

Tale of the Tails, the Missing Postpartum IUCD Strings

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About the Author



Dr. Sujnanendra Mishra Worked as consultant in OBGYN in remote places in Odisha. He did much work on use of ketamine in obstetrics in remote places where nonavailability of anesthetist is perpetual. He worked relentlessly on population stabilization. He did more than hundred thousands of female sterilization and worked on PPIUCD since 2009 and published Article on evaluation of safety, efficacy and expulsion of intra-cesarean and post-placental insertion of PPIUCD. He received the best publication award of the year 2014 at AICOG 2016 and received CS Dawn Award at AICOG 2016 for presentation on Social and Preventive Obstetrics on prevention of Sickle Cell Disease in pregnancy and presently working on factors affecting user's satisfaction among PPIUCD clients.

Abstract

Introduction Using an intrauterine device (IUD) is many times safer than pregnancy and more effective in preventing pregnancy than oral contraceptives, condoms, spermicidal, any barrier method, or natural family planning. Benefits of healthy timing and spacing of pregnancy are many. Postpartum contraception is becoming popular after introduction of PPIUCD services.

Objective To study the incidence, management, clinical outcome of missing strings cases in post-placental and intra-cesarean IUCD.

Materials and Methods This study was a retrospective observational study, carried out in the district of Balangir, Odisha, India. Status of women who had post-placental and intra-cesarean IUCD insertion in various institutions between January 2010 and December 2012 having follow-up as per the protocol was taken for the study. All the complications were recorded and studied. Incidence, clinical outcome, and management of missing strings were analyzed.

Results Records of 1343 clients were studied. Six hundred and seventeen cases had failed to report for follow-up as per the study design. Seven hundred and twenty-six cases had follow-up as per the protocol. Of them, 36 had expulsion, and rest 690 cases were taken for the study. There were 209 missing strings at 3 months. At the end of the study, there was spontaneous descend in 138 cases. More than 50 % cases were asymptomatic. Ultrasonography was the method of diagnosis, and simple sounding of

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the uterus alone could also establish IUD in uterine cavity. Removal rate was higher in missing strings group, Continuation rate is higher in String visible group.

Conclusion Post-placental intra-cesarean Copper T 380A insertion is a safe and effective method of reversible contraception; missing string is emerging as a potential detractor of its use. It is important that every user must be followed up and the providers must be competent in managing complication. Better after care in form of effective follow-up and complication management is needed to maintain popularity. Introduction of compensation scheme will also help improving the acceptance.

Keywords PPIUCD · Missing string · Expulsion · Management of missing thread · IUD retriever Hook · Alligator forceps

Introduction

Unwanted and rapid repeat pregnancies result in adverse outcome for both mother and child. Studies show that pregnancies taking place within 24 months of a previous birth have a higher risk of adverse outcomes like abortions, premature labor, postpartum hemorrhage, low-birth-weight babies, fetal loss, death during neonatal period and infant and maternal death [1]. Hence, it is advisable for women to wait for 2–3 years between births in order to decrease these risks. In India, 65 % of women in the first year postpartum have an unmet need for family planning. Only 26 % of women use some method of family planning during the first year postpartum. Eight percentage of the women desire to have another child within the next 2 years after giving birth and are vulnerable to the risks of early pregnancy [2, 3].

A large proportion of women in the postpartum period want to accept a contraceptive method to regulate their fertility, either by spacing or limiting future pregnancies [4, 5]. Immediate postpartum insertion of IUCDs has been practiced in China since 1975. With introduction of PPIUCD in several other countries, scenario has changed. Reaching postpartum women for providing contraception has become easier. PPIUCD insertion has become popular among the women due to its safety and efficacy with innumerable advantages.

The IUCD string is used to locate the device in utero and to remove the device. Lost string occurs due to expulsion, curling and in-drawing into the uterine cavity, breaking and loss of the strings, expulsion outside, uterine perforation and translocation of the device into the abdominal cavity.

Missing strings are an uncommon finding in interval IUCD [6], whereas finding of missing strings during PPIUCD follow-up is a common event. With increase in use of PPIUCD, more and more cases with “missing strings” are being reported. It is

encountered more in clients with intra-cesarean insertion. During follow-up, every client is counseled for ultrasound and in few cases for X-rays. They also require additional follow-up visits. Need for invasive methods to retrieve displaced IUCD strings further complicates the situation. It leaves a stressful experience upon the clients and provider which may be detrimental to the program.

Objective

The aim of the study was to determine the incidence, management, clinical outcome of missing strings cases in post-placental and intra-cesarean IUCD.

Materials and Methods

This study was a retrospective observational study, carried out in the district of Balangir, Odisha, India. Records of 1343 clients of post-placental and intra-cesarean IUCD insertion at various institutions between January 2010 and December 2012 were studied. The participants who had follow-up having visits at 1, 3, 6, and 12, 18, 24 and 36 months or till removal were included for the study. At every visit, visibility of the strings and clinical outcome were recorded. Seven hundred and twenty-six clients had follow-up as per the study design. Forty-six clients had expulsion and thus were excluded from the study. The data obtained were entered into a workbook (xls), and statistical analysis in percentage was done after due validation. Tabulation of the descriptive data was done. The incidence, reasons, and management of missing strings at and after 4 weeks up to 36 months were analyzed. Outcome of PPIUCD insertion in “missing strings” and “visible strings” groups was compared. Feedbacks from clients with missing strings on PPIUCD use were also analyzed. Summary of the study is depicted in Fig. 1.

Results

See Tables 1, 2, 3, 4, 5, and 6.

Demographic distribution of the clients is depicted in Table 1 which shows that 88.18 % of the users are between 20 and 30 years of age. 97.15 % were having 1 or 2 living children. Table 2 shows incidence of missing strings in both post-placental and intra-cesarean cases. Among the post-placental insertion group, expulsion was 7.65 %, whereas in intra-cesarean insertion group, expulsion was 4.76 %. Overall expulsion rate was 6.25 %. It clearly shows that expulsion is common with post-placental insertion (Table 2).

Fig. 1 Summary of the study

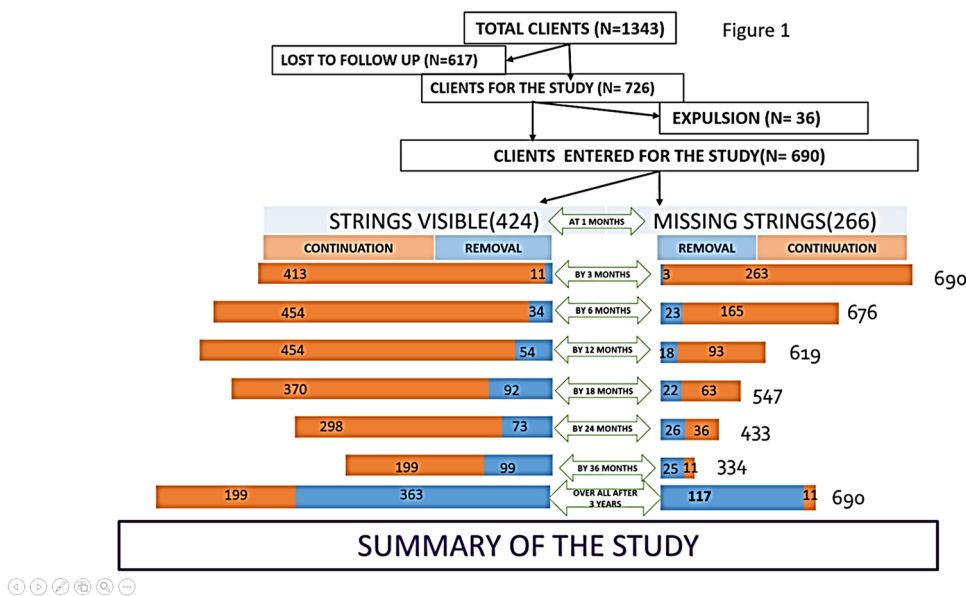


Table 1 Socio-demographic characteristics excluding lost to follow-up (N = 736)

Characteristics	Frequency	Percentage	Cumulative (%)
Age			
20–25	428	58.15	58.15
26–30	221	30.03	88.18
31–35	63	8.56	96.74
Above 35	24	3.26	100.00
Living children			
1	443	60.19	60.19
2	272	36.96	97.15
3	21	2.85	100.00
4	0	0.00	100.00

In missing strings, cases presenting complaints were not consistent, no symptoms in 59.33 %. Pain abdomen was the presenting symptom in 33.01 %. Again 37.80 % had bleeding per vagina. 10.53 % did complain of vaginal discharge, and 1.91 % had pregnancy (Table 3).

Table 4 shows reasons for missing strings excluding expulsion, Curled strings were found in the cervical canal in 52.63, and in 36.84 % cases, strings were retracted into

the uterine cavity without pregnancy. 1.91 % had pregnancy resulting in retraction of strings into the uterine cavity. In 2.87 % of the cases, strings with the IUD were found embedded, perforation and translocation into abdominal cavity were in 0.48 %, strings were absent in 3.83 % of the cases, and broken strings were found in 1.44 %.

Table 5 depicts the cumulative visibility of strings in both types post-placental and intra-cesarean insertion cases. Significant spontaneous descent of strings occurred at 3 and 6 months; 80.29, 83.82 % for post-placental and 64.57, 76.57 % for intra-cesarean groups, respectively. There after, only few cases had such descent. It also shows association of string status with removal and continuation of PPIUCD. The continuation rate at 1, 2, and 3 years was 82.10, 53.02, and 35.41 % for visible string group, 67.88, 28.13, and 8.59 % for missed strings group, respectively. At 4 weeks, 424 cases had missing strings; there was spontaneous descent of strings in 75 cases at 3 months and 54 during 6–12 months. We found 9 such cases between 12 and 24 months. Continuation rate in missed strings group was only 8.59 %, whereas in visible strings group it was 35.41 %.

Table 2 Type of insertion and missing strings rate at 4 weeks

Type of insertion	Total follow-up cases at 4 weeks		IUD status at 4 weeks			
	Frequency	Percentage	Expulsion		Retained IUD	
			Frequency	Percentage	Frequency	Percentage
Post-placental	379	51.8	29	7.65	350	92.35
Intra-cesarean	357	48.2	17	4.76	340	95.24
Total	736	100	46	6.25	690	93.75

Table 3 Presentation of missing strings (excluding expulsion) at 3 month (*N* 209) multiple symptoms

Presentation	Frequency	Percentage
Asymptomatic	124	59.33
Bleeding	79	37.80
Pain abdomen	69	33.01
Backache	45	21.53
Vaginal discharge	22	10.53
Pregnancy	04	1.91

Table 4 Reasons of missing strings (excluding expulsion)

Reasons	Frequency (<i>N</i> = 209)	Percentage among lost strings cases	Percentage Overall (<i>N</i> = 690)
Curled strings in cervical canal	110	52.63	15.94
Retraction into uterine cavity (excluding pregnancy)	77	36.84	11.16
Embedding	6	2.87	0.87
Pregnancy	4	1.91	0.58
Perforation and translocation	1	0.48	0.14
Absent strings	8	3.83	1.16
Broken strings	3	1.44	0.43

Procedures used for diagnosis and management of missing strings have been shown in Table 6. Ultrasonography was done 319 times for 266 cases. (114.29 %). Retrieval of the strings could be done simply with artery forceps in 93 cases (79.49 %): 68 from the cervical canal and 25 from the uterine cavity. All of these cases opted removal even though strings became visible. Sixteen cases (18.80 %) needed teasing with curette. Hysteroscopy was done in one case. Laparoscopic retrieval was done in another one.

Discussion

Postpartum IUD insertion within a few days after delivery is safe and convenient, with no increased risk of infection, perforation, or bleeding [7, 8]. Immediate postpartum

insertion of IUCDs has been practiced in China since 1975. In many studies, only a few complications were reported, and no additional puerperal morbidity or infection due to IUCD was seen. The serious disadvantage of postpartum insertion is the high expulsion rate. IUD is easily expelled after childbirth because the uterus is contracting and the cervix is dilated. When the IUD is inserted immediately postpartum, expulsion rates at 6 months ranged from 31 to 41 per 100 in a WHO multicenter trial and from 12 to 22 in a Family Health International multicenter trial [4]. Insertion 1–7 days after delivery results in even higher expulsion rates. In our previous study in 2014, expulsion rate was 8.99 %, in a study by Geeta Katheit et al. [9]. Expulsion rate was 10.5 %. In a study by Sunita Singal, Rekha Bharti and others, 16 IUCDs were expelled (6 complete and 10 partial), and expulsion rate was 5.33 %. In the present study, it was 7.65 % in post-placental, and 4.76 % in intra-cesarean insertions with overall expulsion rate was 6.25 % [4]. Findings in the present study that expulsion is more common in post-placental insertion than intra-cesarean insertion, it supports many studies worldwide. Sunita Singal and others reported 16 expulsions, 21 removals, and 2 pregnancies out of 300 intra-cesarean IUCD insertions, with gross cumulative expulsion, removal, failure, and continuation rates of 5.33, 7, 0.67, and 91 %, respectively, at the end of 1 year. Failure rate of about 2–3 pregnancies per 100 woman-years of exposure has been described in case of interval IUCD insertion [4]. Failure in case of postpartum insertion is 1.91 % in the present study. Worldwide 14.3 % of women are using this method. The prevalence of displaced IUD was 3.6 % in a study by Ikechebelu, Onwusulu [10], and incidence of missing strings (excluding expulsion) in the present study was more common in intra-cesarean (23.47 %) than post-placental insertion (6.47 %). In the present study, IUCD strings were not visible in 61.87 % women at 1 month and visibility increased to 84.62 % at 12 months. Bhutta et al. [11] reported string visibility of 92 and 96 % at 6 months after intra-cesarean and interval insertion, respectively. In the present study it is higher, which might be due to use of device (CuT 380A) with a shorter strings than CuT 375. Sunita Singal et al. [4] also found nonvisibility of strings at 1, 3, 6, and 12 months as 36.79, 27.30, 20.07 and 14.65 %, respectively, in their studies. Similar results has also been

Table 5 String status and continuation of PPIUCD (excluding expulsion) *N* = 690

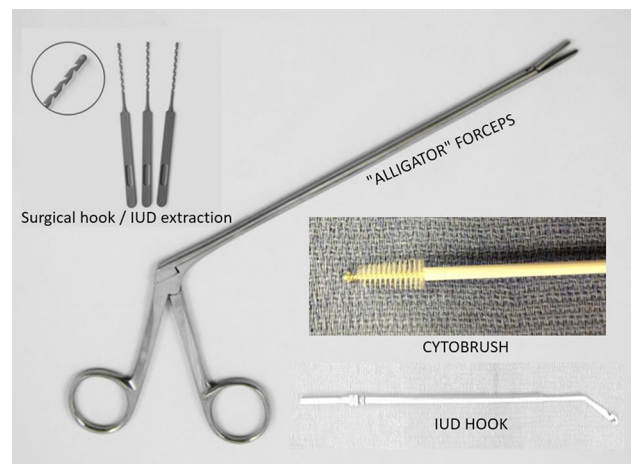
Duration of use in months	Strings visible			String missing			Total continuation	
	Frequency	Removal	Continuation <i>N</i> /%	Frequency	Removal	Continuation <i>N</i> /%	Frequency	Percentage (%)
AT 1 YEAR	553	99	454 (82.10 %)	137	44	93 (67.88 %)	547	79.28
AT 2 YEARS	562	264	298 (53.02 %)	128	89	36 (28.13%)	334	48.41
AT 3 YEARS	562	363	199 (35.41 %)	128	117	11 (8.59 %)	210	30.43

At the beginning of the study string visible in 424 cases, in 138 of the 266 missing strings cases had spontaneous descend. Hence, at the end of 3 years strings were visible in 562 and missing in 128 cases

Table 6 Procedures for diagnosis and management

	Frequency	Percentage
<i>Investigation</i>	(<i>N</i> = 266) few had more than one investigations at different time	Among lost strings cases
Sonography (abdomen and pelvis)	319	114.29
Sounding uterus alone	36	25.19
Radiology	12	2.87
<i>Management</i>	<i>N</i> = 117	
	[266–138 (spontaneous descend) – 11 (continuing with missing strings)]	
Retrieval with artery forceps	93	79.49
From cervical canal	(68	
From uterine cavity	+25)	
Teasing with curettage	22	18.80
Laparoscopy	1	0.85
Hysteroscopy	1	0.85

found by Ahuja and others [10]. In the present study, continuation rate in string visible group was 82.10, 53.02, and 35.41 % at 1, 2 and 3 years and it was 67.88, 28.18 and 8.59 % in missing string group. Intrauterine placement of IUCD was confirmed by various methods. Ultrasound was done at least once in 230 cases. In many cases USG was done more than once. In 36 (25.19 %) cases sounding the uterus alone could confirm placement of IUCD. Radiological imaging was done in 12 (2.87 %) cases. Curling and retraction of the thread into cervical canal and uterine cavity are the major cause of missing strings. Similar findings were reported in various studies, other reasons found in the present study were embedding, pregnancy, perforation and translocation, absent and broken strings. Simple pulling the IUCD with an artery forceps from uterine cavity under sedation was done 93 (79.49 %) cases. In 22 (18.80 %) dilatation of cervix and teasing, the device with curette under short-acting anesthesia was resorted to remove the IUCD. Various methods have been devised to remove the IUCD with missing strings [12]. It includes teasing with simple brush or suction cannula, to extract the coiled thread of IUCD. Use of hook, long artery forceps, alligator forceps, Emmett IUD thread retriever, Mi-Mark helix and “Retrievette IUD thread retriever” have also been described. USG or hysteroscopy guided removal can also be done in difficult cases [12]. None of the retrievers described is available with us, we used simple artery to remove intrauterine IUCD. Hysteroscopic removal is required when it is deeply embedded [2]. Laparoscopic retrieval is done in abdominal translocation. In case of postpartum IUCD, insertion thread may take time to descent. Usually 75 % of threads are visible by the end of 3 months. In postpartum insertion, perforation is very rare, but it occurs with inexperienced and careless provider. Expulsion is common. Most of the expulsions occur within 3 months of delivery. Absent or lost string is a problem where the strings get detached

**Fig. 2** Instruments used to extract missing IUD thread

from the IUD and often women attend clinics with the strings, we found 8 such cases (1.16 %). Broken string was also found in 1.44 % of missing string group. Common instruments used for retrieval are shown in Fig. 2.

Conclusion

The IUD is a very safe and highly effective contraceptive method among all long-acting reversible contraception. PPIUCD has abundant scope in India. Its wide use has a potential of having strong impact on population control and prevention of unplanned pregnancy. With increasing use, we are bound to see its relatively infrequent complications with greater regularity. In postpartum insertion, perforation is very rare, but expulsion is common. Most of the expulsions occur within 3 months of delivery. Missing strings after PPIUCD insertion is a pertinent problem encountered during PPIUCD follow-ups. Need for invasive

methods to remove IUCD with nonvisible strings is a troublesome both for the client and the provider. In our experience, this issue is more prevalent in the clients who had insertion with LSCS. In case of postpartum IUCD, insertion thread may take time to descend. Usually 75 % of threads are visible by the end of 3 months. In asymptomatic cases, if the IUD is in the proper intrauterine location, then no further investigation is necessary, and the IUD may remain in place until there is another indication for removal or replacement. Every time ordering ultrasonography for convincing the client about on-translocation of the device is a big challenge. The continuation rate among the missing strings cases is many times lower than the string visible group. We should do everything to reduce the incidence of missing strings in order to increase its acceptance in eligible women. Increasing the length of the strings would improve visibility. Improving quality of the string can reduce incidence of rupture and absent string cases. No financial compensation is awarded in case of complication. As PPIUCD has been adopted on priority, Government must think of extending such support to the beneficiaries. At present, management of missing strings is done by few providers in higher institutions, others are not confident about its management. The providers are not trained well to tackle such problem. No special IUD thread retriever is available with the provider. Acceptance is dependent upon the safety efficacy and perfect after care. All the deficiencies must be addressed without much delay. We should plan accordingly for successful “FP 2020.”

Compliance with ethical Standards

Ethical Statement Author certify that he has no commercial associations (e.g., consultancies, stock ownership, equity interest, patent/licensing arrangements.) that might pose a conflict of interest in connection with the submitted work.

Conflict of interest None.

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