

Hysteroscopic Morcellation in Endometrial Lesion Patients

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Background: Hysteroscopy is a current diagnosis and treatment by the expertise surgeons. The hysteroscopic morcellation is not used in all hospitals compared to the electrosurgery resectoscope.

Objective: The purpose of the present study was to characterize hysteroscopic diagnosis and treatment. The second purpose is to display the innovation in tissue collection called adaptive tissue collection (Budhosp-tissue collection).

Materials and Methods: The present retrospective study was conducted on 63 patients who had hysteroscopy procedures between January 2019 and June 2021. The present research was an observational study and innovation of adaptive tissue collection (Budhosp-tissue collection).

Results: The hysteroscopy had been used to treat 63 patients. The anesthetic included 61 patients that received intravenous anesthesia, one patient had general anesthesia, and one patient had spinal block. Fifty-five of 63 hysteroscopic patients (87%) had endometrial polyps, and six patients (9.5%) had submucous leiomyoma.

Conclusion: Modern technologies are currently available for hysteroscopic morcellation. It has been recognized as a safe and effective resection. Notwithstanding, the innovation of adaptive tissue collection (Budhosp-tissue collection) appeared beneficial in rural hospital as it is less expensive and is the safest operation.

Keywords: Abnormal uterine bleeding; Hysteroscopy; Hysteroscopic morcellator; Endometrial polyp

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Minimally invasive surgery (MIS) is used in gynecology patients worldwide. Abnormal uterine bleeding (AUB) is diagnosed using the International Federation of Gynecology and Obstetrics (FIGO) classification systems. The prevalence is between 3% and 30% amongst reproductive-aged women⁽¹⁾. The PALM-COEIN classification includes polyp, adenomyosis, leiomyomas, malignancy, and atypical endometrial hyperplasia, defined as structural pathologies. The COEIN is characterized by coagulopathies, ovulatory disorders, primary endometrial disorders, iatrogenic and not otherwise classified, which is defined as non-structural

pathologies^(1,2). The prevalence of heavy menstrual bleeding (HMB), irregular, and intermenstrual bleeding is 35%⁽²⁾. The diagnosis of AUB done by a modern-gynecologic endoscopist is a hysteroscopy operation used for diagnosis and treatment. Furthermore, the hysteroscopy evaluates the endometrial cavity lesion. The process includes polypectomy of the endometrial polyp, resection of submucous leiomyoma type 0, 1 less than 3 cm⁽¹⁾. The gynecologists perform office hysteroscopy in about 15% to 25% of the cases in the United States⁽²⁾. In Thailand, hysteroscopy is not generalized because the hysteroscopy requires specific expertise from physicians and is not free of charge in some institutions. Owing to poor reimbursement for the procedure, physicians do not offer it to their patients. In 2019, the Ministry of Public Health had established the one-day surgery (ODS) project to support the hysteroscopy procedure for the patients in Thailand. Buddhachinaraj Phitsanulok Hospital is the tertiary care unit that can perform hysteroscopy operations in the operating room for diagnosis and treatment, free of charge. The anesthetists will select the proper anesthetic options for the patients, including total intravenous anesthesia (TIVA), general anesthesia (GA), local anesthesia, or spinal block. The

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hospital could reimburse for all the procedures. The present research aimed to characterize hysteroscopic diagnoses and endometrial procedures.

Materials and Methods

The present study obtained approval from the Institutional Review Board (IRB) of Buddhachinaraj Phitsanulok Hospital, number 043/64. The retrospective study was conducted on 63 patients who had hysteroscopy procedures between January 2019 and June 2021 (Figure 1). Informed consent had been utilized before the operation. In addition, the anesthetists had checked the preoperative laboratory results before the process. The anesthetists had selected anesthetic techniques for the patients, included TIVA, GA, local anesthesia, or spinal block. Misoprostol 400 µg was administered transvaginally 12 hours before the procedure. The hysteroscopic devices were set by TRUCLEAR™ hysteroscopic and tissue removal system. A clear view of the uterine cavity was done in the 63 patients. The TRUCLEAR™ hysteroscopy was used as diagnosis and, at the same time, to treat. The intrauterine pressure was usually set at 70 mm Hg. The 0.9% normal saline (NSS) was the available media for the hysteroscopic morcellation option. The operative port allowed for the introduction of the rigid tissue removal device to remove polyps, fibroids, endometrial tissue, and the intrauterine device (IUD). The hysteroscopic fluid management system was designed for continuous flow and suction while continuously monitoring fluid deficit for accurate measurement. Finally, the tissue was sent to the pathologists with an adaptive tissue collection (Budhosp-tissue collection). There was no complication in any of the hysteroscopic patients. The adaptive tissue collection is the innovation of gynecologic nurses and physicians at Buddhachinnaraj Phitsanulok Hospital. This is done by the utilization of disposable medical bouffant cap as shown in Figure 2. The hysteroscopic morcellator was continuously collecting tissue in the suction trans-adaptive tissue collection. A low-cost disposable medical bouffant cap was prepared as a small hand-made bag to collect tissue, as compared to the high cost of disposable tissue trap instruments of the hysteroscope, which is approximately 1,200 Baht. The formalin fixed-tissue was sent to pathologists.

Results

In the era of the covid-19 pandemic, sixty-three patients were diagnosed with abnormal uterine bleeding. The hysteroscopy was applied and treated

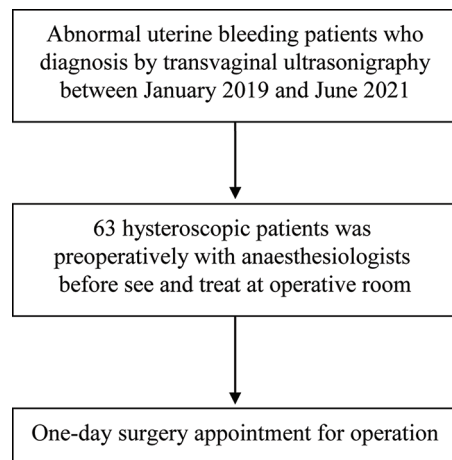


Figure 1. The enrollment of hysteroscopic morcellation patients.

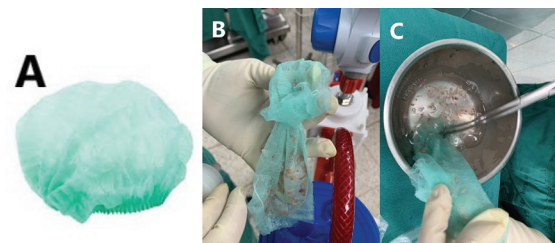


Figure 2. The disposable medical bouffant cap to use for adaptive tissue collection. The hysteroscopic morcellator was continuously collected tissue in the suction trans-adaptive tissue collection. A disposable medical bouffant cap was prepared for a small hand-made bag to collect tissue.

(A) Disposable medical bouffant cap, (B) Adaptive tissue collection, (C) Tissue collection in normal saline (NSS)

63 patients with 65 endometrial polyps that were polypectomy and six leiomyoma patients that were hysteroscopic myomectomy. In addition, a retained IUD was removed with direct-hysteroscopic visualization, and one simple hyperplasia without atypia patient was operated for endometrial resection (Table 1). All procedures were uneventful. The anesthetic options were 61 patients were on TIVA, one patient was on GA, and one patient was on spinal block. In addition, the present study found endometrial polyps in 55 of 63 hysteroscopic patients (87%), as shown in Table 1 and Figure 3, and submucous leiomyoma in six patients (9.5%), as shown in Figure 4.

Discussion

Hysteroscopy is a gold standard in the evaluation of endometrial cavity lesions. Furthermore, the investigation of the etiology of AUB is called hysteroscopic diagnosis. The common indication of

Table 1. The characteristics of hysteroscopic patients

Characteristics	n=63
Diagnosis of abnormal uterine bleeding	
Endometrial polyp	55
Leiomyoma	6
Simple hyperplasia without atypia	1
Retained of IUD	1
The anaesthetic options	
Total intravenous anaesthesia (TIVA)	61
General anaesthesia (GA)	1
Local anaesthesia or spinal block	1
The hysteroscopic procedures	
Polypectomy	55
Myomectomy	6
Endometrial biopsy with direct-hysteroscopic visualization	1
Removal of IUD	1

IUD=intrauterine device

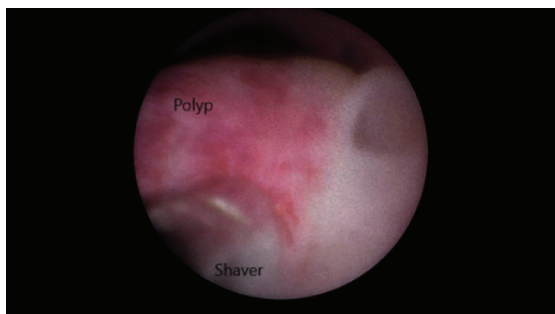


Figure 3. The endometrial polyp was cut with a shaver.

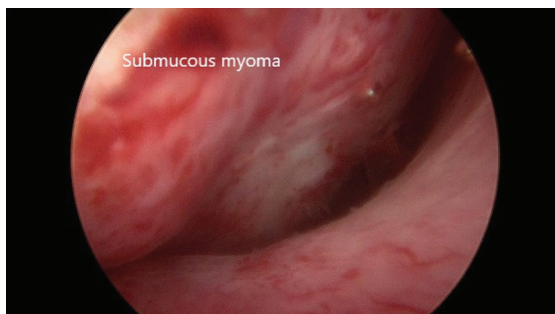


Figure 4. The submucous leiomyoma showed in diameter of 2 cm.

hysteroscopic procedures consists of targeted biopsy sampling, endometrial polypectomy, removal of small submucous leiomyomas, lysis of intrauterine synechiae, removal of retained product of conception, retrieval of dislodged IUD, and metroplasty^(1,2). The early proliferative stage with menstrual days from the fourth to the eleventh day are optimal for

hysteroscopic procedures. The cervical is primed with misoprostol 400 µg 12 hours before hysteroscopy. In comparison, some patients were administered synthetic E1 prostaglandin⁽³⁾.

Furthermore, hysteroscopy is valuable for investigating AUB in premenopausal and postmenopausal women. Hysteroscope has better sensitivity and specificity for evaluating endometrial pathology when compared with transvaginal ultrasonography (TVS) and saline infusion sonography (SIS)⁽⁴⁾. Advanced hysteroscopy is the tissue removal system known as a hysteroscopic mechanical morcellator without a radiofrequency energy source. Therefore, the Food and Drug Administration (FDA) approved the automatic hysteroscopic tissue removal in July 2012^(5,6). The devices are reciprocating blades with a side opening cutting design. The advantages of intrauterine shavers are the ease in attaining visibility due to continuous suction and collection of resected tissue into a specimen bag⁽⁵⁾. The hysteroscope sets include the 5C and the 8.0. They are composed of the internal proprietary sheath (Truclear system). A hollow cylindrical blade is inserted through the external sheath of an operative hysteroscope with a window at the end that acts as a side shaver⁽⁶⁾. The three associated devices comprise Truclear INCISOR, Truclear INCISOR Plus, and Truclear ULTRA Plus, while the INCISOR Plus and ULTRA Plus are devoted explicitly to myoma or dense tissue resection. The properties detail of each morcellator type for myoma resection are shown in Table 1. To the authors' knowledge, adaptive tissue collection is the first low-cost tissue collection device that is hand-made from a disposable medical bouffant cap (Budhosp-tissue collection). It is beneficial for a low to middle-income country like Thailand (Figure 1).

Endometrial polyp is the most common cause of AUB in premenopausal and postmenopausal women. In the present study, 55 of 63 hysteroscopic patients (87%) had endometrial polyps as shown in Table 1 and Figure 2. Six patients had submucous leiomyoma (9.5%) as shown in Figure 2. The procedural complications, including vasovagal reaction, uterine perforation, false passage, and bleeding, were not found the present study⁽⁷⁾. The widely accepted hysteroscopic approach mentioned that the submucous myomas up to 4 cm in diameter for type 2 fibroids or up to 5 cm for types 0 and 1 fibroid could be safely removed⁽⁸⁾. Endometrial sampling is not efficient for diagnosing endometrial polyp or fibroids^(9,10). Similarly, the present study showed that the histopathology of endometrial polyps was 87%

after the hysteroscopy utilization. The benefit of polypectomy is that the removal of endometrial polyp will reduce the recurrence of AUB. The submucous myoma was less than 3 cm in the present study.

The hysteroscopic morcellation technique is the latest innovation in treating intrauterine lesions, which an experienced surgeon can have access to the technology. The advantage of the disposable mechanical cutting device is to simultaneously cut and aspirate polyp tissue. The tissue fragments can easily be removed and collected for subsequent histological analysis as a unique technique. Furthermore, the improvement of visualization and safety during the procedure avoids the need for additional instrumentation within the uterine cavity, reducing bubble formation or the accumulation of excised tissue fragments. Moreover, the hysteroscopic morcellation technique is associated with the least risk of bubble-related embolism. This method has a quicker procedure time and a shorter learning curve than a conventional resectoscope⁽¹¹⁾. This method also helps surgeons gain operative hysteroscopy skills with relative ease for polyp and submucosal myoma removal done by hysteroscopic mechanical morcellation⁽¹²⁾. In addition, owing to mostly TIVA anesthetic option revealed the shortened operative time. The operated hysteroscopic process time was less than 30 minutes in the present study. In addition, hysteroscopic tissue removal is the least painful⁽¹³⁻¹⁶⁾, so one-day surgery is beneficial to patients. The monitoring of fluid deficit in the hysteroscopic tissue removal system resulted in no adverse events.

Conclusion

Modern technologies are currently available for the hysteroscopic procedure, so the procedures are completed within 30 minutes. Hysteroscopic morcellation has been recognized as a safe and effective alternative resection. The innovation of adaptive tissue collection (Budhosp-tissue collection) is beneficial to rural hospitals with the less expensive and safest device.

What is already known on this topic?

Hysteroscopy is a benefit for the diagnosis and treatment of AUB. Hysteroscopic morcellation is a modernized technique for tissue collection. However, because of the skill required by the surgeon and the expensive instruments, it is not used in every hospital.

What this study adds?

After the adaptive tissue collection device

(Budhosp- tissue collection) was invented, the tissue was easy to collect without loss. In addition, the Budhosp- tissue collection device is a cheap and safe device.

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Conflicts of interest

The authors declare that they have no conflicts of interest

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