



ROLE OF HYSTEROSCOPY IN THE EVALUATION OF ABNORMAL UTERINE BLEEDING IN PRE-MENOPAUSAL WOMEN: A RETROSPECTIVE OBSERVATIONAL STUDY

Obstetrics & Gynaecology

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ABSTRACT

Background: Abnormal uterine bleeding (AUB) is a common gynaecological issue faced by premenopausal women, often resulting in considerable physical discomfort and psychological distress. The need for accurate diagnosis and effective management makes the evaluation of AUB an important aspect of women's healthcare. Advances in diagnostic modalities have positioned hysteroscopy as a central tool for evaluating intrauterine pathology, including polyps, submucosal fibroids, and endometrial abnormalities. National and international guidelines, such as those from the British Society for Gynaecological Endoscopy (BSGE) and the National Institute for Health and Care Excellence (NICE), recommend hysteroscopy particularly when initial medical management fails or structural abnormalities are suspected. **Methods:** This retrospective observational study was conducted at Aneurin Bevan University Health Board in 2021, focusing on premenopausal women aged 50 years or below. A total of 124 patients were included in the study. The principal objective was to assess the utility of hysteroscopy in the diagnostic work-up and management of AUB. Also, looked at the correlation between ultrasound and hysteroscopy in the detection of uterine polyps/fibroids. Data analysed using SPSS v22. **Results:** Of the 124 hysteroscopies performed, 44.1% were normal. Polyps were detected in 27.2%, fibroids in 8.8%, thick endometrium in 8.1%, and polypoid changes in 2.9%. Among 29 cases with normal ultrasound, 20.7% were found to have polyps on hysteroscopy, indicating that ultrasound may miss a significant proportion of intrauterine lesions. Biopsy methods included blind biopsy (39.2%), polyp removal (29.6%), pipelle biopsy (9.6%), fibroid removal (9.6%), targeted biopsy (6.4%), and no biopsy (4.8%). Histopathological analysis revealed that 96.72% were normal, with hyperplasia (2.46%), atypia (0.82%), and endometrial cancer (0.82%) detected in a minority. All cases with abnormal histology had additional risk factors such as obesity or PCOS. **Conclusion:** Hysteroscopy is an indispensable tool in the diagnostic algorithm for abnormal uterine bleeding in premenopausal women, offering superior accuracy for detecting polyps, fibroids, and other intrauterine pathologies compared to ultrasound alone. The overall risk of significant endometrial pathology in this population is low, especially in the absence of risk factors. Clinical practice should emphasise initial medical management, reserving hysteroscopy and biopsy for patients with persistent symptoms, risk factors, or abnormal imaging.

KEYWORDS

INTRODUCTION

Abnormal uterine bleeding (AUB) is a prevalent gynaecological concern among premenopausal women, often resulting in significant physical discomfort, psychological distress, and disruption to daily life. The evaluation of AUB has evolved considerably, with hysteroscopy now recognised as a pivotal diagnostic tool in identifying intrauterine pathologies such as polyps, submucosal fibroids, and other endometrial abnormalities. According to Munro et al. (2011) in the International Journal of Gynaecology & Obstetrics, hysteroscopy offers direct visualisation of the uterine cavity, affording superior diagnostic accuracy compared to blind sampling techniques.

The British Society for Gynaecological Endoscopy (BSGE) and the National Institute for Health and Care Excellence (NICE) both recommend the judicious use of hysteroscopy, particularly in cases where initial assessments and medical management do not yield satisfactory symptom control or when structural abnormalities are suspected (Heavy Menstrual Bleeding: Assessment and Management NICE Guideline NG88, 2018). As outlined in the authoritative text Shaw's Textbook of Gynaecology, hysteroscopy not only facilitates diagnosis but also allows for simultaneous therapeutic interventions, thereby streamlining patient care and reducing the need for more invasive procedures.

Recent literature has emphasised that, while the overall risk of endometrial cancer or atypical hyperplasia in premenopausal women with AUB is low (0.33% for cancer, 1.31% for cancer or atypia), targeted use of hysteroscopy remains crucial in optimising outcomes and avoiding unnecessary intervention (Clark et al., Obstetrics & Gynaecology, 2020). Thus, the role of hysteroscopy continues to expand, underpinning evidence-based practice in the evaluation and management of abnormal uterine bleeding in this population.

Methods

- Retrospective observational study data in the year 2021
- Study conducted in Aneurin Bevan University Health Board
- 124 premenopausal women were included in the study

Inclusion criteria

- Hysteroscopy for abnormal uterine bleeding
- Age less than 50years

Exclusion criteria

- Age > 50 years
- Unsure of menopause status or established menopause
- Hysteroscopy for indications other than abnormal uterine bleeding

Methodology

Patients attended gynaecology outpatient clinics or emergency gynaecology units with abnormal uterine bleeding, including heavy menstrual bleeding, intermenstrual bleeding, or postcoital bleeding. Hysteroscopy procedures were performed in either outpatient or theatre settings. Saline hysteroscopy was conducted using a small diagnostic hysteroscope or myosure hysteroscope. If a diagnostic hysteroscopy identified a polyp or fibroid, a therapeutic hysteroscopy was performed during the same session. Data were collected from clinical workstations and theatre records.

Statistical analysis

SPSS v22 was used. Categorical data were presented as percentages; continuous variables as mean $\pm$ SD. Chi square and t-tests were used where applicable

RESULTS

Demographics

Table 1 Demography PF Patient Population

Age Group	Number of Patients	Percentage (%)
20–30	12	10%
31–39	34	27.41%
40–45	37	29.83%
46–50	41	33%
Total	124	100%

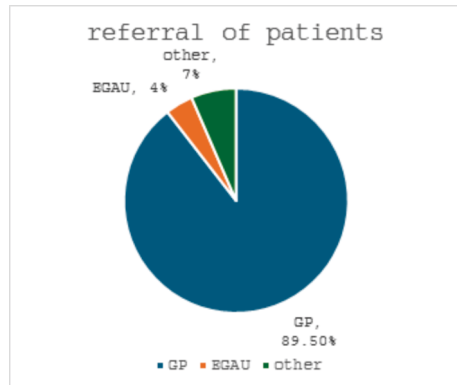
The chart presents the age-wise distribution of 124 women who participated in the study. The majority belonged to the 46–50 years age group, comprising 33% of the participants. Women aged 40–45 made up 29.83%, while those in the 31–39 bracket accounted for 27.41%. The smallest group was aged 20–30, representing 10% of the cohort. This indicates that most patients referred for assessment and included

in the study were in their late reproductive years. Mean age 40.57 years and median age group 40-45 years.

Referral of Patients

Diagram 2

General practitioner referred 89.50% into the hospital, on the other hand few patients self-presented to emergency gynaecology units and others were referred to Gynaecology from other specialties.



Referral Reasons

Table 3

Reason	Percentage (%)
Heavy bleeding	61.2%
IMB	23.1%
Abnormal USS	8.2%

The most common reasons for hysteroscopy referrals were heavy bleeding (61.2%), intermenstrual bleeding (IMB) (23.1%), and abnormal ultrasound scan findings (8.2%).

Medical Management

Table 4

Medical treatment tried	Percentage
Yes	60.5%
No	39.5%

The table indicates that 60.5% of individuals received medical treatment before hysteroscopy, either in primary or secondary care, while 39.5% did not. Among those without documented prior treatment, it is possible some tried primary care options, though clinical records do not confirm this.

Comorbidities

Table 5

PCOS	Obesity	Infertility
4	9	2

The table summarises the comorbidities observed among the participants. Out of the group, 4 individuals had polycystic ovary syndrome (PCOS), 9 were obese, and 2 experienced infertility. This indicates that obesity was the most common comorbidity, followed by PCOS and infertility among those assessed.

Ultrasound Performed

Table 6

Ultrasound performed	123
Ultrasound not performed	1

Out of the total participants, ultrasound was performed in 123 cases, while only 1 participant did not undergo ultrasound scan.

Ultra Findings

Table 7

Finding	Count	Percentage (%)
Polyp	42	34.1%
Submucous Fibroid	17	13.8%
Intramural Fibroid	3	2.4%
Thick Endometrium	33	26.8%
Normal	29	23.6%

The ultrasound findings among the participants revealed that polyps were the most common abnormality, identified in 42 cases (34.1%). This was followed by thick endometrium in 33 cases (26.8%), submucous fibroids in 17 cases (13.8%), and intramural fibroids in 3 cases (2.4%). Notably, 29 participants (23.6%) showed normal

ultrasound results. Overall, the data indicates a predominance of polyps and thick endometrium as the primary ultrasound abnormalities within the group assessed.

Anaesthesia for Hysteroscopy

Table 8

General anaesthesia	Local anaesthesia
110 (88.7%)	14 (11.3%)

The data indicates that out of 124 hysteroscopy procedures performed, general anaesthesia (GA) was used in 110 cases (88.7%), while local anaesthesia (LA) was administered in 14 cases (11.3%). This suggests a strong preference for general anaesthesia among the study participants.

Hysteroscopy Findings

Table 9

Normal	Polyp	polypoidal	Thick endo	Fibroid
60 (44.1%)	37 (27.2%)	4 (2.9%)	11 (8.1%)	12 (8.8%)

The hysteroscopy results from 124 cases reveal that 44.1% (60 cases) were normal, while polyps were detected in 27.2% (37 cases). Other findings included polypoidal changes in 2.9% (4 cases), thick endometrium in 8.1% (11 cases), and fibroids in 8.8% (12 cases). These figures highlight that nearly half the procedures yielded normal findings, with polyps being the most common abnormality detected

Correlation: Ultrasound vs Hysteroscopy

Table 10

Ultrasound Result	Cases	Polyps found on Hysteroscopy	Normal on hysteroscopy
Normal ultrasound	29	6	23

- Out of 29 cases with a normal ultrasound, 6 cases were found to have polyps on hysteroscopy. This represents approximately 20.7% ($6/29 \times 100$) of the cases.
- The remaining 23 cases (out of 29) were confirmed as normal by hysteroscopy, which is approximately 79.3% ($23/29 \times 100$).

Table 11

Finding on Ultra-sound	Total Cases	Normal on Hysteroscopy (n, %)	Polyps on Hysteroscopy (n, %)	Fibroids on Hysteroscopy (n, %)	Other (n, %)
Polyps/fibroids	62	24 (38.7%)	22 (35.5%)	11 (17.7%)	5 (8.1%)

Polyps/fibroids on ultrasound: 62 cases. On hysteroscopy- uterine cavity appeared normal in 24 cases, polyps seen in 22 patients, sub mucous fibroid seen in 11 patients and other findings such as polypoidal endometrium or thick endometrium seen in 5 patients.

Mode of Biopsy

Table 12

Mode of Biopsy	Number of Cases	Percentage (%)
Targeted	8	6.4%
Blind	49	39.2%
pipelle	12	9.6%
No biopsy	6	4.8%
Polyp removal	37	29.6%
Fibroid removal	12	9.6%
Total	124	100%

The data summarise the distribution of biopsy methods used in a cohort of 124 patients evaluated for suspected endometrial pathology. This, followed by polyp removal (37 cases, 29.6%), pipelle biopsy (12 cases, 9.6%), fibroid removal (12 cases, 9.6%), targeted biopsy (8 cases, 6.4%), and no biopsy performed in 6 cases (4.8%). This reflects a practice pattern where blind biopsy and polypectomy are frequently relied upon, with a smaller proportion undergoing targeted or minimally invasive sampling techniques.

Biopsy Results

Table 13

Hyperplasia	Atypia	Cancer	Inadequate	Normal
3	1	1	1	118
2.46%	0.82%	0.82%	0.82%	96.72%

In this cohort of 124 patients evaluated for suspected endometrial pathology, the biopsy results revealed that the vast majority had normal histology. Specifically, out of the total samples, 118 (96.72%)

were normal, while hyperplasia was found in 3 cases (2.46%), atypia in 1 case (0.82%), and endometrial cancer in 1 case (0.82%). There was also 1 inadequate sample (0.82%). These findings underscore the low prevalence of significant endometrial pathology within this population, with most abnormalities being benign or non-neoplastic.

The p-value (≈ 0.5) indicates that there is no statistically significant difference between the observed rate of detection of hyperplasia/malignancy and the expected prevalence in a similar low-risk premenopausal population. This suggests that the results from this cohort are consistent with published international literature and guidelines, where the prevalence of significant endometrial pathology is low among premenopausal women presenting with abnormal uterine bleeding.

DISCUSSION

The present study provides a comprehensive evaluation of the diagnostic and management pathways for abnormal uterine bleeding (AUB) in premenopausal women, with a particular focus on the application and outcomes of hysteroscopy. When contextualised against national and international data, the findings demonstrate both concordance and nuanced differences reflective of regional practice, resource availability, and evolving guidelines.

Globally, the prevalence of polyps and other intrauterine pathologies detected during hysteroscopy varies. For instance, studies such as Campo et al. (2009) report that the rate of normal findings in office hysteroscopy can range from 30% to 60%, depending on patient selection and indication. The detection rate for polyps often falls between 20% and 35%, which aligns closely with the present study's findings of 27.2% for polyps. Similarly, European Society for Gynaecological Endoscopy (ESGE) guidelines suggest that hysteroscopy is highly effective in identifying endometrial abnormalities that may be missed by ultrasound alone, supporting the observed diagnostic value in this cohort. These results reinforce the utility of hysteroscopy in diagnosing intrauterine pathologies, especially in cases where non-invasive imaging appears normal. The study's findings are consistent with international data, further validating the role of hysteroscopy in routine gynaecological practice. The study finding indicates that even when an ultrasound appears normal, hysteroscopy may detect polyps in about one-fifth of such cases. This suggests that ultrasound alone may miss some intrauterine pathologies, highlighting the added diagnostic value of hysteroscopy for patients with suspected endometrial abnormalities. The correlation between ultrasound and hysteroscopy findings observed in this cohort closely mirrors trends reported in the international literature. In the present data, among 29 cases with a normal ultrasound, hysteroscopy identified polyps in 20.7% of cases, demonstrating that a significant proportion of intrauterine pathologies may be missed on ultrasound alone. This finding is consistent with studies such as Campo et al. (2009), which highlight that the sensitivity of ultrasound for detecting endometrial polyps is limited, and that hysteroscopy remains the gold standard for direct visualisation and diagnosis. In their analysis, the detection rate for polyps by hysteroscopy among patients with normal ultrasound findings ranged from 15% to 25%, aligning closely with the 20.7% reported here.

Similarly, guidelines from the European Society for Gynaecological Endoscopy (ESGE) emphasise the diagnostic superiority of hysteroscopy, particularly in cases where ultrasound results are inconclusive or normal but clinical suspicion persists. Studies referenced by the ESGE demonstrate that hysteroscopy can uncover polyps, submucosal fibroids, or other intrauterine abnormalities not apparent on sonography in up to one-fifth of cases, further supporting the present findings.

The pattern of findings in patients with thickened endometrium or suspected polyps/fibroids on ultrasound also reflects international experience, where a proportion of cases initially suspected to have pathology on ultrasound are ultimately found to be normal or have different intrauterine lesions on hysteroscopic evaluation. This underscores the complementary role of hysteroscopy in clarifying ambiguous or suspicious ultrasound findings and in guiding targeted biopsy when indicated. Studies such as Campo et al. (2009) and guidelines from the European Society for Gynaecological Endoscopy (ESGE) emphasise the superiority of hysteroscopy-guided (targeted) biopsy for detecting focal lesions like polyps and fibroids, which may not be adequately sampled by blind or pipelle techniques. The notable

proportion of cases managed by polyp or fibroid removal in this cohort aligns with the trend towards minimally invasive, hysteroscopic interventions for direct removal and diagnosis of intrauterine pathology. Combined rate of blind biopsy and pipelle biopsy was more than 50% in this study. These findings are consistent with international literature and clinical guidelines, which highlight that while blind biopsy remains a widely used method due to its simplicity and accessibility, its diagnostic accuracy is limited compared to targeted approaches.

The results from this cohort are consistent with international data and published literature, particularly in premenopausal women with abnormal uterine bleeding (AUB), where the risk of finding atypical hyperplasia or malignancy is generally low. For instance, multiple studies have shown that the prevalence of endometrial cancer in women presenting with AUB is less than 1%, and hyperplasia rates typically range from 1–3%, which aligns closely with the findings here. Over 95% of endometrial biopsies for AUB are normal or benign, consistent with large studies and systematic reviews.

Moreover, as highlighted in the provided context, these findings are in line with international guidelines and expert consensus, such as those from the European Society for Gynaecological Endoscopy (ESGE) and studies like Campo et al. (2009), which emphasise the importance of risk assessment and the limited diagnostic yield of blind biopsies in low-risk women. The low rates of atypia and malignancy further support current recommendations to prioritise medical management and reserve invasive diagnostic procedures for women with persistent symptoms or risk factors (such as obesity or PCOS).

Globally, the trend towards targeted and minimally invasive techniques, such as hysteroscopy-guided biopsy, is driven by the need for greater diagnostic accuracy, especially for focal lesions. However, the overall prevalence of significant pathology remains low in women without risk factors, as demonstrated in this cohort and corroborated by international literature. This reinforces the notion that over-investigation can be avoided in low-risk women, and that management should be tailored based on individual risk profiles and clinical presentation.

Heavy menstrual bleeding was the predominant reason for hysteroscopy referrals, aligning with both UK and international data. Most patients (60.5%) received medical management before hysteroscopy, reflecting adherence to established guidelines, while nearly all underwent ultrasound as the first-line imaging modality, consistent with global standards.

Regarding procedural details, the preference for general anaesthesia (88.7%) stands in contrast to trends in other Western countries, where local anaesthesia or no anaesthesia is increasingly common for outpatient or diagnostic hysteroscopies.^{6,7,8} For instance, up to 30–50% of ambulatory hysteroscopies in Europe and North America are performed with local anaesthesia, reserving general anaesthesia for more complex or operative cases.

Globally, the approach to AUB management in premenopausal women is shaped by healthcare infrastructure and cultural norms. In high-income countries, a structured pathway involving initial medical management, ultrasound, and selective hysteroscopy is the norm, while in resource-limited settings, there is greater reliance on empirical therapy and clinical judgement.^{4,5} Participation rates for medical procedures such as hysteroscopy vary, with UK rates generally exceeding 65–80% and global rates ranging from 50–75%, reflecting disparities in accessibility and awareness.

CONCLUSION

Hysteroscopy remains a valuable and accurate diagnostic tool, particularly for detecting intrauterine lesions such as polyps and fibroids that may be missed by ultrasound. The overall risk of significant endometrial pathology in premenopausal women with AUB is low, especially in the absence of risk factors, supporting a strategy of initial medical management and reserving hysteroscopy for cases with persistent symptoms, abnormal imaging, or additional risk factors. These results reinforce the importance of adhering to evidence-based protocols and tailoring interventions to individual patient risk profiles to optimise outcomes and resource utilisation.

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