

ORIGINAL ARTICLE

Medicine Science 2026;15(2):929-33

Retrospective analysis of the histopathological results of operative hysteroscopy performed in a tertiary healthcare facility over a 3-year period

¹Senol Senturk¹, ¹Mehmet Kagitci¹, ¹Sibel Dogan Polat¹, ¹Ilknur Merve Ayazoglu¹,
²Cigdem Can Bayrak², ²Bulent Yilmaz¹, ³Alperen Aksan³

¹Recep Tayyip Erdogan University, Faculty of Medicine, Department of Obstetrics and Gynecology, Rize, Türkiye

²Bucak State Hospital, Department of Obstetrics and Gynecology, Burdur, Türkiye

³Şar Hospital, Department of Obstetrics and Gynecology, Rize, Türkiye

Received 03 December 2025; Accepted 13 February 2026

Available online 29 May 2026 with doi: 10.5455/medscience.2025.12.339

Content of this journal is licensed under a Creative Commons Attribution-NonCommercial-NonDerivatives 4.0 International License.



Abstract

Operative hysteroscopy allows direct visualization and targeted treatment of intrauterine pathologies. This study evaluated the clinical indications and histopathological outcomes of operative hysteroscopy performed over a three-year period in a tertiary healthcare facility, with particular attention to differences between premenopausal and postmenopausal patients. This retrospective study included 211 consecutive patients who underwent operative hysteroscopy for suspected intrauterine pathology between July 2019 and July 2022. Patients were classified as premenopausal or postmenopausal. Clinical indications, demographic characteristics, and histopathological findings were obtained from medical records and analyzed comparatively between groups. Of the 211 patients, 184 (87.2%) were premenopausal and 27 (12.8%) were postmenopausal. The mean age was significantly higher in postmenopausal patients compared with premenopausal patients (58.15 ± 6.22 vs. 41.96 ± 7.47 years, $p < 0.001$). The most common indication for hysteroscopy was ultrasonographic suspicion of endometrial pathology (49.8%), followed by abnormal uterine bleeding (22.3%). Endometrial polyps were the most frequent histopathological finding ($n=113$, 53.6%). Malignant and premalignant lesions were identified in 14 patients (6.6%) and were significantly more common in postmenopausal than in premenopausal patients (22.2% vs. 4.3%, $p=0.004$). All cases of endometrial carcinoma presented with postmenopausal or abnormal uterine bleeding. Endometrial polyps are the most common histopathological finding in patients undergoing operative hysteroscopy, especially among those with abnormal uterine bleeding or suspicious ultrasonographic findings. Although malignant lesions are relatively uncommon, their significantly higher prevalence in postmenopausal patients highlights the importance of careful hysteroscopic evaluation and targeted endometrial sampling in this population.

Keywords: Endometrial polyp, histopathology, hysteroscopy, operative hysteroscopy

Introduction

Many diseases and clinical conditions encountered in gynecology practice require imaging and evaluation of the endometrial cavity. These diseases include infertility, endometrial polyps, foreign bodies, some malignancies and deformities of the uterus. While some diseases can be diagnosed with endometrial curettage and biopsy, hysteroscopy (HS) is accepted as the gold standard method in cases that require imaging and intervention of the endometrium [1].

Blind endometrial sampling techniques may fail to detect focal intrauterine lesions, particularly polyps and localized

malignancies. Previous studies have reported false-negative rates in blind biopsy procedures, underscoring the added diagnostic value of hysteroscopic visualization and targeted sampling. In addition, reported malignancy rates in hysteroscopy series vary according to population characteristics, including age distribution and menopausal status [2,3].

HS is a safe procedure that allows imaging of the uterine cavity and, when necessary, direct targeting of endometrial pathology and performing surgical intervention [4]. It may be possible to improve the management of patients by knowing in advance what kind of histopathological results may be encountered in which clinical indications.

CITATION

Senturk S, Kagitci M, Dogan Polat S, et al. Retrospective analysis of the histopathological results of operative hysteroscopy performed in a tertiary healthcare facility over a 3-year period. Med Science. 2026;15(2):929-33.



Corresponding Author: Alperen Aksan, Şar Hospital, Department of Obstetrics and Gynecology, Rize, Türkiye
Email: alprnaksan@gmail.com

In this study, it was aimed to present the indications and histopathological results of patients who underwent HS in our hospital.

Material and Methods

This is a retrospective study in which cases were diagnosed with intrauterine pathology and underwent operative HS in the Gynecology and Obstetrics Clinic between July 2019 and July 2022. In all cases, symptomatic or asymptomatic, the diagnosis of intrauterine pathology was made by transvaginal ultrasonography (TVUSG), saline infusion sonography (SIS), or hysterosalpingography (HSG). The information of the patients was obtained retrospectively from the hospitalization files. In this study, indications and histopathological results of operative HS performed in our hospital will be presented.

Applied Operative Hysteroscopy Technique

Before the operation, a detailed anamnesis was taken in all cases, and full physical and pelvic examinations were performed. Vagina and cervix were evaluated by speculum examination in terms of pathologies that may cause active vaginal bleeding. Preoperative and postoperative hemogram as laboratory test, and preoperative coagulometry (PT, aPTT, INR) values for bleeding diathesis were checked. All cases were evaluated with ultrasonography (GE Logic 200 ultrasound with 6.5 MHz transvaginal probe). Abnormal ultrasonographic findings were defined as endometrial thickness above 12 mm in premenopausal women with abnormal uterine bleeding, ≥ 5 mm in postmenopausal women, focal endometrial lesions suggestive of polyps, intracavitary masses, or heterogeneous endometrial echogenicity. The operation was performed under general anesthesia using a 10 mm monopolar resectoscope (Karl Storz, Tuttlingen, Germany). After the cervix and vagina were cleaned with povidone iodine solution with the help of a speculum while the patients were in the dorsolittotomy position, the uterine cavity was entered with a resectoscope by holding it at 11 o'clock with a single gear and dilating it up to the number 9 Hegar bougie. Cavity distension was achieved with glycine irrigation solution (3000 ml of 1.5%). Intraoperative fluid balance was carefully monitored in all cases by recording the amount of glycine infused and recovered. The maximum allowable fluid deficit was predefined according to institutional protocol. No cases of clinically significant fluid overload, electrolyte imbalance, or procedure-related hyponatremia were observed during the study period. All procedures were performed by experienced gynecologic surgeons in the same tertiary center. Histopathological evaluation was conducted by dedicated gynecologic pathologists according to standardized institutional criteria. Pathologists were blinded to detailed clinical indication when feasible.

Inclusion criteria of patients in the study

Patients who underwent operative hysteroscopy with a preliminary diagnosis of intrauterine pathology were included in the study. All procedures included in the study were operative

hysteroscopies performed with a resectoscope and involved either resection, excision, or removal of intrauterine pathology. Purely diagnostic hysteroscopies without intervention were not included in the analysis.

Exclusion criteria of patients in the study

Patients with bleeding diathesis, presence of abnormal pap-smear, presence of known gynecological malignancies, pelvic inflammatory disease in the last 3 months, presence of sexually transmitted diseases were excluded from the study. Exclusion criteria were defined to obtain a relatively homogeneous cohort of patients undergoing operative HS for benign or suspected premalignant intrauterine pathology. Patients with known gynecological malignancies or active pelvic infection were excluded to avoid confounding factors that could independently influence histopathological outcomes.

Statistical analysis

Statistical analyses were performed using SPSS software version 21.0 (IBM Corp., Armonk, NY, USA). The normality of continuous variables was assessed using the Shapiro–Wilk test. Continuous variables with normal distribution were expressed as mean $\pm$ standard deviation and compared using the Student's t-test. Continuous variables with non-normal distribution were expressed as median (interquartile range) and compared using the Mann–Whitney U test.

Categorical variables were presented as numbers and percentages and were compared using the chi-square test. Fisher's exact test was applied when the expected cell count was less than five.

Premenopausal and postmenopausal patients were compared in terms of demographic characteristics, clinical indications, and histopathological outcomes. Premenopausal status was defined as the presence of regular or irregular menstrual cycles within the preceding 12 months. Postmenopausal status was defined as the absence of menstruation for at least 12 consecutive months without other pathological or physiological causes. A p -value < 0.05 was considered statistically significant.

Due to the relatively small number of malignant and premalignant cases, multivariate regression analysis was not performed, and the results were interpreted descriptively.

Ethics Committee Approval

Recep Tayyip Erdoğan University Faculty of Medicine, Non-Invasive Clinical Research Ethics Committee (No: 2022-202, Date: 10 November 2022).

Results

A total of 211 patients who underwent operative HS were included in the study. The selection of the patients was illustrated in Figure 1. Of these, 184 (87.2%) were premenopausal and 27 (12.8%) were postmenopausal. The overall mean age of the study population was 44.03 ± 9.10 years. The mean age was

significantly higher in postmenopausal patients compared with premenopausal patients (58.15 ± 6.22 years vs. 41.96 ± 7.47 years, respectively; $p<0.001$).

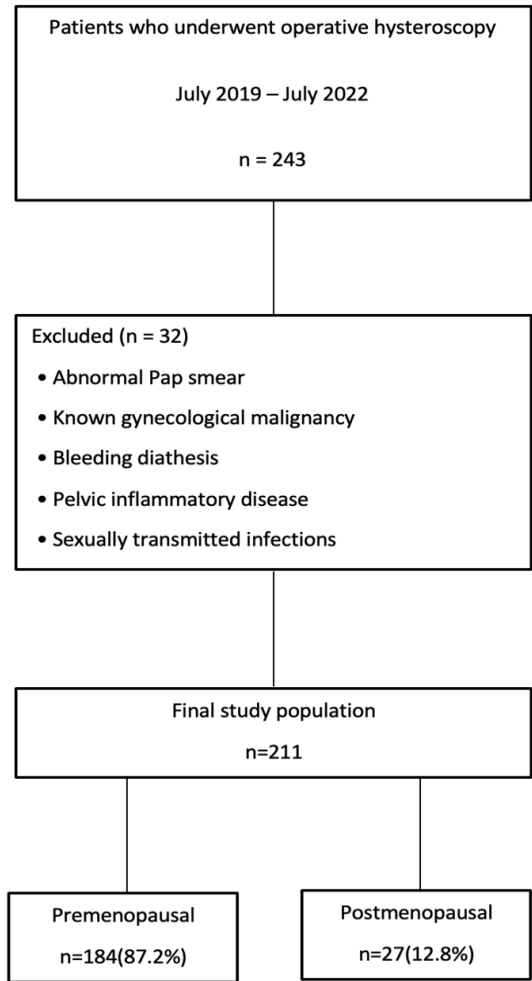


Figure 1. Flowchart of patient selection

The most common indication for operative HS was ultrasonographic suspicion of endometrial pathology, including increased endometrial thickness or irregular intrauterine lesions (n=105, 49.8%). Other indications were abnormal uterine bleeding (n=47, 22.3%), anatomical uterine disorders (n=18, 8.5%), postmenopausal bleeding (n=15, 7.1%), infertility (n=13, 6.2%), intrauterine device removal (n=9, 4.3%), and pelvic pain (n=4, 1.9%). Demographic characteristics and clinical indications are summarized in Table 1.

Table 1. Demographic data of the patients included in the study	
Number of patients	211
Age (mean ± SD)	44.03 ± 9.10
Premenopausal	184 (87.2)
Postmenopausal	27 (12.8)
Indication	
Ultrasound findings	105 (49.89)
Abnormal uterine bleeding n (%)	47 (22.3)
Anatomical disorder n (%)	18 (8.5)
Postmenopausal bleeding n (%)	15 (7.1)
Infertility n (%)	13 (6.2)
Intrauterine device n (%)	9 (4.3)
Pain n (%)	4 (1.9)
Data are presented as number and percentage unless otherwise stated. AUB: Abnormal uterine bleeding; PMB: Postmenopausal bleeding; IUD: Intrauterine device	

Endometrial polyps were the most common histopathological finding, detected in 113 patients (53.6%). Other histopathological diagnoses were physiological endometrium (12.8%), leiomyoma (7.6%), endometritis (4.7%), irregular proliferative endometrium (2.8%), retained products of conception (2.4%), and malignant or premalignant lesions (6.6%). The distribution of histopathological diagnoses according to clinical indication is presented in Table 2.

Table 2. Distribution of histopathological diagnoses according to clinical indication

Histopathological diagnosis	USG findings n (%)	AUB n (%)	Anatomical disorder n (%)	PMB n (%)	Infertility n (%)	IUD n (%)	Pain n (%)	Total n (%)
Endometrial polyp	67 (63.8)	29 (61.7)	1 (5.6)	10 (66.7)	2 (15.4)	1 (11.1)	3 (75.0)	113 (53.6)
Physiological endometrium	12 (11.4)	7 (14.9)	2 (11.1)	0 (0)	3 (23.1)	2 (22.2)	1 (25.0)	27 (12.8)
Leiomyoma	9 (8.6)	4 (8.5)	1 (5.6)	0 (0)	2 (15.4)	0 (0)	0 (0)	16 (7.6)
Endometritis	5 (4.8)	2 (4.3)	0 (0)	0 (0)	2 (15.4)	1 (11.1)	0 (0)	10 (4.7)
Irregular proliferative endometrium	3 (2.9)	1 (2.1)	0 (0)	2 (13.3)	0 (0)	0 (0)	0 (0)	6 (2.8)
Retained products of conception	4 (3.8)	1 (2.1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (2.4)
Endometrioid adenocarcinoma	0 (0)	0 (0)	0 (0)	3 (20.0)	0 (0)	0 (0)	0 (0)	3 (1.4)
Endometrial intraepithelial neoplasia	1 (1.0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.5)
Serous carcinoma	1 (1.0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.5)
Total	105 (100)	47 (100)	18 (100)	15 (100)	13 (100)	9 (100)	4 (100)	211 (100)

Values are expressed as number of patients and corresponding percentages within each clinical indication. USG: Ultrasonographic findings; AUB: Abnormal uterine bleeding; PMB: Postmenopausal bleeding; IUD: Intrauterine device

Malignant and premalignant lesions were identified in 14 patients (6.6%). Of these, 6 (22.2%) were postmenopausal and 8 (4.3%) were premenopausal. The incidence of malignant and premalignant lesions was significantly higher in postmenopausal patients compared with premenopausal patients (chi-square test, $p=0.004$).

Endometrioid adenocarcinoma was detected in three patients, all of whom presented with postmenopausal bleeding. One case of serous carcinoma was identified in a patient who underwent hysteroscopy due to suspicious ultrasonographic findings. One patient was diagnosed with endometrial intraepithelial neoplasia.

Regarding operative hysteroscopic procedures, septum resection was performed in 12 patients, T-shaped uterus correction in 2 patients, adhesiolysis for Asherman syndrome in 4 patients, and intrauterine device removal in 9 patients. The distribution of operative procedures is shown in Table 3.

Table 3. Operative hysteroscopic procedures performed

Procedure	n (%)
Septum resection	12 (5.7)
T-shaped uterus correction	2 (0.9)
Adhesiolysis (Asherman syndrome)	4 (1.9)
Intrauterine device removal	9 (4.3)
Other operative procedures	—

Values are expressed as number of patients and corresponding percentages within each clinical indication. USG: Ultrasonographic findings; AUB: Abnormal uterine bleeding; PMB: Postmenopausal bleeding; IUD: Intrauterine device

Discussion

In this retrospective study, the clinical indications and histopathological outcomes of operative hysteroscopy performed over a three-year period in a tertiary healthcare facility were evaluated. The main findings of the study can be summarized as follows: (i) ultrasonographic suspicion of intrauterine pathology was the most common indication for operative HS, (ii) endometrial polyps constituted the most frequent histopathological diagnosis, and (iii) malignant and premalignant lesions, although relatively uncommon overall, were significantly more frequent among postmenopausal patients.

Evaluation of the endometrial cavity is a common challenge in daily gynecological practice. Transvaginal ultrasonography is widely used as an initial diagnostic tool; however, its ability to accurately characterize focal intrauterine lesions is limited. Although saline infusion sonography improves diagnostic accuracy, patient discomfort and limited availability restrict its routine use. Operative HS allows direct visualization of the uterine cavity and enables targeted biopsy or complete removal of focal lesions, thereby providing both diagnostic and therapeutic advantages [1,4-6].

In the present study, endometrial polyps were identified as the most common histopathological finding, accounting for more

than half of all cases. This finding is consistent with previous studies reporting endometrial polyps as the leading intrauterine pathology in patients undergoing hysteroscopic evaluation, particularly among those presenting with abnormal uterine bleeding or suspicious ultrasonographic findings [7–10]. Similar frequencies of endometrial polyps have been reported in studies evaluating histopathological results of endometrial sampling and hysteroscopic procedures, supporting the reliability of the current findings [8–10].

Abnormal uterine bleeding represented one of the main indications for operative HS in this cohort, and endometrial polyps were again the most frequent underlying pathology in this subgroup. This observation is in line with existing literature, which consistently demonstrates a strong association between focal endometrial lesions and abnormal uterine bleeding [9,10]. The ability of HS to directly visualize and remove such lesions provides a clear clinical advantage over blind endometrial sampling techniques [4,6].

Anatomical abnormalities of the uterine cavity, including uterine septum, T-shaped uterus, and intrauterine adhesions, were less frequent indications in the present study but were successfully managed hysteroscopically without reported complications. These findings are consistent with previous reports demonstrating the safety and effectiveness of hysteroscopic management of congenital and acquired uterine anomalies [11]. The data in our study show that such anatomical disorders can be successfully treated with the hysteroscopic method. There were no complications detected after the interventions of these lesions. HS seems to be a safe method for the intervention of such lesions.

Malignant and premalignant lesions were detected in a minority of patients; however, their prevalence was significantly higher among postmenopausal patients. All cases of endometrioid adenocarcinoma presented with postmenopausal bleeding, highlighting the importance of thorough endometrial evaluation in this clinical setting. In cases diagnosed with endometrial intraepithelial neoplasia or serous carcinoma, ultrasonography demonstrated focal intracavitary lesions or abnormal endometrial thickening, highlighting the importance of correlating imaging findings with hysteroscopic evaluation. Blind endometrial sampling may fail to detect focal lesions, particularly in postmenopausal women, whereas HS allows targeted biopsy under direct visualization [12,13]. Therefore, operative HS may contribute to improved diagnostic accuracy in patients at increased risk of endometrial malignancy. The distribution of histopathological diagnoses according to presenting complaints provides clinically relevant information. In particular, malignant lesions were predominantly associated with postmenopausal bleeding, reinforcing current recommendations for prompt endometrial evaluation in this group.

The strengths of this study include the use of operative HS with histopathological confirmation in all cases and the inclusion of a well-defined cohort from a tertiary referral center over

a fixed time period. This study has several limitations. First, its retrospective design limits the ability to establish causal relationships and may introduce selection bias. Second, the study was conducted in a single tertiary referral center, which may limit the generalizability of the findings to different healthcare settings. Third, long-term clinical outcomes following operative HS were not systematically evaluated, and recurrence rates or subsequent interventions could not be analyzed. Finally, the relatively small number of postmenopausal and malignant cases limited advanced subgroup and multivariate analyses.

Future prospective, multicenter studies with larger postmenopausal cohorts are warranted to better define risk factors for malignant endometrial pathology and to clarify the role of HS in diagnostic algorithms. Incorporation of standardized risk stratification models may further enhance patient selection for operative hysteroscopic evaluation.

Conclusion

In conclusion, operative HS remains a valuable diagnostic and therapeutic tool for the evaluation of intrauterine pathologies. Endometrial polyps represent the most common histopathological finding, particularly in patients presenting with abnormal uterine bleeding or suspicious ultrasonographic findings. Although malignant lesions are relatively infrequent, their higher prevalence among postmenopausal patients underscores the importance of careful hysteroscopic assessment and targeted endometrial sampling in this population [12,13]. These findings support the preferential use of operative HS in patients with postmenopausal bleeding or suspicious ultrasonographic findings and contribute real-world data from a tertiary referral center to existing literature.

Ethical Approval

Approved by the Recep Tayyip Erdoğan University Faculty of Medicine, Non-Invasive Clinical Research Ethics Committee (No: 2022-202, Date: 10 November 2022).

Patient Consent

Informed consent was waived due to the retrospective design.

Conflict of Interest

The authors declare no conflict of interest.

Funding

The authors received no financial support for this study.

References

1. Mairos J, Di Martino P. Office Hysteroscopy. An operative gold standard technique and an important contribution to Patient Safety. *Gynecol Surg* 2016;13:111-4.
2. Di Spiezio Sardo A, Saccone G, Carugno J, et al. Endometrial biopsy under direct hysteroscopic visualisation versus blind endometrial sampling for the diagnosis of endometrial hyperplasia and cancer: Systematic review and meta-analysis. *Facts Views Vis Obgyn*. 2022;14:103-10.
3. Ferrando CA, Lintel MK, Bradley LD. Comparing endometrial biopsy results with hysteroscopic pathology in women presenting with abnormal and postmenopausal uterine bleeding. *J Gynecol Obstet Hum Reprod*. 2023;52:102685.
4. Vitale SG, Watrowski R, Barra F, et al. Abnormal Uterine Bleeding in Perimenopausal Women: The Role of Hysteroscopy and Its Impact on Quality of Life and Sexuality. *Diagnostics (Basel)*. 2022;12:1176.
5. Taşkın EA, Berker B, Özmen B, et al. Comparison of hysterosalpingography and hysteroscopy in the evaluation of the uterine cavity in patients undergoing assisted reproductive techniques. *Fertil Steril*. 2011;96:349-52.
6. Xia Z, Jin H. Diagnostic Value of Ultrasonography Combined with Hysteroscopy in Intrauterine Space-Occupying Abnormalities. *Contrast Media Mol Imaging*. 2022;2022:6192311.
7. Günay T. Polyp localization and malignancy risk in patients with hysteroscopic endometrial polyps. *JCEI*. 2018;9:95-9.
8. Çintesun E, Çintesun FNİ, Aslan BK, et al. Endometrial Örneklem Sonuçlarımız: 655 Olgunun Analizi. *Jinekoloji-Obstetrik ve Neonatoloji Tıp Dergisi*. 2017;14:56-9.
9. Şahin E, Çöl Madendağ İ, Eraslan Şahin M, et al. Comparison of endometrial thickness measured by transvaginal ultrasonography and histopathologic outcome in premenopausal patients with abnormal uterine bleeding. *Jinekoloji-Obstetrik ve Neonatoloji Tıp Dergisi*. 2019;16:93-6.
10. Cavkaytar S, Kokanalı MK, Ceran U, et al. Comparison Of Hysteroscopic Findings And Histopathologic Diagnoses In Premenopausal Patients With Abnormal Uterine Bleeding. *Jinekoloji-Obstetrik ve Neonatoloji Tıp Dergisi*. 2014;11:93-6.
11. Coelho Neto MA, Ludwin A, Petraglia F, Martins WP. Definition, prevalence, clinical relevance and treatment of T-shaped uterus: systematic review. *Ultrasound Obstet Gynecol*. 2021;57:366-77.
12. Manchanda R, Thapa S. An overview of the main intrauterine pathologies in the postmenopausal period. *Climacteric*. 2020;23:384-7.
13. Vitale SG, Buzzaccarini G, Riemma G, et al. Endometrial biopsy: Indications, techniques and recommendations. An evidence-based guideline for clinical practice. *J Gynecol Obstet Hum Reprod*. 2023;52:102588.