polyp	13	20.6
Endometritis	2	3.2
Adhesions	1	1.6

Histopathology

In the study, 63 patients with AUB were evaluated for endometrial pathology. Of these, 30 (47.6%) patients had a normal endometrium showing the proliferative and secretory phases.

Endometrial hyperplasia was diagnosed in 14 patients, with 11 (17.4%) showing hyperplasia without atypia and 3 (4.8%) showing hyperplasia with atypia. Thirteen (20.6%) patients had endometrial polyps, 3 (4.8%) had fibroids, and 1 (3.2%) had endometritis, atrophic endometrium, and disordered proliferative endometrium. (Table 2) 57 out of 63 patients had the same diagnosis on both modalities, out of the remaining 6 cases, 4 were missed for normal endometrial findings, 1 for fibroid, and 1 for disordered proliferative endometrium, which is a histopathological diagnosis.

Table 2: Histopathology examination

Histopathology findings	Cases (n- 63)	Percentage
Normal	30	47.6
Hyperplasia without atypia	11	17.4
Hyperplasia with atypia	3	4.8
Myoma	3	4.8
Endometritis	1	1.6
Endometrial Polyp	13	20.6
Atrophic Endometrium	1	1.6
Disordered proliferative endometrium	1	1.6

The study aimed to assess. The study evaluated the effectiveness of hysteroscopy in diagnosing endometrial pathology among patients with AUB. The accuracy of hysteroscopy was assessed to determine its reliability in diagnosing this condition. The sensitivity, specificity, positive predictive value, and negative predictive value were 96.15%, 86.49%, 83.33%, and 96.97%, respectively. The overall diagnostic accuracy of the study was found to be 90.48%. (Table 3)

Table 3: Comparison of validities

Sensitivity	96.15%
Specificity	86.49%
Positive Predictive Value	83.33%
Negative Predictive Value	96.97%
Diagnostic Accuracy	90.48%

Discussion

AUB is a frequent complaint among women who visit gynecologists. The condition can manifest in various forms, such as heavy menstrual bleeding, frequent or infrequent cycles, irregular bleeding, and post-coital bleeding. Due to the complex nature of AUB, gynecologists and patients may require several diagnostic methods, including ultrasound, to accurately diagnose and treat the condition." Clinical management of AUB aims at obtaining an accurate diagnosis and charting out correct line of management. On USG the uterine contour and morphology of ovary can be found but it fails to provide adequate information regarding the pathology of the endometrium. Hysteroscopy in this new era is increasingly becoming a valuable investigation for the evaluation of AUB.

The use of hysteroscopy provides a valuable addition to the diagnostic tools available to gynecologists. It may enable more effective reproductive illness therapy and increase diagnosis precision. Following hysteroscopy, patient care can be better managed.[7] Due to its ability to "see" and "decide" the reason, hysteroscopy is almost completely substituting blind curettage in the treatment of irregular vaginal haemorrhage. This is possible due to the ability to visualize the uterus canal and curet the troublesome region.

The standard procedure for diagnosing endometrial pathology is histopathological examination of an endometrial biopsy obtained through dilatation and curettage (D&C) is a recommended diagnostic method.[8] This approach should be considered for women with menstrual complaints if abnormal uterine bleeding (AUB) does not improve with medical management, particularly those who are over 40 years old or at a higher risk of endometrial cancer.

The current investigation recruited 63 women who were over the age of 35. Among the participants, the majority (52.4%) were in the 35-40 years age group, followed by 24 (38.1%) patients in the 41-50 years age group, 4 (6.3%) patients in the 51-60 years age group, and only 2 (3.2%) patients were in the 61-70 years age group. The participants in the current study had a mean age of 42.98±19.09 years, with an age range of 35-70 years. According to a study by Puhan JN et al [11] (2019), abnormal uterine bleeding is most commonly observed in the 35-50 years age group, with 118 out of 200 cases (59.0%) belonging to this group. This suggests that the majority of women with AUB are in the perimenopausal age range. Hormonal imbalance is most frequently observed during the perimenopausal period, which could be a contributing factor to the development of AUB in this age group. In a study by Khushnood M and Niyaz FF [12] (2019), the age range of their participants was 20-70 years, with a mean age of 40.33 years.

Out of all the patients, the largest percentage (40%) fell into the 40-50 years age range. The next highest percentages were the 20-30- and 30-40-years age groups at 20% each, followed by the 50-60 years age group at 13.8%. A smaller percentage of patients (10%) were in the 50-60 years age group, while only 3.33% were below 20 years old. Distribution according to AUB pattern in patients. In our study, out of 63 patients, there were 28 (44.4%) patients had regular menses and 35 (55.6%) patients had irregular menses.

The frequency of menses was normal in 42 (66.7%) patients, frequent in 8 (12.7%) patients, and infrequent in 13 (20.6%) patients. For patients with complaints of the duration of the flow, there were 41 (65.1%) patients with a normal duration of flow followed by 15 (23.8%) patients with a prolonged duration of flow and 7 (11.1%) patients with duration of flow shortened. Out of the total 63 patients, 15 (23.8%) patients had normal blood loss, 40 (63.5%) patients had heavy monthly blood loss during menses, and 8 (12.7%) patients had light blood loss. 61 Similarly in the study done by Khan R et al [8] (2016) Upon analysis, the distribution of patients was categorized according to their bleeding pattern.

The prevalent presenting illness was menorrhagia (55.8%). According to a study conducted by Kazemijaliseh and colleagues in 2017, approximately 10.6% (with a 95%confidence interval between 6.3% and 12.5%) of the female participants experienced irregularity disturbances. The same study found that 23.8% (with a 95% confidence interval between 18.4% and 26.1%) of the female participants reported disturbances in frequency, 16.0% (95% CI: 12.7%- 19.2%) of participants reported a disturbance in the heaviness of their menstrual flow, while 11.5% (95% CI: 8% - 15.4%) reported a disturbance in the duration of their flow. Walraven G et al [13] (2002) reported that more than 40.0%of women suffered from menstrual disorders. Also, 16.0%complained of irregular cycles, 14.0% with dysmenorrhea, 8.0% spot, and 4.0% of cases heavy or prolonged bleeding. However, the prevalence of menstrual disorders in our study was slightly lower compared to a previous study. In our study, heavy menstrual bleeding (HMB) was the most common disorder reported by 84.0% of women. HMB is a serious problem that can contribute to anemia and could potentially be life-threatening if left untreated.

A study by Fraser IS et al. (2015) reported the prevalence of HMB among women aged 18-57 years in five European countries through an internet-based survey. The study found that out of 4506 respondents, 1225 (27.2%) had experienced

HMB symptoms within the previous year, which is lower than the prevalence observed in our study.

This difference could be attributed to the shorter duration of HMB experienced in the European study. It has been reported by Shapley M et al. [4] (2004) that the perimenopausal years are associated with a high incidence rate of resolution of heavy menstrual bleeding.

Hysteroscopy findings In our study, based on hysteroscopy findings, out of 63 patients, 26 patients were reported with normal hysteroscopy findings inclusive of proliferative and secretory endometrium, and the rest of the patients with abnormal hysteroscopy findings, the majority of patients i.e. 17 (26.9%) were diagnosed with endometrial hyperplasia, followed by 13 (20.6%) patients were reported as a polyp in the endometrium 2 (3.2%) patients reported as submucous fibroid and endometritis each, 2 (3.2%) patients reported with atrophic endometrium and 1 (1.6%) patient was reported with adhesions.

Table 4:

Study	Hyperplasia	Polyp	Fibroid
Edwin R et al. [12] 2014	24.4%	8.88 %	4.44 %
Kumar AK et al. [14] 2017	42 %	22 %	4 %
Shreshtha A et al. [15] 2017	12 %	59 %	5 %
Nighat Firdous et al. [9] 2017	27 %	21 %	-
Tiwari K et al. [16] 2019	44 %	16 %	8 %

Histopathological findings It was observed that out of 63 patients in our study, 30 (47.6%) patients showed normal endometrium (proliferative and secretory phase of the endometrium), there were 14 patients diagnosed with endometrial hyperplasia in which 11 (17.4%) patients showed hyperplasia without atypia, and 3 (4.8%) patients showed hyperplasia with atypia. There were 13 (20.6%) reported polyps, 3 (4.8%) patients had fibroid, and 1 (3.2%) patient had endometritis, atrophic endometrium, and disordered proliferative endometrium.

In a study conducted by Bhatiyani BR et al [17] in 2018, the histopathological findings on HPE reports were analyzed for a group of patients. After analyzing the data, it was discovered that the majority of patients, specifically 39, had secretory phase endometrium. This was followed by 16 patients who had proliferative phase endometrium. Additionally, 14 patients exhibited disordered proliferative endometrium, endometrial polyp, and endometrial hyperplasia without atypia. Additionally, endometrial hyperplasia with atypia was reported in 2 patients, while leiomyoma was reported in 1 patient. The study showed that 43.0% of patients had an abnormal histopathology report, while the remaining 57.0% had a normal report.

A study conducted by Kathuria R et al [18] in 2014 showed results that are almost identical to ours: 40% of patients exhibited abnormalities, while 60% had normal HPE reports. According to a study by Patil SG et al [20] in 2009, proliferative phase endometrium was found to be the most common finding, which contrasts with the results of our study, where secretory endometrium was the most frequently reported histopathology. In the study of Bashir H et al [19] (2015) endometrial hyperplasia was found in 18.9% of cases, which was also concordant with observations made by Patil SG et al20 (2009) reported 20.0% of patients had endometrial hyperplasia, but higher than that observed by Doraiswami S et al [21] (2011) in 6.11% patients and Abid M et al [22] (2014) reported endometrial hyperplasia in 5.0% patients. In 12% of instances, the most prevalent form of hyperplasia was simple hyperplasia without atypia. It was discovered that hyperplasia was the most frequent biological cause of AUB in post-menopausal women as well as in fertile and peri-menopausal women. However, its frequency peaked in the peri-menopausal age group accounting for about 50% of cases.

Similar observations were made by Vaidiya S et al [23] (2013) and Muzaffar M et al [24] (2005). Similar observations were made by Dangal G [25] (2003) in 10.7% of patients, and Gredmark T et al [26] in 10% of patients. However, its incidence was lower in a study by Jairajpuri ZS et al [27] (2013) reported in 5.79%of patients and a higher incidence was seen in studies done by Baral R et al [28] (2011) that is in 18.3% of the patients. The most frequently observed type of hyperplasia in the present study was simple hyperplasia without atypia, which is consistent with the findings of Pilli GS et al. [29] (2002) and Vakiani M et al. [30] Endometrial hyperplasia is a prevalent diagnosis, particularly among women aged 41-50, often presenting symptoms of irregular or prolonged bleeding resulting from anovulatory cycles in most cases. [31] The observed variation in the prevalence of endometrial hyperplasia could be attributed to various factors such as differences in socioeconomic status, the presence of risk factors such as obesity, diabetes, sedentary lifestyle, and variations in early diagnosis. It is important to identify endometrial hyperplasia as it is believed to be a precursor to endometrial carcinoma. Furthermore, the prevalence of endometrial

hyperplasia peaks among perimenopausal and postmenopausal women. [14]

Overall comparison of validities of Hysteroscopy and Histopathology On hysteroscopy, the overall sensitivity, specificity, positive predictive value, and negative predictive value were as follows 96.15%, 86.49% 83.33%, and 96.97%respectively. On histopathology, the overall sensitivity, specificity, positive predictive value, and negative predictive value were as follows 80%, 72.73% 92.31%, and 84.21%respectively. The overall diagnostic accuracy of our study came out to be 90.48%. The result of our study indicates 96.15% sensitivity and 86.49% specificity.

The correlation between hysteroscopic findings and histopathological findings was found to be significant, on the Kappa test (Kappa value=0.282 and p-value <0.05).

Conclusion

Hysteroscopy can aid in the diagnosis of the underlying cause of AUB, and appropriate management will depend on factors such as the patient's age, fertility goals, and the results of the final histopathology. While hysteroscopy is a useful diagnostic tool, it should not replace tissue diagnosis, which remains the gold standard. Both hysteroscopy and biopsy are necessary for accurate diagnosis of AUB and for developing a proper treatment plan. After careful analysis, it can be concluded that Hysteroscopy offers the advantage of providing direct visualization of any abnormalities present within the uterine cavity. As a result, it proves to be a valuable diagnostic tool for identifying the underlying cause Of AUB. However, it should not be considered a substitute for other diagnostic procedures such as tissue biopsy, ultrasound, or blood tests. Rather than being considered as a primary diagnostic tool, hysteroscopy should be perceived as a supplementary method that can furnish supplementary information to facilitate the diagnosis and treatment of AUB.

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