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Research Article

The Effect of Vaginal Misoprostol on Difficult Intrauterine Contraceptive Removal

Erin M. Wahle[1], Abbey J. Hardy-Fairbanks[2]*, Jean M. Hansen[2], Whitney L. Cowman[2] and Colleen K. Stockdale[2]

[1]Carver College of Medicine, University of Iowa, USA
[2]Department of OB/GYN, University of Iowa Hospitals and Clinics, USA

*Corresponding authors
Abbey J. Hardy-Fairbanks, Department of OB/GYN, University of Iowa Hospitals and Clinics, 200 Hawkins Drive, PFP 51225, Iowa City, IA, 52246, USA, Tel: 319-356-2291; Email: abbey-hardy-fairbanks@uiowa.edu

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Keywords

- Misoprostol
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Abstract

Background: Typically removal of an IUC involves mild traction on the string and yields few complications. However, there are situations in which IUC strings are not visible to the provider and removal of the device proves to be difficult.

Study design: Retrospective cohort study of all patients presenting for IUC removal in the Procedure Clinic from January 1, 2009 through December 31, 2011 (N=29).

Results: While there was no statically significant effect on whether strings were visible at the time of removal (p=0.06), patients who received misoprostol pre-procedure required significantly less ultrasound guidance (p=0.04) and significantly fewer instruments for IUC removal (p< 0.01).

Conclusion: Use of vaginal misoprostol was associated with increased ease of IUC removal as demonstrated by lack of need for ultrasound guidance and fewer instruments required to successfully remove the device. Misoprostol appears to be effective in reducing the effort required in difficult IUC removal.

ABBREVIATIONS

IUC: Intrauterine Contraceptive

INTRODUCTION

Intrauterine contraceptives (IUC) are one of the most common forms of contraception worldwide [1]. Despite IUC popularity worldwide, they are not as widely recommended by physicians in the US due to concerns regarding pain and potential for complications during the insertion and removal process [2]. Under normal circumstances, removal of an IUC involves mild traction of the string and yields few impediments [1]. However, there are situations in which IUC strings are not visible to the provider and removal of the device proves to be difficult [1]. Several office techniques are performed during instances of difficult IUC removal, including the use of forceps, thread retrievers, hand-held suction, Novak biopsy curette and IUC removal hooks [1]. If removal of the IUC is unsuccessful in the office setting, then further attempts may be undertaken in settings such as an in-office procedure suite with intravenous sedation capabilities, or an operating room setting [1].

Despite the anecdotal experience of providers [3], multiple attempts to improve IUC insertion experience with pre-procedure misoprostol have proven ineffective for both ease of insertion and reduction in pain [4-6]. However, it has not been studied in difficult IUC removal. We previously reviewed three cases wherein the use of vaginal misoprostol, a synthetic prostaglandin E1 analogue, was found to ease the removal of IUCs with nonvisible strings [1]. We hypothesized that the uterotonic and uterocontractile effects following vaginal misoprostol administration explains why vaginal misoprostol was able to facilitate IUC removal in these three cases [1].

In our previous case series, use of vaginal misoprostol alone was able to facilitate IUC removal in three cases of nonvisible IUC strings. In all three cases, IUC strings were noted at the external cervical os and the IUCs were removed with ease [1]. The current study was conducted in a retrospective manner to further evaluate the effectiveness of misoprostol in facilitating the ease of IUC removal in complicated cases. In this study, we compare patients who were given misoprostol with others who did not receive misoprostol prior to attempted removal in the Procedure Clinic. The Procedure Clinic at the University of Iowa

allows procedures that are unable to be completed in routine gynecology clinic to be done in an office setting with IV sedation and the availability of ultrasound guidance. This study seeks to identify less invasive methods to facilitate IUC removal after failed in-office removal attempts or non-visible IUC strings.

MATERIALS AND METHODS

The design of the study is a retrospective cohort study evaluating the effectiveness of misoprostol use in the removal of complicated IUCs. This retrospective review includes all patients presenting for intrauterine contraceptive removal in the Procedure Clinic in the University of Iowa Hospitals and Clinics Women's Health Center from the inception of the Procedure Clinic, January 1, 2009 through December 31, 2011 (N = 29). Patients are typically scheduled in the Procedure Clinic only when routine office IUC removal fails. Although there is no uniform practice, a typical patient would have an attempted removal in clinic that either failed or was too uncomfortable for the patient. That attempt could have been by a gynecologist or a primary care provider who then referred the patient to the gynecologic procedure clinic based on their attempt at removal in clinic.

Patients were thus seen in a procedure suite where IV sedation, ultrasound guidance and additional instrumentation (including hysteroscopy) are available. This clinic is staffed by a senior OB/GYN resident and OB/GYN staff physician. Ultrasound is immediately available and use is determined by the staffing physicians at the time of procedures and is not routinely used for difficult IUC removal unless requested. All subjects seen in the procedure clinic since its inception were reviewed via electronic scheduling records, and then all those who were scheduled for IUC removal were included. Charts were then hand abstracted for demographic characteristics and procedural information.

Subjects were further divided into those who had been given misoprostol prior to their scheduled IUC removal and those who had not. Misoprostol was administered in two 200mcg vaginal doses, the first the night prior and the second the morning of their scheduled appointment. 11 out of the 12 patients received this standard drug dose, while one patient received the drug but the dose was unspecified. The primary outcome for the study was to determine whether or not IUC strings were visible at the time of attempted removal following administration of misoprostol. Secondary outcomes included the need for ultrasound guidance and the number of instruments required for IUC removal. All instruments listed in operative reports were recorded and tallied for all subjects. Although there is not a standardized methodology for instrument use or order, there are a finite number of available instrument types in the procedure clinic. Institutional Review Board approval was obtained for all study activities and all data was collected from the available electronic medical record. Statistical analysis included frequency tables, chi square analysis, fisher's exact tests and non-parametric analyses.

RESULTS AND DISCUSSION

A total of 29 subjects were included in this study as having been scheduled for IUC removal in procedure clinic and were known to have the IUC in appropriate placement within the uterus prior to attempted removal. Misoprostol was used prior to IUC removal in 12 (41.4%) of subjects at discretion of the provider. There was no significant difference in the sociodemographic background, parity, weight and ages between the two groups (Table 1). The length of time the IUC had been in utero proved to be of no significance in relation to difficulty in IUC removal (p=0.361). 25 patients (86.2%) had a levonorgestrel-releasing IUC (Mirena®, Bayer Corporation, Pittsburgh, PA, USA); the remaining four subjects used the copper-containing T380-A IUC (ParaGard®, Teva Women's Health Inc, Frazer, PA, USA). Due to lack of subjects with the cooper containing IUC, a comparison between types of IUC's could not be made.

There was no statistically significant effect of vaginal misoprostol on whether IUC strings were visible at the time of removal (p=0.057), as evident in (Table 2). However, patients who received misoprostol prior to attempted removal required significantly less ultrasound guidance (p=0.035) and needed significantly fewer instruments to accomplish successful IUC removal (p=0.004). Instruments used included IUC hook, manual suction canula or IPAS, Bozeman forceps, pap-smear endobrush, endometrial pipelle, hysteroscope with or without graspers, Randall stone polyp forceps, ring forceps, and uterine sound. The order of instrument use was provider dependent. In 11 out of the 12 misoprostol patients, only one instrument was needed to remove the IUC. In contrast, 12 out of the 17 non-misoprostol patients needed two or greater number of instruments to remove the IUC.

CONCLUSION

Although the effect of misoprostol did not reach statistical significance regarding visibility of strings at the time of IUC removal, there was a trend toward significance with a p-value of 0.057. This may have reached significance with a larger sample population. In regard to our secondary outcomes

Table 1: Demographic information.

	Misoprostol	No Misoprostol	
Demographic	**(n=12)**	**(n=17)**	**p-value**
Age at removal (years)	34.7 (±8.2)	31.4(±7.5)	0.26
BMI	33.7 (±13.7)	27.8(±7.6)	0.19
Nulliparity	16.7% (2)	17.6%(3)	0.473
Length of IUC use (months)	37.4 (±25.0)	48.9(±36.0)	0.361
Age at first delivery (years)	24.8 (±5.7)	21.8(±4.8)	0.262
Number prior vaginal deliveries	1.17 (±0.9)	1.31(±1.0)	0.769
Number prior cesarean deliveries	0.33 (±0.9)	0.50(±0.7)	0.59

Table 2: Outcomes.

	Misoprostol	No Misoprostol	
Outcome	**(n=12)**	**(n=17)**	**p-value**
Strings Visible	6 (50.0%)	0 (0.0%)	0.057
Ultrasound Use	3 (25.0%)	11 (64.7%)	0.035
Number of Instruments: 1	11 (91.7%)	5 (29.4%)	
2	1 (8.3%)	6 (35.3%)	0.004
3 or >	0 (0.0%)	6 (35.3%)	

(use of ultrasound guidance and number of tools used for IUC removal), these indicate that the misoprostol was helpful in easing the removal of IUCs in the Procedure Clinic. By using less ultrasound guidance, the cost of care for each patient decreases, as does the length of the office visit. Furthermore, decreasing the total number of tools used for IUC removal helps to minimize discomfort for the patients and quicken the removal procedure. Both of these measures support our initial hypothesis that using misoprostol facilitates the removal of IUC when strings are not visible or office removal is difficult.

Home self-administration of vaginal misoprostol has been found to be effective, safe and acceptable for patients for management of miscarriage and in medical abortion [7]. This medication, when used vaginally as described, has minimal side effects and may simplify complicated IUC removal thus lessening pain and expense in these circumstances.

Limitations of this study include the small overall sample size and its retrospective design. A slightly larger sample size may have resulted in statistical significance of the primary outcome measure. Further limitations also include the provider dependent nature of instrument use and misoprostol dosing. Administration of misoprostol is used frequently at our institution, but it is at provider discretion, so prescribing habits for pre-procedure misoprostol were a potential confounder in this study. Also, the accuracy of the misoprostol insertion placement may affect the efficacy of the drug. If misoprostol does not reach the cervix, then the effects on cervical ripening may be weakened.

Misoprostol was prescribed in advance for placement the night before and the morning prior to presenting for their appointments. Thus, while home administration of vaginal misoprostol is widely utilized, we are unable to confirm actual use or control for dissimilar placement location between subjects.

Based on the findings of this study, misoprostol seems to provide some benefit to facilitating complicated removal of IUC. Misoprostol use could be considered in preparation for cases of difficult IUC removal and a prospective randomized trial would be helpful to further determine the degree of benefit.

REFERENCES

1. Cowman WL, Hansen JM, Hardy-Fairbanks AJ, Stockdale CK. Vaginal misoprostol aids in difficult intrauterine contraceptive removal: a report of three cases. Contraception. 2012; 3: 281-284.
2. Sååv I, Aronsson A, Marions L, Stephansson O, Gemzell-Danielsson K. Cervical priming with sublingual misoprostol prior to insertion of an intrauterine device in nulliparous women: a randomized controlled trial. Hum Reprod. 2007; 10: 2647-2652.
3. Ward K, Jacobson JC, Turok DK, Murphy PA. A survey of provider experience with misoprostol to facilitate intrauterine device insertion. Contraception. 2011; 84: 594-599.
4. Swenson C, Turok DK, Ward K, Jacobson JC, Dermish A. Self-administered misoprostol or placebo pbefore intrauterine device insertion in nulliparous women: a randomized control trial. Obstet Gynecol. 2012; 120: 341-347.
5. Dijkhuizen K, Dekkers OM, Holleboom CA, de Groot CJ, Hellebrekers BW, van Roosmalen GJ, et al. Vaginal misoprostol prior to insertion ofa intrauterine device: an RCT. Hum Reprod. 2011; 26: 323-329.
6. Allen RH, Bartz D, Grimes DA, Hubacher D, O'Brien P. Interventions for pain with intrauterine device insertion. Cochrane Database Syst Rev. 2009; CD007373.
7. Schaff EA, Stadalius LS, Eisinger SH, Franks P. Vaginal misoprostol administered at home after mifepristone (RU486) for abortion. J Fam Pract.1997; 44: 353-60.

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