

The role of hysteroscopy with morcellator without anesthesia in the management of abnormal uterine bleeding

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Abstract

Objective: To evaluate the feasibility of hysteroscopy with morcellator without anesthesia and the diagnostic accuracy of 2D, 3D and power Doppler transvaginal sonography (TVS) in patients with abnormal uterine bleeding (AUB).

Material and Methods: This was a retrospective study including women with AUB. All patients underwent 2D, 3D and power Doppler TVS evaluation of the uterine cavity, and patients with suspicion on ultrasound (US) of endometrial pathology (EP) underwent hysteroscopy with morcellator without anesthesia. The painful symptomatology was assessed during the procedure using a visual analogue scale (VAS). Additionally, histological evaluation was performed.

Results: A total of 182 women underwent US imaging, of whom 131 (72%) had hysteroscopy. 130/131 patients completed the hysteroscopic examination with good compliance (VAS <4). One patient (0.8%) was unable to complete the procedure due to nulliparity and cervical stenosis. Of the 130 patients the US diagnosis was confirmed in 120 (92.3%), while in 10 patients (7.7%) the hysteroscopic diagnosis was different from the US diagnosis. Histological examination confirmed benign endometrial polyps in 115/130 patients (88.5%), while premalignant conditions were diagnosed in 3/130 patients (2.3%) and malignant conditions in 2/130 (1.5%). Of the 10 patients with endometrial thickening, two were diagnosed with a malignant condition.

Conclusion: This study confirmed the feasibility of managing patients with AUB and suspicion of EP using “see-and-treat” hysteroscopy with morcellator without anesthesia. This procedure has the potential to yield desired outcomes while minimizing pain and discomfort, presenting a feasible outpatient approach for both treating and preventing endometrial carcinoma without requiring anesthesia. (J Turk Ger Gynecol Assoc 2024; 25: 1-6)

Keywords: Abnormal uterine bleeding, endometrial polyp, hysteroscopy, morcellator

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Introduction

Abnormal uterine bleeding (AUB) is a widespread gynecological problem, affecting up to 30% of women (1). Endometrial polyps are one of the most common causes of uncontrolled uterine bleeding in both pre- and post-

menopausal women (2). Transvaginal sonography (TVS) is the primary modality for locating endometrial polyps and identifying endometrial pathology (EP), in some cases using contrast saline infusion or gel installation, while the gold standard for diagnosis and treatment is hysteroscopy (3,4).



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Practice-based operative hysteroscopy is generally well tolerated by patients (5), thus avoiding many traumatic uterine procedures and allowing a more direct strategy for the assessment and treatment of a numerous intrauterine pathologies, at the same time that the diagnosis is made (6). Hysteroscopy may be suitable in women with AUB if there are ultrasound (US) signs of EP (7), given the excellent diagnostic accuracy in the detection of uterine pathologies.

Endometrial polyps may be treated by uterine curettage and grasping forceps, but this procedure is time-consuming, and may not yield satisfying results. Usually, small polyps may be removed by hysteroscopic grasping instruments or by electrosurgical resection. However, these strategies are challenging when there are large or multiple polyps. In these cases, hysteroscopic morcellation is faster, less painful, and more effective, allowing a more complete excision of endometrial polyps than electrosurgical resection (9,10).

Outpatient hysteroscopy provides significant advantages to women who can tolerate it, as they can get safe and precise detection and treatment of AUB, avoiding the potential complications of general anesthesia and hospital admission (11). For clinical management in the outpatient setting, the main objectives are to manage pain, improve efficiency, and reduce the duration of procedures while maintaining adequate accessibility standards for both diagnostic and therapeutic outpatient hysteroscopy.

This retrospective study evaluated the feasibility of “see-and-treat” hysteroscopy with morcellator without anesthesia in patients with AUB, and investigated the advantages that this procedure may offer regarding alleviation of pain, levels of patient discomfort, and improving clinical efficiency without sacrificing treatment and prevention of endometrial carcinoma.

Material and Methods

This retrospective, observational study included women with AUB referred to our hospital between November 2021 and December 2022, including patients with suspicion of EP such as polyps and endometrial thickening, and excluding patients with suspected intracavitary myomas. AUB was defined in childbearing age, as bleeding from the corpus of the uterus which was not controlled in duration, amount, frequency and/or regularity, while postmenopausal bleeding was defined as either any bleeding after menopause in women not on hormonal therapy or unexpected or heavy bleeding in women on hormonal therapy. Subjects were divided into premenopausal and menopausal groups. All patients underwent two-dimensional (2D), 3D and power Doppler TVS assessment of the uterine cavity. Subsequently, patients with suspicion of EP on TVS underwent hysteroscopy with morcellator without anesthesia, and were included in the study. All patients were

subjectively evaluated for painful symptomatology during the procedure by means of completion of a visual analogue scale (VAS). Hysteroscopic diagnosis was also made and histological evaluation was performed in cases where samples were taken. Additionally, the accuracy of the TVS diagnosis was compared with respect to the hysteroscopic diagnosis.

The criteria for inclusion in this study were: women with AUB and TVS suspicion of EP; who underwent hysteroscopy with morcellator without anesthesia; and there was access to complete medical history, including symptoms and surgical reports. Exclusion criteria were; no suspicion of EP on TVS; being pregnant; and unavailable accurate medical history.

Clinical examination

The complete medical, surgical, and obstetrical history of the patients including age, body mass index [(BMI), in kg/m²], age at menarche, gravidity, parity, and the mode of delivery were recorded. Demographic data, menstrual information, indication for hysteroscopy and imaging findings were collected.

Ultrasound examination

All TVS assessments and interpretations were performed by an experienced sonographer using a 4-9-MHz probe with a 3D facility (Voluson E6 or E10, GE Medical Systems, Zipf, Austria). Routinely, 2D US with greyscale and power Doppler for examination of the pelvis was carried out.

The uterus, myometrium, and endometrium were analyzed. The 2D examination was followed by the acquisition of the 3D volume of the uterus, with and without power Doppler, which is important to assess the uterine cavity morphology. TVS scans were performed using the International Endometrial Tumor Analysis (IETA) examination technique, and the US findings were described in IETA terminology (12).

Endometrial depth was measured in the sagittal plane including both endometrial layers. When intracavitary fluid was found, the two layers were measured separately, and the sum was recorded. Endometrial echogenicity was reported as uniform or non-uniform. The color-Doppler score is a subjective evaluation of the amount of color, reflecting the vascularity, and is scored as 1 (no color), 2 (minimal color), 3 (moderate color) or 4 (abundant color).

All data was recorded as 2D still images, 2D video-clips, and 3D volumes.

Hysteroscopy

All patients underwent hysteroscopy with morcellator using an Integrated Bigatti Shaver (Karl Storz, Tuttlingen, Germany) without anesthesia using normal saline (NaCl: 0.9%) as distention medium in an outpatient setting. The procedural time measurement began upon insertion of the instrument

using vaginoscopic access and continued until its removal. Painful symptoms were assessed during the procedure using a VAS, taking the mean score reported throughout the procedure. The hysteroscopic diagnoses of intracavitary pathologies were recorded for all patients. Removal of intrauterine pathologies with histological examination was performed for all patients.

Ethical approval

All involved patients gave their informed consent before the TVS examination and the hysteroscopy to permit the use of their data. The study was submitted and approved by the board of the USL Toscana Sud Est (approval number: 0002959, date: 22.11.2022).

Statistical analysis

Statistical analyses were performed using the SPSS v.15.0 (SPSS, Inc., Chicago, IL, USA). Continuous variables are reported as mean \pm standard deviation (SD). Categorical variables are reported as a frequency or percentage. The statistical analyses initially assessed patient characteristics. Then the characteristics of hysteroscopy procedure and US, hysteroscopic and histological findings were evaluated in terms of percentage. Intergroup comparisons were performed using chi-square tests for categorical variables and independent sample t-tests for continuous data. Fisher's exact test was used to compare prevalence. Results with $p < 0.05$ were considered statistically significant.

Results

A total of 182 women underwent TVS and 131 (72%) patients who matched the inclusion criteria were included. The characteristics of the study cohort are shown in the Table 1.

The mean \pm SD age of the patients was 49.7 ± 5.2 years. Most patients (78.7%) had one or more pregnancies and 27.2% of patients were affected by hypertension, diabetes, and/or dyslipidemia. The majority (62.6%) were menopausal. None of the patients were undergoing hormone replacement therapy.

The cohort was divided into two subgroups: pre-menopausal patients (n=49) and menopausal (n=82) patients. There were no differences in between the two groups in terms of BMI, age at menarche, presence of metabolic diseases (hypertension, diabetes, and dyslipidemia), or indication for hysteroscopy (Table 1). Thus, the two groups were considered together for further analysis.

The characteristics of the hysteroscopic procedure used in the study are shown in Table 2. The hysteroscopic procedure was completed in 99.2%. One patient was unable to complete the procedure due to nulliparity and presence of cervical stenosis. The mean duration of the procedure was 7.3 minutes, while the mean VAS score reported was 2.5. The majority who completed the hysteroscopy (n=128, 98.5%) reported satisfaction with the procedure and setting. In two cases, complications involving fever and pelvic pain attributable to endometritis were reported 2 days after the procedure.

The results of the sonographic, hysteroscopic and histological evaluations are shown in Table 3. In 120 cases (92.3%), the diagnosis was consistent with both TVS and hysteroscopy, while in 10 patients (7.7%), hysteroscopy revealed the presence of an EP different from that suspected by the US. Histological examination confirmed benign endometrial polyps in 115/130 (88.5%), premalignant conditions (atypical endometrial hyperplasia) in 3/130 patients (2.3%) and malignant conditions (endometrial cancer) in 2/130 patients (1.5%). Among the 10 patients who received a diagnosis of endometrial thickening

Table 1. Patients characteristics in total study population, premenopausal group, and menopausal group

Patients characteristics	Total population, n (%) / (mean \pm SD)	Premenopausal group, n (%) / (mean \pm SD)	Menopausal group, n (%) / (mean \pm SD)
		131	49 (37.4)
Age (years)	49.7 \pm 5.2	43.5 \pm 4.6	51.1 \pm 4.2
BMI (kg/m ²)	27.8 \pm 2.1	25.6 \pm 2.5	28.3 \pm 1.7
Menarche (years)	12.0 \pm 1.8	11.8 \pm 1.6	12.2 \pm 2.0
Gravidity	2.3 \pm 0.8	2.2 \pm 1.2	2.1 \pm 1.1
Parity	1.5 \pm 0.6	1.6 \pm 0.7	1.8 \pm 0.4
Nulliparity	29 (22.1)	11 (22.4)	18 (21.9)
Hypertension	23 (17.5)	7 (14.3)	16 (19.5)
Diabetes	5 (3.8)	1 (2.0)	4 (4.9)
Dyslipidemia	9 (6.9)	3 (6.1)	6 (7.3)
Previous uterine surgery	16 (12.2)	5 (10.2)	11 (13.4)
On hormonal therapy	12.2% (16)	32.6% (16)	0.0% (0)
Data shown as n (%) or mean \pm standard deviation, BMI: Body mass index			

Table 2. The characteristics of hysteroscopic procedure, the evaluation of painful symptomatology and patients' satisfaction

Hysteroscopic procedure	Total population
Completed (n)/total (%)	130/131 (99.2%)
Not completed, (n)/total (%)	1/131 (0.8%)
VAS (mean \pm SD)	2.5 \pm 0.8
Duration of procedure, minutes (mean \pm SD)	6.5 \pm 1.6
Patient satisfaction, (n)/total (%)	128/131 (97.7%)
Complications, (n)/total (%)	2/131 (1.5 %)
SD: Standard deviation, VAS: Visual analogue scale	

Table 3. Sonographic, hysteroscopic and histological evaluation in total study population

Uterine pathology (n %; pts/)	Sonographic diagnosis	Hysteroscopic diagnosis	Histological diagnosis
Benign endometrial polyp, (n)/total (%)	125/131 (95.2%)	120/130 (92.3%)	115 (88.5%)
Endometrial thickening, n/total (%)	6/131 (4.6%)	10/130 (7.7%)	8 (6.1%)
Atypical endometrial hyperplasia, n/total (%)	0 (0.0%)	0 (0.0%)	3 (2.3%)
Endometrial cancer, n/total (%)	0 (0.0%)	0 (0.0%)	4 (3.1%)

during hysteroscopy, two patients were diagnosed with endometrial cancer, and eight patients were diagnosed with benign endometrial thickening.

Discussion

AUB is one of the most frequent gynecological complaints. Very often, AUB is the manifestation of a benign clinical condition, but sometimes it can be the first sign of malignant uterine pathology (13). Therefore, evaluation of the cause of AUB is important and should be performed promptly. Before obtaining the diagnosis and removing the organic EP causing AUB, the patient may be subjected to various procedures, such as diagnostic, and subsequently operative, hysteroscopy (14). The purpose of our study was to estimate the feasibility of hysteroscopy with morcellator without anesthesia and all outcomes regarding alleviating pain, discomfort, and improving efficiency without sacrificing treatment and prevention of endometrial carcinoma.

The hysteroscopic procedure was completed in 99.2% of the patients and 98% of patients who completed the hysteroscopy reported satisfaction with the procedure and setting, confirming that hysteroscopic morcellation was safe, effective and acceptable to patients, even in an outpatient setting (15). Pain might be a limitation for this procedure in an outpatient setting, but our results, in agreement with the literature, show that the technique is well tolerated patients (16).

Certainly, given the size of the instrument, hysteroscopy with morcellation can be more troublesome than a simple diagnostic

hysteroscopy, however, unlike diagnostic hysteroscopy, which is often not curative in terms of treatment, this surgical method is both diagnostic and therapeutic. This technique is capable of removing and aspirating polyp tissue, reducing the time needed to reintroduce and to remove the hysteroscope to extract material through the cervix (17).

This is an important consideration because the possibility of diagnosing and treating the cause of AUB during a single procedure is likely to make patients more compliant, reducing the number of healthcare visits required to treat the condition. Therefore, the role of US evaluation is fundamental. It can guide towards diagnostic hysteroscopy, alleviating discomfort caused to the patient when there is suspicion of endometrial thickening or a malignant myometrial pathology (18,19) or towards a "see-and-treat" hysteroscopy with morcellator when endometrial polyps are identified. Diagnostic hysteroscopy remains an important tool for direct endometrial sampling and may be used as the first line treatment for the diagnosis of endometrial cancer and hyperplasia. In line with this, the results of the present study showed a high accuracy (92.3%) for TVS in the evaluation of the endometrial cavity.

Some authors have compared this surgical procedure with conventional operative hysteroscopy, with varying results. For some, hysteroscopic morcellation is more accurate, effective and safe because it does not involve electrical equipment. This eliminates the risk of electrical damage to the patient, such as tissue necrosis, uterine perforation or potential damage to other organs that may occur due to alterations in the current

circuit. In addition, hysteroscopic morcellation does not cause scars, the endometrium is better protected, and there are fewer postoperative complications (20-22). For others, this new technology is no better than traditional resection in terms of surgical success rate for treating endometrial lesions (23). Certainly, operative hysteroscopy can have advantages in certain types of intracavitary pathology, such as fibroids, especially those that are calcified or measuring >40 mm (24), or polyps located on the uterine fundus where it is more difficult to remove the entire lesion. In contrast, operative hysteroscopy may be more difficult in the presence of large or numerous polyps (25,26). This consideration once again highlights the importance of pre-operative US diagnosis in order to select the most appropriate therapeutic approach for each patient (12).

Another point of interest is the accuracy of the histological diagnosis, which may be improved with this method. In the present study, 3.1% of patients were diagnosed with endometrial malignancy. This may be attributed in part to the fact that one third of patients were affected by hypertension, diabetes, and dyslipidemia, all of which are contributing risk factors (27), and in part to the use of the technique that simultaneously excises and aspirates polyp tissue, not only reducing the formation of bubbles and the accumulation of excision tissue fragments, but also facilitating subsequent histological analysis (28). Within our cohort, no intraoperative complications were identified and only two postoperative complications were reported. This evidence supports the published reports on this technique, highlighting the role of hysteroscopic morcellation as a less complex surgery compared to conventional operative hysteroscopy (29).

However, hysteroscopic morcellation also has disadvantages, for example the inability to coagulate bleeding vessels encountered during surgery (20). In addition, the expense incurred for disposable devices (blades, tubings, etc.) needed to perform hysteroscopic morcellation is higher compared to the reusable instruments utilized for resectoscopy, but the possibility of performing a single procedure without the use of anesthesia and an operating room has been reported to more than compensate for the higher operating costs (30).

Conclusion

This study has provided additional evidence to support the opinion that “see-and-treat” hysteroscopy with morcellator without anesthesia is a safe and effective technique while having high patient acceptability. This procedure exhibits the potential to yield desired outcomes while minimizing pain and discomfort, presenting a feasible outpatient approach for both treating and preventing endometrial carcinoma. In deciding which technique should be used, a good pre-operative US

evaluation plays a fundamental role. However, the tolerance for pain during practice-based operative hysteroscopy will vary greatly among women and will also depend on the skill level of the clinician performing the procedure, which may result in lower levels of patient acceptability.

Ethics Committee Approval: *All involved patients gave their informed consent before the TVS examination and the hysteroscopy to permit the use of their data. The study was submitted and approved by the board of the USL Toscana Sud Est (approval number: 0002959, date: 22.11.2022).*

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