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Original Research Article

Profile of Acceptors and Outcome of Postpartum Intrauterine Contraceptive Device in a Tertiary Health Care Facility in West Bengal: A Prospective Observational Study

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Abstract

Background: In this study, we wanted to evaluate and analyse acceptance, effectiveness and complications of PPIUCD insertion in the postpartum period, assess the proportion of women accepting immediate PPIUCD insertion, find out the reasons for acceptance and decline of PPIUCD, find out the complications among the acceptors, follow post placental insertion and its outcome after 6 weeks, 3 months, and 6 months, evaluate the effectiveness of PPIUCD, and determine the reasons for removal of PPIUCD.

Materials and Methods: This was a hospital based prospective observational study conducted among 106 patients who presented with normal or assisted vaginal delivery, caesarean section to the Department of Obstetrics and Gynaecology of Deben Mahata Government Medical College, Purulia, West Bengal, from July 2019 to December 2020 after obtaining clearance from the institutional ethics committee and written informed consent from the study participants.

Results: Out of 106 patients 6(14.7%) patients had reversible reasons of acceptance of PPIUCD and 2(4.9%) patients had no interference with breast feeding reasons of acceptance of PPIUCD, 4(6.67%) patients did not want contraceptives immediately reason of decline of PPIUCD. 13(31.7%) patients had a mode of delivery CS, 26(63.41%) patients had a mode of delivery VD and 2(4.89%). 14(34.2%) patients had a history of previous use of contraception, 14(34.15%) showed no complications of PPIUCD and 27(65.85%) showed complications. 36 patients came for follow up at 6 months out of which 30 (83.33%) showed no complications. No case of pregnancy was found at follow up visits.

Conclusion: PPIUCD is a safe, convenient, and highly effective postpartum intrauterine contraceptive device, which can be encouraged in both vaginal delivery and CS; it can be integrated with maternal child health services ensuring an appropriate long term reversible family planning method before returning home. To improve acceptance of PPIUCD, there should be a separate unit of antenatal counselling for the couples regarding the possibility of

conception during lactational amenorrhea, morbidity related to consecutive conception, and the importance of birth spacing. Even in the postpartum period effectiveness of PPIUCD counselling can only be ensured if the couple is counselled together. Misconceptions and negative attitudes related to PPIUCD should be addressed through community-based activities and government strategies to increase public awareness through different media sources as another way of promoting the programme.

Keywords: Profile of Acceptors, Outcome of PPIUCD (Postpartum Intra Uterine Contraceptive Device)

Introduction

India stands as the second most populated country in the world with a population of 1.315 billion (approx.).[1] With roughly 25 million births annually, India at present contributes to one-fifth of the world's total population growth-more than any other country. In India, 65% of women in the first year of postpartum have an unmet need for family planning [2, 3] which is associated with an increase in the health risks of both mother and baby. The common reasons for unmet needs are lack of information and fear about the side effects of the contraception method. Women are highly motivated and receptive to accepting family planning methods during the postpartum period. Demographic and health surveys show that only 26% of women are using some methods of family planning during the first year of postpartum. 8% of women desire to have another child within the next two years of giving birth and are vulnerable to the risk of early pregnancy [3]. The postpartum period is one of the critical times when both mother and newborn need a special and integrated package of health services, as morbidity and mortality rates are quite high and also women are vulnerable to unintentional pregnancy. WHO medical eligibility criteria [4] dictate that postpartum intrauterine contraceptive device (PPIUCD) is safe in postpartum lactating women with advantages outweighing disadvantages.

The specific advantages of an IUCD placed in the immediate postpartum period include advantages for the women:

- Convenience saves time and additional visit
- Safe because it is certain that she is not pregnant at the time of insertion
- High motivation (woman and family) for a reliable birth spacing method
- Has no risk of uterine perforation because of the thick wall of the uterus
- Reduced perception of initial side effects (bleeding and cramping)
- Reduced chance of heavy bleeding, especially among lactational amenorrhea method (LAM) users, since they are experiencing amenorrhea.
- No effect on the amount or quality of breast milk
- The woman has an effective method of contraception before discharge from the hospital. Advantages for the service provider or the service delivery site:
- The certainty that the woman is not pregnant
- Saves time as performed on the same delivery table for post placental/ intra caesarean insertions. Additional evaluations and the separate clinical procedure are not required.
- Need for minimal additional instruments, supplies and equipment.
- Convenience for clinical staff; help relieve overcrowded outpatient

facilities thus allowing more women to be served.

India accounts for more than 20% of global maternal and child deaths most of them are preventable. Indian women have more children than desired and are often too close together. Maternal outcomes [birth to pregnancy (BTP) interval less than 24 months] are associated with an increased risk of maternal mortality, induced abortion and miscarriage. [5] Perinatal/Neonatal/Infant outcomes when short birth to pregnancy interval is less than 18 months are associated with increased risk of preterm birth, smaller size for gestational age, low birth weight and neonatal/infant mortality, [6] and increased risk of uterine rupture among the women undergoing a trial of labour after caesarean section. [7] Among the various methods of family planning available for a woman, the insertion of PPIUCD appears appealing for several reasons. [3]

- Commencement of ovulation is unpredictable after delivery
- Women wish to avoid pregnancy but still may not be using any form of contraception
- Delivery maybe the only time when the women come in contact with a health care provider
- Women are likely to be highly motivated for accepting contraception during postpartum
- Long term and reversible methods
- Newer understanding of IUCD in terms of acceptability
- Low expulsion when inserted by proper technique
- Cost effectiveness
- Safety
- Feasibility of inserting immediately after childbirth.

In India, less than 2% of women use IUD as a modern contraceptive method of choice. National programs provide incentives to healthcare providers to promote sterilization and very little importance is given to IUDs or other temporary contraceptive methods. In this environment, it is not surprising that the use of temporary contraceptive methods in the country is limited to 10.2% and that of IUDs is only 1.8%. During the last 20 years, the use of IUDs has remained low. Postpartum women need a range of effective contraceptive methods to be able to prevent unplanned pregnancy, within a short interval, [8,9] PPIUCDs are still emerging as a relatively new contraception choice in India. While follow up data on complications with PPIUCD insertions were available from international sources, given the scale at which PPIUCD services are being introduced in India, it was important to generate country-based evidence on the post insertion outcomes after the introduction of the PPIUCD programme. Additionally, information is related to the demographic profile of women who accept PPIUCDs. The dynamics of their decision-making process, their satisfaction with this method of contraception, and complications with the IUCD have not been well characterized.

Aims and Objectives

1. To assess the proportion of women accepting immediate PPIUCD insertion.
2. To find out the reasons for the acceptance and decline of PPIUCD.
3. To find out the complications i.e. expulsion rate, abdominal pain, missing thread, bleeding, and perforation of PPIUCD among the acceptors following post placental insertion and its outcome after 6 weeks, 3 months, and 6 months.
4. To know the effectiveness of PPIUCD.
5. To determine the reasons for the removal of PPIUCD.

Materials and Methods

This was a hospital based prospective observational study conducted among 106 patients who presented with

normal/assisted vaginal delivery, caesarean section to the Department of Obstetrics and Gynaecology of Deben Mahata Government Medical College, Purulia, West Bengal, from July 2019 to December 2020 after obtaining clearance from the institutional ethics committee and written informed consent from the study participants.

Inclusion Criteria

1. Mothers delivering at this Institution irrespective of their booking location
2. All mothers willing to participate in the study
3. Aged between 19-35 years old
4. Mothers delivering at 34-42 weeks of gestation, irrespective of the baby's outcome
5. Multiparous women not willing for sterilization.

Exclusion Criteria

1. H/o ruptured membrane (more than 12 hours)
2. Postpartum haemorrhage complicating delivery
3. Anomalous uterus if already diagnosed
4. H/o lower genital tract infection
5. Severe anaemia

Sample Size Estimation

One study showed that the prevalence of postpartum intrauterine contraceptive device use in India was 63.3%. So, for this study, p=0.633 [10]

Thus, the number of patients required for this study was 106.80~ 106 with a power of 87%. The formula used for sample size calculation was as follows: -

$n = 4pq / (L^2)$

Where, n= required sample size, p= 0.633 (as per the study by one study), [10] q = 1 – p,

L = Loss % (Loss of information)

Calculation: Here p= 0.633, q=1-p = 1-0.633 =0.367,

$4pq = 4 \times 0.633 \times 0.367 = 0.9292$ $L^2 = 0.0087$ $n = 4pq / (L^2) = 0.9292/0.0087 = 106.80 = 106$

Statistical Methods

For statistical analysis, data were entered into a Microsoft Excel spreadsheet and then analyzed by SPSS (version 27.0; SPSS Inc., Chicago, IL, USA) and Graph Pad Prism version 5. Data had been summarized as mean and standard deviation for numerical variables and count and percentages for categorical variables. Two-sample t-tests for a difference in mean involved independent samples or unpaired samples. Paired t-tests were a form of blocking and had greater power than unpaired tests.

Z-test (Standard Normal Deviate) was used to test the significant difference in proportions. Once the t value is determined, the p-value can be found using a table of values from the student's t-distribution. If the calculated p-value is below the threshold chosen for statistical significance (usually the 0.10, the 0.05, or 0.01 level), then the null hypothesis is rejected in favour of the alternative hypothesis. A p value $\leq$ 0.05 was considered statistically significant.

Result

Table 1

Age in years	Number(n=41)	Percentage
<20	2	4.8%
21-25	21	51.3%
26-30	12	29.3%
31-35	5	12.2%
36-40	1	2.4%
Total	41	100%
Distribution of study of acceptors of PPIUCD according to different age groups(n=41)		

Mode of delivery	Number(n=41)	Percentage
VD	13	31.7%
CS	26	63.41%
Instrumental Forceps/Ventouse	2	4.89%
	41	100%
Distribution of study of acceptors of PPIUCD according to the mode of delivery(n=41)		
Socioeconomic status	**Number(n=41)**	**Percentage**
I	5	12.2%
II	8	19.5%
III	24	58.5%
IV	3	7.3%
V	1	2.5%
Total	41	100%
Distribution of study of acceptors of PPIUCD according to socioeconomic status (n=41)		

2(4.8%) patients were <20 years old, 21(51.3%) patients were in the age group of 21-25 years, 12(29.3%) patients were 26-30 years old, 5(12.2%) patients were 31-35 years old, and 1(2.4%) patient was 36-40 years old.

13(31.7%) patients had a mode of delivery CS, 26(63.41%) patients had a mode of delivery VD and 2(4.89%) patients had a mode of delivery Instrumental – Forceps/Ventouse.

5(12.2%) patients were in socioeconomic status I, 8(19.5%) patients were in socioeconomic status II, 24(58.5%) patients were in socioeconomic status III, 3(7.3%) patients were in socioeconomic status IV and 1(2.5%) patient was in socioeconomic status V.

Table 2

Reasons	Number(n=41)	Percentage
Long term	17	41.5%
Safe	8	19.5%
Fewer clinical visit	4	9.7%
Non-hormonal	4	9.7%
Reversible	6	14.7%
No interference with breastfeeding	2	4.9%
Total	41	100%
Distribution of reasons for acceptance of PPIUCD (n=41)		
	Number (n=60)	**Percentage**
Prefer to use another method	18	30.00%
Party family refusal	7	11.66%
Fear of pain and heavy bleeding	8	13.32%
Do not want contraceptives immediately	4	6.67%
Not enough knowledge about PPIUCD	6	10.00%
Fear of cancer	1	1.67%
Religious belief	1	1.67%
Interference with intercourse	1	1.67%
No specific reason	1	1.67%
Need to discuss with partner/family	7	11.67%
Fear of infertility	6	10.00%
Total	60	100%

Distribution of reasons for decline of PPIUCD(n=60)		
Parity	**Number**	**Percentage**
1	30	73.1%
2	8	19.5%
3	3	7.4%
4 or more	0	0%
Distribution of study of acceptors of PPIUCD according to parity(n=41)		

17(41.5%) patients had long-term reasons for acceptance of PPIUCD, 8(19.5%) patients had safe reasons for acceptance of PPIUCD, 4(9.7%) patients had fewer clinical visit reasons for acceptance of PPIUCD, 4(9.7%) patients had non-hormonal reasons of acceptance of PPIUCD, 6(14.7%) patients had reversible reasons of acceptance of PPIUCD, and 2(4.9%) patients had no interference with breastfeeding reasons of acceptance of PPIUCD.

Table 3

Previous use of contraception	**Number**	**Percentage**
No	27	65.8%
Yes	14	34.2%
Total	41	100%
Distribution of study of PPIUCD acceptors according to the history of previous use of contraception (n=41)		
Religion	**Number**	**Percentage**
Hindu	24	58.5%
Muslims	12	29.2%
Christians	4	9.7%
Others	1	2.6%
Total	41	100%
Distribution of study of PPIUCD acceptors according to religion (n=41)		

Table 4

Complications	**Number(n=27)**	**Percentage**
Abdominal pain	15	36.58%
Bleeding	7	17.07%
Missing thread	4	9.75%
Infection	1	2.43%
Perforation	0	0%
Spontaneous expulsion	0	0%
Total	27	65.85%
Distribution of study of complications of PPIUCD at 6weeks follow-up visit- all 41 patients came for follow-up at 6 weeks		
Complications	**Number at 3 months (n=10)**	**Percentage at 3 months**
Abdominal pain	6	15.79%
Bleeding	2	5.26%
Missing thread	1	2.63%
Spontaneous expulsion	1	2.63%
Infection	0	0%
Perforation	0	0%
Total	10	26.32%
Distribution of study of complications of PPIUCD at 3 months follow-up visit		

18(30.0%) patients preferred to use another method reason for the decline of PPIUCD, 8(13.32%) patients had fear of pain and heavy bleeding reason for the decline of PPIUCD, 7(11.66%) patients had party family refusal as a reason for the decline of PPIUCD, 7(11.67%) patients needed to discuss with partner/family as reason of decline of PPIUCD, 6(10.0%) patients had no enough knowledge about PPIUCD reason of decline of it, 6(10.0%) patients had fear of infertility reason of decline of PPIUCD and 4(6.67%) patients did not want contraceptive immediately reason of decline of PPIUCD. 30(73.1%) patients had parity 1, 8(19.5%) patients had parity 2 and 3(7.4%) patients had parity 3.

14(34.2%) patients had a history of previous use of contraception. 24(58.5%) patients were Hindus, 12(29.2%) patients were Muslims, 4(9.7%) patients were Christians and 1(2.6%) patient was other. 14 patients (34.15%) showed no complications and 27(65.85%) showed complications. 38 patients came for follow-up at 3 months, out of them 28(73.68%) showed no complications and 10(26.32%) showed complications.

Table 5

Complications	**Number at 6months(n=6)**	**Percentage at 6 months**
Abdominal pain	1	2.78%
Bleeding	1	2.78%
Missing thread	0	0%
Spontaneous expulsion	4	11.11%
Infection	0	0%
Perforation	0	0%
Total	**6**	**16.67%**
Distribution of study of complications of PPIUCD at 6 months follow-up visit		
Reasons of Removal	**Number**	**Percentage**
Abdominal pain	1	2.76%
Bleeding	1	2.76%
Family pressure	1	2.76%
Continuation	33	91.72%
Distribution of study of net continuation of PPIUCD at 6 months follow-up		

36 patients came for follow-up at 6 months. Out of them, 30 (83.33%) showed no complications and only 6(16.67%) showed complications. At 6 months, 36 patients came for follow up, out of them, 3(8.33%) requested for removal of PPIUCD due to complications and other reasons and 33 patients (91.72%) continued PPIUCD after 6 months. 41(100.0%) patients were followed up in 6 weeks, 38(92.6%) patients were followed up in 3 months and 36(87.8%) patients were followed up in 6 months. No case of pregnancy was found during the follow up visits discussion.

Table 6

	6 Weeks(n=41)	**3 Months(n=38)**	**6 Months(n=36)**
Number of patients	41	38	36
Percentage	100%	92.6%	87.8%
Distribution of study of number of patients who came for follow-up at 6 weeks, 3 months and 6 months			
	At 6wks	**At 3 Months**	**At 6 Months**
Pregnancy	0	0	0
Distribution of study of the effectiveness of PPIUCD			

Discussion

106 mothers were counselled for PPIUCD insertion. Out of them, 101 were eligible for PPIUCD acceptance according to WHO eligibility criteria. Among those who were eligible for PPIUCD insertion, 41 (40.59%) were willing for insertion and 60 (59.41%) declined PPIUCD insertion. The most common reasons for acceptance were its long-term effect (41.5%), safe (19.5%), and reversible (14.7%). In our study, P value was 0.03078 which was <0.05 and it was statistically significant. In our study, 59.41% of mothers declined PPIUCD. The most common reason to decline was the preference to use another method (30%), fear of pain and heavy bleeding (13.32%), and the need to discuss with their partners (11.67%). In our study, P was 0.02642, P<0.05 which was statistically significant. R. Richa et al [11] did a study which showed that 79% of mothers declined insertion. Anjali Kanhare et al [12] found that 32% of mothers wanted another method of contraception, 18% had fear of complications, and Jha P et al [13] found that the husband was the main reason for refusal. In our study, the most common reasons to decline were a preference to use other methods and fear of complications. In our study, majority of mothers who accepted PPIUCD were of 21-25 years of age (51.3%). Mothers in 26-30 years' age were (29.3%), 31-35 years age group were (12.2%), 36 -40 years (2.4%) and < 20 years were (4.8%). P was statistically significant at a value < 0.05. In our study, (73.1%) women were of parity 1, (19.5%) of parity 2 and (7.4%) of parity 3. Results were significant at P<0.05, this showed that mothers with higher parity preferred a permanent mode of contraception, unlike primiparous mothers who used PPIUCD to space out pregnancy. PPIUCD was used in higher order birth when women or their family members were unwilling for permanent sterilization. In our study, the mother's acceptance rate was high in those who practiced the Hindu religion (58.5%) than in Muslims (29.2%), Christians (9.7%), and other religions (2.6%). P value was 0.00758 and it was statically significant at <0.05. In our study, 26 (63.41%) mothers accepted PPIUCD after CS, 13 (31.7%) following normal delivery and 2 (4.89%) following instrumental delivery. In our study, P value was 0.0041 which was <0.05 and it was statistically significant. In our study, more acceptance was after CS, the same was observed by Shukla M et al [14], wherein they found acceptance of PPIUCD following CS at 60.87%, and normal labour at 39.13%. All 41(100%) mothers came at 6 wks., out of them, 27 (65.85%) showed complications, and 14 (34.15%) showed no complications. The most common complaint was abdominal pain in 15 (36.58%), bleeding per vaginal 7(17.07%), missing thread in 4(9.7%), and infection in 1 (2.4%). P value was 0.01108 which was statistically significant at <0.05. There was no case of perforation or spontaneous expulsion at 6 wks. in our study. R Mahaburet al [15] in a study on complications of PPIUCD acceptors found that (20%) had complained of pain abdomen, (18%) bleeding, (8%) missing thread, no perforation, no infection at 6 wks. followup. 38 (92.6%) mothers came for follow-up at 3 months, out of them, 28 (73.68%) showed no complications, and only 10 (26.32%) showed complications. They were abdominal pain in 6 (15.79%), bleeding in 2 (5.26%), missing thread in 1 (2.63%) and spontaneous expulsion in 1 (2.63%). There was no case of infection or perforation found in our study at 3 months. P value was 0.00424 which was significant at <0.05. Out of 36 (87.8%) mothers who came for follow-up at 6 months, 30 (83.33%) showed no complications and 6 (16.67%) showed complications. Spontaneous expulsion was seen in (11.11%) and it was the most common complaint at 6 months, abdominal pain (2.78%), and bleeding (2.78%). P value was 0.004744 which was statistically significant at < 0.05. There was no case of infection, missing thread, or perforation in

our study. Shukla M et al in their study on PPIUCD found that 10.68% expulsion rate was at 6 months follow-up. Four multisided studies in UN- POPIN [16] report found that after 6 months the cumulative expulsion rate was 9% after immediate PPIUCD. The main complaint of abdominal pain was managed by an analgesic. Mothers were counselled that pain in the early 6 wks., may be due to involution of the uterus, or due to CS. Complaint of pain gradually reduced from (36.58%) at 6 wks. to (8%) at 3 months, only (2.78%) at 6 months. Mothers with bleeding were given tranexamic acid and counselled that bleeding might be heavy in the initial 2 to 3 months. Effectively no complaint of bleeding was found at 6 months. Visibility of string was definite in ensuring correct IUCD placement. The threads not visible on speculum examination were confirmed by ultrasonography. In our study, the missing thread was 9.7% at 6 wks., 2.78% at 3 months, and no case of the missing thread at 6 months. Maluchuru S et al [17] in their study found that lost strings were found in 16% at 4 to 6 wks. of follow-up. The string was found to be in a cervical canal in 14 % of cases. The reason behind fewer complaints of missing threads may be the correct placement of PPIUCD. Confirmation of the missing thread was done by USG. All the mothers were found to be having PPIUCD in the correct place. Mahabur et al, GaikwardSet al, [18] Afshan A et al, [19] Kumar Sethi et al, [10] Mangala M et al [20] found no case of perforation after PPIUCD placement in their studies. In our study, only 2.6 % of patients complained of infection at 6 wks., which was managed by antibiotics and finally no case of infection was found at 3 months and 6 months of follow-up. This was similar to those found in the literature by Jain N et al, [21] Gaikwad Set al. In our study at 6 wks., no spontaneous expulsion was found, at the end of 3 months it was 2.78%, and at 6 months it was 11.11%. It can be overcome by proper training about PPIUCD placement using the principle of fundal placement using long placental forceps. At the end of 6 months despite frequent counselling, 1(2.76%) removal was due to pain, 1(2.76%) requested removal due to bleeding, and 1(2.76%) removal due to family pressure. P value was 0.0001 and was statistically significant at $P< 0.05$. In our study, there was no case of pregnancy found at 6 wks., 3 months and 6 months follow-up. It was similar to the study done by R Mahabur et al, Jain K Akhtar et al in their study. No case of ectopic pregnancy was found in our study similar to that of Isa B et al [22]. So, it is highly efficacious. [23]

Conclusion

It can be concluded that PPIUCD is a safe, convenient and highly effective post-partum intrauterine contraceptive device, which can be encouraged in both vaginal delivery and CS; it can be integrated with maternal child health services ensuring an appropriate long term reversible family planning method before returning home. Those who were aware, the rate of acceptance was high, with further promotional activities, by training we can improve its acceptability. In order to improve acceptance of PPIUCD, there should be a separate unit of antenatal counselling for couples regarding the possibility of conception during lactational amenorrhea, morbidity related to consecutive conception, and the importance of birth spacing. Even in the postpartum period effectiveness of PPIUCD counselling can only be ensured if the couple is counselled together. Misconceptions and negative attitudes related to PPIUCD should be addressed through community-based activities and government strategies to increase public awareness through different media sources as another way of promoting the programme.

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