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Research Article

EVALUATING EXPULSION RATES: POSTPARTUM VERSUS INTERVAL INTRAUTERINE DEVICE INSERTION IN A TERTIARY CARE SETTING

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ABSTRACT

Objective: The intrauterine contraceptive device (IUCD) is a safe, reversible, feasible, and cheap form of contraception, yet its popularity is limited partly due to the risk of expulsion. Increased institutional deliveries can enhance family planning services, including postpartum IUCD (PPIUCD) insertion. This study compared the expulsion rates of PPIUCD and interval IUCD and aimed to educate, motivate, and counsel pregnant women about IUCD use.

Methods: This was a comparative study conducted in a tertiary care teaching institute. After counseling, 900 women were willing for IUCD insertion. Outcomes were studied at 6 weeks and at 12 months.

Results: A total of 4605 women were counseled regarding the benefits of IUCD, among which 900 women accepted IUCD as a method of contraception. Six hundred women accepted PPIUCD and 300 opted for interval IUCD. Among PPIUCD acceptors, 402 cases opted for intracesarean insertion of IUCD, and 198 cases opted for post-placental (n=114) and early postpartum (n=84) insertion of IUCD after vaginal delivery. The overall expulsion rate in the PPIUCD group was 6.16% and 1.66% in the interval IUCD group. The expulsion rate was more in multiparas than in primiparas. In the PPIUCD group, the patients who had IUCD insertion in the early postpartum period had a higher expulsion rate than the post-placental and intracesarean group.

Conclusion: Proper counseling helps women make informed choices about IUCDs. Despite higher expulsion rates, PPIUCD can be recommended as an ideal method in developing countries like India, where women often do not return for contraceptive needs.

Keywords: Contraceptive need, Copper intrauterine device, Expulsion rate, Postpartum insertion.

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INTRODUCTION

A developing country like India has a significant unmet need of contraception [1,2]. Although the government is investing a lot to address this gap, still there is a large number of unwanted pregnancies which lead to medical termination of pregnancy or undesirable childbirth. Intrauterine devices (IUDs) go a long way not only for birth spacing but also for long-term contraception, which is cost-effective.

Intrauterine contraceptive devices (IUCDs), especially Copper T 380A, are supplied free of cost in government setups. It is proven to be safe and effective [3-5].

However, there is a reluctance among women to use IUCD, more so due to misinformation [6]. Proper counseling along with motivation would go a long way to dispel these misconceptions [6-8]. Indian women, especially are unwilling to visit a health center for contraceptive advices; therefore, once they present to the clinic/health center/hospital for antenatal checkups, the provider should use this opportunity to educate them regarding contraceptives [2].

IUCD is an effective contraceptive and antenatal women should be sensitized regarding this. Clinicians often ignore this golden opportunity in a busy outpatient department (OPD); however, guidance regarding contraception during this period would go a long way [9].

One of the limitations of IUCD use is risk of expulsion. Expulsion rates are higher in postpartum IUCD (PPIUCD) groups as compared to interval IUCD [10,11].

Various factors that are implicated for increased chances of expulsion are timing of insertion longer the duration from delivery, the higher the chances of expulsion, and longer the duration of lochia, the more are chances of expulsion and also nulliparity [11,12]. Levonorgestrel devices also have higher chances of expulsion [13].

Advantages of immediate PPIUCD include convenience, motivation for birth spacing, reduced pain and bleeding perception, no effect on breast milk, and no additional clinic visits. For the health-care system, benefits include assured non-pregnancy and minimal extra evaluation and equipment. With proper counseling, women can opt for interval IUCD insertion after 6 weeks. At this tertiary care hospital, we counsel antenatal women on IUCD benefits, though fear of expulsion remains a concern.

Objectives

The objectives of the study are as follows:

1. To study the effect of education, motivation, and counseling the women about IUCD as a method of contraception
2. To compare the expulsion rate of PPIUCD and the interval IUCD in our setup.

Complete expulsion was defined as IUCD located in the vagina, not visible in the uterus or abdomen or the patient reported that IUD fell out or partial expulsion was when any portion of the IUCD was in the cervix or malposition.

METHODS

Study design

This comparative observational study was carried out in the department of obstetrics and gynecology of a tertiary care teaching hospital in rural Maharashtra from September 2017 to September 2019.

The results were analyzed by the Chi-square test.

Women delivering in the hospital fulfilling inclusion criteria were included in the study after obtaining informed consent. The study received approval from the Institutional Ethics Committee.

Inclusion criteria

All women attending the antenatal outpatient department or coming to the labor room in early labor were counseled for Copper-T 380A insertion. Those who opted for the method were included in the study.

Exclusion criteria

According to medical eligibility criteria for IUCD by the World Health Organization (WHO), candidates who were in Category Three and Category Four were not selected for the study. Other unfit candidates for PPIUCD were women having chorioamnionitis, puerperal sepsis, and postpartum hemorrhage, with pre-labor rupture of membranes >18h or with obstructed labor were excluded from the study.

The women included in the study were divided into two groups.

1. Women opting for PPIUCD in vaginal and cesarean delivery (post-placental within 10 min) and the early postpartum period (within 48 h of delivery) after vaginal delivery
2. Women opting for interval IUCD any time after 6 weeks of delivery.

Patient counseling

During antenatal visits

All pregnant women attending the antenatal OPD were counseled on family planning by dedicated staff. They were informed about IUCD advantages and motivated for postpartum IUCD insertion using charts, with any concerns addressed immediately. Choices were documented on the antenatal card. Women were also counseled in early labor, post-delivery, and before elective cesarean sections. Those opting for interval IUCD insertion were instructed to follow-up after 6 weeks.

WHO medical eligibility criteria for IUCD were followed for deciding whether the women were fit for IUCD. If unfit, the reason was explained to the women, and an alternate method was offered. All aseptic measures were taken for IUCD insertion.

Follow-up

Post-insertion, patients were instructed to follow-up at 6 weeks, 12 weeks, 6 months, and annually, or return early if warning signs or expulsion occurred. During follow-ups, women were asked about IUCD expulsion and excessive menstrual bleeding. Examinations (abdominal, speculum, and vaginal) were conducted, and findings were recorded. Abnormal vaginal discharge and bleeding were managed conservatively, with removal considered if results were unsatisfactory.

If the copper-T thread was found to be missing, the hospital protocol was followed which was in accordance to the guidelines [14].

If there was no history of expulsion of IUCD, pelvic ultrasonography was done to note for misplaced IUCD. Partially expelled IUCDs were removed, and patients were counseled for either reinsertion or other methods of contraception. Partial expulsion was defined when the IUCD was seen protruding through the external os on per speculum examination.

If IUCD was in place and the woman had no problem, she was advised to return for further follow-up visits as scheduled.

RESULTS

A total of 4605 women were counseled among which 900 women accepted IUCD as a method of contraception. Six hundred women accepted PPIUCD and 300 opted for interval IUCD. Among PPIUCD acceptors, 402 cases opted for intracesarean insertion of IUCD and 198 cases opted for post-placental and postpartum insertion of IUCD after vaginal delivery.

The acceptance rate of IUCD was 19.54%. PPIUCD was accepted by 13.03% and 6.51% opted for interval IUCD.

The study was done to evaluate the expulsion rate of PPIUCD versus interval IUCD. Figs. 1 and 2 show the acceptance rate in terms of age and parity. The expulsion rate of PPIUCD and interval IUCD according to the timing of insertion (Table 1), parity (Table 2), expulsion observed at different periods of follow-up visits (Table 3), and complete or partial expulsions (Table 4) are depicted.

Other factors such as complication rate (Table 5) and causes of removal (Fig. 3) were also studied.

Table 1: Expulsion rate in PPIUCD according to timing of insertion

No	PPIUCD	No of expulsions	Expulsion rate (%)
1.	Post-placental	11	1.83
2.	Postpartum (within 48 h)	18	3.00
3.	Intra cesarean	8	1.33
Total		37	6.16

*PPIUCD: Post-placental intrauterine contraceptive device

Table 2: Expulsion rate with respect to parity

Parity	PPIUCD	Percentage	Interval IUCD	Percentage
Primipara	12	2.00	1	0.33
Multipara	25	4.16	4	1.33
Total	37	6.16	5	1.66

PPIUCD: Post-placental intrauterine contraceptive device, IUCD: Intrauterine contraceptive device

Table 3: Expulsion rate observed in PPIUCD and interval IUCD at follow-up visits

No	IUCD types	At 6 weeks	Percentage	6 weeks-12 month	Percentage
1	PPIUCD	16	2.66	21	3.50
	Post-placental	3	0.50	8	1.34
	Post-partum	8	1.33	10	1.66
	Intracesarean	5	0.83	3	0.50
2	Interval IUCD	1	0.33	4	1.33

PPIUCD: Post-placental intrauterine contraceptive device, IUCD: Intrauterine contraceptive device

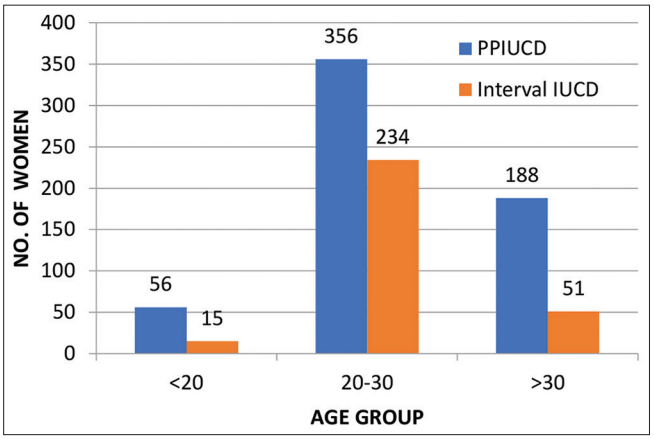

Fig. 1: Age distribution among intrauterine contraceptive device acceptors. *PPIUCD: Post-postpartum intrauterine contraceptive device, IUCD: Intrauterine contraceptive device

Table 4: Complete expulsion versus partial expulsion

No	IUCD type	Complete expulsions	Percentage	Partial expulsions	Percentage
1	PPIUCD	22	3.66	15	2.50
	Post-placental	8	1.33	3	0.50
	Postpartum	10	1.66	8	1.34
	Intracesarean	4	0.67	4	0.66
2	Interval IUCD	2	0.66	3	1.0

PPIUCD: Post-placental intrauterine contraceptive device, IUCD: Intrauterine contraceptive device

Table 5: Other complications in PPIUCD versus interval IUCD

Complications	PPIUCD	Percentage	Interval IUCD	Percentage
Abnormal uterine bleeding	52	8.66	9	3.0
Excessive vaginal discharge	30	5.0	6	2.0
Pain abdomen	62	10.33	8	2.66
Missing threads	102	17.0	9	3.0
Perforation	0	0	0	0

PPIUCD: Post-placental intrauterine contraceptive device, IUCD: Intrauterine contraceptive device

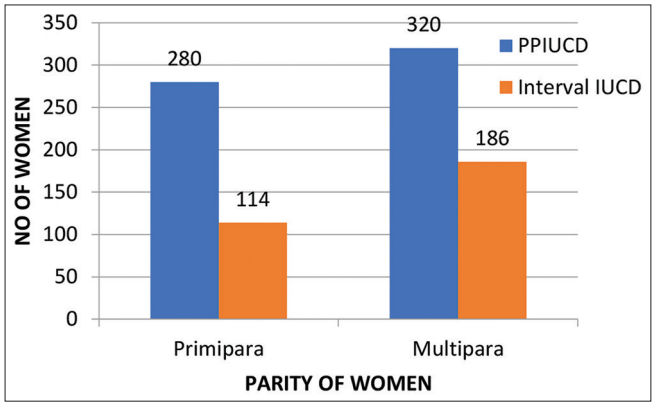

Fig. 2: Parity distribution among intrauterine contraceptive device acceptors

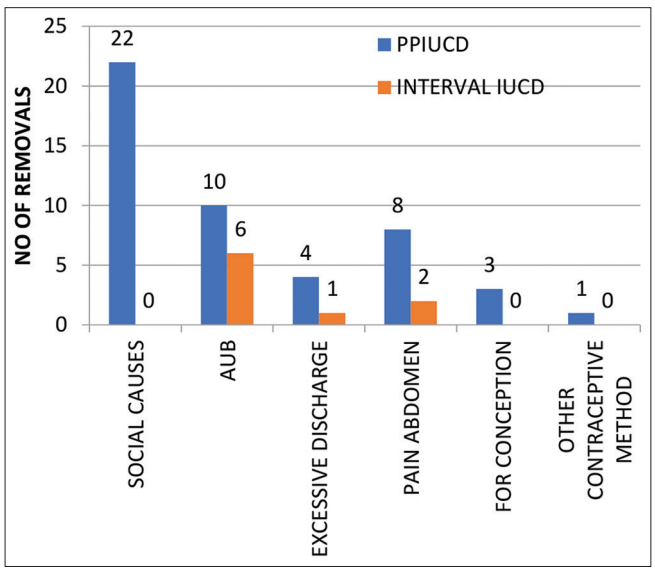

Fig. 3: Causes of removal of intrauterine contraceptive device. †AUB: Abnormal uterine bleeding

DISCUSSION

IUCD is a highly effective, long-acting, reversible, cost-effective, and easily accessible method of contraception. The study showed that the expulsion rate was significantly higher ($p<0.05$) in the PPIUCD group (6.16%) than interval IUCD group (1.66%) which is similar to other studies [3,15]. Expulsion in the 20–30 years age group was higher than any other age group in both the PPIUCD and interval IUCD acceptors.

Expulsion in cases of primipara was 2.00% in the PPIUCD group as compared to 0.33% in the interval IUCD group. Multiparous women showed a higher incidence of expulsion in the PPIUCD group (4.16%) than the interval IUCD group (1.33%) which was similar to previous studies [10].

Among PPIUCD acceptors, the rate of expulsion in cases who accepted intracesarean insertion of IUCD (1.33%) was significantly lower ($p<0.05$) as compared to the cumulative expulsion rate of post-placental (1.83%) and postpartum (3.00%) insertions of IUCD after vaginal delivery which was comparable to other studies [4,11].

Among PPIUCD acceptors, 22 women had complete expulsion and 15 women had partial expulsion, while among interval IUCD acceptors, two women had complete expulsion and three women had partial expulsion [10].

Expulsion rates observed during follow-up visits at 6-week intervals in cases of PPIUCD and in cases of interval IUCD were 2.66% and 0.33%, respectively.

Expulsion rates observed between 6 weeks and 12 months in cases of PPIUCD and interval IUCD were 3.50% and 1.33%, respectively, which is lesser as compared to other studies [12,16].

Other complications such as excessive bleeding, discharge per vaginum, pain abdomen, and missing threads were higher in the PPIUCD group than in the interval IUCD group. Perforation of uterus was not seen in either group [16,17].

In my study, overall acceptance rate of IUCD was 19.54%, which is low as compared to studies in other countries [18,19]. There is a deep-rooted apprehension among the Indian women regarding IUDs. Even when a woman is willing for IUD, the family members have a greater say in the contraceptive need. Women need to be empowered for their well-being along with more information display in the public. The overall acceptance rate among IUCD acceptors was 7.8% in <20 years age group, 66.66% were in the 20–30 years age group, and 26.55% were above 30 years age group, which is similar to the other studies as this is the peak reproductive age group in need of contraception [15].

Multiparous women were more forthcoming in accepting IUCD when compared to primigravida, as in India, contraception is accepted mostly after the completion of the family.

In this study, the overall expulsion rate for the PPIUCD group was 6.16%, significantly higher ($p<0.05$) than the 1.66% expulsion rate observed in the interval IUCD group. This finding is consistent with other studies, which have reported an 8% expulsion rate for PPIUCDs after several

months [3,10,11]. In our study, we have considered expulsion of those patients who self-reported or when expulsion was seen on clinical examination. Muhumuza *et al*. reported a higher expulsion rate in PPIUCD as they used ultrasonography along with clinical examination to detect the expulsion rate [12].

Among the PPIUCD acceptors, the expulsion rate was more in cases of postpartum insertion of IUCD (3.00%) and less among cases of post-placental insertion and intracesarean cases which is similar to Muhumuza *et al*. [12] This may be because in the immediate post-placental phase, the device can be placed high up at the fundus, so chances of expulsion are less.

The most common complaints after IUCD insertion were pain lower abdomen and heavy menstrual bleeding, which also lead the women to remove the IUCD. Missing thread was more often seen with the PPIUCD group than women with interval IUD which is similar to other studies [15,16].

In this study, continuation rates over a follow-up period of 12 months in PPIUCD and interval IUCD were 85.83% and 95.33%, respectively, which is comparable to the study of Çelen *et al*. [16].

This study only compared CuT380A in postpartum and interval periods as it is supplied free in our institution. Many studies have compared expulsion rates of multiload copper devices, and silver-bearing copper devices as well. Nowadays, even levonorgestrel IUD is being studied in these groups of patients although the reported expulsion rate is higher as compared to copper devices [13,20].

The limitation of this study was that we could not determine the exact reasons causing expulsion. Proper technique of insertion needs to be followed, and a workshop needs to be conducted, especially for the newly joined residents about insertion methods which vary in post-placental, postpartum, intracesarean, and interval methods to reduce the expulsion rates. Further studies are required to study the factors which cause expulsion of IUCDs which may be heavier menstrual bleeding, technique of insertion, or other uterine causes.

CONCLUSION

The unmet need for postpartum contraception is high in India, with many women conceiving during lactational amenorrhea. IUCDs, when inserted in the postpartum period, are safe and effective, meeting family planning needs without requiring extra visits. However, due to insufficient information and counseling, health-care workers often miss this opportunity. Proper counseling for both the woman and her partner is essential. While IUCD expulsion is a limitation, further studies are needed to identify factors contributing to expulsion and to reduce its rate.

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AUTHOR'S CONTRIBUTION

Dr. Khushboo Singh and Dr. Vaishali Korde Nayak: Concept and design of study, Dr. Khushboo Singh and Dr. Jaya Barla: Acquisition of data or analysis and interpretation of data, Dr. Jaya Barla and Dr. Khushboo Singh: Manuscript preparation, Dr. Jaya Barla, Dr. Khushboo Singh, Dr. Vaishali Korde Nayak: Revising it critically for important intellectual content, Dr. Vaishali Korde Nayak, Dr. Jaya Barla, Dr. Khushboo Singh: Final approval of the version to be published.

CONFLICTS OF INTEREST

None.

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