



Original article

Office management of lost intrauterine devices either with or without strings



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ABSTRACT

Objective: To evaluate the efficacy of our method for retrieval of lost intrauterine devices (IUDs) either with or without strings in an office-based setting.

Methods: A total of 38 women underwent retrieval of lost IUD. After preevaluation with ultrasonography and hysteroscopy, a Lin polyp grasper was used to remove the IUD under ultrasound monitoring without using a simultaneous hysteroscopy.

Results: Out of 38 women, 12 (31.6%) had IUD insertion for 10–19 years, whereas in another 12 women (31.6%), the duration was 20–40 years. Participants were divided into two groups: (1) premenopausal group ($n = 21$). The removed IUDs were 11 Chinese IUDs, seven FD-1 IUDs, one Yusei ring IUD, one Lippe loop IUD, and one Mirena IUD; and (2) postmenopausal group ($n = 17$). The removed IUDs were five soft type Ota ring IUDs, eight FD-1 IUDs, one Saf-T-Coil IUD, one KS wing IUD, and one Chinese IUD. A very hard type Ota ring IUD inserted for 40 years could not be removed. All of the other IUDs were removed uneventfully. Most of the patients could tolerate the procedure without the use of analgesia or anesthesia. No subsequent complication except bleeding for several days was encountered.

Conclusion: Using our method, lost IUDs either with or without strings can be effectively and safely retrieved in the office-based setting without analgesia or anesthesia.

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Introduction

It has been estimated that more than 168 million women are using different kinds of intrauterine devices (IUDs) for contraception all over the world.¹ There are two kinds of IUD. One is made with a string for easy removal, whereas the other is with no strings (Fig. 1) and its retrieval may be difficult. To remove them, the use of hysteroscopy with grasping forceps has been reported.² The procedure was to find the missing string in the majority of the cases,^{3–5} whereas for those with no strings or with strings torn off, the approach was to hold the IUD directly with a grasping forceps as one withdrew the hysteroscope.⁶ However, conventional

hysteroscopic grasping forceps are so small and weak that very often the IUD would slip from the forceps and cannot be removed. In order to solve this problem, a strong Lin polyp grasper,⁷ which was originally designed for the removal of endometrial polyps was used to catch and remove the IUDs without using a simultaneous hysteroscopy. This paper describes our experiences of how to manage difficult-to-remove IUDs with or without strings in an office-based setting.

Materials and methods

From March 2006 to August 2012, 38 women, aged from 26 years to 84 years, with the diagnosis of missed IUD underwent retrieval without analgesia or anesthesia. The majority of the patients were referred from other physicians after unsuccessful retrieval. Four women with FD-1 IUD inserted for preventing intrauterine adhesions after hysteroscopic myomectomy⁸ were enrolled in the study because of the missing string.

Conflicts of interest: The authors declare no conflicts of interest relevant to this article.

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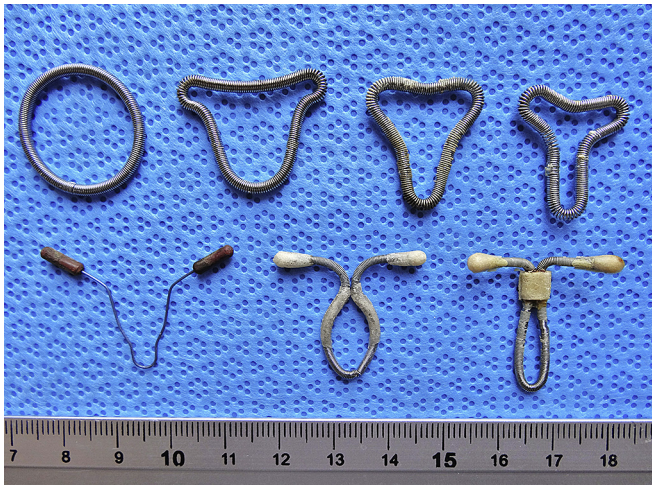


Fig. 1. Different types of Chinese IUDs with no strings.

Our procedures for retrieval of IUD were as follows. (1) Vaginal and abdominal ultrasound^{9–11} examinations were performed to evaluate the uterine condition. Then a diagnostic flexible hysteroscopy was performed to confirm the type and location of the IUD as well as the intrauterine condition. (2) Cervical dilatation was done using Hegar dilators from the size of Number 1 up to Number 4. (3) Finally, a Lin polyp grasper (Yoshida Co, Saitama, Japan) was inserted into the uterine cavity under ultrasound guidance without simultaneous hysteroscopy to catch and remove the IUD (Fig. 2). In most cases, a tenaculum was not used.

Results

Out of 38 women, 12 (31.6%) had the IUD insertion for 10–19 years, whereas in another 12 women (31.6%) the duration was 20–40 years. Women were divided into two groups. Table 1 shows the indications for retrieval of the IUDs between two groups. Table 2 shows the characteristics of the 12 women with the duration of IUD insertion ≥ 20 years.

Premenopausal group ($n = 21$). The age was 26–51 years (mean 39.9 ± 6.9 years). The removed IUDs were 11 Chinese IUDs, five FD-

Table 1
Indications for retrieval of IUDs.

Indication	Premenopausal (n)	Postmenopausal (n)
Bleeding	7	11
Patient request	7	4
Hope for childbearing	3	0
Lower abdominal pain	3	0
Infection	1	2
Total no.	21	17

1 IUDs with missing strings, two FD-1 IUDs with strings torn off, one Yusei ring IUD, one Lippe loop IUD with a string torn off, and one Mirena IUD with a missing string. In five women, the duration of insertion was 1–4 months. In the other 16 women, the duration was 1–20 years (mean 9.5 ± 5.0 years). Missing strings of both FD-1 IUDs and Mirena IUDs were removed by grasping the IUD directly with polyps grasper without cervical dilation.

Postmenopausal group ($n = 17$ women). The age was 44–84 years (mean 61.7 ± 10.9 years). The duration of postmenopausal period was 1–40 years (mean 10.6 ± 11.4 years). The duration of IUD insertion was 1–40 years (mean 22.3 ± 11.9 years). The removed IUDs were eight FD-1 IUDs (five torn off strings, two missing strings, and one visible string), five soft type Ota ring IUDs, one Saf-T-Coil IUD, one KS wing IUD, and one Chinese IUD. The FD-1 IUD with visible string had been inserted for 20 years. This patient was a 59-year-old, gravida 5 para 5, woman with a chief complaint of abnormal uterine bleeding. Diagnostic hysteroscopy revealed mild intrauterine adhesions. After cervical dilation, the IUD was removed successfully with a Lin polyp grasper. A 75-year-old postmenopausal woman, gravida 4 para 2, with a hard type Ota ring inserted for 40 years, had no clinical symptom but wanted to retrieve her IUD. The IUD could not be removed because the consistency was very hard. Without anesthesia and further cervical dilation, it was impossible to remove this IUD. She declined further procedures. All of the other IUDs were removed uneventfully. Most of the patients could tolerate the procedure well without analgesia of anesthesia. No subsequent complication other than bleeding for several days was encountered.

Discussion

Some IUDs with strings were left in place so many years that the bond between the IUD and its string became weak. This may have led the string to be torn off, causing the retrieval to be difficult in some cases. There are also many Japanese IUDs without strings that are still left in place in many women. They have not been produced for many years because of the difficult removal. However, because our method is to grasp and remove the IUD directly, there is no concern about the existence of the strings.

Even so, among different kinds of IUDs with no strings, the hardest to remove were the Chinese stainless steel ring IUDs.^{12,13} Firm intrauterine adhesions may be formed through this IUD that adhesiolysis becomes necessary before retrieval. Figs. 3 and 4 show a Chinese stainless steel ring IUD that was inserted 20 years ago and was incarcerated by dense intrauterine adhesions in a 51-year-old postmenopausal woman.

This case was not enrolled in the study because adhesiolysis was done and the ring IUD was retrieved in the operating room under general anesthesia. There has been a report of Chinese stainless steel ring IUD incarcerated by submucous myoma, which required simultaneous hysteroscopic myomectomy.

Another concern exists when trying to pull the Chinese stainless steel ring IUDs. They may be stretched and become a piece of wire

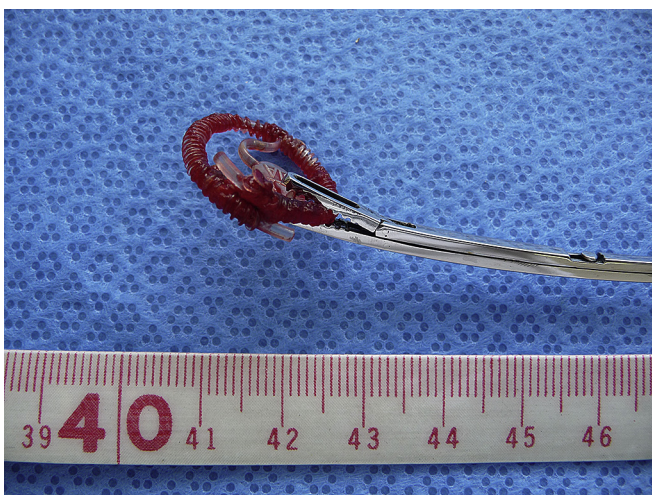
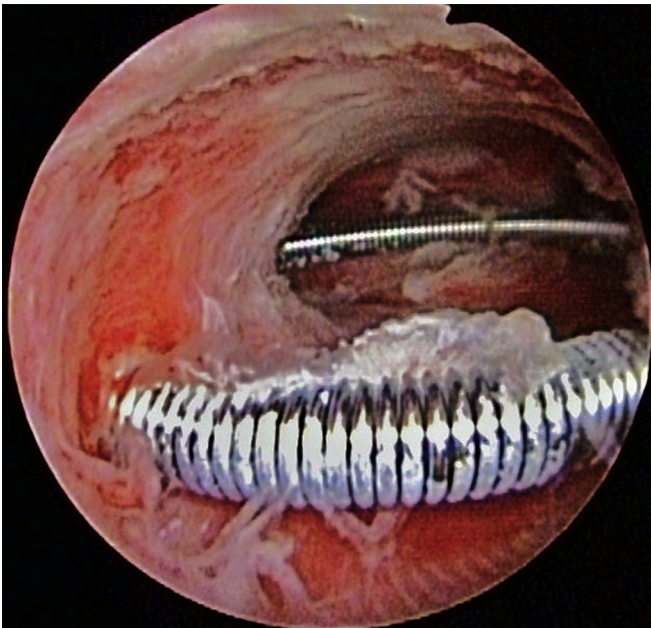
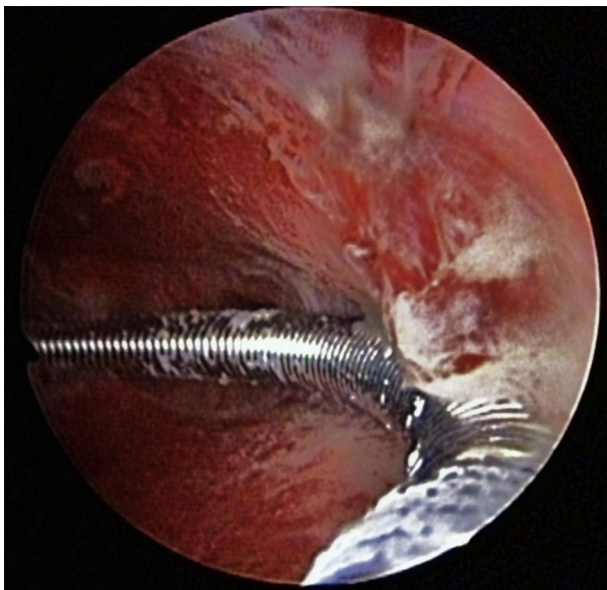
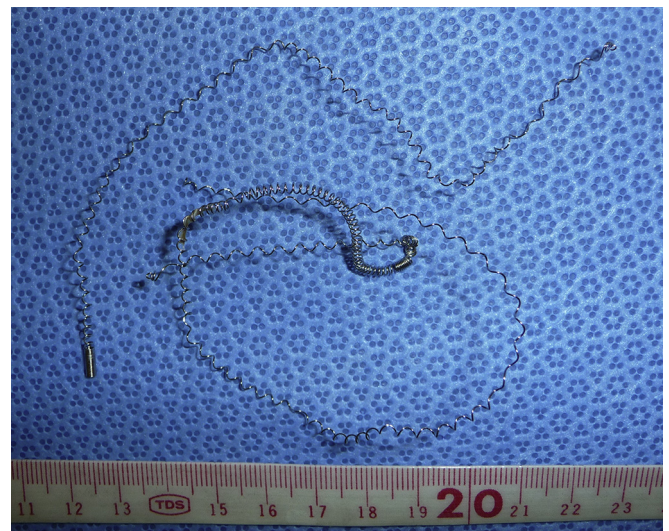


Fig. 2. Successful retrieval of an Ota ring IUD with a Lin polyps grasper. This IUD had been inserted for 40 years in a 71-year-old, G3P3, woman with a chief complaint of abnormal uterine bleeding.

Table 2Characteristics of 12 patients with an intrauterine device (IUD) inserted for ≥ 20 years.

No.	Age (y)	Duration of menopause (y)	Duration of insertion (y)	Type of IUD	Indication for retrieval	Successful retrieval
1	44	2	20	Ota ring	Bleeding	Yes
2	48	0	20	Chinese IUD	Lower abdominal pain	Yes
3	59	3	20	FD-1 with string	Bleeding	Yes
4	62	14	20	FD-1 with torn off tail	Bleeding	Yes
5	58	3	22	FD-1 with torn off tail	Patient request	Yes
6	58	1	22	FD-1 with torn off tail	Bleeding	Yes
7	59	2	30	Ota ring	Bleeding	Yes
8	61	9	30	Ota ring	Bleeding	Yes
9	80	28	35	KS wing	Bleeding	Yes
10	75	22	40	Ota ring (hard type)	Patient request	No
11	67	9	40	Saf-T-Coil	Patient request	Yes
12	71	20	40	Ota ring	Bleeding	Yes

**Fig. 3.** A stainless steel ring IUD was incarcerated by dense intrauterine adhesions at the right side.**Fig. 4.** Left side of the IUD was found with mild intrauterine adhesion.**Fig. 5.** The ring was stretched into a piece of wire during the retrieval.

(Fig. 5). The wire may be broken and the remnant left inside the uterus. We have experienced a case of a Chinese stainless ring IUD remnant embedded in the cervix that required resectoscopic operation.¹⁴ It is recommended to take a plain low abdominal X-ray after the retrieval procedure to confirm the possible remnant if the wire is broken.

IUD is a cause of uterine bleeding and infection. Out of 17 postmenopausal women, 11 (64.7%) had abnormal uterine bleeding. It is well known that the incidence of endometrial malignancy in the woman with postmenopausal bleeding is high.^{15–17} The inserted IUD may interfere in the intrauterine examination for malignancy. When the symptom persists, it is then necessary to remove the IUD. However, in a postmenopausal woman with a small atrophic uterus, retrieval of IUD becomes difficult. Uterine perforation or traumatic uterine bleeding may be encountered with violent retrieval; therefore, hysterectomy¹⁸ or hysterotomy¹⁹ remain the main options for this situation.

Ring-shaped IUD in comparison with T-shaped IUD has the disadvantages of difficult insertion and difficult retrieval. However, most of the ectopic or perforated IUDs,^{20–22} which we did not experience, are reported for T-shaped IUDs.

Conclusion

With our method, lost IUDs either with or without strings can be removed safely and effectively in an office-based setting, without anesthesia or analgesia.

References

- United Nations Department of Economic and Social Affairs Population Division. World contraceptive use 2011. http://www.un.org/esa/population/publications/contraceptive2011/wallchart_front.pdf. Accessed 15.08.13.
- Prabhakaran S, Chuang A. In office retrieval of intrauterine contraceptive devices with missing strings. *Contraception*. 2011;83:102–106.
- Tugrul S, Yavuzer B, Yildirim G, Kayahan A. The duration of use, causes of discontinuation, and problems during removal in women admitted for removal of IUD. *Contraception*. 2005;71:149–152.
- Roke CM. A comparative study of the ease of removal of intrauterine contraceptive devices. *Contraception*. 1988;37:555–563.
- Lin JC, Chen YO, Lin BL, Valle RF. Outcome of removal of intrauterine devices with flexible hysteroscopy in early pregnancy. *J Gynecol Surg*. 1993;9:195–200.
- Lin BL, Iwata YY, Valle R. Clinical applications of Lin's forceps in flexible hysteroscopy. *J Am Assoc Gynecol Laparosc*. 1994;1:383–387.
- Lin BL, Iida M, Yabuno A, et al. Removal of endometrial polyps through a small caliber diagnostic flexible hysteroscope using a Lin polyp snare system. *Gynecol Minim Invasive Ther*. 2013;2:18–21.
- Lin BL, Higuchi TY, Yabuno A, et al. One-step hysteroscopic myomectomy using Lin dissecting loop and Lin myoma graspers. *Gynecol Minim Invasive Ther*. 2012;1:27–33.
- Peri N, Graham D, Levine D. Imaging of intrauterine contraceptive devices. *J Ultrasound Med*. 2007;26:1389–1401.
- Bonilla-Musoles F, Pardo G, Simon C. How accurate is ultrasonography in monitoring IUD placement? *J Clin Ultrasound*. 2005;18:395–399.
- de Kroon CD, van Houwelingen JC, Trimbos JB, Jansen FW. The value of transvaginal ultrasound to monitor the position of an intrauterine device after insertion. A technology assessment study. *Hum Reprod*. 2003;18:2323–2327.
- Cheung VY. A 10-year experience in removing Chinese intrauterine devices. *Int J Gynaecol Obstet*. 2010;109:219–222.
- Wang C. Trends in contraceptive use and determinants of choice in China: 1980–2010. *Contraception*. 2012;85:570–579.
- Lin BL, Iwata SK. *Hysteroscopic removal of an IUD remnant embedded in cervix*. Video poster presented at: 38th Annual Meeting of the American Association of Gynecologic Laparoscopists. November 17–19, 2009. Orlando.
- van Hanegem N, Breijer MC, Khan KS, et al. Diagnostic evaluation of the endometrium in postmenopausal bleeding: an evidence-based approach. *Maturitas*. 2011;68:155–164.
- van Hanegem N, Breijer MC, Opmeer BC, Mol BW, Timmermans A. Prediction models in women with postmenopausal bleeding: a systematic review. *Womens Health*. 2012;8:251–262.
- Burbos N, Musonda P, Crocker SG, Morris EP, Nieto JJ, Duncan TJ. Management of postmenopausal women with vaginal bleeding when the endometrium cannot be visualized. *Acta Obstet Gynecol Scand*. 2012;91:686–691.
- Byrd L, Slade R. The lost intrauterine device: removal by hysterectomy. *J Fam Plann Reprod Health Care*. 2004;30:174–175.
- New FC, Candelier CK. A case of hysterotomy for removal of an intrauterine contraceptive device and subsequent pregnancy. *J Fam Plann Reprod Health Care*. 2004;30:177–178.
- Ko PC, Lin YH, Lo TS. Intrauterine contraceptive device migration to the lower urinary tract: report of 2 cases. *J Minim Invasive Gynecol*. 2011;18:668–670.
- Heinberg EM, McCoy TW, Pasic R. The perforated intrauterine device: endoscopic retrieval. *JLS*. 2008;12:97–100.
- Balci O, Capar M, Mahmoud AS, Colakoglu MC. Removal of intra-abdominal mislocated intrauterine devices by laparoscopy. *J Obstet Gynaecol*. 2011;31:650–652.