Gynecology and Minimally Invasive Therapy 2 (2013) 18–21

Contents lists available at SciVerse ScienceDirect

Gynecology and Minimally Invasive Therapy

journal homepage: www.e-gmit.com

Original article

Removal of endometrial polyps through a small-caliber diagnostic flexible hysteroscope using a Lin polyp snare system

Bao-Liang Lin [a,*], Miho Iida [a], Akira Yabuno [a], Takayuki Higuchi [a], Yukitaka Murakoshi [a], Soukichi Iwata [a], Yun Zhao [b]

[a] Department of Obstetrics and Gynecology, Kawasaki Municipal Hospital, Kawasaki, Japan
[b] Department of Obstetrics and Gynecology, Kiang Wu Hospital, Macau, China

ARTICLE INFO

Article history:
Received 12 October 2011
Received in revised form
2 October 2012
Accepted 25 October 2012
Available online 18 January 2013

Keywords:
Endometrial polyps
Flexible hysteroscope
Hysteroscopy
Polypectomy
Snare

ABSTRACT

Objective: To evaluate the efficacy of a newly developed snare system used for hysteroscopic polypectomy in a small-caliber diagnostic flexible hysteroscope.
Materials and methods: One hundred thirty-eight women (age 26–69 years) with endometrial polyps underwent hysteroscopic polypectomy using a Lin polyp snare system in a small-caliber diagnostic flexible hysteroscope without cervical dilation, analgesia, anesthesia, or use of a tenaculum. No electric current was used during the procedure.
Results: Indications of hysteroscopic examinations for these 138 women were infertility in 56, abnormal uterine bleeding in 43, menorrhagia in 17, abnormal ultrasound findings in 20, and abnormal intrauterine pathologic or cytologic findings in 2. Sixty-nine women had a single polyp, whereas the other 69 had multiple polyps. In 11 women, the polyps were only excised without removing the specimens. In 29 women, the polyps were removed partly by a snare first and the remaining polyps by a polyp grasper. In 49 women, the polyps were transected by a snare and the specimens were removed by a polyp grasper. In the other 49 women, the polyps were transected and removed only by using a snare. Most of the women had a satisfactory specimen, but there were 28 women with small specimens and 11 women with no specimen. The pathologic findings were endometrial polyps in 100 women, endometrium in 17, endometrial hyperplasia complex in three, atypical endometrial hyperplasia complex in three, adenomyoma in two, atypical polypoid adenomyoma in one, and endometrial carcinoma in one. The painful sensation was slight and all patients could tolerate the whole procedures. No special complication other than bleeding for several days was encountered.
Conclusions: Endometrial polyps can be removed using a Lin polyp snare system equipped in a small-caliber flexible hysteroscopy without requiring cervical dilation, anesthesia, analgesia, or a tenaculum in the office. This procedure may substitute for blind dilation and curettage for intrauterine pathologic evaluation.

Introduction

An endometrial polyp is the most common intrauterine pathologic lesion. It may cause abnormal uterine bleeding[1,2] and sometimes is the cause of infertility.[3] Hysteroscopy is the most effective method for diagnosis and treatment of intrauterine diseases.[4] The development of the small-caliber diagnostic flexible hysteroscope (outer diameter 3.1–3.7 mm) has enabled intrauterine examination performed in the office without the use of a tenaculum, cervical dilation, analgesia, or anesthesia even for a nulliparous patient.[5,6] However, these flexible hysteroscopes can only be used for observation. No additional surgical procedure can be done. If endometrial polyps are found, it is then necessary to change the diagnostic hysteroscope to a larger 4.9-mm flexible operating hysteroscope to perform polypectomy with a snare[7] or a biopsy forceps.[8,9] However, in nulliparous women, difficult insertion of the flexible operating hysteroscope is often encountered and cervical dilation is required. Even after successful insertion of the hysteroscope, the uterine bleeding caused by the traumatic injury to the endometrium during the cervical dilation or hysteroscope insertion may impair the clarity of the visual field, which makes the subsequent procedure impossible. As a consequence, a dilation and curettage (D&C) is usually required for treatment. Alternatively, we

* Corresponding author. Department of Obstetrics and Gynecology, Kawasaki Municipal Hospital, 12-1, Shinkawadori, Kawasaki-Ku, Kawasaki 210-0013, Japan.
E-mail address: linbaoliang7878@gmail.com (B.-L. Lin).

2213-3070/$ – see front matter
http://dx.doi.org/10.1016/j.gmit.2012.12.009

report on the development of and experience with a new snare system that can be used with a small-caliber diagnostic hysteroscope to perform polypectomy in the office.

Materials and methods

The Lin snare system (Hakko Medical Co., Tokyo, Japan) consists of three parts: a snare, wire holder, and Y-shaped connector (Fig. 1). To assemble this system, the loop side of the snare wire is first inserted into the irrigation channel from the proximal end of the hysteroscope, going through the channel within the hysteroscope and exiting from the distal end. The Y-shaped connector is then fixed to the proximal irrigation channel of the hysteroscope after inserting the wire through it. A wire holder is connected at the proximal end of the snare wire. An intravenous infusing tubing set is then connected to the Y-shaped connector (Fig. 2). The size of an open snare loop is 30 × 10 mm (Fig. 3). The loop is made of a nickel–titanium alloy. No electric current is used for this system.

From January 2011 to August 2012, 138 women aged 26–69 years in whom suspected endometrial polyps were diagnosed via vaginal ultrasound[10] underwent diagnostic hysteroscopy in our clinics. The size of the polyps was restricted to equal to or smaller than 25 mm of its largest portion measured via ultrasound. Hysteroscopy was performed using a 3.1-mm (Olympus Optical Co., Tokyo, Japan) or a 3.5-mm diagnostic flexible hysteroscope (Karl Storz Co., Tuttlingen, Germany), or a 3.8-mm video flexible hysteroscope (Olympus Optical Co., Tokyo, Japan) equipped with a Lin polyp snare system. A tenaculum, cervical dilation, and analgesia or anesthesia were not used. The distending medium was 5% glucose in water. The plastic bag of 5% glucose was suspended approximately 80 cm above the uterus and connected to the Y-shaped connector through intravenous infusion tubing set. If distention was insufficient, a pressure cuff with a pressure of 50 mmHg was placed around the plastic bag to increase the irrigating pressure. When the polyp was found, the snare was advanced to the area of the polyp and the loop was opened. By moving the tip of the hysteroscope, the loop was placed around and slightly tightened on the polyp. There were two different subsequent procedures. The first procedure involved pulling the loop to transect the pedicle without withdrawing the hysteroscope from the uterine cavity. Additional cutting could be continued. If necessary, the specimens or the remaining polyps were removed by a Lin polyp grasper (Yoshida Co, Saitama, Japan) guided by an abdominal ultrasound. The second procedure involved tightening the loop around the base of the polyp. Next, the hysteroscope was withdrawn and the polyp extracted from the uterus simultaneously (Fig. 4). The hysteroscope could be reinserted into the uterine cavity to perform an additional cutting procedure. All the polyps were transected or cut as completely as possible. Part of the resected polyp often drifted into the vagina and could be retrieved for pathologic examination.

To evaluate the amount of the removed specimens sufficient for an easy pathologic diagnosis, the specimen was divided into a small amount and a satisfactory amount. A small amount was defined as a specimen smaller than or equal to 4 mm measured through its longest part but in which the possible pathologic diagnosis could be done. The other larger specimens or the completely removed polyp (Fig. 5) were defined as a satisfactory amount.

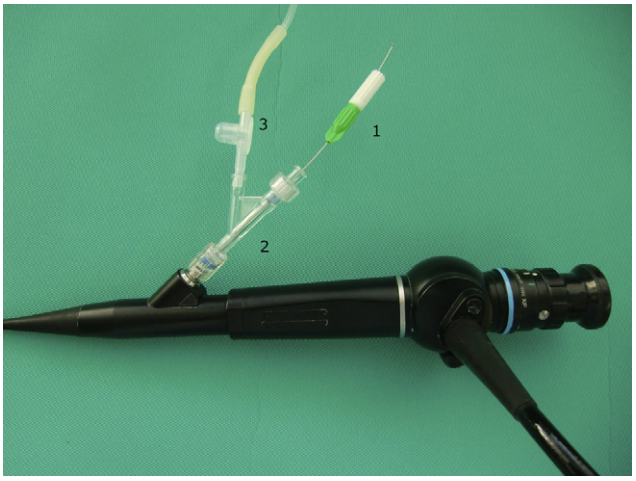

Fig. 2. The Lin polyp snare system is equipped in a flexible diagnostic hysteroscope. 1, Wire holder. 2, Y-shaped connector. 3, Intravenous infusing tubing set.

Results

Indications of hysteroscopic examinations for these 138 women were infertility in 56, abnormal uterine bleeding in 43, menorrhagia in 17, abnormal ultrasound findings in 20, and abnormal intrauterine pathologic or cytological finding in two. Sixty-nine women had a single polyp, and the other 69 had multiple polyps. One hundred seven procedures were performed

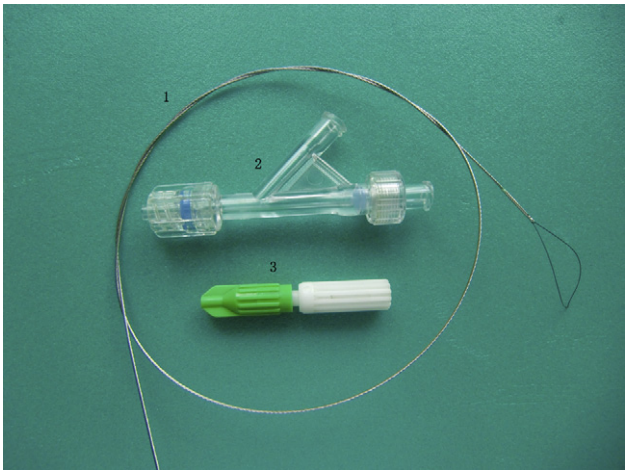

Fig. 1. The Lin polyp snare system. 1, Snare. 2, Y-shaped connector. 3, Wire holder.

Fig. 3. The snare is extended from the hysteroscope and the loop is opened.

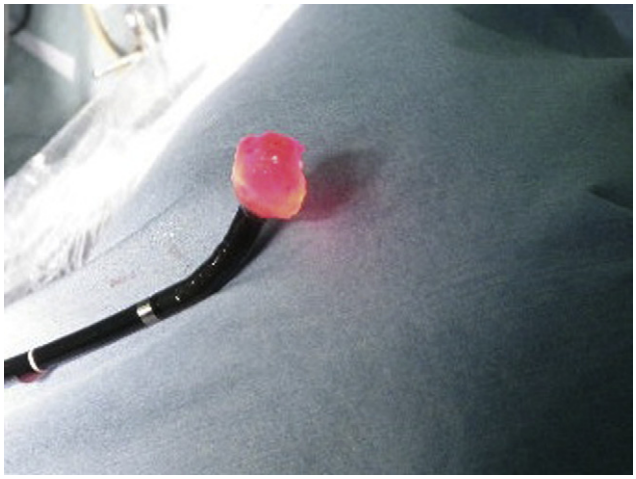

Fig. 4. The endometrial polyp is removed.

using a 3.1-mm flexible hysteroscope. Twenty-seven procedures were with a video hysteroscope, and four procedures with a 3.5-mm flexible hysteroscope. In 29 women, the polyps were removed partly by a snare first and the remaining polyps by a polyp grasper. In 49 women the polyps were transected by a snare and removed by a polyp grasper. In another 49 women the polyps were transected and removed only by using the snare. Eleven women had no specimen and the procedures were done only by excising the polyps. These 11 patients received endometrial cytologic examination with negative findings before the hysteroscopy. Twenty-eight women had small specimens and 99 women had satisfactory specimens. The pathologic findings were endometrial polyps in 100 women, endometrium in 17, endometrial hyperplasia complex in three, atypical endometrial hyperplasia complex in three, adenomyoma in two, atypical polypoid adenomyoma in one, and endometrial carcinoma in one. During manipulation of the snare, no woman required further anesthesia or analgesia. Three patients with a history of severe dysmenorrhea complained of painful sensation that could be tolerated. Almost all of the other patients experienced little painful sensation. The time for a procedure of polypectomy was approximately 5–10 minutes. No special complication other than bleeding for several days was found.

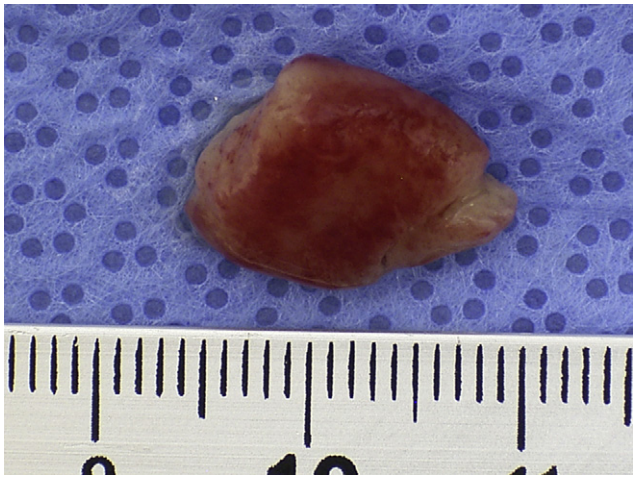

Fig. 5. Specimen of the removed endometrial polyp.

Discussion

To perform endometrial polypectomy in the office, we developed the Lin polyp grasper (3 mm in diameter) that could be introduced into the uterine cavity under abdominal ultrasound guidance without cervical dilation and anesthesia. However, even under abdominal guidance, sometimes the polyps could not be grasped and removed. Therefore, directed polypectomy with a hysteroscope was expected.

From 1983 to August 2012 we have experienced more than 17,400 hysteroscopic examinations using a flexible diagnostic hysteroscope, which has significant advantages over a rigid diagnostic hysteroscope because of its small diameter and flexibility. The procedures required no tenaculum, cervical dilation, analgesia, or anesthesia. However, the indications for using this hysteroscope were restricted to diagnostic purposes only.

It is advantageous for a hysteroscopist to remove endometrial polyps when they are found in a small-caliber flexible diagnostic hysteroscope. To achieve this goal, we developed a two-channel Lin soft outer sheath (Hakko Medical Co., Tokyo, Japan). The sheath has a second channel that is used for a continuous flow system.[11] We thought that through this second channel, a snare could be introduced to perform polypectomy. The idea was good in theory but an unpredicted complication was encountered. During the hysteroscopy, because of the flexibility of the distal end, the snare that was inserted through the second channel was difficult to be found within the visual field of the hysteroscope. This experiment failed. We concluded that to perform a polypectomy with a diagnostic flexible hysteroscope, the snare has to be inserted through the irrigation channel of the hysteroscope, so that the extended snare loop can enter the visual field. However, the irrigation channel is used not only for passing a forceps, but also as a pathway for irrigating fluid or carbon dioxide gas. Usually the diameter of the irrigating channel in a diagnostic flexible hysteroscope is equal to or smaller than 1 mm. A conventional biopsy forceps (1.8 mm outer diameter) cannot be used. The only instrument that can pass through the channel is the snare. As a result, the space for passing the fluid is reduced, causing insufficient distention of uterine cavity and disturbance of visualization. Fortunately, even with snare insertion, the irrigation system (sometimes using a 50 mmHg pressure cuff) in diagnostic flexible hysteroscopy was sufficient to maintain good visualization.

A snare can be easier to use in a 3.8-mm video flexible hysteroscope than in a conventional flexible hysteroscope because of its 120-degrees-wide visual field, whereas the visual field in a 3.1-mm flexible hysteroscope is 100 degrees. However, in some nulliparous women, inserting a 3.8-mm video flexible hysteroscope into the uterine cavity may be difficult; therefore, a 3.1-mm hysteroscope is preferred.

To remove a polyp, it is necessary to remove the hysteroscope at the same time after the snare loop has hung the polyp. However, with a large polyp, the specimen cannot be passed through the narrow cervical canal by the snare. However, the bleeding caused by the removed polyp or insertion trauma to the endometrium may impair visualization. Continuing to remove another polyp may become difficult. In case of multiple polyps or large polyps that require repeat manipulation, we prefer to cut and divide the polyp first and remove it with a Lin polyp grasper. However, once the surgeon's technical skill increases, the polyps can usually be removed using a snare without a grasper.

Eleven patients had no specimen after the polyp was cut with a snare. Because most of these patients had an empty bladder, abdominal ultrasound guidance for using a polyp grasper was difficult.

Endometrial cytologic examination,[12,13] which had a diagnostic sensitivity of more than 90%, is a routine examination for all patients before hysteroscopic examination. We used the endocyte (Matsunami Glass Co., Osaka, Japan) for endometrial evaluation.

Nine cases were not enrolled in the study because the loop could not catch the polyps. The reasons for failure were acute retroflexion of the uterus in two, hard consistency of the polyp in two, submucous myoma in two, large polyp in one, too-small polyp in one, and unfamiliar surgical skill in the beginning in one. The total failure rate was 6.1%. In the two cases of submucous myoma, we had mistaken them for endometrial polyps because of the thick endometrium. The application of the snare removed the overlying endometrium and enabled us to see the characteristic findings of the myoma, including dilated subepithelial blood vessels and its whitish appearance.[14] Hysteroscopic myomectomy[15] was eventually performed for these two cases.

During the procedure, only little pain was experienced, proving that an office-based snare D&C could be performed.

Conclusions

Uterine polyps can be removed by a small-caliber diagnostic hysteroscope using a Lin polyp snare system without requiring a tenaculum, cervical dilation, anesthesia, or analgesia in the office. This procedure may substitute blind D&C for intrauterine pathologic evaluation.

Conflicts of interest

All contributing authors declare no conflict of interest.

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