

## Flexible Outpatient Hysteroscopy without Anesthesia: A Feasible and Valid Procedure

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**Background:** To evaluate the feasibility and validity of a large series of outpatient diagnostic hysteroscopies using a 4.9 mm flexible hysteroscope without anesthesia.

**Methods:** In this observational clinical study, 2033 consecutive women referred with various indications underwent an outpatient hysteroscopy without analgesia or anesthesia. A 4.9 mm flexible hysteroscope (Olympus Corporation, Shinjuku-ku, Tokyo, Japan) was used to perform the examination. The diagnostic efficacy and patient tolerance were evaluated.

**Result:** The whole procedure was finished within 3 minutes. The hysteroscopy could not be completed in 41 (2.2%) women. Three hundred sixty-six patients (18.0%) required cervical dilatation before insertion of the hysteroscope. Severe discomfort including vagal reflex and ascending infection occurred in 4 (0.19%) women. Normal results were found in 60.1% of women with premenopausal and 59.3% with postmenopausal abnormal uterine bleeding. In women who underwent transvaginal ultrasound and hysteroscopic examination concomitantly, the accuracy of ultrasound diagnosis of an intrauterine mass was 83.3%, and the predictive rate for submucosal myoma was significantly higher than that for endometrial polyps (91.2% vs. 76.2%,  $p = 0.001$ ). Correlation between histological and hysteroscopic diagnoses showed the accuracy of hysteroscopic diagnosis of submucosal myoma was higher than that for endometrial polyps (81.3% vs. 68.4%,  $p = 0.034$ ). Physiologic endometrial changes were misdiagnosed as endometrial hyperplasia more often than they were misdiagnosed as endometrial cancer (39.5% vs. 4.2%,  $p = 0.027$ ).

**Conclusions:** Low failure and complication rates indicate that flexible hysteroscopy is feasible when performed in an outpatient setting without anesthesia. Extensive experience and histological confirmation are necessary for accurate endometrial evaluation.

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**Key words:** hysteroscopy, hysteroscope, anesthesia

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**H**ysteroscopy provides a panoramic visualization of the uterine cavity and tubal ostium and is judged the best method for intrauterine evaluation.<sup>(1-3)</sup> The procedure is usually performed under general or local anesthesia to avoid pain and a vagal reaction.<sup>(4,5)</sup> However, ambulatory procedures without anesthesia have become common given the obvious advantages to the patients and the cost effectiveness. For scopes with diameters less than 5 mm, it is possible to perform a diagnostic hysteroscopy without premedication or anesthesia.<sup>(6)</sup> Thus, hysteroscopy can become an office procedure with minimal discomfort.

At Chang Gung Memorial Hospital Linkou Medical Center, outpatient hysteroscopy service began in 1993, and became a routine office procedure a year later. We used a 4.9 mm diameter flexible hysteroscope (HYF-1T, Olympus Corporation, Shinjuku-ku, Tokyo, Japan) for the first 4 years, and then replaced it with a 3.1 mm diameter instrument (HYF-XP) in 1999. In our retrospective study, we evaluated the results of 2033 consecutive women who underwent hysteroscopy with a 4.9 mm hysteroscope. The indications, feasibility, and validity in this large series of outpatient diagnostic hysteroscopies without anesthesia were analyzed.

## METHODS

From January 1997 to December 1998, we performed 2033 office-based hysteroscopies at our center. Main indications were abnormal uterine bleeding, infertility, suspicious findings on ultrasound examination or hysterosalpingography, and recurrent spontaneous abortion.

Before the outpatient hysteroscopy was performed, the women were informed that they might experience menstrual-type cramps during the procedure and bleeding for about 24 hours afterwards. They were assured that the hysteroscopy would be discontinued any time at their request. No premedication or local anesthetic was used. The hysteroscopy was performed using an electronic gynecological examination chair with the patient in a semi-recumbent position. A Cuscoe's speculum was inserted into the vagina in order to visualize the cervix. Panoramic hysteroscopy was performed using a 4.9 mm diameter flexible hysteroscope without preliminary dilatation. Occasionally the cervix needed to be steadied with a tenaculum and the canal

dilated to 5 mm with a small Hegar dilator.

The images of the cervical canal and the uterine cavity were viewed on a high-resolution color television monitor. Dextrose solution 5% was used as the distending medium and was propelled by simple gravity (the vehicle 1 meter above the level of the patient's uterus) or an electronic pump (Endomat, Kar Storz, Tuttlingen, Germany), with intrauterine pressure maintained at 45 mm Hg. Illumination was provided by a halogen light source with a fiber-optic cable. After insertion of the hysteroscope, the cervical canal, tubal ostium, uterine cavity, and endometrium were examined.

Examinations were performed by experienced hysteroscopists (CJW, CFY, CLL, and YKS) and by resident physicians. The endometrium was evaluated based on published criteria.<sup>(7)</sup> Uterine anomalies were diagnosed based on the American Society of Reproductive Medicine classification with the limits of hysteroscopy.<sup>(8)</sup>

Results were statistically analyzed by the Pearson chi-square test and Fisher's exact test. The level of significance was accepted at a probability below 5%. SPSS for Windows version 11.0 (SPSS, Inc., Chicago, IL) was used for the statistical calculations.

## RESULTS

Hysteroscopies were performed successfully in all but 41 (2.2%) women in an outpatient setting without premedication or anesthesia. The whole procedure was finished within 3 minutes. The reasons for failure of the procedure were cervical stenosis and/or subjective complaints. Three hundred sixty-six patients (18.0%) required cervical dilatation before insertion of the hysteroscope. Four women (0.19%) had a vagal reflex (bradycardia and cold sweating) during the examination and recovered fully within an hour after cessation of the procedure, bed rest and hydration. Four women (0.19%) had pelvic inflammatory disease after the day of hysteroscopy. Hospitalization with parenteral antibiotic administration was needed for 3 of these 4 women, and the other post-menopausal woman with refractory symptoms required surgical intervention to control infection. All the remaining women tolerated the procedure well with only minimal to mild discomfort.

The indications for outpatient hysteroscopy are listed in Table 1. Abnormal uterine bleeding, infertility, suspected intrauterine mass and suspected intrauterine adhesions were among the most common reasons for examination. Table 2 shows the hysteroscopic findings in correlation with indications. Normal results were frequently found in women suffering from abnormal uterine bleeding (671/1133, 59.2%), infertility (207/307, 67.4%), and recurrent abortion (14/26, 53.8%). Intrauterine masses (submucous myomas and endometrial polyps) and endometrial pathology (endometrial hyperplasia and endometrial cancer) were found respectively in

258/1133 (22.8%) and 131/1133 (11.6%) women with abnormal uterine bleeding. In women with suspected intrauterine adhesions and mullerian anomalies, positive results were found in 75 (44.1%) and 21 (48.8%) women, respectively. Up to 15.8% (15/95) of women with increased endometrial thickness on ultrasound scan had endometrial pathology on hysteroscopy.

Of the 2033 women, 810 underwent transvaginal ultrasonographic (TVU) examination concomitantly. Suspected intrauterine masses were shown in 120 women. The accuracy of ultrasound diagnosis of intrauterine mass was 83.3% (Fig. 1). Eleven of the 120 women (9.2%) were found to have potential endometrial malignancy. The accuracy of TVU diagnosis of intrauterine masses showed a significantly higher predictive rate for submucous myoma than that for endometrial polyp (91.2% vs. 76.2%,  $p = 0.027$ ) (Table 3).

Three hundred and fifteen women had histological reports to confirm the accuracy of hysteroscopic diagnosis (Table 4). The accuracy of hysteroscopic diagnosis of submucosal myoma was higher than that for endometrial polyps (81.3% vs. 68.4%,  $p = 0.034$ ). Of 81 women with a hysteroscopic diagnosis of endometrial hyperplasia, 32 (39.5%) had physiologic endometrial changes without pathology; however, there was one (1/24, 4.2%) woman with a normal endometrium in hysteroscopic diagnosis of

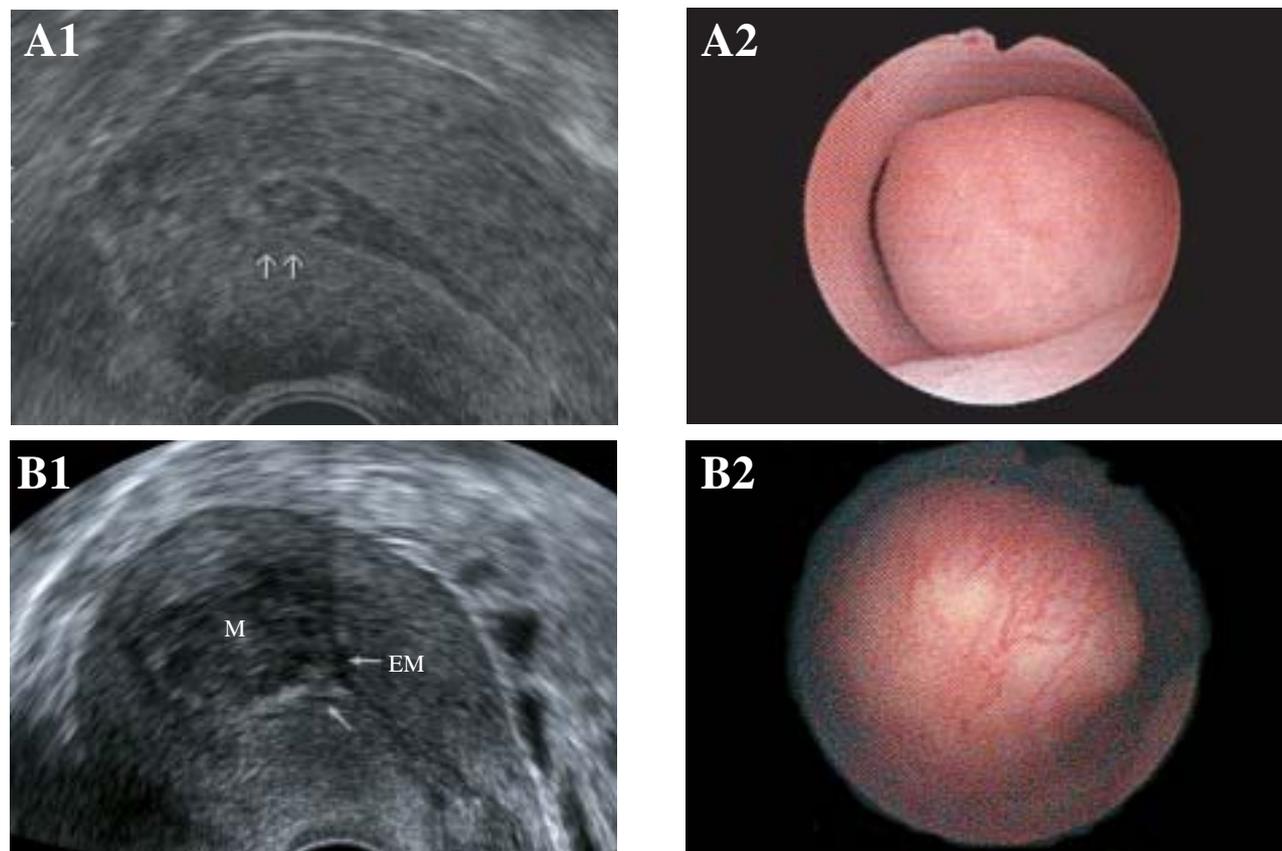
**Table 1.** Indications for Outpatient Hysteroscopy

Indication	No. of patients	%
Abnormal uterine bleeding	1133	55.7
Infertility	307	15.1
Suspected intrauterine mass	213	10.5
Suspected intrauterine adhesion	170	8.4
Increased endometrial thickness	95	4.7
Suspected mullerian anomalies	43	2.1
Recurrent abortion	26	1.3
Miscellaneous		
Menorrhagia	17	0.8
Retained gestational tissue	12	0.6
Incarcerated contraceptive device	10	0.5
Postcoital bleeding	7	0.3
Total	2033	100

**Table 2.** Hysteroscopic Findings

Indication	No. (%)	No. (%) normal	No. (%) Em polyp	No. (%) submucosal myoma	No. (%) mullerian anomalies	No. (%) intrauterine adhesion	No. (%) Em hyperplasia	No. (%) Em cancer	No. (%) miscel- laneous
AUB									
premenopausal	888 (43.7)	534 (60.1)	152 (17.1)	47 (5.3)	22 (2.5)	10 (1.1)	104 (11.7)	7 (0.8)	12 (1.4)
postmenopausal	199 (9.8)	118 (59.3)	27 (13.6)	24 (12.1)	1 (0.5)	7 (3.5)	15 (7.5)	5 (2.5)	2 (1.0)
post-D & C	46 (2.3)	19 (41.3)	5 (10.9)	3 (6.5)	2 (4.3)	6 (13.0)	0	0	11 (23.9)
Infertility	307 (15.1)	207 (67.4)	30 (9.8)	14 (4.6)	12 (3.9)	20 (6.5)	8 (2.6)	0	16 (5.2)
Suspected intrauterine mass									
submucosal myoma	151 (7.4)	34 (22.5)	43 (28.5)	58 (38.4)	4 (2.6)	2 (1.3)	4 (2.6)	0	6 (4.0)
Em polyp	62 (3.0)	14 (22.6)	27 (43.5)	3 (4.8)	1 (1.6)	1 (1.6)	6 (9.7)	2 (3.2)	8 (12.9)
Suspected intrauterine adhesion	170 (8.4)	69 (40.6)	5 (2.9)	1 (0.6)	6 (3.5)	75 (44.1)	0	0	14 (8.2)
Increased Em thickness	95 (4.7)	31 (32.6)	30 (31.6)	7 (7.4)	5 (5.3)	3 (3.2)	14 (14.7)	1 (1.1)	4 (4.2)
Suspected mullerian anomalies	43 (2.1)	13 (30.2)	5 (11.6)	2 (4.7)	21 (48.8)	1 (2.3)	1 (2.3)	0	0
Recurrent abortion	26 (1.3)	14 (53.8)	3 (11.5)	0	4 (15.4)	4 (15.4)	0	0	1 (3.8)
Miscellaneous	46 (2.3)	20 (43.5)	2 (4.3)	4 (8.7)	1 (2.2)	1 (2.2)	3 (6.5)	0	15 (32.6)
Total	2033	1073 (52.8)	329 (16.2)	163 (8.0)	79 (3.9)	130 (6.4)	155 (7.6)	15 (0.7)	89 (4.4)

**Abbreviations:** AUB: abnormal uterine bleeding; D & C: dilatation and curettage; Em: endometrial.



**Fig. 1** Transvaginal ultrasound shows intrauterine masses: an endometrial polyp (A1) and a submucous myoma (B1). Note that both images demonstrate similar hypoechoic sonographic characteristics. The corresponding imaging on hysteroscopy is demonstrated in A2 and B2. M: mass, EM: endometrium.

**Table 3.** Correlation between Transvaginal Ultrasonographic (TVU) and Hysteroscopic Findings in 120 Women with Suspected Intrauterine Mass

TVU finding	No.	Hysteroscopic finding				Sensitivity	Specificity
		No. (%) Em polyp	No. (%) submucosal myoma	No. (%) Em hyperlpasia	No. (%) normal		
Em polyp	63	35 (55.6)	13 (20.6)	9 (14.3)	6 (9.5)	81.4%	77.2%
Submucosal myoma	57	8 (14.0)	44 (77.2)	2 (3.5)	3 (5.3)	63.6%	79.4%

**Abbreviation:** Em: endometrial.

**Table 4.** Correlation between Hysteroscopic and Histologic Findings in 315 Women

Histology	No.	Hysteroscopy						Sensitivity	Specificity
		No. (%) Em polyp	No. (%) submucosal myoma	No. (%) Em hyperlpasia	No. (%) Em cancer	No. (%) proliferative change	No. (%) secretory change		
Em polyp	114	78 (68.4)	10 (8.8)	9 (7.9)	0	5 (4.4)	12 (10.5)	74.5%	82.9%
Submucosal myoma	96	13 (13.5)	78 (81.3)	1 (1.0)	1 (1.0)	1 (1.0)	2 (2.1)	88.6%	92.1%
Em hyperlpasia	81	13 (16.0)	0	35 (43.2)	1 (1.2)	10 (12.3)	22 (27.2)	64.8%	82.4%
Em cancer	24	1 (4.2)	0	9 (37.5)	13 (54.2)	0	1 (4.2)	86.7%	96.3%

**Abbreviation:** Em: endometrial.

endometrial cancer ( $p = 0.001$ ), and a high detection rate (54.2%) in hysteroscopic diagnosis of endometrial cancer.

## DISCUSSION

In this study, less than one-fifth (18.0%) of the women required cervical dilatation before examination, and no cervical or uterine perforation occurred. This reflects the advantages of this instrument. The distal tip of the flexible hysteroscope with two-way angulations allows for negotiation of the tortuous cervical canal and observation of the cornua with ease. Therefore, a flexible hysteroscope enables the gynecologist to examine the uterine cavity while avoiding the difficulties occasionally encountered with rigid hysteroscopes. Use of a tenaculum and cervical dilatation can be decreased, and trauma, such as uterine perforation, can be avoided.

Almost 60% women with complaints of abnormal uterine bleeding (including postmenopausal bleeding) have normal results on hysteroscopy. In the past, endometrial curettage (D & C) with or without cervical biopsy were often performed to manage metrorrhagia for diagnostic and therapeutic purposes, especially in postmenopausal women. Our results demonstrate that hysteroscopy can reduce unnecessary anesthesia and invasive procedures, thus decreasing the risks associated with these procedures and health insurance costs. Although this finding is not new,<sup>(9,10)</sup> we suggest that physicians perform a hysteroscopy before a D & C if they have the access to the facilities, and also suggest that this procedure be done more liberally in postmenopausal women.

In contrast to ultrasound, hysteroscopy allows a direct view of the uterine cavity; however, TVU is still the main screening method for intrauterine pathology before performing a hysteroscopy.<sup>(11)</sup> In our study, 7.5% of women with suspected intrauterine masses on TVU, had normal physiologic endometrial changes on hysteroscopy. That is to say, around one-twelfth of women with a false positive result on TVU would have had unnecessary surgery. Sonohysterography (SHG) provides a better intrauterine evaluation than traditional TVU.<sup>(12,13)</sup> The complicated operative procedure for SHG (vaginal disinfection, inserting an intrauterine catheter and instillation of saline solution) makes it less popular than TVU.

In one study, the sensitivity of hysterosalpingography (HSG) in revealing intrauterine abnormalities<sup>(14)</sup> was 80.3% and the specificity was 70.1%,<sup>(14)</sup> and the procedure was associated with irradiation exposure and potential allergic reaction to the contrast medium. The ability of HSG to detect tubal patency means that it cannot be completely replaced by hysteroscopy. In addition, a retrospective study showed that 31.3% of women undergoing hysteroscopy due to unexplained infertility had chronic endometritis.<sup>(15)</sup> Importantly, chronic endometritis is usually asymptomatic, and it can be diagnosed only by direct visual evaluation. Therefore, both HSG and hysteroscopy are recommended as part of the basic infertility work-up for tubal and intrauterine integrity.

Hysteroscopy is deemed the gold standard for the diagnosis of uterine cavity pathology.<sup>(16-19)</sup> However, intrauterine pathology can be misdiagnosed even by experienced hysteroscopists, especially in endometrial hyperplasia. A thickened, proliferated endometrium obscures small lesions and in general makes diagnosis and surgery more difficult.<sup>(20,21)</sup> Therefore, performing hysteroscopic examination at an ideal time is essential for achieving exact diagnosis. However, in patients with metrorrhagia, it can be difficult to predict the early follicular phase a month in advance. The optimal timing for hysteroscopy should be immediately after menstrual flow because the endometrium is thin.

In conclusion, the feasibility, and validity of outpatient flexible hysteroscopy without anesthesia is confirmed by the high procedure tolerance and low failure rate, even in postmenopausal and nulliparous women. However, extensive experience and proper timing of the examination are required for a highly accurate diagnosis, especially in evaluating endometrial pathology.

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## 無麻醉門診軟式子宮鏡檢查術：一個可行且有效的方法

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**背景：** 本篇文章之目的乃在評估以 4.9 毫米管徑軟式子宮鏡在無麻醉下，於門診應用在不同適應症之患者，其臨床可行性及有效性。

**方法：** 在此篇臨床觀察研究中，2033 名婦女因各種不同原因接受門診子宮鏡檢查。在沒有麻醉或服用止痛藥的情況下，以 4.9 毫米管徑的軟式子宮鏡來執行檢查。我們分析檢查的結果、檢查步驟的可行性，以及受檢者對檢查的耐受性。

**結果：** 檢查時間在三分鐘內可完成。有 41 名 (2.2%) 婦女無法完成檢查，366 名 (18.0%) 婦女需先擴張子宮頸，才能進行檢查。分別有 4 名 (0.19%) 婦女發生嚴重的迷走反射及上行性感染。檢查結果的分析中，因不正常陰道出血接受檢查的未停經前婦女，有 60.1% 檢查結果為正常，在停經婦女則為 59.3%；若婦女同時接受子宮鏡及經陰道超音波檢查，超音波診斷子宮腔腫瘤的準確性為 83.3%，其中診斷子宮黏膜下肌瘤的準確性高於子宮內膜息肉 (91.2% 對 76.2%,  $p = 0.001$ )；若比較子宮鏡與組織學診斷，子宮鏡正確診斷子宮黏膜下肌瘤的比例高於子宮內膜息肉 (81.3% 對 68.4%,  $p = 0.034$ )；此外有 39.5% 會將正常的子宮內膜生理性變化誤認為子宮內膜增生，誤認為子宮內膜癌的機率只有 4.2% ( $p = 0.027$ )。

**結論：** 軟式子宮鏡檢查術的低失敗率及低併發症，在無麻醉下可成功運用於門診檢查。豐富的子宮鏡操作經驗及組織學診斷，才能正確判斷子宮內膜病變。  
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**關鍵詞：** 子宮鏡檢查術，軟式子宮鏡，麻醉

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