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Original Article

Effective use of office hysteroscopy in virgin patients: A series of 22 cases

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ABSTRACT

Objective: To investigate the efficacy of hysteroscopy in the diagnosis and treatment of patients with virginity.

Materials and Methods: The retrospective study included 22 virgin patients that underwent hysteroscopy due to various indications between January 2015 and January 2022.

Results: Mean age was 35.4±12.6 years. Most common indication for hysteroscopy was heavy menstrual bleeding (n=13; 59.09%), followed by intermenstrual bleeding (n=4; 18.1%), vaginal bleeding (n=2; 9.09%), postmenopausal bleeding (n=2; 9.09%), and persistent vaginal discharge (n=1; 4.54%). Most of the patients (n=19; 86.36%) were in the premenopausal period and the remaining 3 (13.63%) patients were in the postmenopausal period. Maximum lesion diameter was 1.2±0.93 cm for endometrial polyps (n=20) and 1.8±0.9 cm for submucosal fibroids (n=4). Two patients had both endometrial polyp and submucous myoma. No patient had malignancy or endometrial hyperplasia. The procedure was completed successfully in all patients. No perioperative complications such as cervical trauma, uterine perforation or transurethral resection of prostate (TURP) syndrome were reported by any patient. Hymen integrity was preserved in all patients. Microscopically, no residual polyps and fibroids were identified and abnormal uterine bleeding (AUB) resolved.

Conclusion: Hysteroscopy can be performed in virgin patients as well and is well tolerated when performed by experienced physicians. Accordingly, physicians should consider hysteroscopy together with the vaginoscopic approach to explore the genital tract and evaluate intrauterine lesions in this population.

Keywords: hysteroscopy; virginity; endometrial polyp; submucosal myoma

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Introduction

Hysteroscopy is a minimally invasive diagnostic and surgical technique mostly administered in patients with abnormal uterine bleeding (AUB) or infertility. Hysteroscopy (with histology) is the gold standard for diagnosing endometrial pathologies in patients with AUB. Meta-analyses have shown high sensitivity and specificity values for hysteroscopy in the diagnosis of endometrial cancer (82.6% and 99.7%), polyps (95.4% and 96.4%), and submucosal fibroids (97.0% and 98.9%) and medium accuracy for endometrial hyperplasia (75.2% and 91.5%). Transvaginal ultrasound (US) is superior to other diagnostic techniques such as saline infusion sonography (SIS) and endometrial sampling [1]. Other indications for hysteroscopy include endometrial polyps, endometrial ablation, septoplasty, adhesiolysis in Asherman's syndrome, and removal of small submucosal fibroids. Hysteroscopy is also performed to remove intrauterine devices and for transcervical sterilization [2].

The only contraindication for hysteroscopy is usually intrauterine pregnancy. A pregnant uterus is softer and more stretchable than a non-pregnant organ, resulting in bloating, retroplacental bleeding, or a significant air embolism [3]. Relative contraindications include acute pelvic infection, virginity, systemic recurrence of endometrial cancer, and cardiac patients overresponsive to vasovagal stimuli [4].

Abnormal uterine bleeding (AUB) is a common symptom and accounts for one-third of outpatient visits to the gynecologist among premenopausal women [5]. Children and adolescent patients often present with vaginal discharge and bleeding. A detailed patient history and a pelvic examination are essential to determine the etiology of AUB. However, vaginal examination is difficult in women with an intact hymen and further imaging studies may be indicated. Among these, transabdominal US has been the method of choice in adolescent gynecology and in virgin patients with no history of sexual intercourse. However, an optimal evaluation of the endometrium often requires transvaginal US or hysterosonography that allow the detection of intrauterine abnormalities. In hysteroscopic studies evaluating virgin patients, the rate of endometrial hyperplasia has been reported to be 5.7% and endometrial malignancy to be 4.2% [6]. In virgin patients requiring a reproductive tract examination or transvaginal procedure, the operator may hesitate to utilize hysteroscopy, which may lead to delayed diagnosis and mistreatment, particularly in some serious diseases such as endometrial hyperplasia and malignancies. In this study, office hysteroscopy was used as a vaginal examination tool to establish the diagnosis in virgin patients; if necessary, surgical intervention was performed in the same session. The retrospective study aimed to evaluate the surgical technique, instrumentation, and clinical outcomes of 22 patients with an intact hymen that underwent diagnostic hysteroscopy and also aimed to examine the efficacy and applicability of hysteroscopy in this population.

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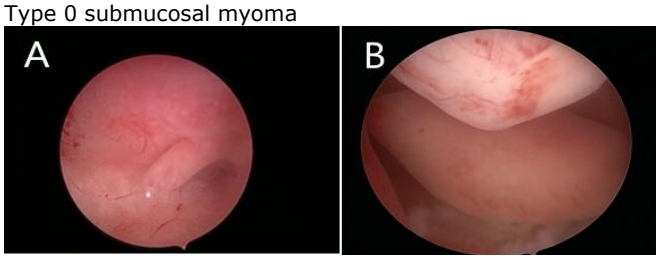
Material and methods

The study was approved by Memorial Şişli Hospital Ethics Committee (Protocol No: 01.04.2022/002). The retrospective study included 137 virgin patients that presented with indications for hysteroscopy between January 2015 and January 2022, including persistent vaginal discharge, AUB, suspected Müllerian anomalies, and suspicious US findings. Of these, 22 (16%) patients (mean age, 35.4±12.6 years) underwent hysteroscopy and were included in the study. After the inspection of the external genital organs, rectal examination, and transabdominal sonographic imaging of internal genital organs in all patients, endometrial imaging with magnetic resonance imaging (MRI) was performed in patients with endometrial polyps and submucous myomas. A written informed consent was obtained from each patient for the publication of intraoperative images.

Hysteroscopy was performed in the operating room under general anesthesia. The procedure was conducted with the patient in the dorsolithotomy position. Since the intact hymen prevents wide movements in virgin patients, the lower the uterus is, the easier the surgical operation [7]. Accordingly, maximum downward position of the uterus was achieved by hyperflexion of the legs as in the McRoberts maneuver utilized for shoulder dystocia in obstetrics [7].

For the examination, intrauterine pressure was automatically controlled by an electronic irrigation and suction device set to 100-120 mmHg. The procedure was commenced by inserting a 4.5 mm hysteroscope (Karl Storz, Germany) into the vagina. Surgical instruments including hysteroscopic forceps, hysteroscopic scissors, and 5F flexible knife electrode (Olympus-Gyrus) were utilized as needed. The 'no-touch' vaginoscopic hysteroscopy described by Bettochi et al., which does not require a speculum or tenaculum, was utilized [8]. Uterine distention was achieved by intrauterine injection of hypertonic saline. Squeezing the vulva together with the labia was sufficient to achieve distension inside the vagina. All patients were given intraoperative antibiotic prophylaxis with Ceftriaxone 1 g (Rocephin, Roche, Istanbul).After inserting the hysteroscope, a careful inspection of the cervix, cervical canal, fornix, vaginal walls, tubal ostium, uterine cavity and endometrium was performed. Illumination was provided by a high-intensity cold light with a fiber optic cable.5 Fr scissors and forceps (Karl Stroz) were utilized for excising polyps and fibroids. A 5 Fr flexible knife electrode (Olympus-Gyrus) was used for myoma excision and morcellation of large intrauterine polyps and fibroids (Figure 1). All excised tissues were sent for histopathological examination.

Figure 1. A. Endometrial polyp, B. Endometrial polyp and Type 0 submucosal myoma



Age, body mass index (BMI), clinical data (complaints, radiological findings), perioperative parameters (surgical duration, perioperative complications), characteristics of polyps (type, location, and size), hysteroscopic examination in light of preoperative findings, examination of submucosal fibroids, and hymen integrity after surgery were recorded for each patient. Surgical duration was defined as the time from the insertion of the hysteroscope to the termination of the surgery.

After the first and third menstrual cycles, patients were examined by pelvic US to assess polyp recurrence. AUB and menstrual recovery were evaluated during the follow-up.

Results

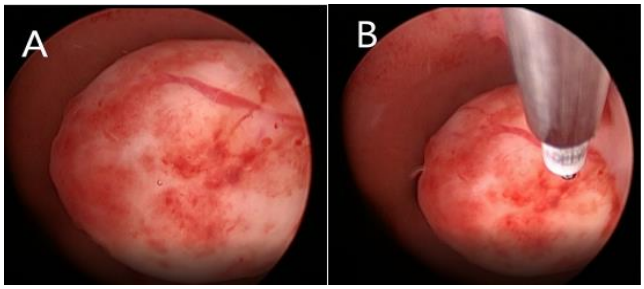
Hymen type was annular in 20, septate in 1, and subseptate in 1 patient. Table 1 presents the demographic and clinical characteristics of the patients. Most common indication for hysteroscopy was heavy menstrual bleeding (n=13; 59.09%), followed by intermenstrual bleeding (n=4; 18.1%), vaginal bleeding (n=2; 9.09%), postmenopausal bleeding (n=2; 9.09%), and persistent vaginal discharge (n=1; 4.54%). Most of the patients (n=19; 86.36%) were in the premenopausal period and the remaining 3 (13.63%) patients were in the postmenopausal period.

Table 1. Demographic and clinical characteristics

Age (years)	35.4±12.6	
Premenopausal (>18 years)	19	86.36%
Postmenopausal	3	13.63%
Body mass index (BMI)	25.2±4.8	
Hysteroscopy indications		
Persistent vaginal discharge	1	4.54%
Vaginal bleeding	2	9.09%
Heavy menstrual bleeding	13	59.09%
Intermenstrual bleeding	4	18.1%
Postmenopausal bleeding	2	9.09%
Mean lesion diameter (cm) *Submucous myoma* *Endometrial polyp*	 1.8±0.9 1.2±0.93	

MRI was performed in patients with abnormal US findings. Of all, 55% (n=11) of the endometrial polyps were diagnosed by US and 90% (n=18) of them were diagnosed by MRI. One patient had two endometrial polyps that could not be diagnosed by MRI and also had a submucous myoma (Figure 1). Two other patients had both endometrial polyp and submucous myoma. All the submucosal fibroids were Type 0 (Figure 2).

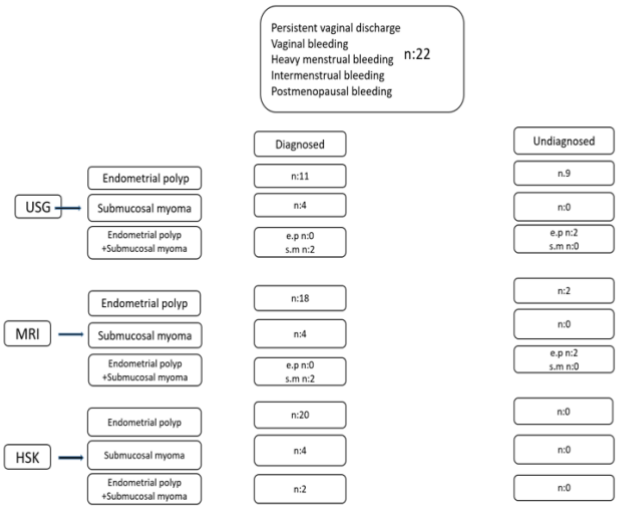
Figure 2. A. Type 0 Submucosal myoma B. 5 Fr flexible knife electrode (Olympus-Gyrus)



All the 22 patients were evaluated with abdominal US and MRI followed by office hysteroscopy. All the lesions were diagnosed by office hysteroscopy and the diagnoses were confirmed pathologically (Table 2). All the endometrial polyps and submucosal fibroids were successfully resected using hysteroscopic scissors (Karl Stroz, Germany) and a 5 Fr flexible knife electrode (Olympus-Gyrus) (Figure 3).

Figure 3. 4.5 mm hysteroscope, hysteroscopic forceps, hysteroscopic scissors (Karl Stroz, Germany), and 5F flexible knife electrode (Olympus-Gyrus).

Table 2. Efficacy of diagnostic tools used in the study



No perioperative complications such as cervical trauma, uterine perforation or transurethral resection of prostate (TURP) syndrome were reported by any patient. Hymen integrity was preserved in all patients. Median surgical duration was 22.6 (range, 10-45) min. Maximum lesion diameter was 1.2±0.93 cm for endometrial polyps and 1.8±0.9 cm for submucosal fibroids.

Microscopically, no residual polyps and fibroids were identified and AUB resolved. In postmenopausal patients with persistent vaginal discharge, endometrial polyps were excised with scissors. No patient had any complaints of vaginal discharge during the follow-up. Pathological diagnoses were consistent with hysteroscopic findings. No malignancy was detected in any patient.

Discussion

The present study investigated the efficacy of hysteroscopy in the diagnosis and treatment of patients with virginity, which is employed as a means of community pressure. Preserving virginity is a personal decision, and virginity can be an obstacle in the examination of patients with gynecological problems. Hymenal tissue does not easily tolerate vigorous manipulation and wide movements. When necessary, potential hymenal disruption may be discussed with mature women or with the parents of adolescent girls to ensure the correct diagnosis and treatment; however, in general, they are highly resistant to that. In our region, in particular, the hymen is considered a taboo and hymenal disruption is a serious cause of women's death. Virginity testing is often performed by inspecting the hymen for tears or its size of opening, practiced under the belief that the appearance of the female genitalia can indicate a girl's or woman's history of sexual activity. As such, this test prevents the woman's control over her own body, causing physical, social, and psychological problems as well as suicide and murder of women [9]. In previous studies conducted with university students, 54.5-85% of the students emphasized the importance of being a virgin before marriage and some students indicated that "breaking the hymen" is tantamount to death [10].As for the social importance of the hymen in Turkey, the hymen is often attributed to honor and the concepts that evoke honor [11]. Moreover, according to the 2013 Turkey Demographic and Health Survey (TDHS-2013), 73% of women agreed with the statement "women must be virgins before marriage" [11]. This is an indication of the widespread importance attributed to virginity in the society, which was further supported by our finding that showed that only 22 out of 137 (16.5%) patients consented to undergoing hysteroscopy.

Common risk factors for endometrial malignancy include nulliparity, late menopause, obesity, diabetes mellitus, unopposed estrogen therapy, and polycystic ovarian syndrome. Moreover, nulliparous women have a two to three times higher risk of having endometrial cancer than parous women [12]. In a previous study, intrauterine lesions were detected in 86.4% of virgin women with postmenopausal bleeding [12]. In our study, endometrial polyps were detected in two patients with postmenopausal bleeding and no malignancy was found in any patient. Another study reported that among the patients that had obscure intrauterine lesions on transabdominal US, 50.8% of them were found to have intrauterine lesions [13]. In our study, 55% of endometrial polyps and 90% of submucous myomas were successfully diagnosed by transabdominal US. Nevertheless, some studies reported that transvaginal US is superior to transabdominal US in the diagnosis of intrauterine lesions [13]. On the other hand, a recent multicenter randomized controlled trial proposed that hysteroscopy is the gold standard for detecting focal (pre)malignancies in women with postmenopausal bleeding (PMB) [14]. It has also been reported that hysteroscopy improves the accuracy of the diagnosis compared to curettage since it allows for the biopsy of suspicious lesions [15]. Literature indicates that physicians should consider hysteroscopy as a complementary tool in the diagnosis of intracavitary lesions in women with an intact hymen, particularly those with medically refractory AUB [7]. Additionally, numerous studies have reported that the accuracy of hysteroscopy is remarkably high for the diagnosis of endometrial malignancy, while it is moderate for the diagnosis of endometrial hyperplasia [16]. In our study, MRI was administered in all patients to support the diagnosis, and we observed that the use of MRI, though not a cost-effective technique, helps persuade patients to undergo hysteroscopy. On the other hand, MRI was administered in all the patients that had obscure intrauterine lesions on transabdominal US. Additionally, hysteroscopy was performed in all patients that consented to the procedure for treatment and diagnostic purposes, and our hysteroscopy findings were consistent with the findings obtained by the combination of transabdominal US and MRI in all patients.

Endometrial polyps and submucosal fibroids are the most common intrauterine lesions in women of reproductive age. Treatment of endometrial polyps and submucosal fibroids includes conservative treatment, medical treatment, and surgical excision. Watchful waiting is appropriate for functional polyps that may shed with menstrual blood. Medical treatment includes the administration of hormonal therapies such as oral progesterone or oral contraceptives in the second half of the menstrual cycle. Nonetheless, side effects and endocrine disorders caused by long-term use of hormonal drugs should not be overlooked. On the other hand, using medical therapy alone for cervical polyps is unlikely to provide a radical cure. Of note, after ineffective treatment of large polyps and submucosal fibroids with hormonal therapies, removal of polyps and fibroids by hysteroscopy and electrosurgery is recommended. However, it is highly difficult to perform hysteroscopic electrosurgery in virgin women, and in only a few cases, the preservation of hymen integrity during surgery has been discussed [6].

In our study, the hysteroscopy procedure was highly successful and no complications occurred in any patient, which could be attributed to the surgical instruments used for the procedure as well the experience of the operator. Flexible knife electrode has been used in our hospital since 2018. Since it has a diameter of 5 Fr and can be introduced through the working channel of the hysteroscope, it allows

for the resection of submucous myomas in addition to polyps. Moreover, since it can be used with office hysteroscopy, there is no need to dilate the cervix before surgery. In our study, there were only four submucosal fibroids and all of them were type 0, which is a limitation of the study. Studies have shown that office hysteroscopy leads to no long-term postoperative complications such as intrauterine adhesions since the thermal injury to the surrounding healthy endometrium is remarkably low. In addition, the hysteroscope is easier to control compared to resectoscopes since it has a low depth of resection, which reduces the risk of cervical trauma and uterine perforation.

In our study, all the endometrial polyps or submucosal fibroids were successfully removed. Additionally, intraoperative blood loss and surgical duration were minimized, no intraoperative complications such as cervical injury, uterine perforation, or TURP syndrome were observed in any patient, hymen integrity was preserved, and the symptoms of AUB resolved in all patients. Studies have shown that the resection of endometrial polyps and type 0 submucosal fibroids with scissors and flexible knife electrode is safe and effective, allowing for the preservation of hymen integrity. Diagnosis and treatment of intrauterine lesions in virgin women are highly characteristic. However, satisfactory outcomes can be achieved when surgical indications are fully understood and perioperative options are considered. First and foremost, it should be recognized that women with an intact hymen are prone to resistance and fear transvaginal uterine surgery. Therefore, such patients should be fully informed of the necessity and risk of the surgery prior to the procedure. General anesthesia is recommended during the procedure, and the procedure should be initiated after achieving adequate anesthesia to avoid hymen injury caused by repeated movements of the patient. Second, the complex iodine rinse for disinfection of the vagina can be administered through a catheter. This fluid can also be utilized for flushing the vagina to prevent bacteria from retrograding into the uterine cavity and even leading to pelvic inflammation. Moreover, although there is no need to dilate the cervix prior to surgery, movement of the instrument needs to be controlled. Utmost care should be taken regarding both the entry and exit of the instrument to avoid complications and preserve the hymen integrity.

The strengths of the study are that it is one of the rare studies reporting on the use of scissors and flexible knife electrode with the office hysteroscopy in the diagnosis and treatment of endometrial pathologies in women with an intact hymen. In contrast, the main limitations of this study are that the data were collected retrospectively and the sample size was relatively small. Additionally, since the study was conducted in a single center and there was no data regarding the clinical course of the patients that refused to undertake hysteroscopy, a second group could not be formed and thus no comparison could be performed. Further studies are needed to explore additional options for the treatment of intrauterine lesions in women with an intact hymen in such special cases.

Conclusion

The results indicated that hysteroscopy can be performed in virgin patients as well and is well tolerated when performed by experienced physicians. Accordingly, physicians should consider hysteroscopy together with the vaginoscopic approach to explore the genital tract and evaluate intrauterine lesions in this population.

Disclosure

Authors have no potential conflicts of interest to disclose.

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